



Microsoft Azure Developer Associate (AZ-204) Crash Course

Developing Solutions for Microsoft Azure

December 2022



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Cloud Consultant and Trainer



@zaalion



Course Overview

AZ-204 Skills Measured

Exam AZ-204: Developing Solutions for Microsoft Azure



Questions & Resources

- Please post questions in the Q&A box
- The course repository
 - <https://github.com/zaalion/oreilly-az-204>
- Reach out:
 - Twitter: [@zaalion](https://twitter.com/zaalion)



AZ-204 Candidate Profile

- Professionals who:
 - Have subject matter expertise designing, building, testing, and maintaining cloud applications and services on Microsoft Azure.



Azure Data Engineers

- Should have 1-2 years professional development experience
- Experience with Microsoft Azure
- Can program in a language supported by Azure



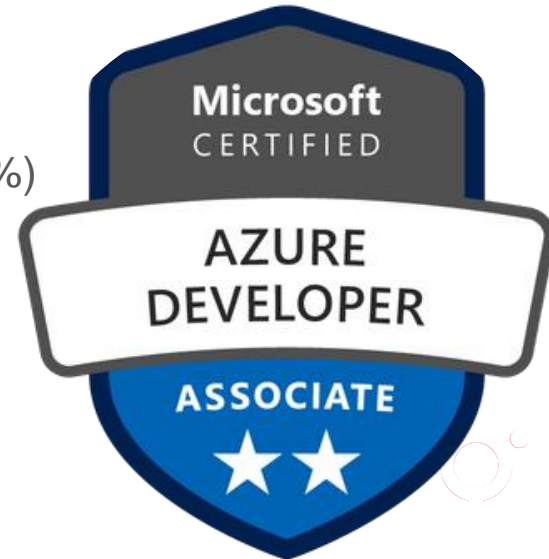
AZ-204 Candidates

- Proficiency in
 - Azure SDKs, Azure PowerShell, Azure CLI,
 - Data storage options, data connections, APIs,
 - App authentication and authorization
 - Compute and container deployment
 - Debugging, performance tuning, and monitoring.



AZ-204 Skills Measured

- Skills measured:
 - Develop Azure compute solutions (25-30%)
 - Develop for Azure storage (15-20%)
 - Implement Azure security (20-25%)
 - Monitor, troubleshoot, and optimize Azure solutions (15-20%)
 - Connect to and consume Azure services and third-party services (15-20%)



Course Repository


<https://github.com/zaalion/oreilly-az-204>



zaalion / oreilly-az-204 Public

[Code](#) [Issues](#) [Pull requests](#) [Actions](#) [Projects](#) [Wiki](#) [Security](#) 10 [Insights](#) [Settings](#)

 master ▾

 1 branch

 0 tags

[Go to file](#)

[Add file](#) ▾

[Code](#) ▾



rezasalehinewsig Updated slide deck PDF



Demos

demo files arrangement



.gitignore

Demos



AP-204 Resources.pdf

Resource updates



OReilly-AZ-204-Slide-Deck.pdf

Updated slide deck PDF

Help people interested in this repository understand your project by adding a

Local

Codespaces

[New](#)

 Clone



HTTPS

SSH

GitHub CLI

<https://github.com/zaalion/oreilly-az-204.git>



Use Git or checkout with SVN using the web URL.

 Open with GitHub Desktop

Open with Visual Studio

 Download ZIP

Develop Azure Compute Solutions

Develop Azure Compute Solutions

- Implement IaaS solutions
- Create Azure App Service Web Apps
- Implement Azure functions

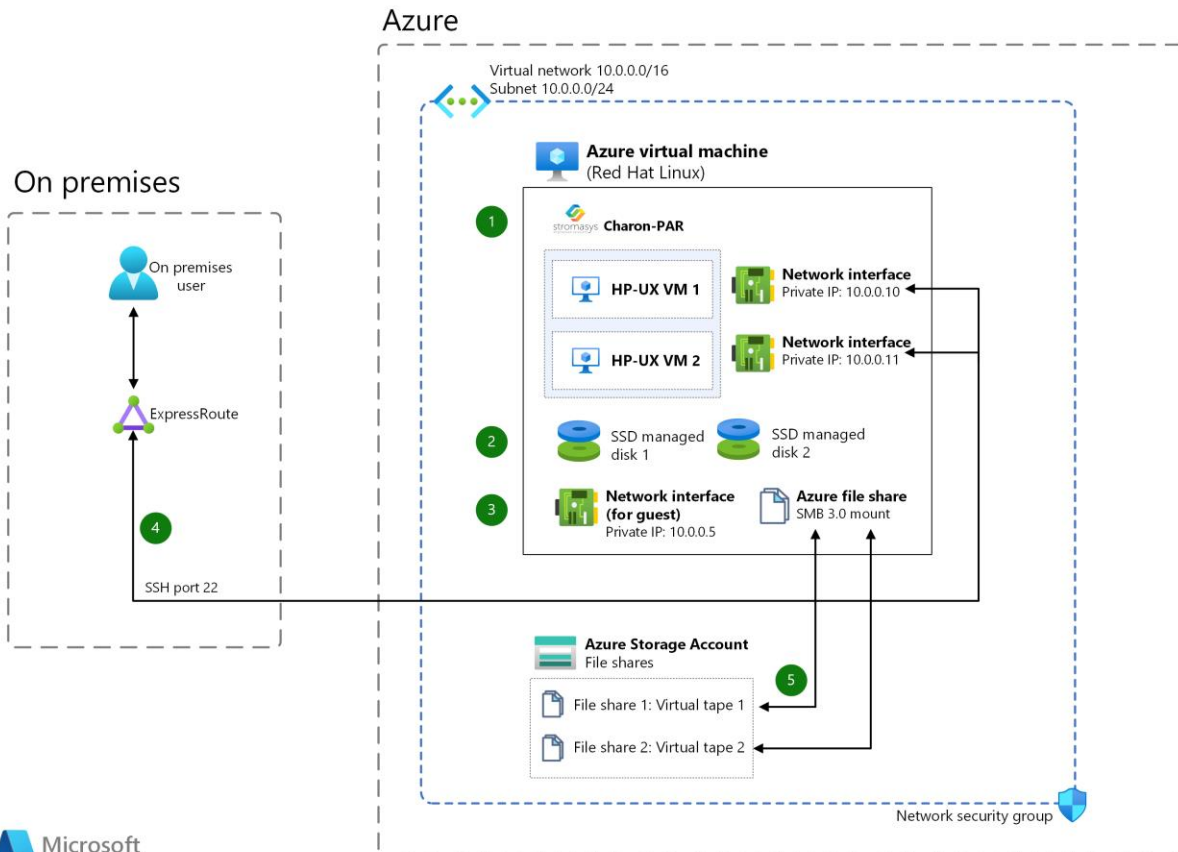


Implement IaaS solutions

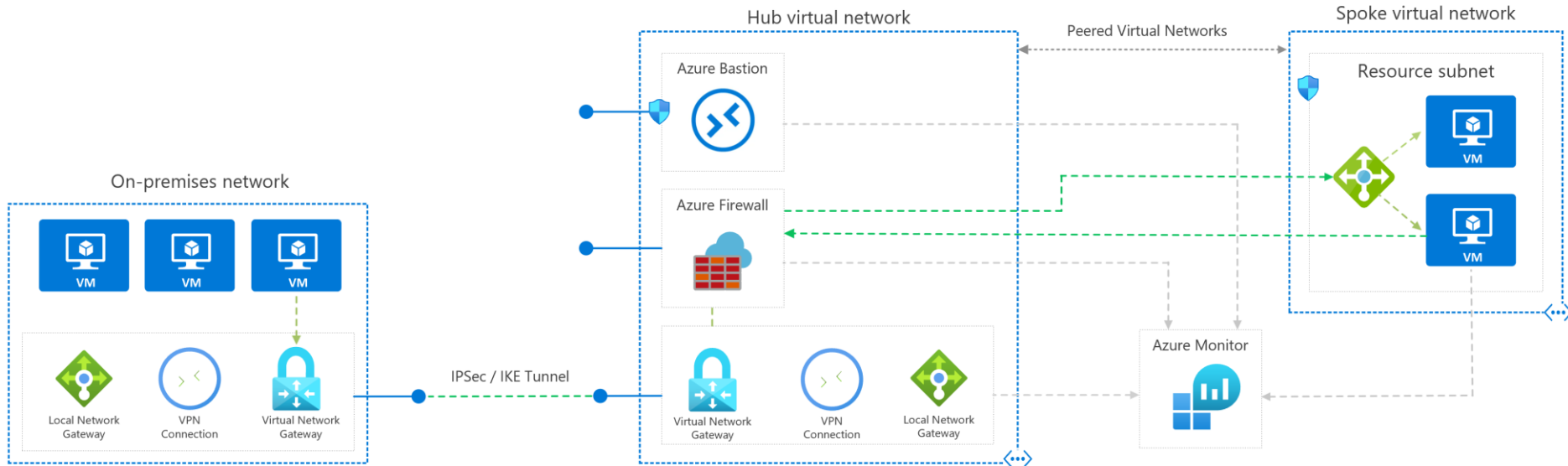
- Provision virtual machines (VMs) [see [1](#) [2](#) [3](#)]
- Configure, validate, and deploy ARM templates [see [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#)]
- Configure container images for solutions [see [1](#) [2](#)]
- Publish an image to the Azure Container Registry [see [1](#) [2](#) [3](#) [4](#)]
- Run containers by using Azure Container Instance [see [1](#) [2](#) [3](#)]



Implement IaaS solutions




Implement IaaS solutions



ARM Templates

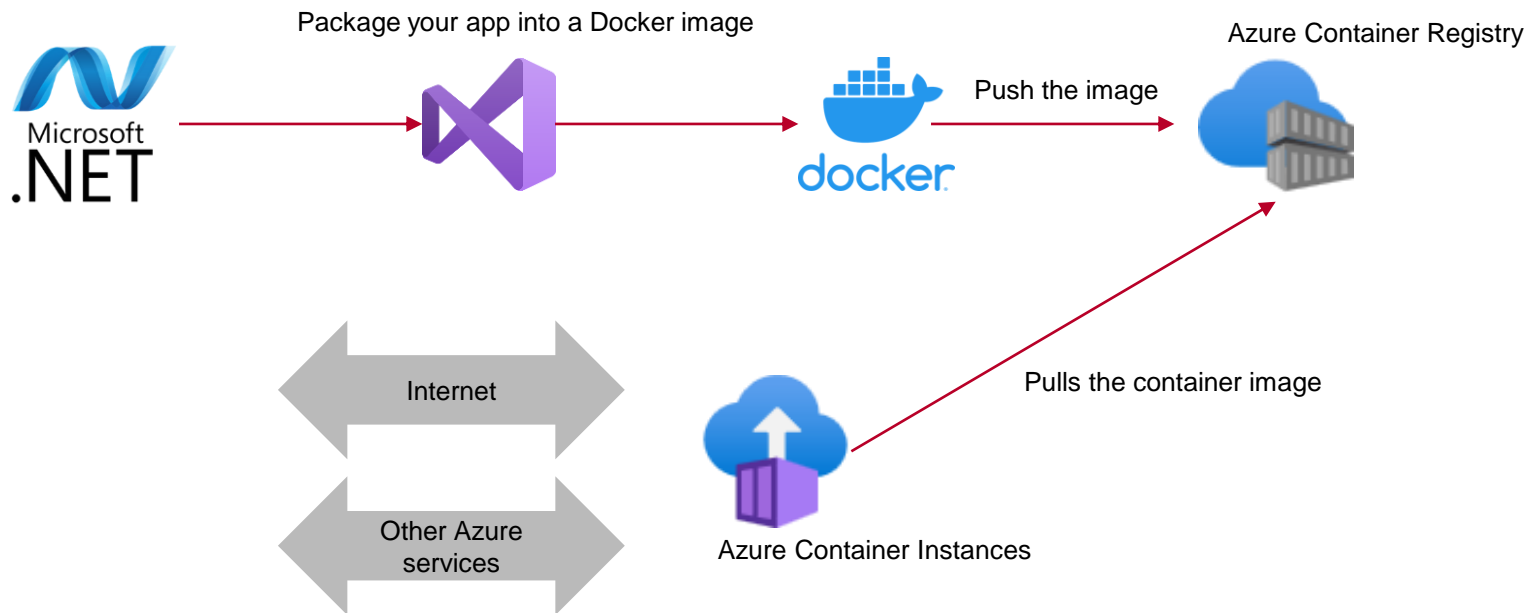
JSON

 Copy

```
{
  "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
  "contentVersion": "",
  "apiProfile": "",
  "parameters": {  },
  "variables": {  },
  "functions": [  ],
  "resources": [  ],
  "outputs": {  }
}
```

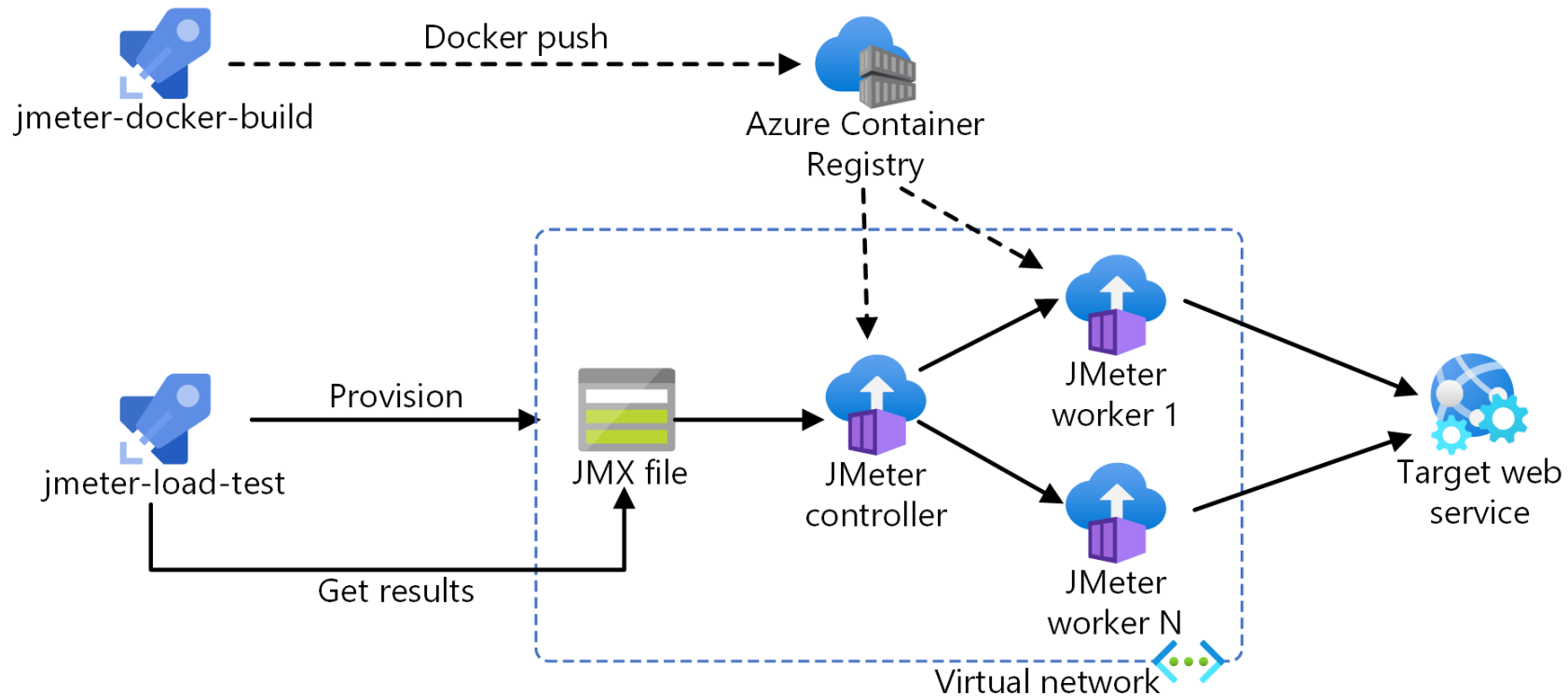


Host Your Code in ACI



<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-overview>





Create Azure App Service Web Apps

- Create an Azure App Service Web App [see [1](#) [2](#) [3](#)]
- Enable diagnostics logging [see [1](#)]
- Deploy code to a web app [see [1](#) [2](#) [3](#) [4](#)]
- Configure web app settings including SSL, API settings, and connection strings [see [1](#) [2](#)]
- Implement auto scaling rules including scheduled autoscaling and autoscaling by operational or system metrics [see [1](#)]



Azure App Services

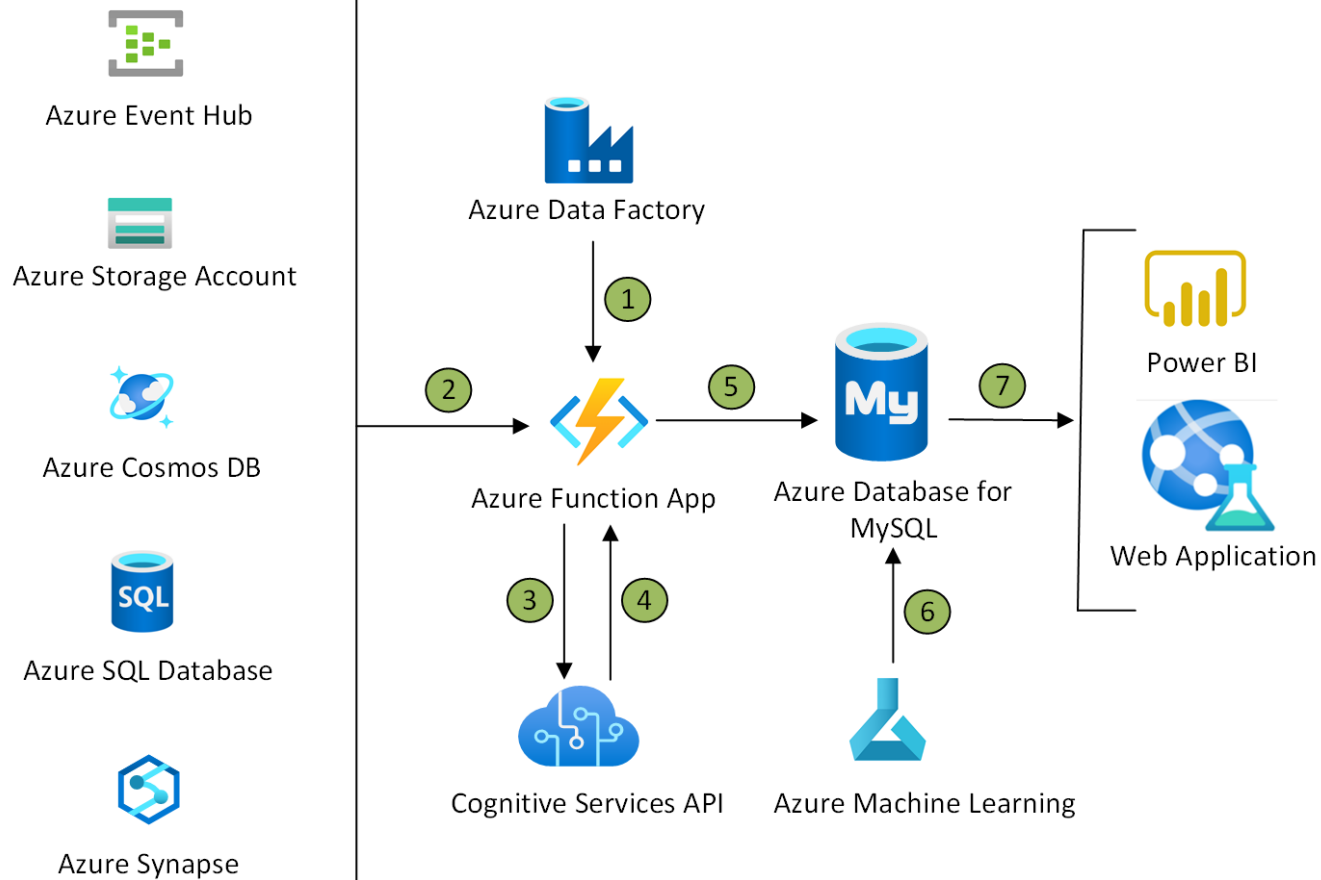
Azure App Service is an HTTP-based service for hosting web applications, REST APIs, and mobile back ends. It can host .NET, .NET Core, Java, Ruby, Node.js, PHP, or Python code

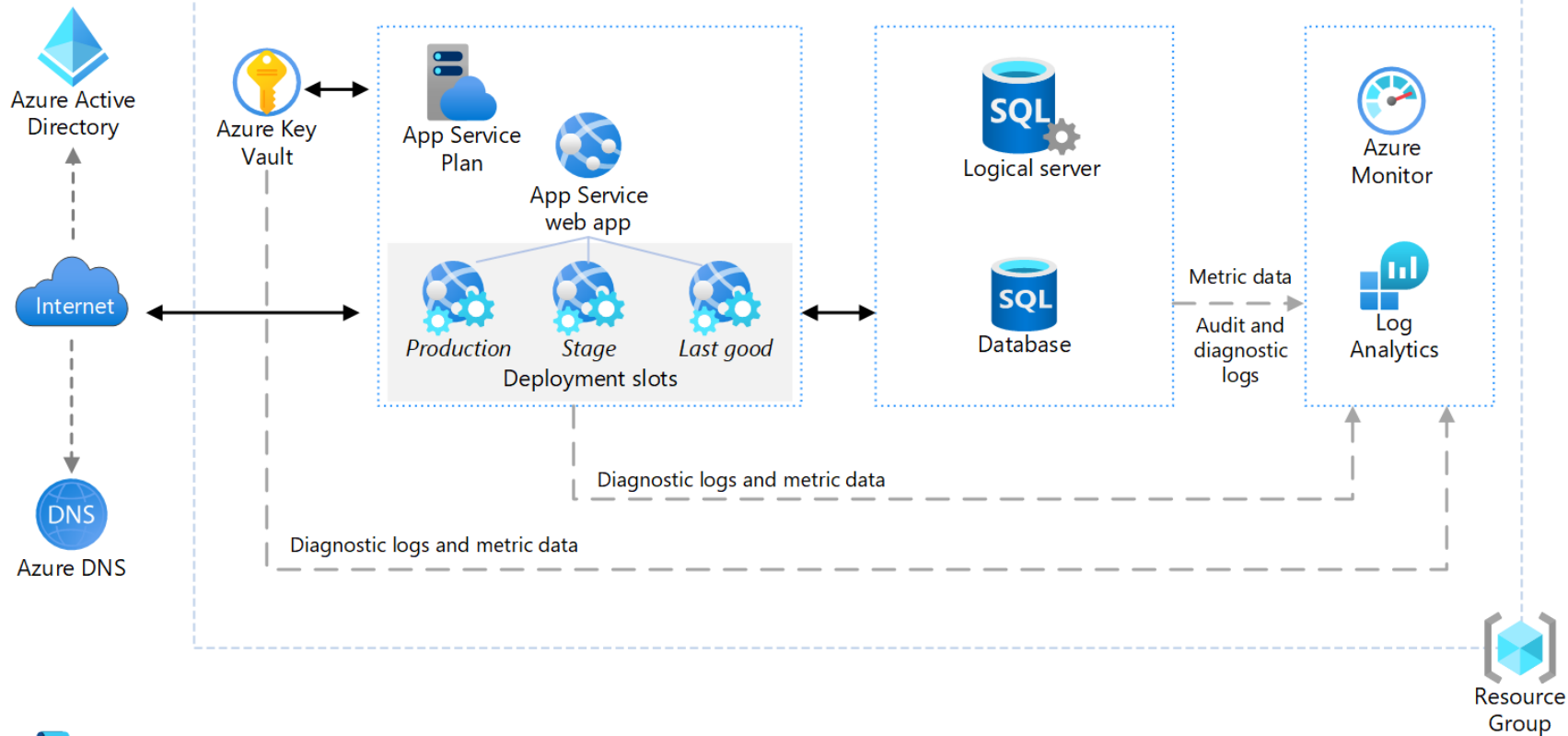


Azure App Services

- Is a PaaS service, which means less administrative overhead comparing to IaaS services
- The service is managed by Azure. You just deploy your code and run it
- Host websites and RESTful APIs using the web app feature
- Other apps such as mobile app back ends or automated business processes
- Use for legacy and new applications
- Global scale with high availability







Implement Azure functions

- Create and deploy Azure Functions apps [see [1](#) [2](#) [3](#)]
- Implement input and output bindings for a function [see below]
- Implement function triggers by using data operations, timers, and webhooks
[see [1](#) [2](#) [3](#) [4](#)]
- Implement Azure Durable Functions [see [1](#) [2](#) [3](#) [4](#) [5](#)]



Azure Functions

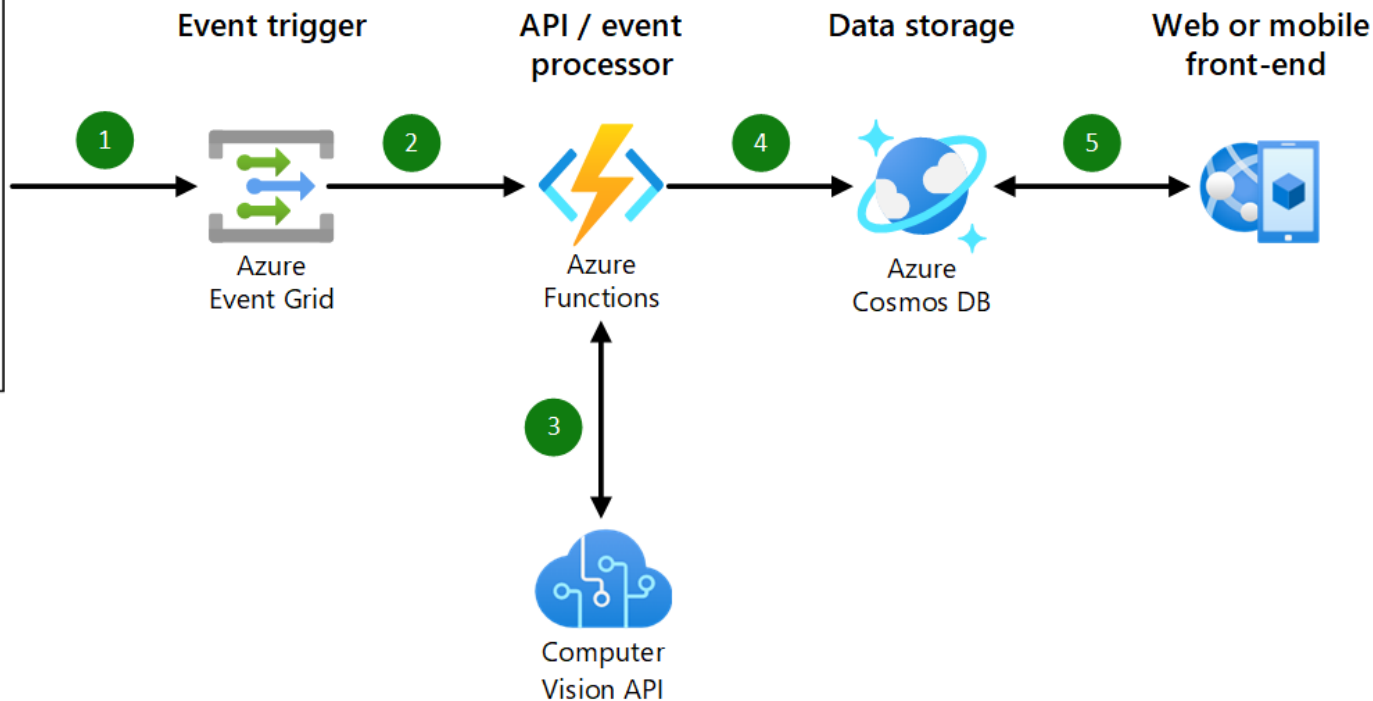
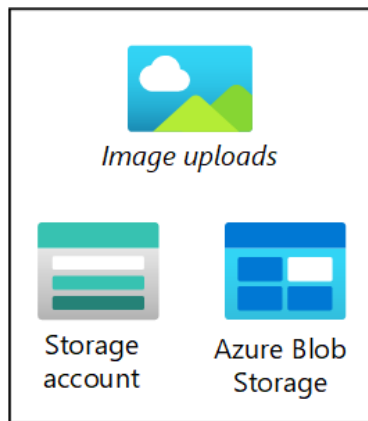
- Run isolated pieces of code in a serverless solution.
- Best to host microservices and APIs (HTTP, and other types)



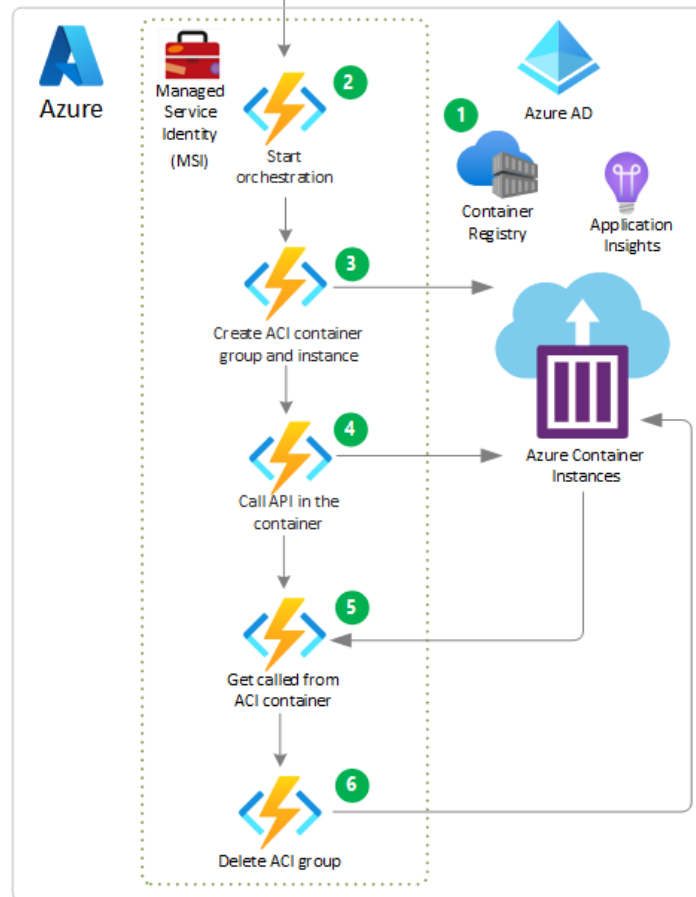
Azure Functions

- A serverless PaaS
- The service is managed by Azure. Just deploy your code and run it
- Host APIs and microservices
- Use for legacy and new applications
- Automatic scale and high availability





HTTP API call to Orchestrator
Durable Function



Develop for Azure Storage

Design Azure Data Storage Solutions

- **Develop solutions that use Cosmos DB storage**
- **Develop solutions that use blob storage**

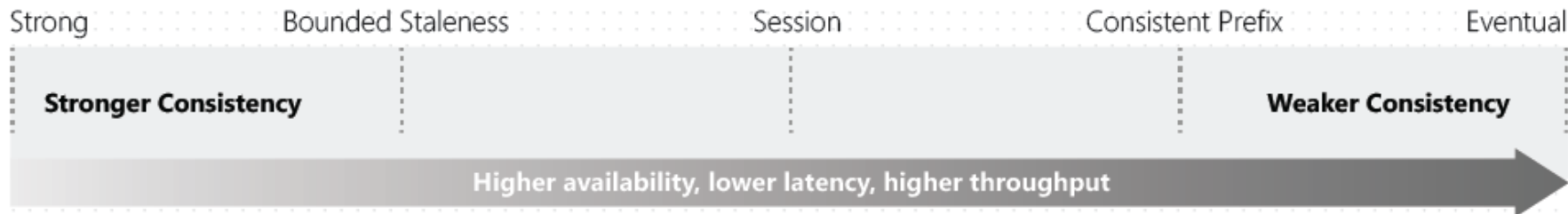


Develop solutions that use Cosmos DB storage

- Select the appropriate API and SDK for a solution [see [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#)]
- Implement partitioning schemes and partition keys [see [1](#) [2](#)]
- Perform operations on data and Cosmos DB containers [see [1](#) [2](#)]
- Set the appropriate consistency level for operations [see [1](#)]
- Manage change feed notifications [see [1](#), [2](#)]



Consistency Levels in Azure Cosmos DB





Event-Computing and Notifications

Retail, Gaming, Content management



Azure
Functions



Azure
Notification Hubs



Azure
App Service

Trigger call to an API
when a document is
inserted or modified

Stream Processing

IoT processing, Data Science & analytics



Azure
Stream Analytics



Azure
HDInsight



Apache
Spark



Apache
Storm

Real-time (stream)
processing of data

Data movement

Enterprise data management



Azure
Storage Blob



Azure
Storage Table

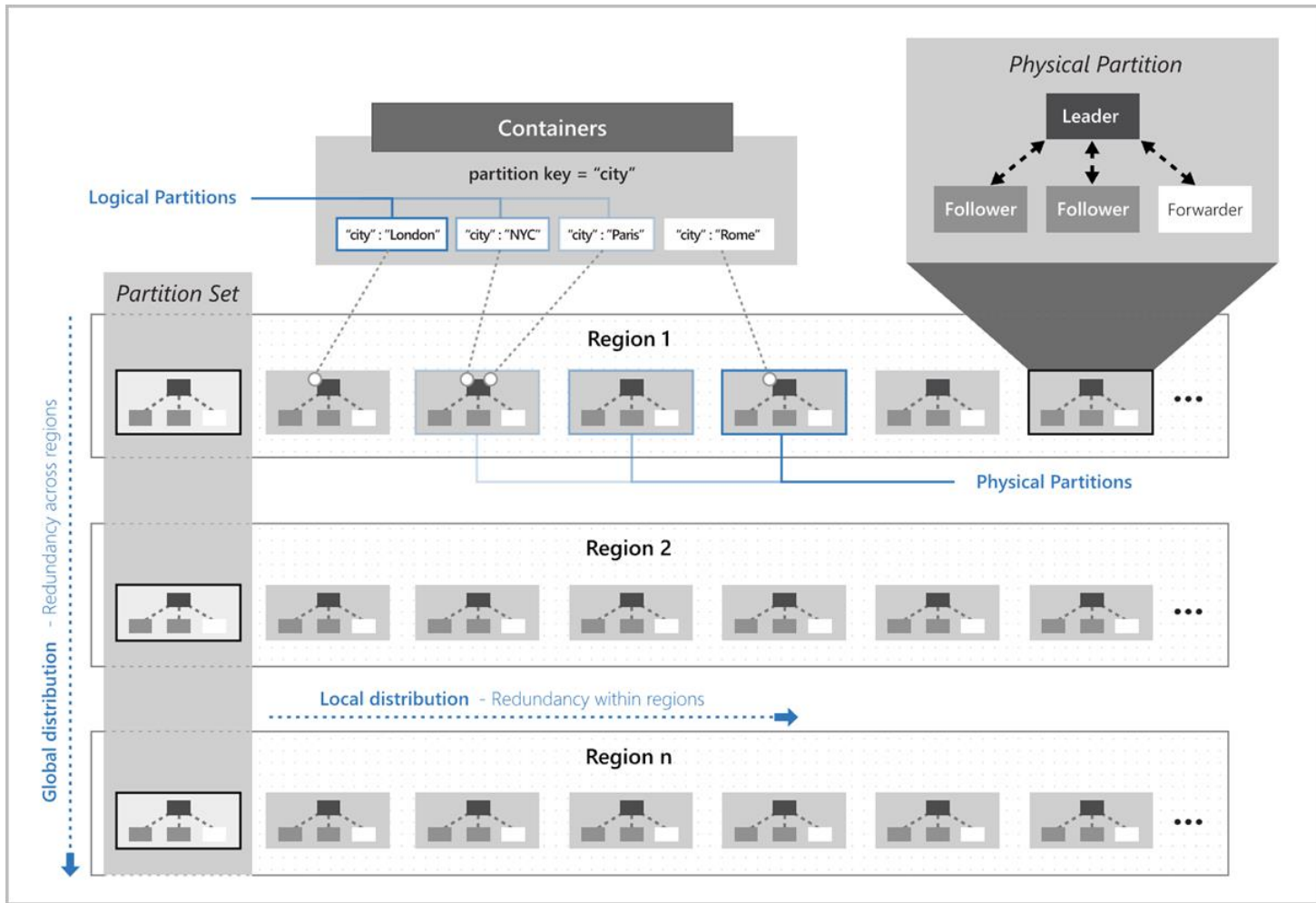


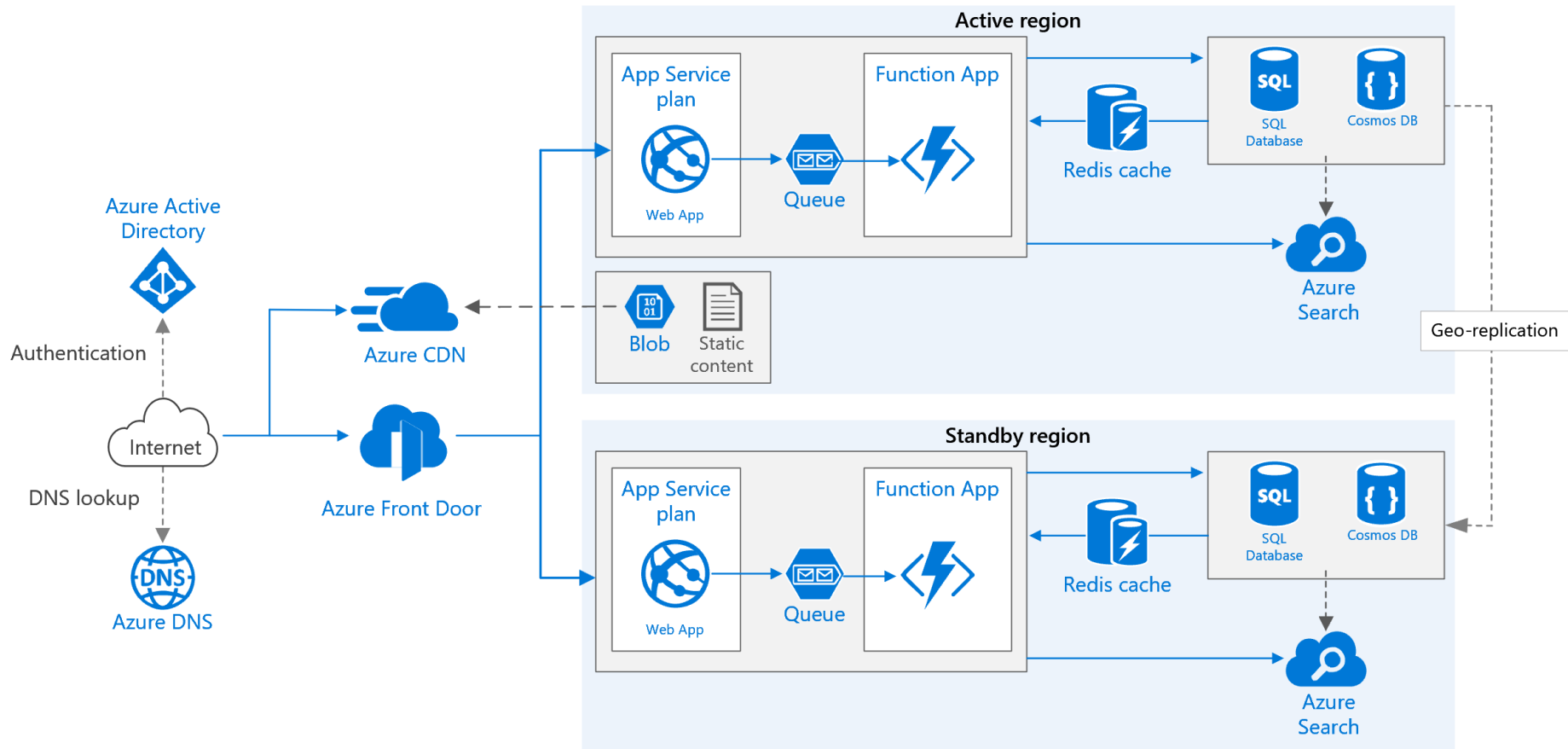
Azure
Data Lake

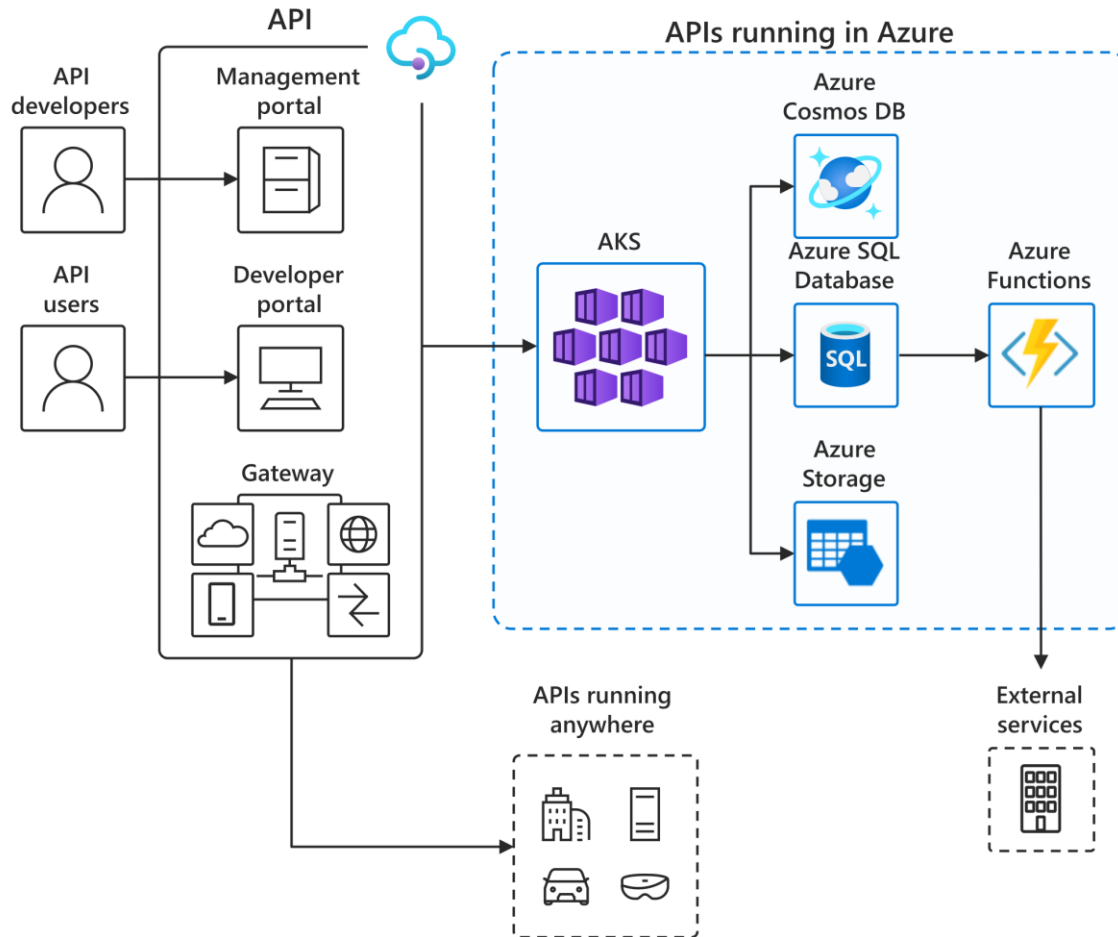


Azure
Cosmos DB

Zero-downtime
migrations







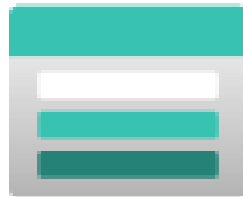
Develop solutions that use blob storage

- Move items in Blob storage between storage accounts or containers [see [1](#)]
- Set and retrieve properties and metadata [see [1](#)]
- Perform operations on data by using the appropriate SDK [see [1](#) [2](#)]
- Implement storage policies, and data archiving and retention [see [1](#) [2](#) [3](#) [4](#)]



Azure Storage Account

Contains all Azure Storage data objects, including blobs, file shares, queues, and tables.

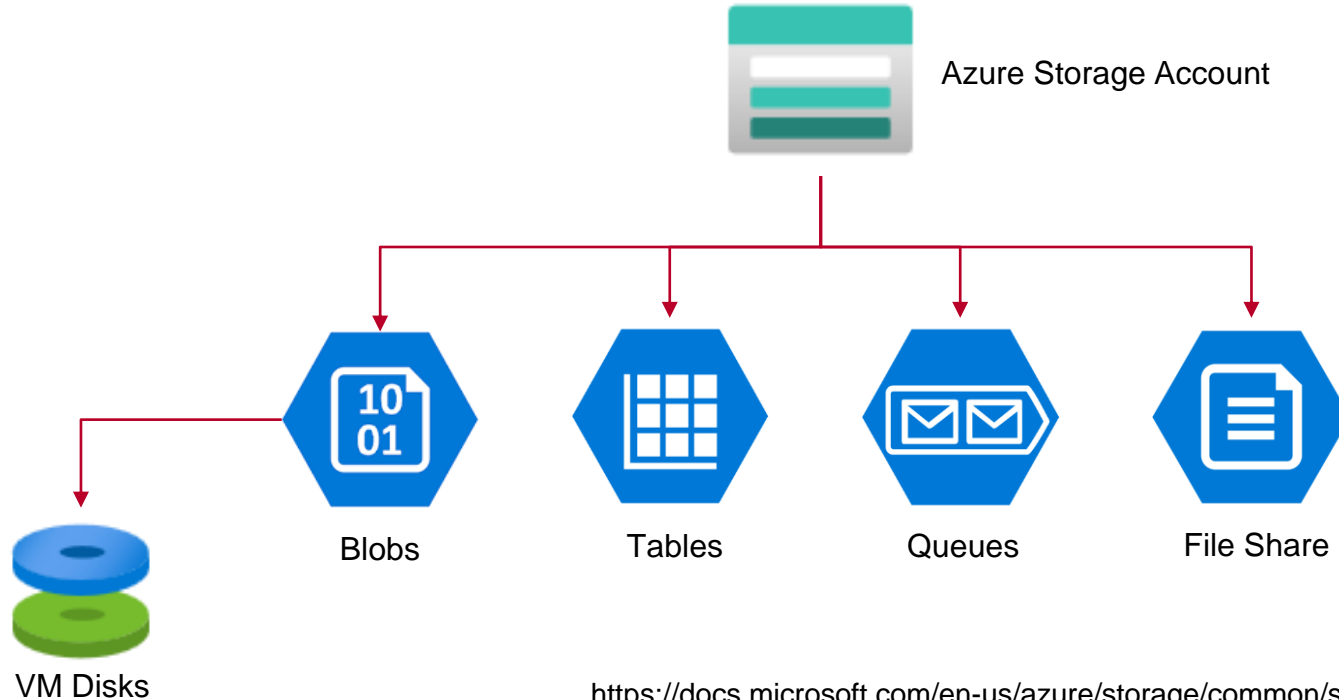


Azure Storage Account

- Accessible from around the globe over HTTP(S)
- Store blobs, tables, queues, and file shares
- Access via public and private endpoints
- Financially-backed SLA
- Security-in-depth (firewall, in transit, at rest)



Azure Storage Services

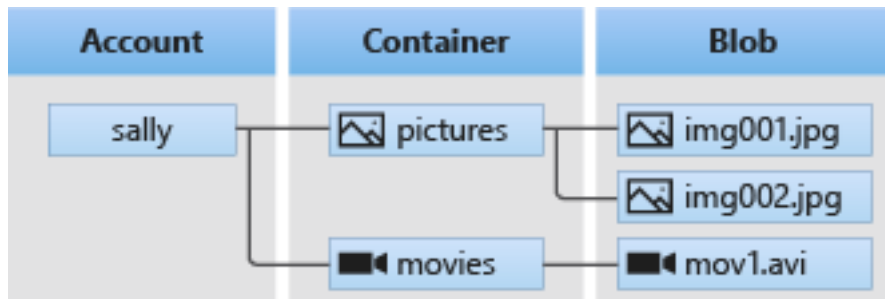


<https://docs.microsoft.com/en-us/azure/storage/common/storage-introduction>

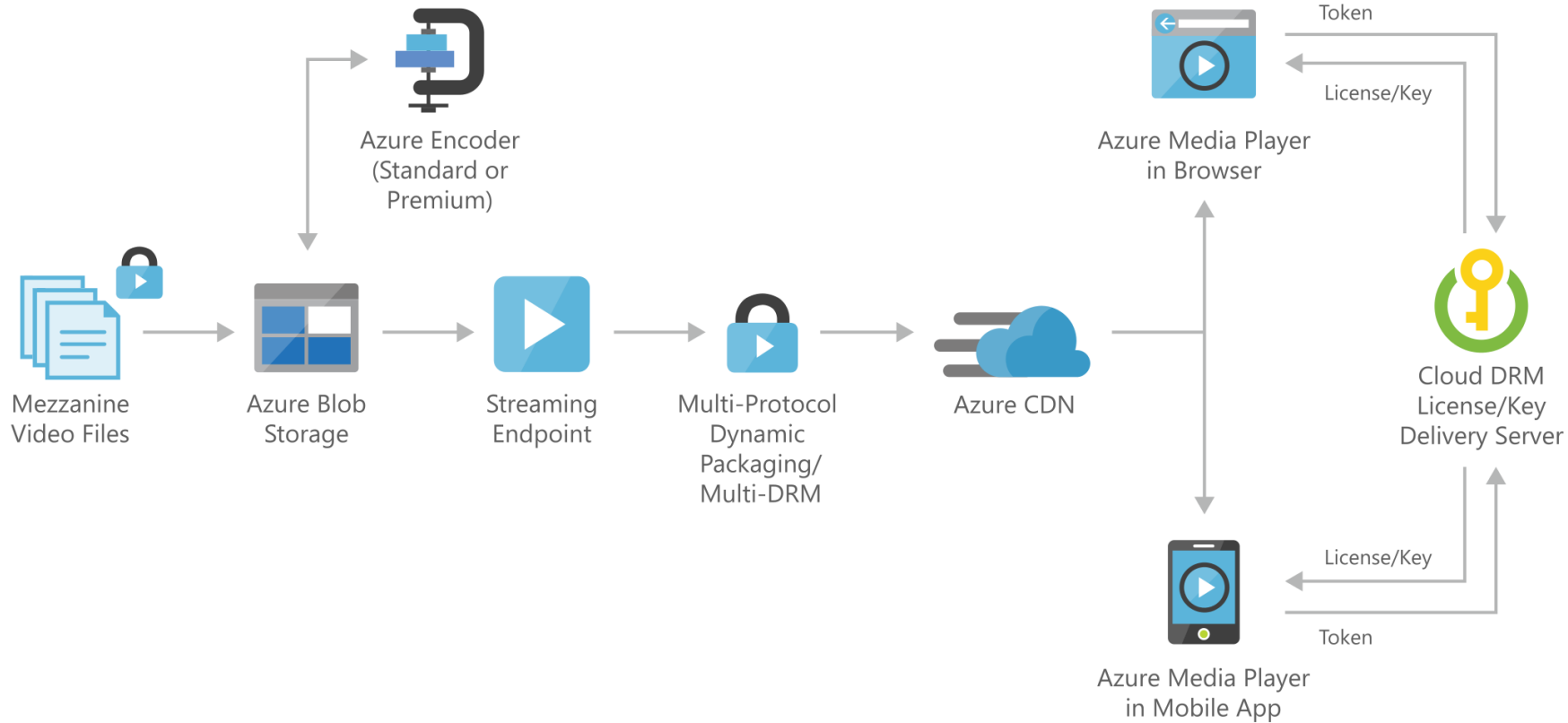


Azure Storage Account: Blobs

A scalable object store for text/binary files (unstructured data). Also includes support for big data analytics through Data Lake Storage Gen2







Implement Azure Security

Implement Azure Security

- Implement user authentication and authorization
- Implement secure cloud solutions



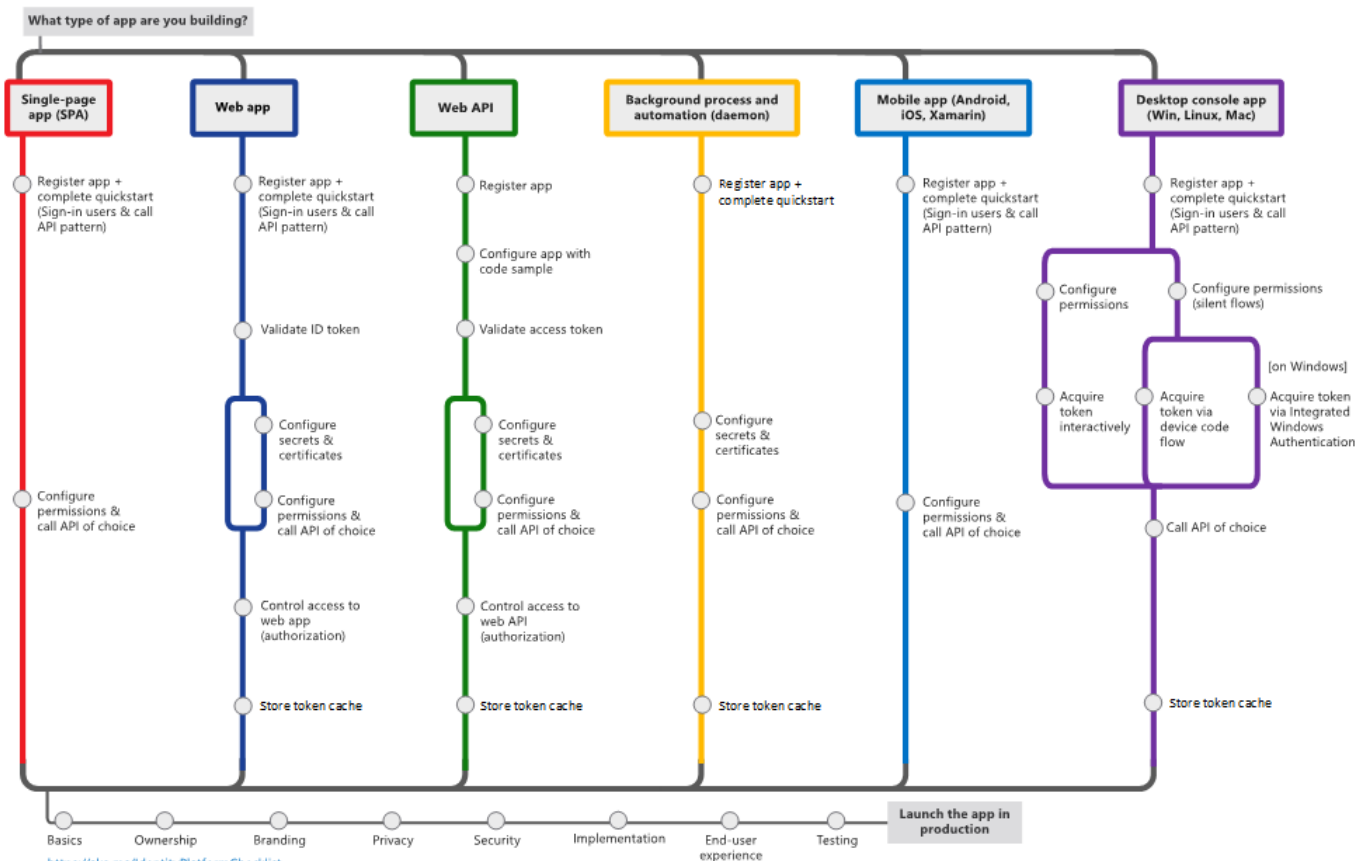
Implement user authentication and authorization

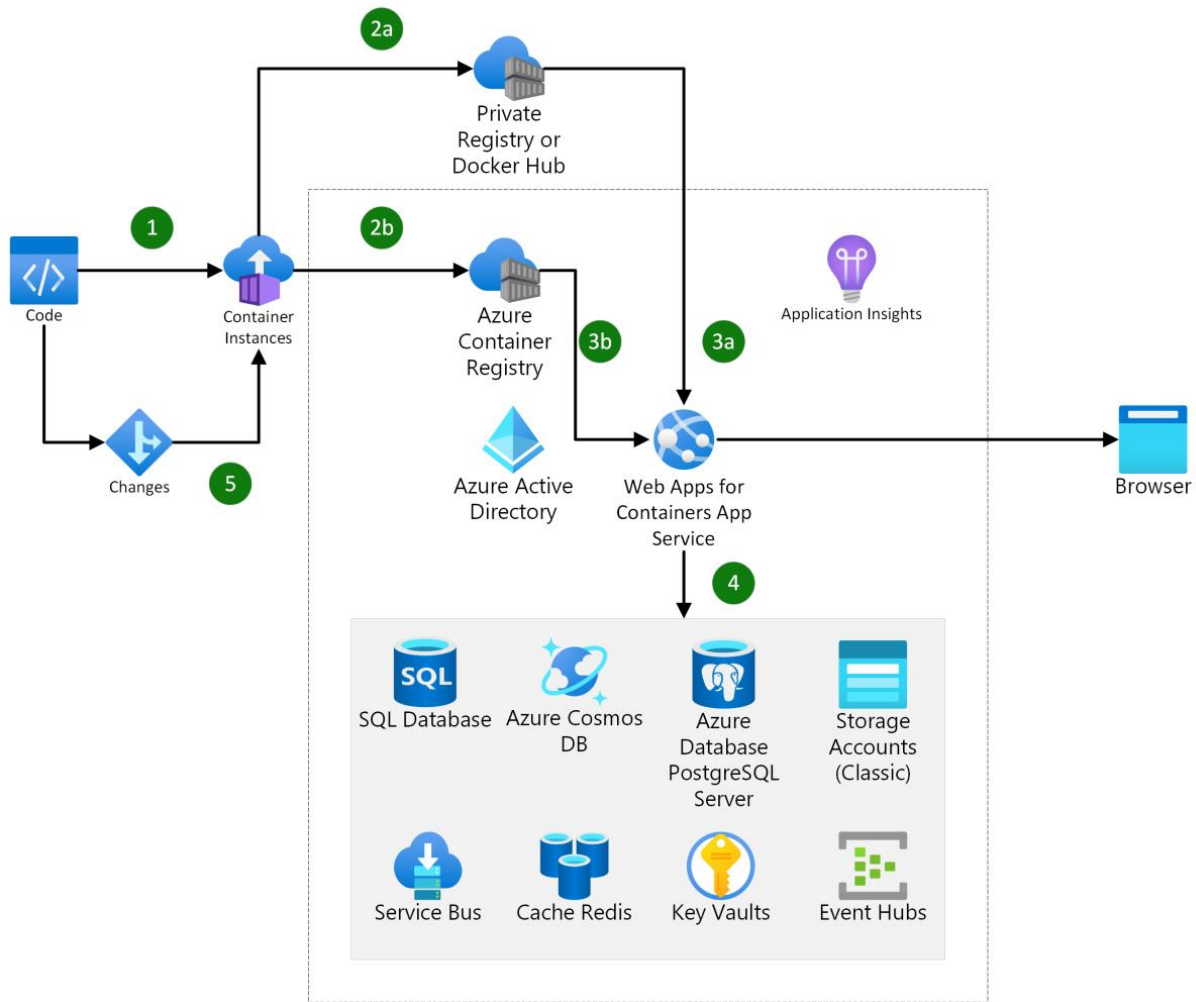
- Authenticate and authorize users by using the Microsoft Identity platform [see [1](#) [2](#) [3](#) [4](#) [5](#)]
- Authenticate and authorize users and apps by using Azure Active Directory [see [1](#) [2](#)]
- Create and implement shared access signatures [see [1](#) [2](#)]
- Implement solutions with Microsoft Graph [see [1](#) [2](#) [3](#) [4](#) [5](#)]

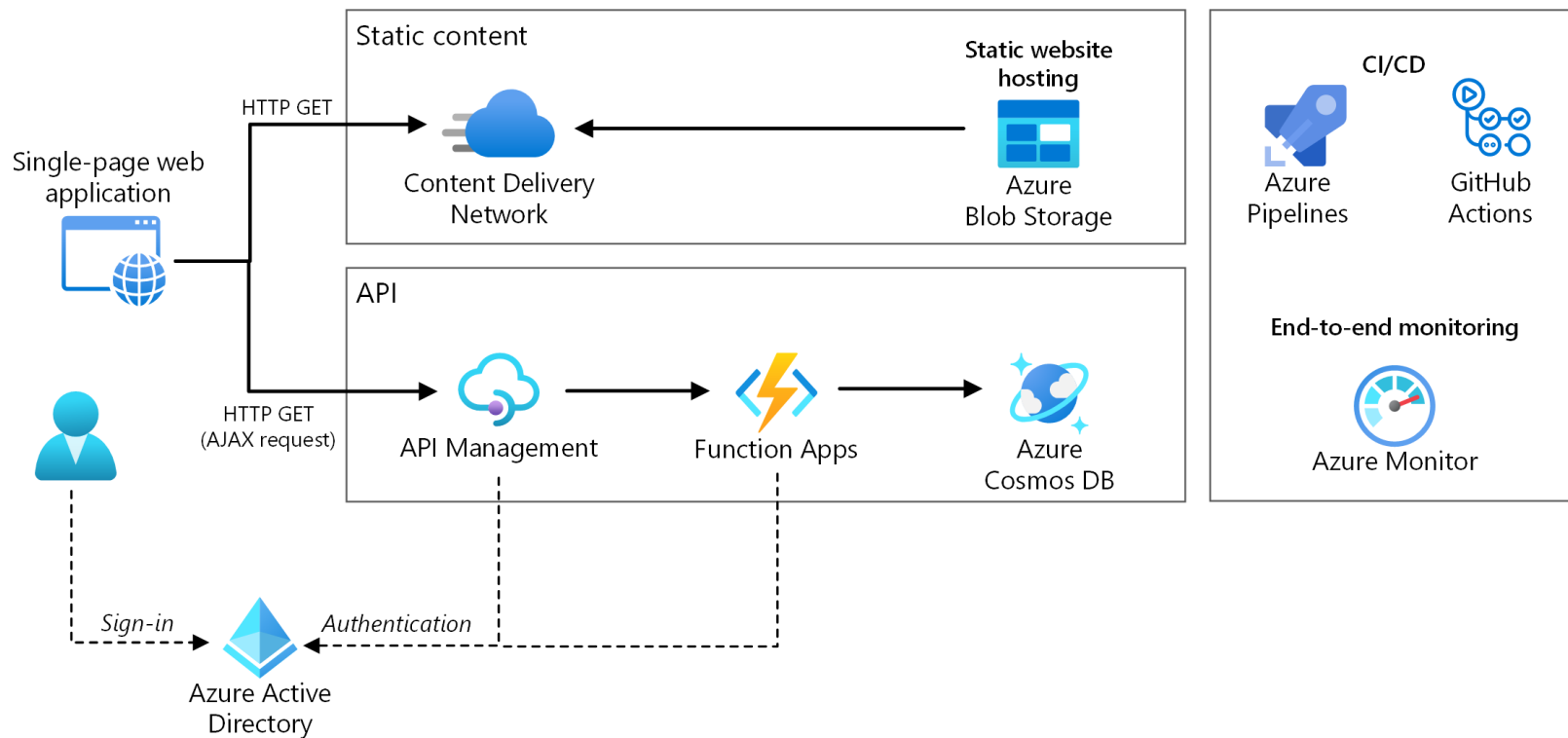


Microsoft identity platform

<http://aka.ms/IdentityPlatform>







Implement secure cloud solutions

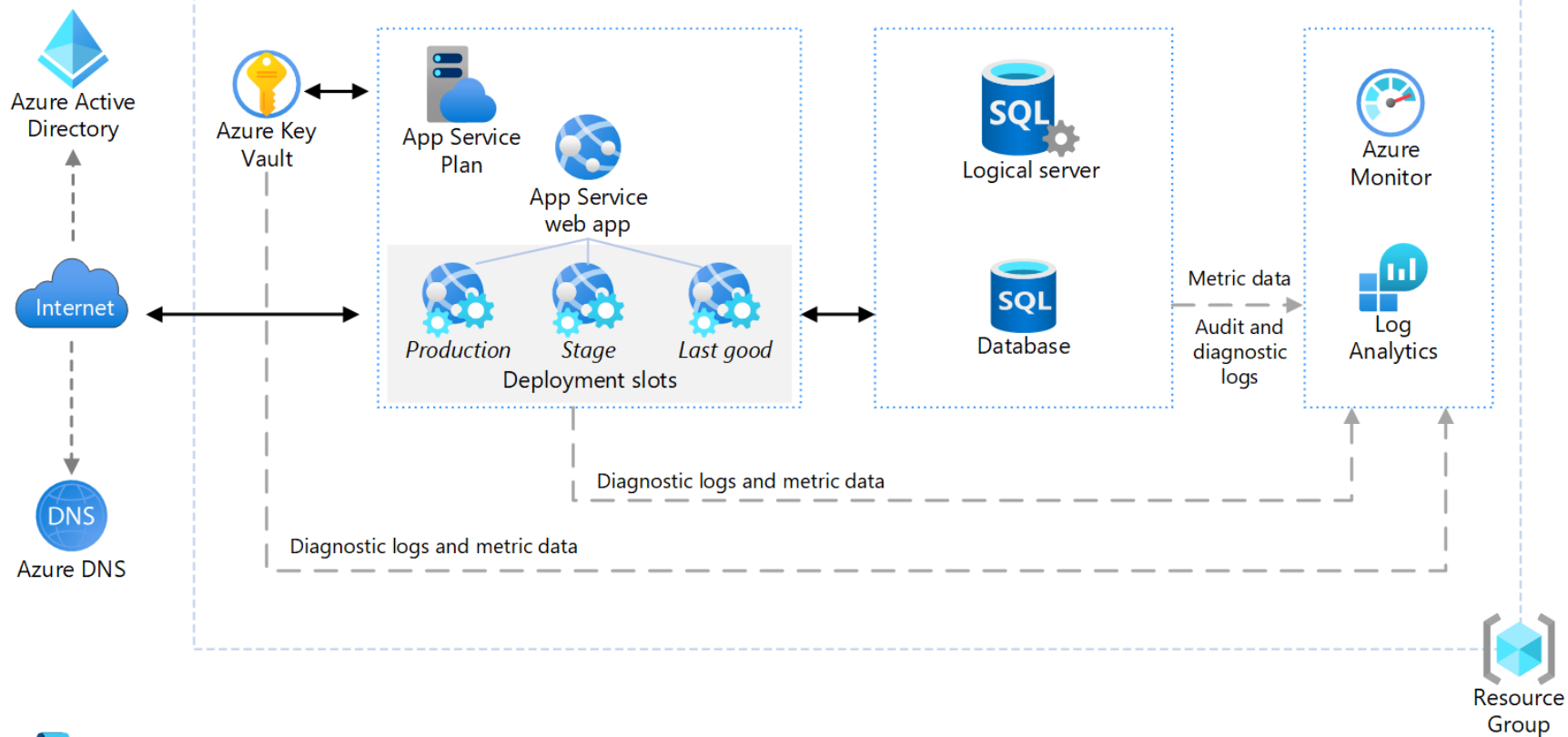
- Secure app configuration data by using App Configuration Azure Key Vault

[see [1](#) [2](#) [3](#)]

- Develop code that uses keys, secrets, and certificates stored in Azure Key

Vault [see [1](#) [2](#) [3](#)]





Monitor, Troubleshoot, and Optimize Azure Solutions

Monitor, Troubleshoot, and Optimize

- Implement caching for solutions
- Troubleshoot solutions using metrics and log data

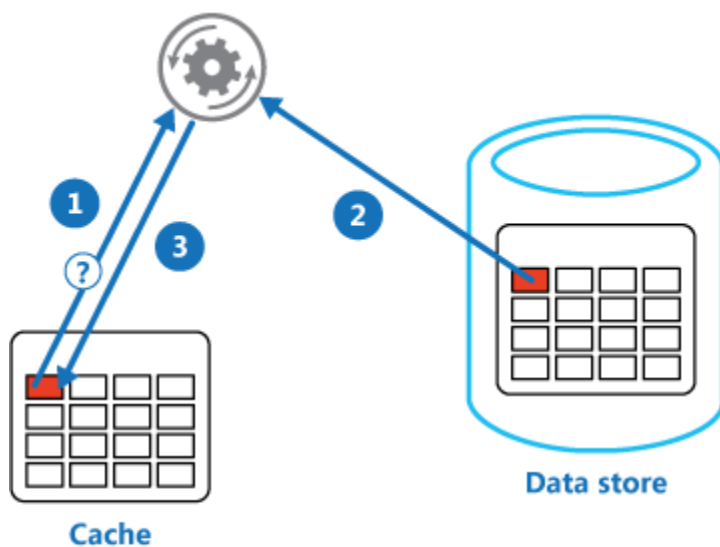




Implement caching for solutions

- Configure cache and expiration policies for Azure Cache for Redis [see [1](#) [2](#) [3](#)]
- Implement secure and optimized application cache patterns including data sizing, connections, encryption, and expiration [see [1](#)]





- 1: Determine whether the item is currently held in the cache.
- 2: If the item is not currently in the cache, read the item from the data store.
- 3: Store a copy of the item in the cache.



Browser



CDN



CMS on Web App



Application Insights



SQL Database



Azure Cache for Redis



Troubleshoot solutions using metrics and log data

- Configure an app or service to use Application Insights [see [1](#) [2](#) [3](#)]
- Review and analyze metrics and log data [see [1](#)]
- Implement Application Insights web tests and alerts [see [1](#) [2](#) [3](#)]





1st-function

40.3 ms
24K calls



2nd-function

27.4 ms
24K calls



3rd-function

32.2 s | 3.1%
53K calls

1.5 s
323 calls

21.2 ms
37K calls

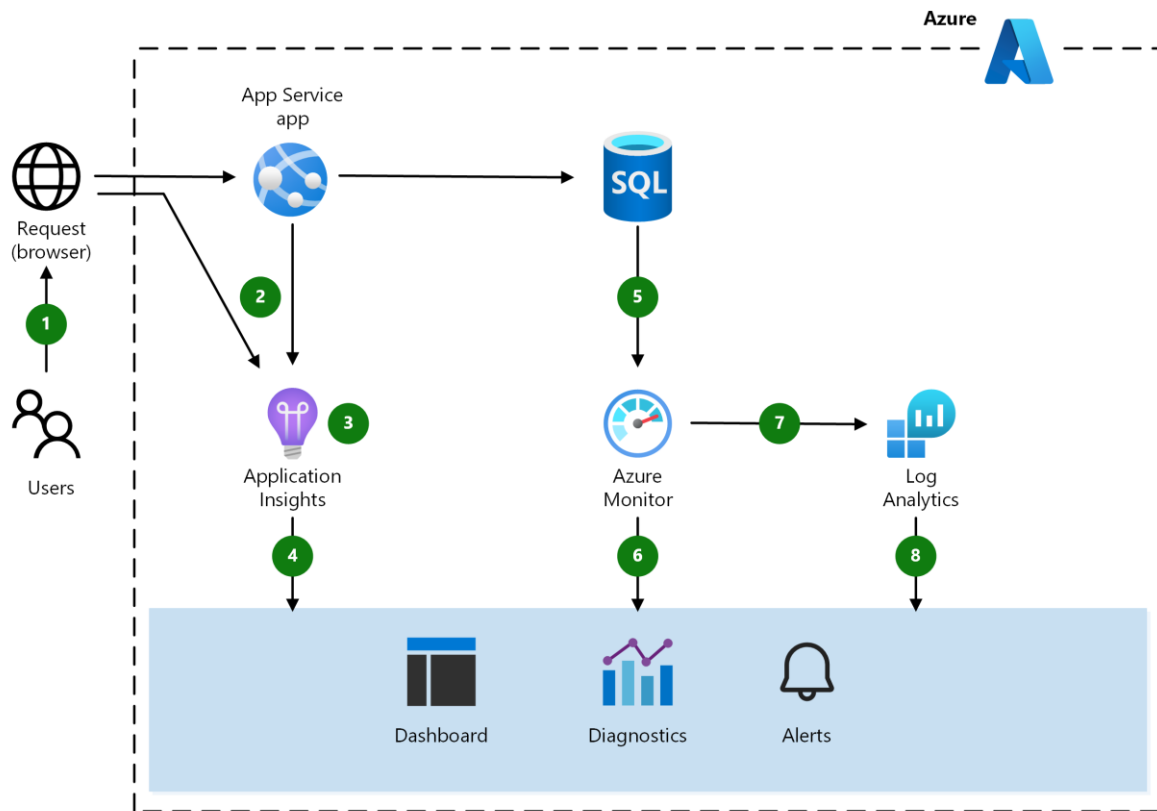


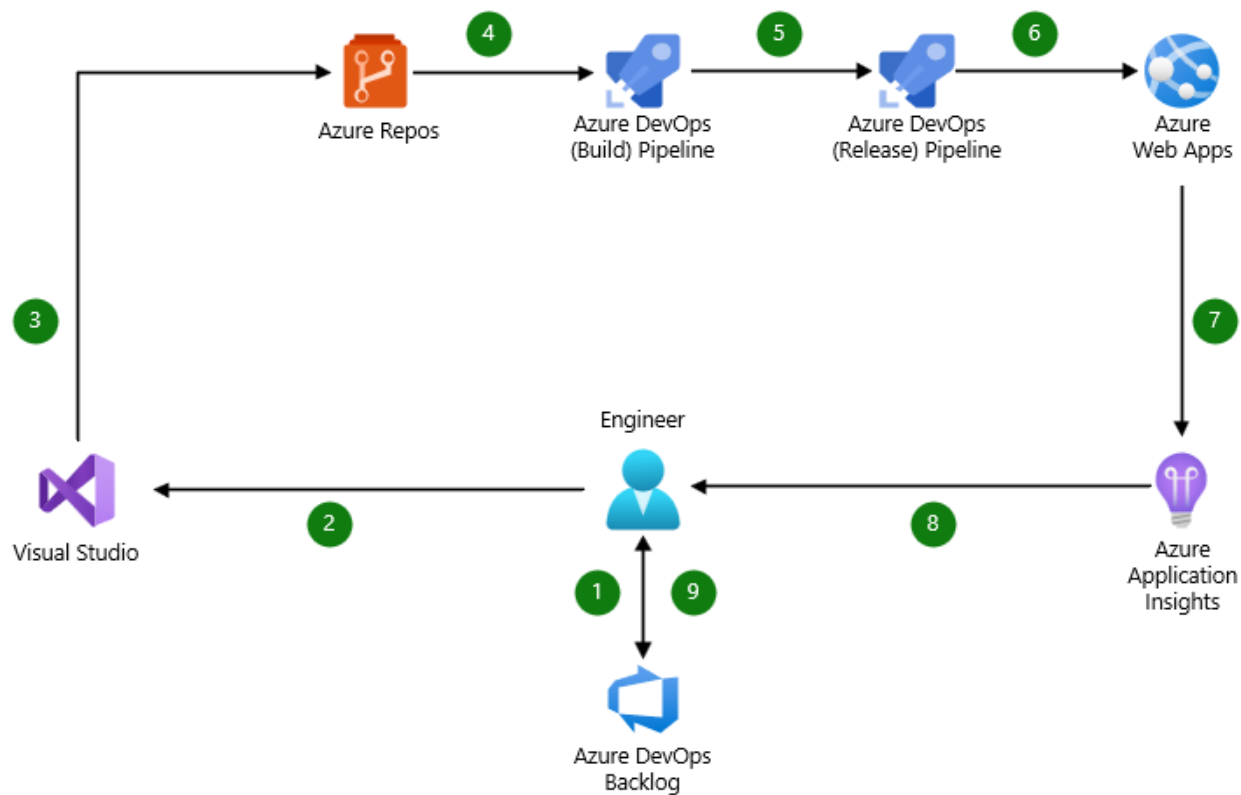
Database
HTTP



final-eventhub
AZURE EVENT HUBS







Connect to and Consume Azure Services and Third-party Services

Consume Azure and Third-party Services

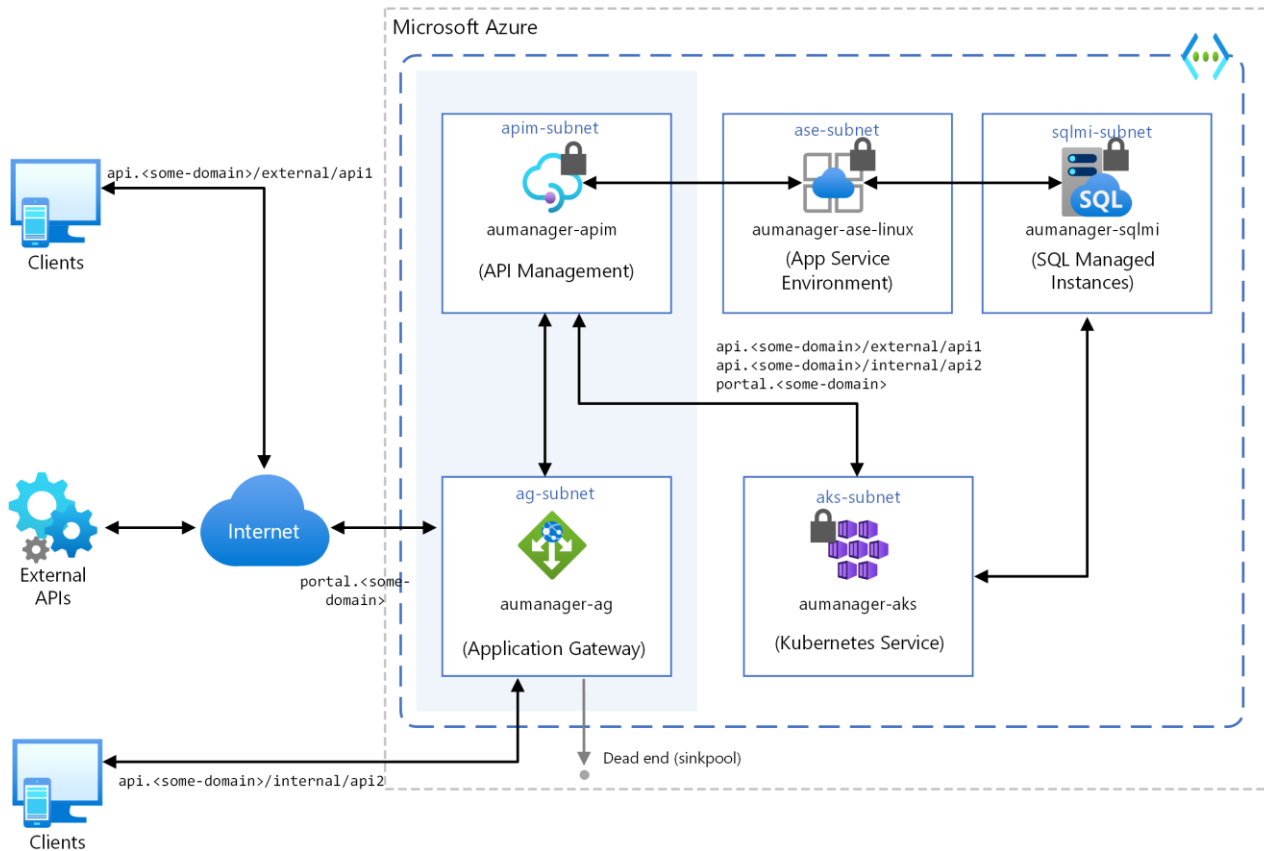
- Implement API Management
- Develop event-based solutions
- Develop message-based solutions

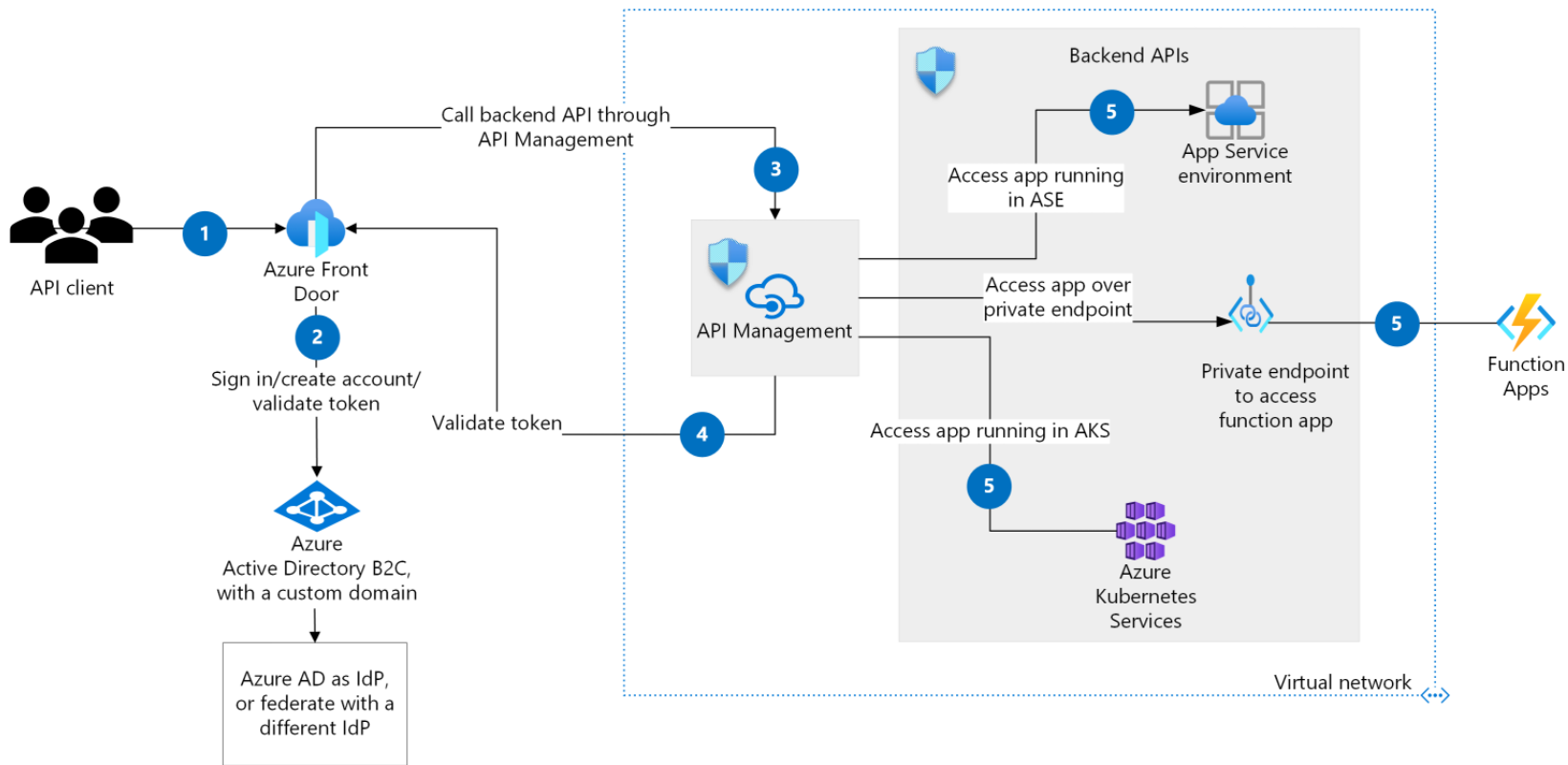


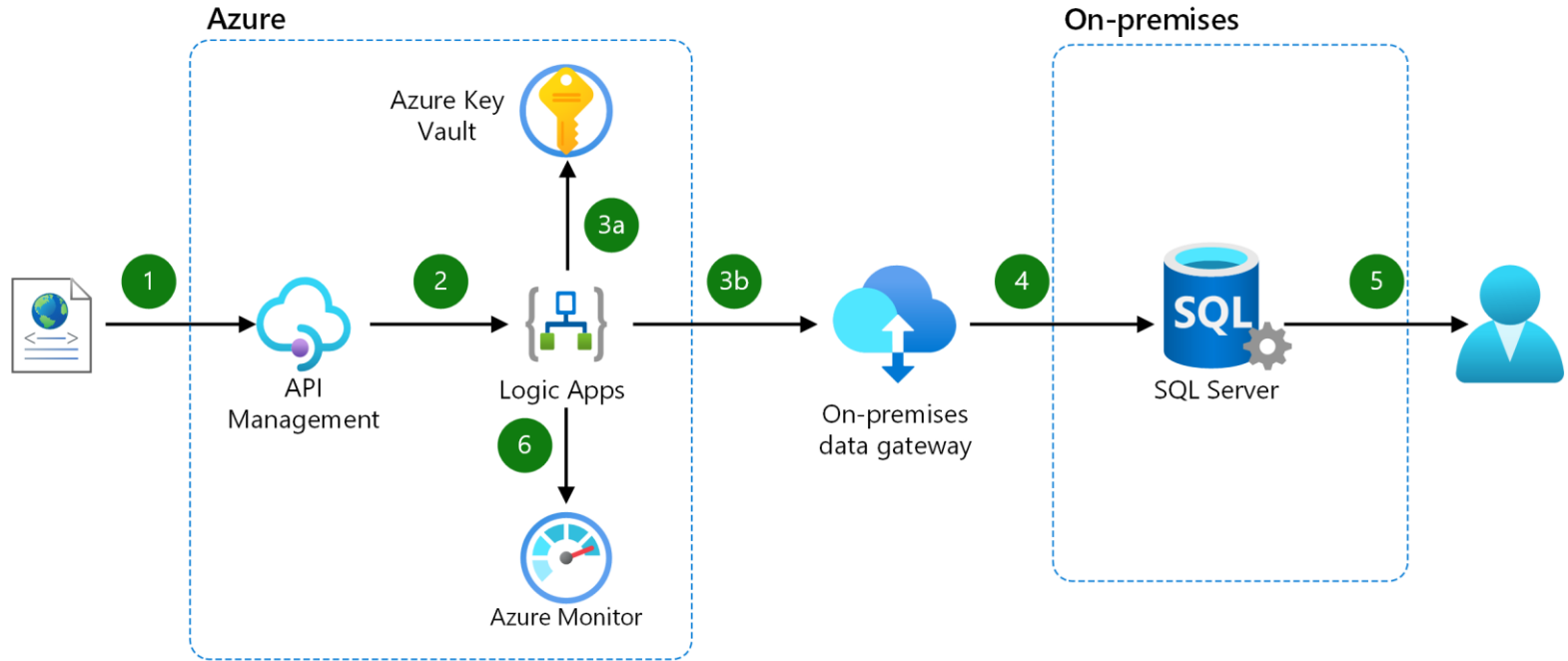
Implement API Management

- Create an APIM instance [see [1](#)]
- Create and document APIs [see [1](#)]
- Configure authentication for APIs [see [1](#)]
- Define policies for APIs [see [1](#)]





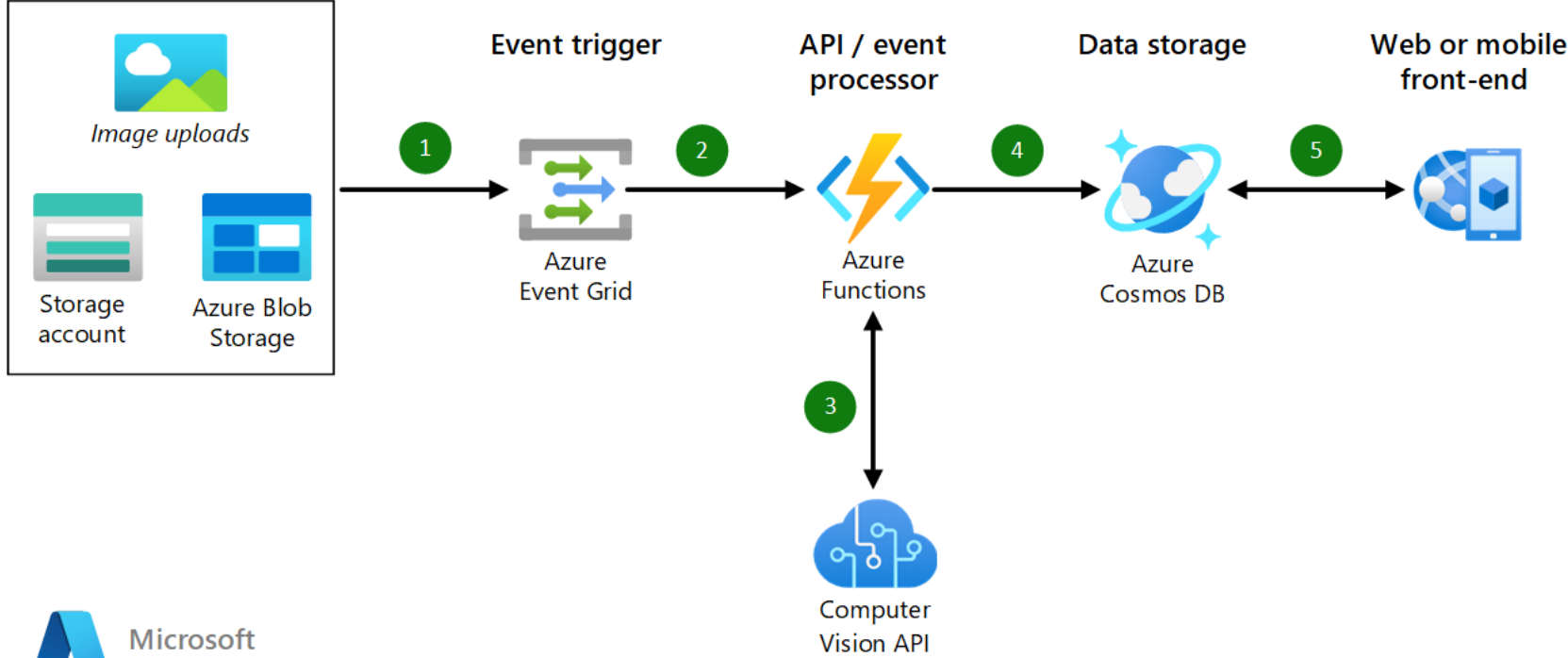


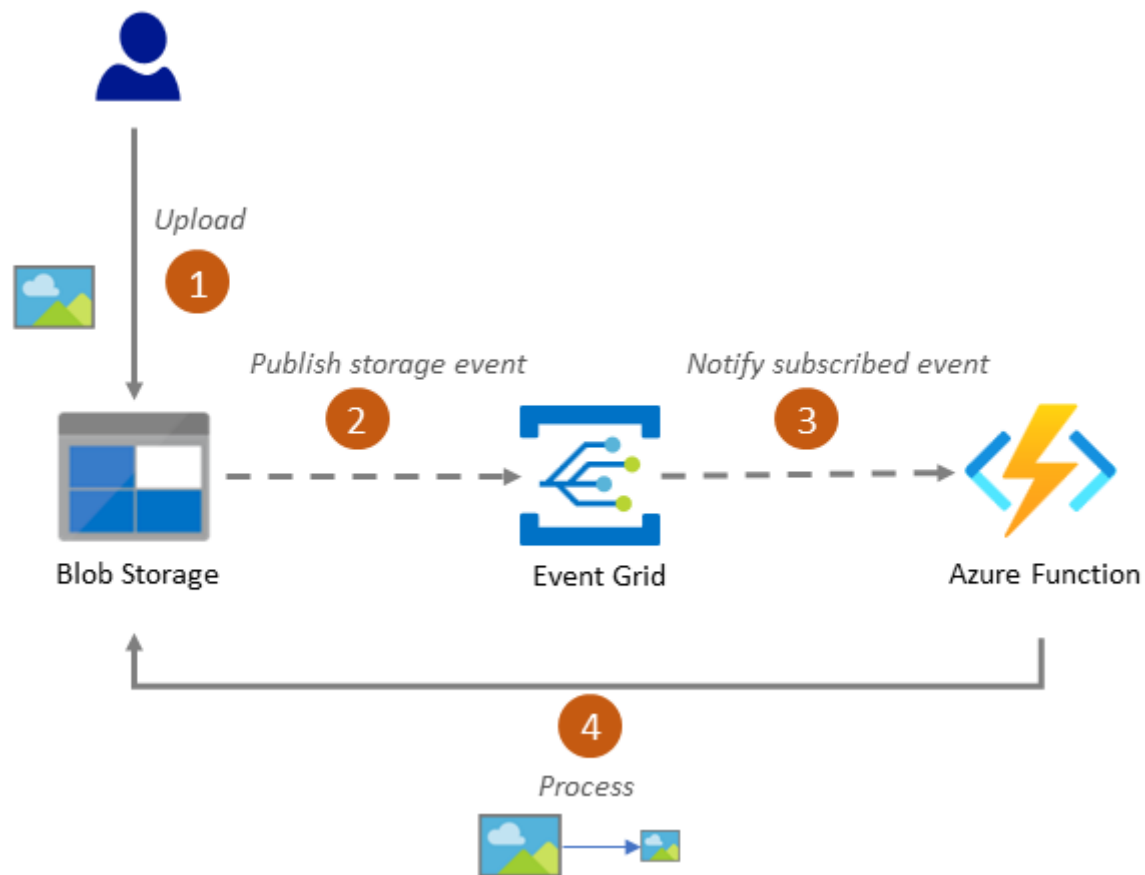


Develop event-based solutions

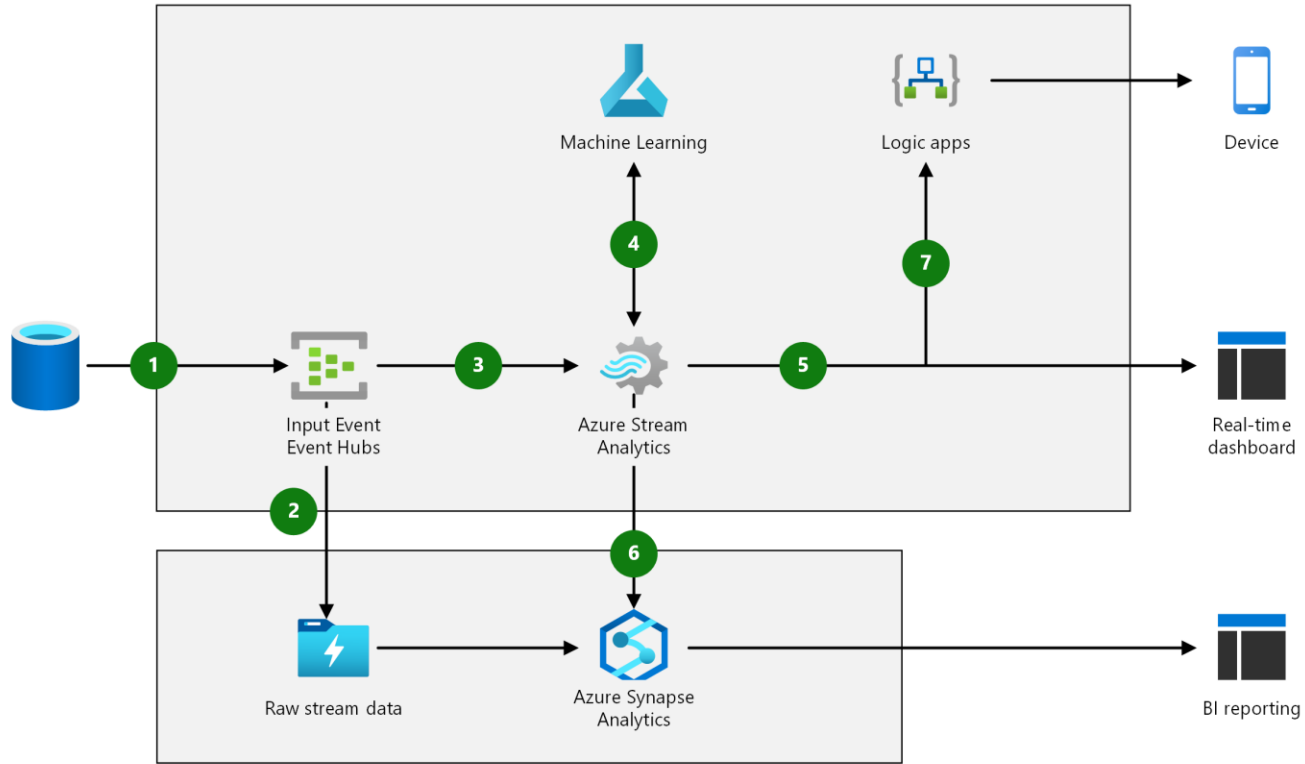
- Implement solutions that use Azure Event Grid [see [1](#) [2](#)]
- Implement solutions that use Azure Notification Hubs [see [1](#) [2](#)]
- Implement solutions that use Azure Event Hubs [see [1](#) [2](#) [3](#) [4](#)]
- Import OpenAPI definitions [see [1](#)]







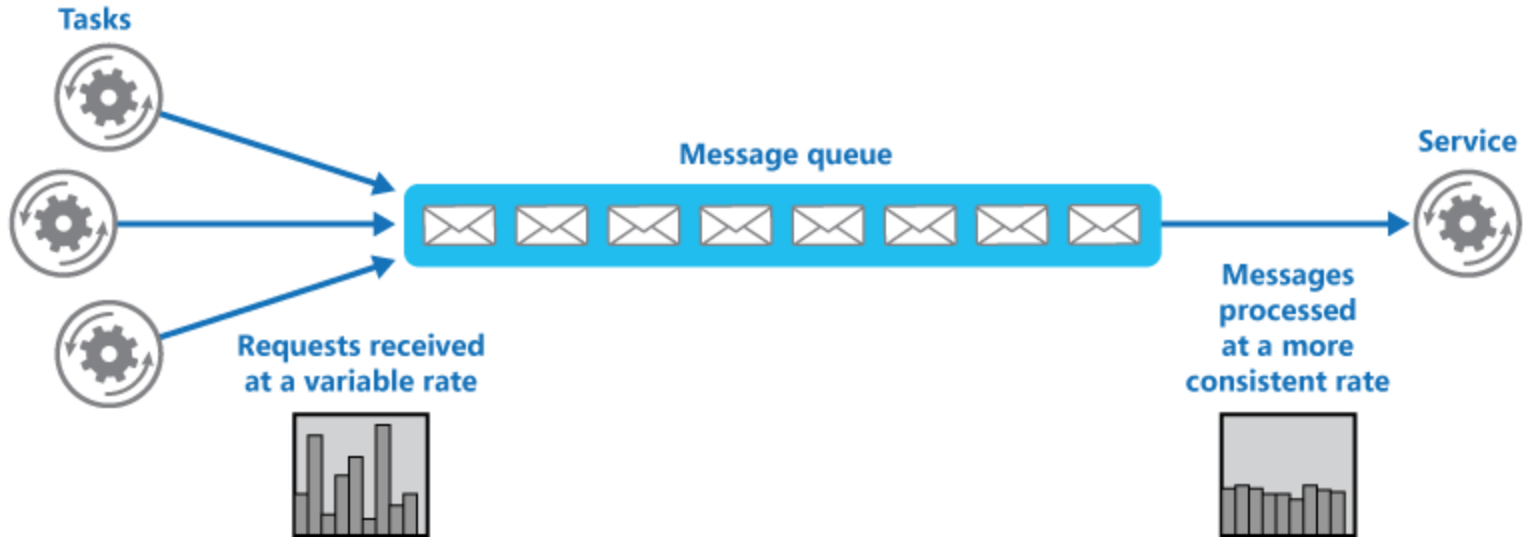


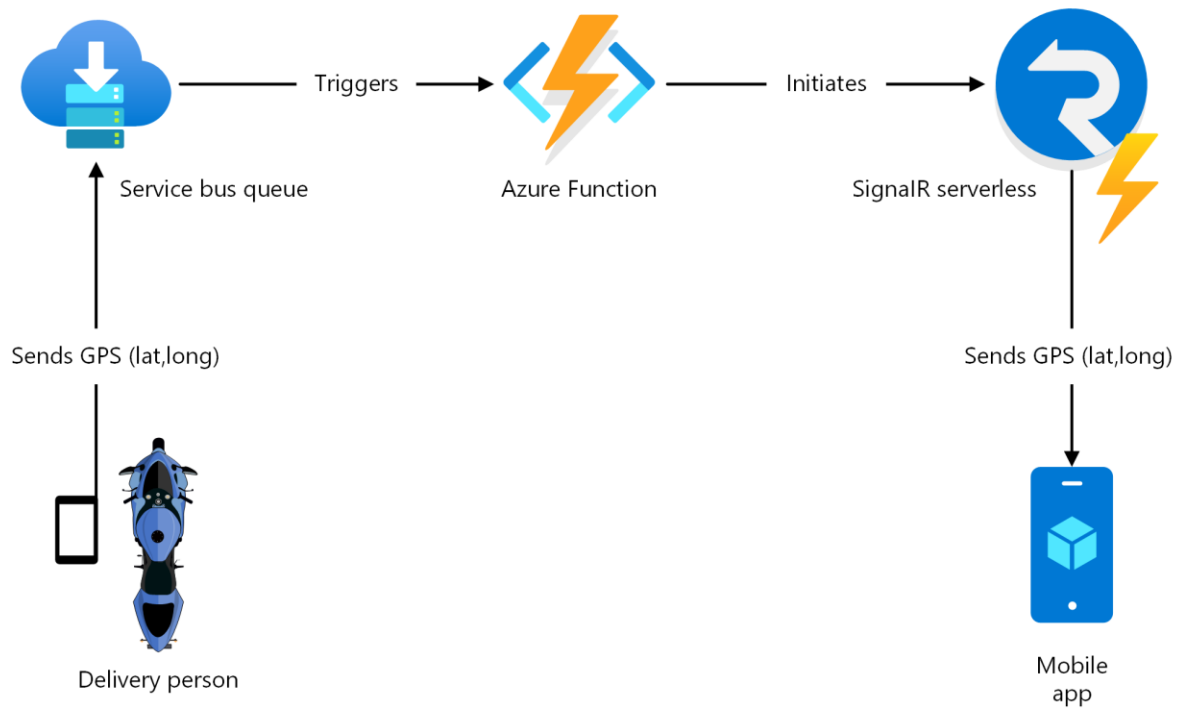


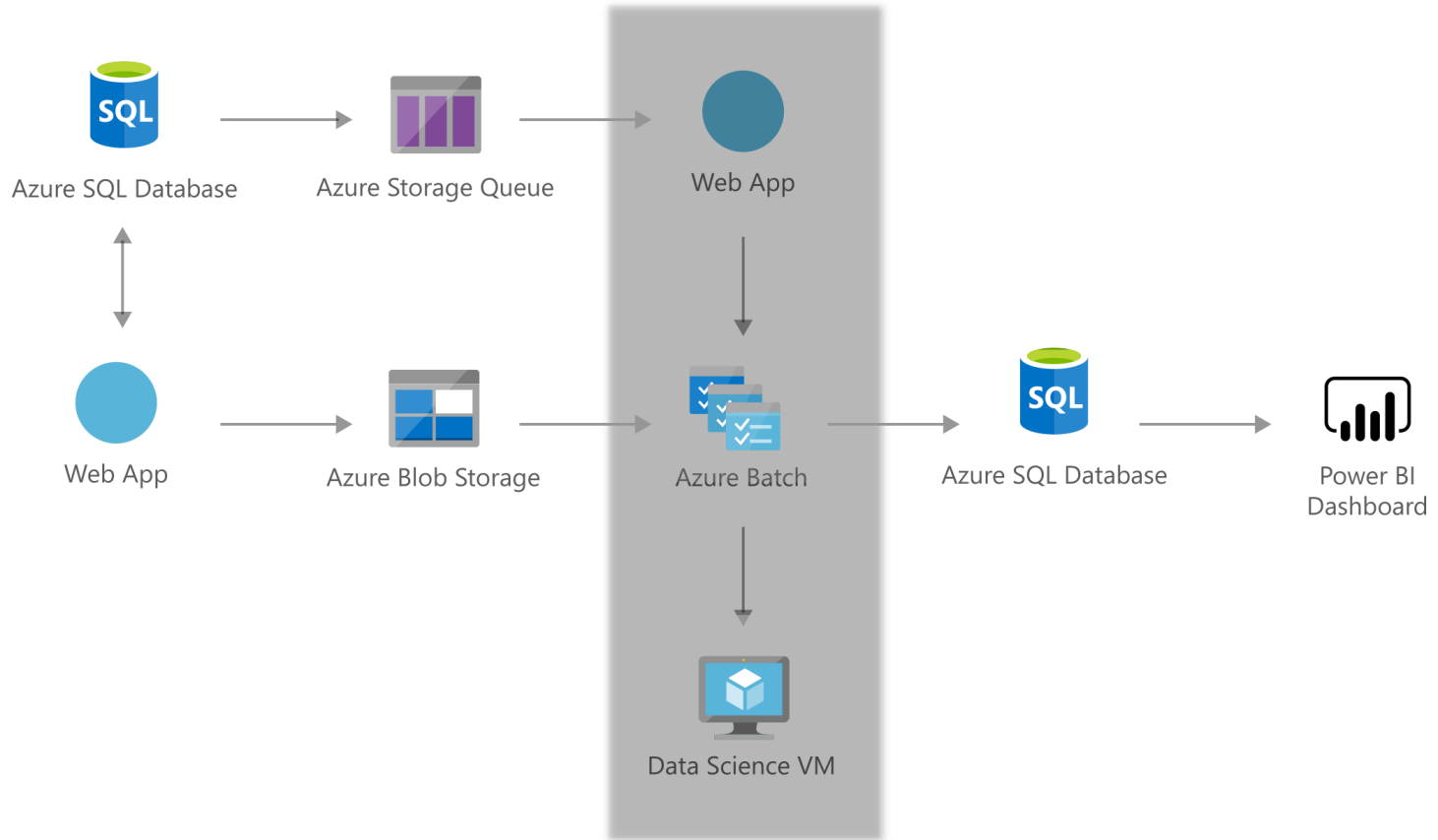
Develop message-based solutions

- Implement solutions that use Azure Service Bus [see [1](#) [2](#) [3](#) [4](#) [5](#)]
- Implement solutions that use Azure Queue Storage queues [see [1](#) [2](#)]









The Exam

Questions in AZ-204

- 45-55 questions
- Multiple choice
- Drag and drop
- Scenario based
- There will be hands-on labs



AZ-204

- Exam AZ-204:

<https://docs.microsoft.com/en-us/learn/certifications/exams/az-204>

- Skills measured :

<https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RE4oZ7B>



Questions in AZ-204

💡 Tip

- Watch **AZ-204 Exam Prep videos** on Learn
- Download the **AZ-204 study guide** [↗](#) to help you prepare for the exam
- Demo the exam experience by visiting our **Exam Sandbox** [↗](#)

Part of the requirements for: [Microsoft Certified: Azure Developer Associate](#)

Related exams: none

Important: [See details](#)

[Go to Certification Dashboard](#) [↗](#)



Schedule exam

Exam AZ-204: Developing Solutions for Microsoft Azure

United States



Languages: English, Japanese, Chinese (Simplified), Korean, French, German, Spanish, Portuguese (Brazil), Russian, Chinese (Traditional), Italian, Indonesian (Indonesia), Arabic (Saudi Arabia)

Retirement date: none

This exam measures your ability to accomplish the following technical tasks: develop Azure compute solutions; develop for Azure storage; implement Azure security; monitor, troubleshoot, and optimize Azure solutions; and connect to and consume Azure services and third-party services. You will be able to select the code language (C# or Python) that's included in the questions when you launch the exam.

\$165 USD*

Price based on the country or region in which the exam is proctored.

Schedule exam >

Official practice test for Developing Solutions for Microsoft Azure

All objectives of the exam are covered in depth so you'll be ready for any question on the exam.

+ Save



Select exam options

AZ-104: Microsoft Azure Administrator

Where do you want to take your exam?



At a test center



Online at my home or office

I have a Private Access Code



Where do you want to take your exam?



At a test center



Online at my home or office

I have a Private Access Code

Prepare for your online exam at your home or office



Your computer

Use a personal computer that has a reliable webcam and internet connection.

Run [system test](#).



Your testing space

The room should be a distraction-free, private place.

See [acceptable spaces](#) and view permitted [comfort aid list](#).



Your photo ID

We'll verify your government-issued identification (ID) when you arrive for your exam.

Review [admission & ID policies](#)



What to expect

Check in for your OnVUE exam 30 minutes before your appointment time.

Watch our [short video](#) to get familiar with the process.

Questions?

Check out the [OnVUE FAQs](#) and [minimum technical requirements](#).



Cart

[Review and confirm](#) contact information to avoid issues on test day.

Description	Details	Price	Actions
		165.00	Remove

Available Products

In addition to scheduling your exam, you might be interested in the following products.



Microsoft Official Practice Test powered by MeasureUp - 30 day online access
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It's time to test your system

Order #: 0064-8802-7606

Your appointment is confirmed! An order confirmation containing important exam day information has been sent to: zaalion@gmail.com

What's next?

Run a system test

We need to verify that the computer and internet connection you plan to use on exam day meet the [minimum requirements](#) for online testing. It'll just take 5 minutes to run:



Equipment and internet connection checks



Exam simulation

Description

Details

Order Information

Price

165.00



System Test

☐ I confirm that on my exam day I will be using this same testing space, computer, and internet connection.

Alert! Work computers generally have more restrictions that may prevent a successful test. Ensure you are not behind a corporate firewall, and shut down any **Virtual Private Networks (VPNs)** or **Virtual Machines**.

1. Copy Access Code

Click '**Copy Access Code**'.

This code will authorize you to perform a system test.

690-635-235

Copy Access Code

2. Download OnVUE

Click '**Download**'.

Download

3. Run OnVUE

Run the OnVUE application from your Downloads folder.





Course Repository

<https://github.com/zaalion/oreilly-az-204>



O'REILLY[®]

Thank you!

Reza Salehi

@zaalion

