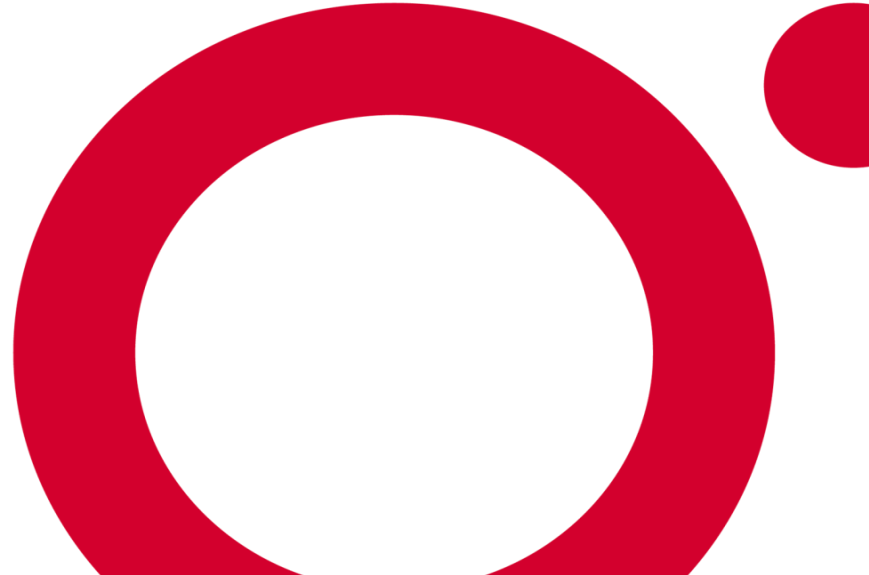




Microsoft Azure Developer Associate (AZ-204) Crash Course

Developing Solutions for Microsoft Azure



Reza Salehi

Cloud Consultant and Trainer

[linkedin.com/in/rezasalehi2008](https://www.linkedin.com/in/rezasalehi2008)



Pulse Check: Are you familiar with Azure Fundamentals?



Microsoft Azure Fundamentals (AZ-900) Certification Course, 2nd Edition



4h 55m remaining

With your instructor

[Reza Salehi](#)

+ Add to playlist

Associated roles

Cloud native engineer

Cloud solutions architect

Cybersecurity engineer

Database administrator

[+1 more](#)

Skills covered

AZ-900: Microsoft Azure Fundamentals

AZ-303: Microsoft Azure Architect...

AZ-500: Microsoft Azure Security...

AI-900: Microsoft Azure AI Fundamentals



Includes quizzes

Test your knowledge during the course and with a final quiz.

 October 2024

[O'Reilly Media, Inc.](#)

Learning Outcomes

- Gain knowledge of Azure cloud concepts and services
- Explore Azure services in greater depth
- Get ready for Exam AZ-900: Microsoft Azure Fundamentals
- Comfortably work with the Azure portal

The Microsoft Azure Fundamentals (AZ-900) exam is one of the most popular certifications for those who are just beginning to work with cloud-based solutions and services or who are new to Azure. The exam certifies knowledge of cloud concepts, Azure services, workloads, security and privacy, and pricing and support.

In this self-paced course, Reza Salehi will help you get familiar with Microsoft Azure's cloud services and begin your Azure certification journey. This course is aligned to the AZ-900 exam objective domains and has recently been updated to reflect the most current version of the exam (2024). It covers all the services and concepts in the Azure ecosystem you need to know in order to prepare for the test.

What you'll learn and how to apply it

By the end of this certification course, you will understand the following:

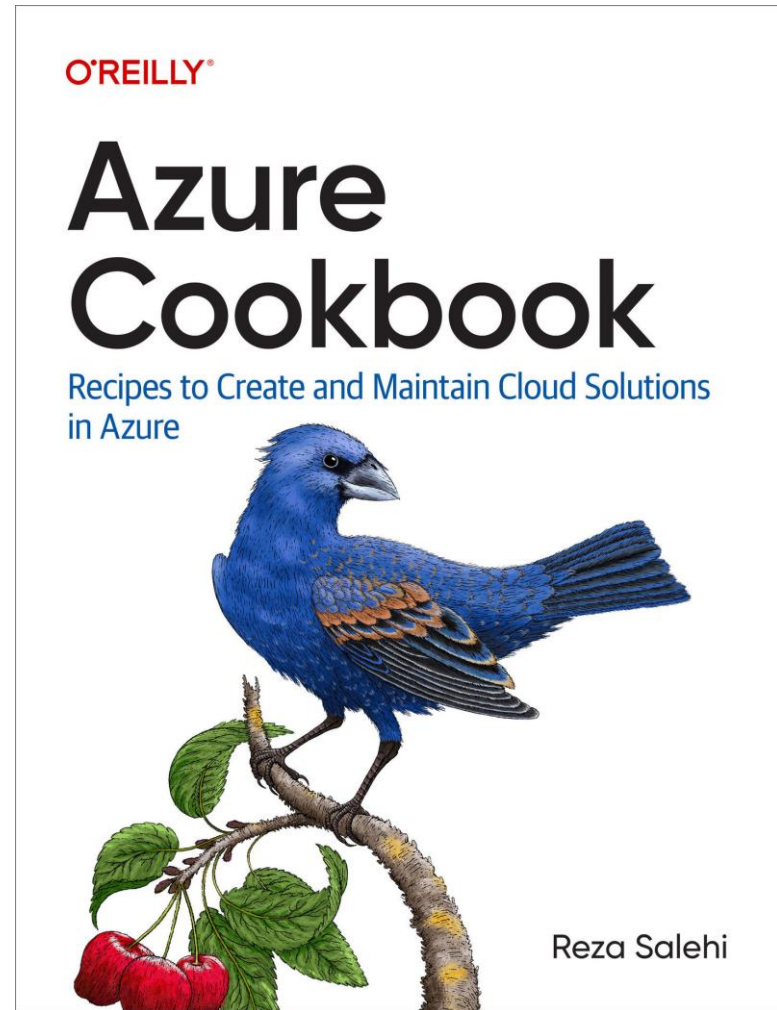
- General cloud concepts
- Core Azure services
- Core solutions and management tools on Azure
- General security and network security features
- Identity, governance, privacy, and compliance features
- Azure cost management and service-level agreements

Azure Cookbook

<https://learning.oreilly.com/library/view/azure-cookbook/9781098135782/>

<https://www.amazon.ca/Azure-Cookbook-Recipes-Maintain-Solutions/dp/1098135792/>

<https://www.amazon.com/Azure-Cookbook-Recipes-Maintain-Solutions/dp/1098135792/>





CERTIFICATION

Microsoft Certified: Azure Developer Associate

Build end-to-end solutions in Microsoft Azure to create Azure Functions, implement and manage web apps, develop solutions utilizing Azure storage, and more.

At a glance



Level



Product

Prepare for the exam



COURSE

Developing Solutions for Microsoft Azure

[Continue course >](#)

Training in this course



AZ-204: Implement Azure App Service web apps

🕒 2 hr 3 min • Learning Path • 4 units



AZ-204: Implement Azure Functions

🕒 53 min • Learning Path • 2 units




AZ-204: Develop solutions that use Blob storage

🕒 1 hr 19 min • Learning Path • 3 units



AZ-204: Develop solutions that use Azure Cosmos DB

Take the exam

 You will have **100 minutes** to complete this assessment.

Exam policy

This exam will be proctored, and is not open book. You may have interactive components to complete as part of this exam. To learn more about exam duration and experience, visit: [Exam duration and exam experience](#).

If you fail a certification exam, don't worry. You can retake it 24 hours after the first attempt. For subsequent retakes, the amount of time varies. For full details, visit: [Exam retake policy](#).

Need accommodations?

We offer a variety of accommodations to support you.

[Learn More](#)

This exam is offered in the following languages:

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

Schedule through Pearson Vue

United States



Pulse Check: Are you an application developer?



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:
 - [@zaalion](#)



AZ-204 Candidate Profile

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



Azure Developer Associate

- Should have at least 2 years of 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 (15-20%)
 - Monitor and troubleshoot Azure solutions (5-10%)
 - Connect to and consume Azure services and third-party services (20-25%)



Course Repository

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



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 (25–30%)**

Develop Azure Compute Solutions

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



Poll 1: You need to deploy a containerized application without managing infrastructure, while ensuring quick startup and per-second billing. Which Azure service should you use?

- Virtual Machines
- Azure Kubernetes Service (AKS)
- Azure Container Instances (ACI)
- Azure App Service



Implement Containerized Solutions

- Create and manage 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](#)]
- Create solutions by using Azure Container Apps [see [1](#) [2](#)]



Azure Container Registry (ACR)

- Use Azure Container Registries to store and manage Docker container images and related artifacts.
- Host images on a service such as App Services, Function Apps, ACI, AKS, or Azure Container Apps.



<https://learn.microsoft.com/en-us/azure/container-registry/container-registry-intro>



Azure Container Instances (ACI)

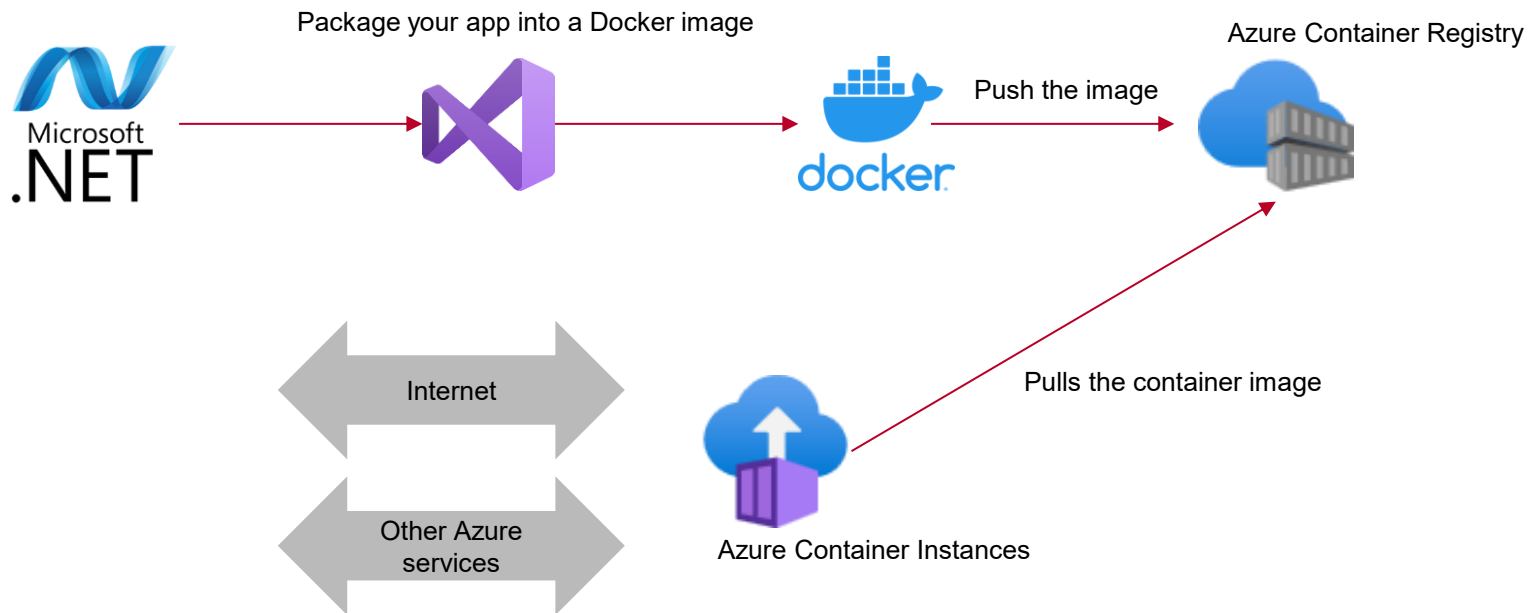
- Host single or multiple containers via NGroups
- ACI enables exposing containers directly to the internet with an IP address or a domain name (FQDN)



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



Host Your Code in ACI



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



Azure Container Apps

- Use ACAs for complex container solutions instead of AKS, to eliminate K8 administrative tasks.



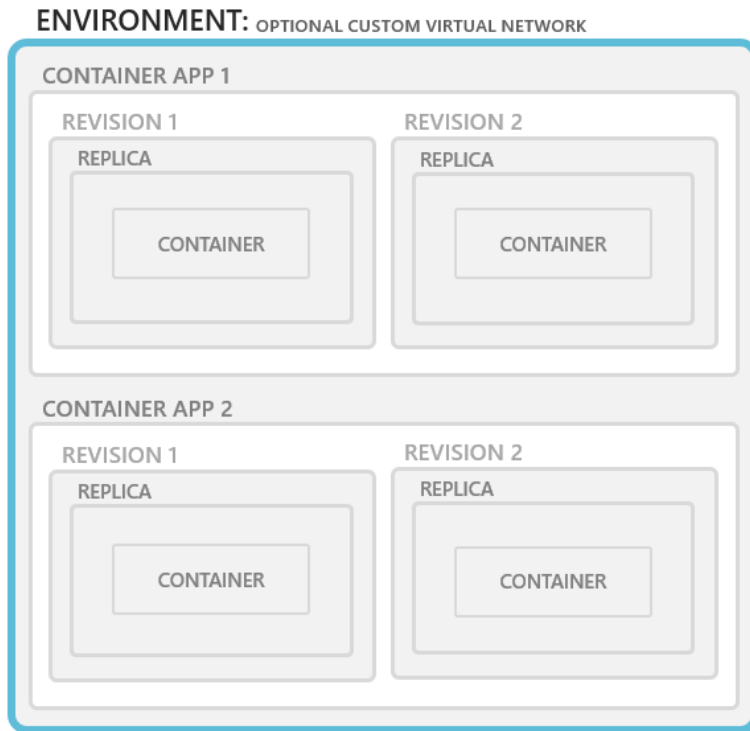
<https://learn.microsoft.com/en-us/azure/container-apps/overview>



Azure Container Apps environments



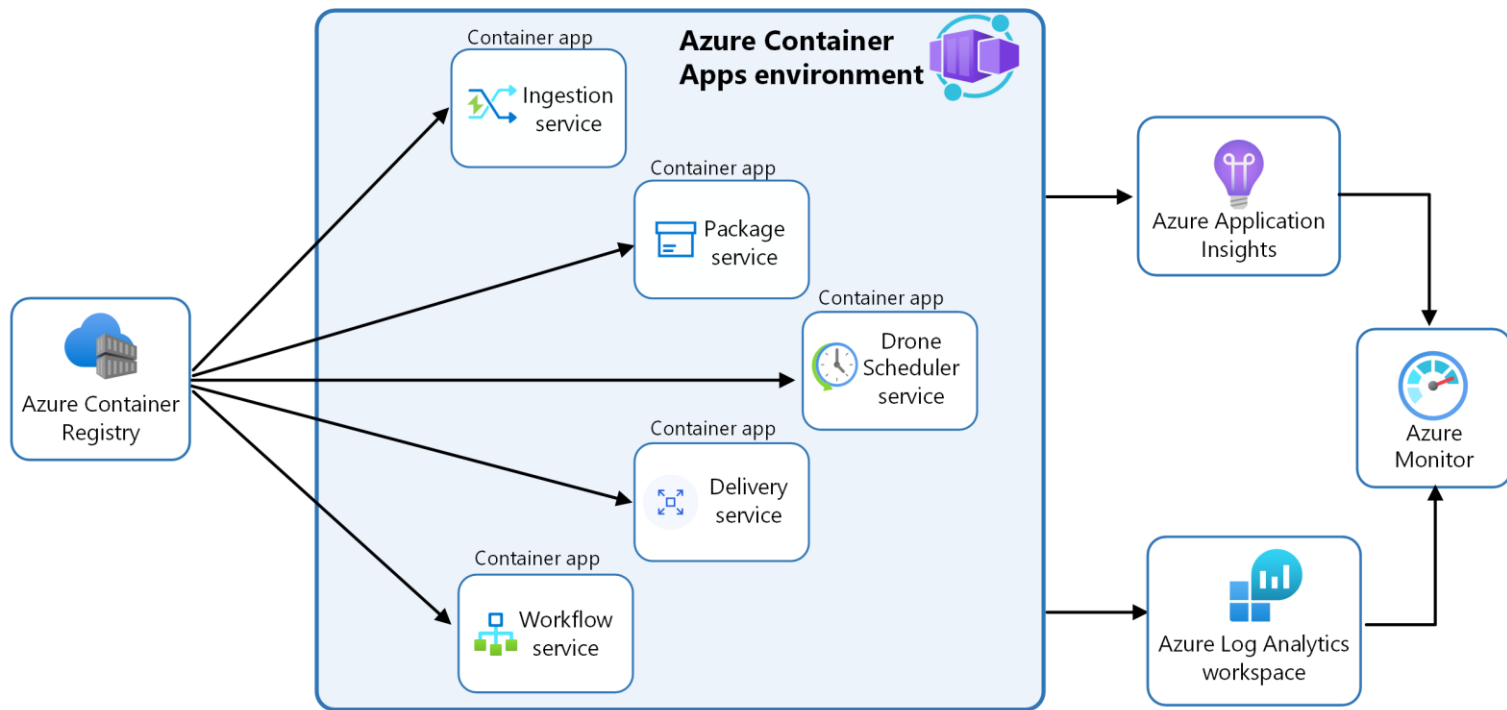
Environments are an isolation boundary around a collection of container apps.

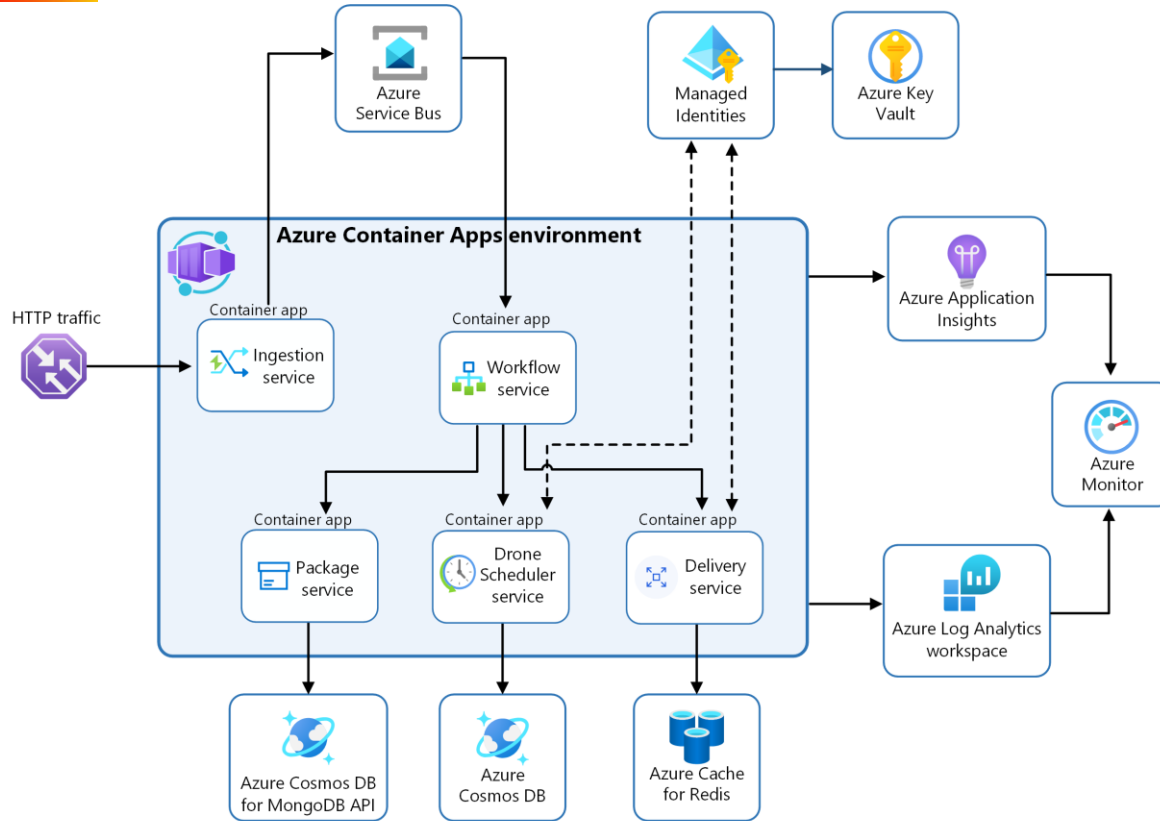


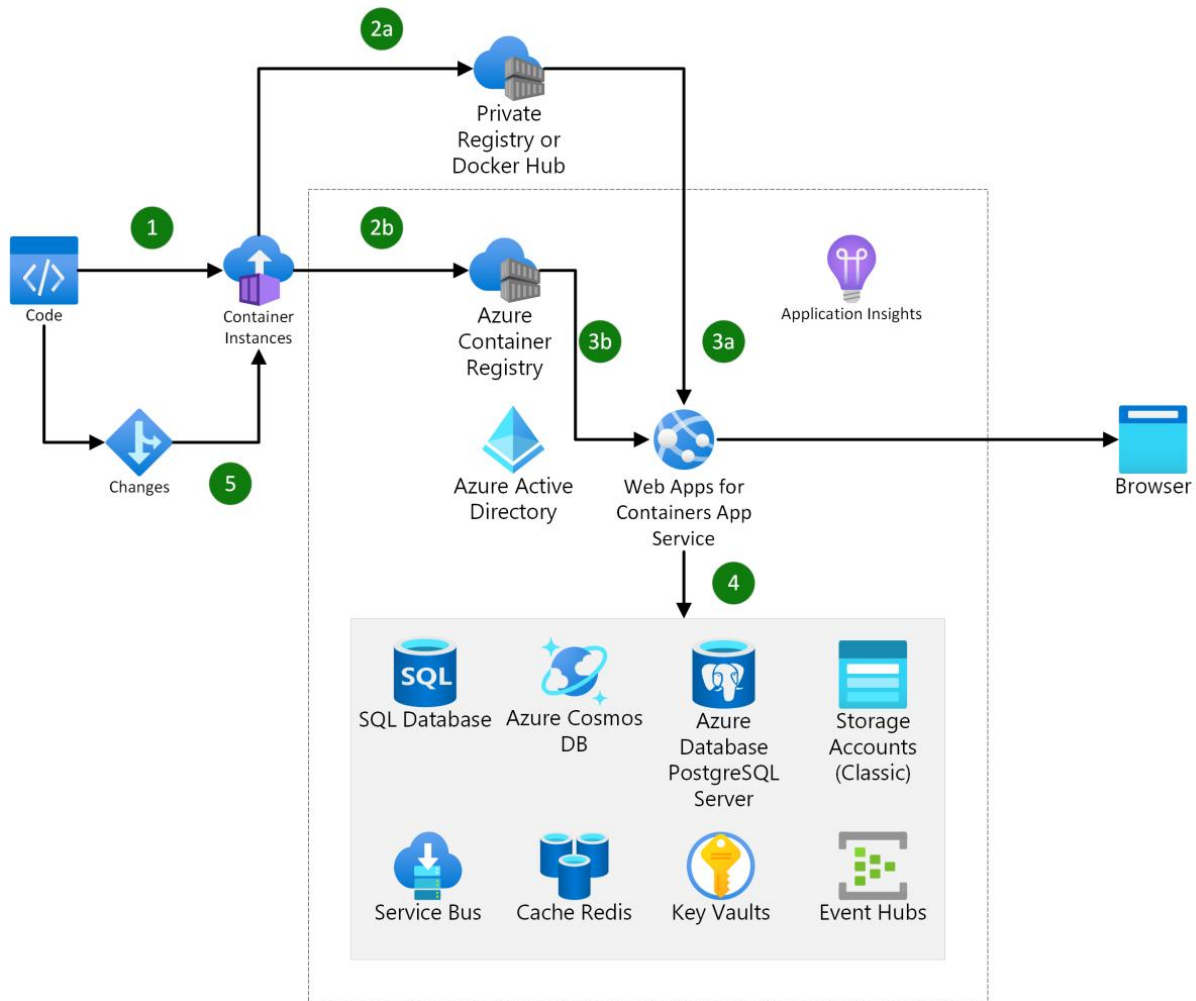
<https://learn.microsoft.com/en-us/azure/container-apps/environment>



Deploy microservices with Azure Container Apps







Implement Azure App Service Web Apps

- Create an Azure App Service Web App [see [1](#) [2](#) [3](#)]
- Configure and implement diagnostics and logging [see [1](#)]
- Deploy code and containerized solutions [see [1](#) [2](#) [3](#) [4](#)]
- Configure settings including Transport Layer Security (TLS), API settings, and service connections [see [1](#) [2](#)]
- Implement autoscaling [see [1](#)]
- Configure deployment slots [see [1](#) [2](#)]



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



<https://docs.microsoft.com/en-us/azure/app-service/overview>

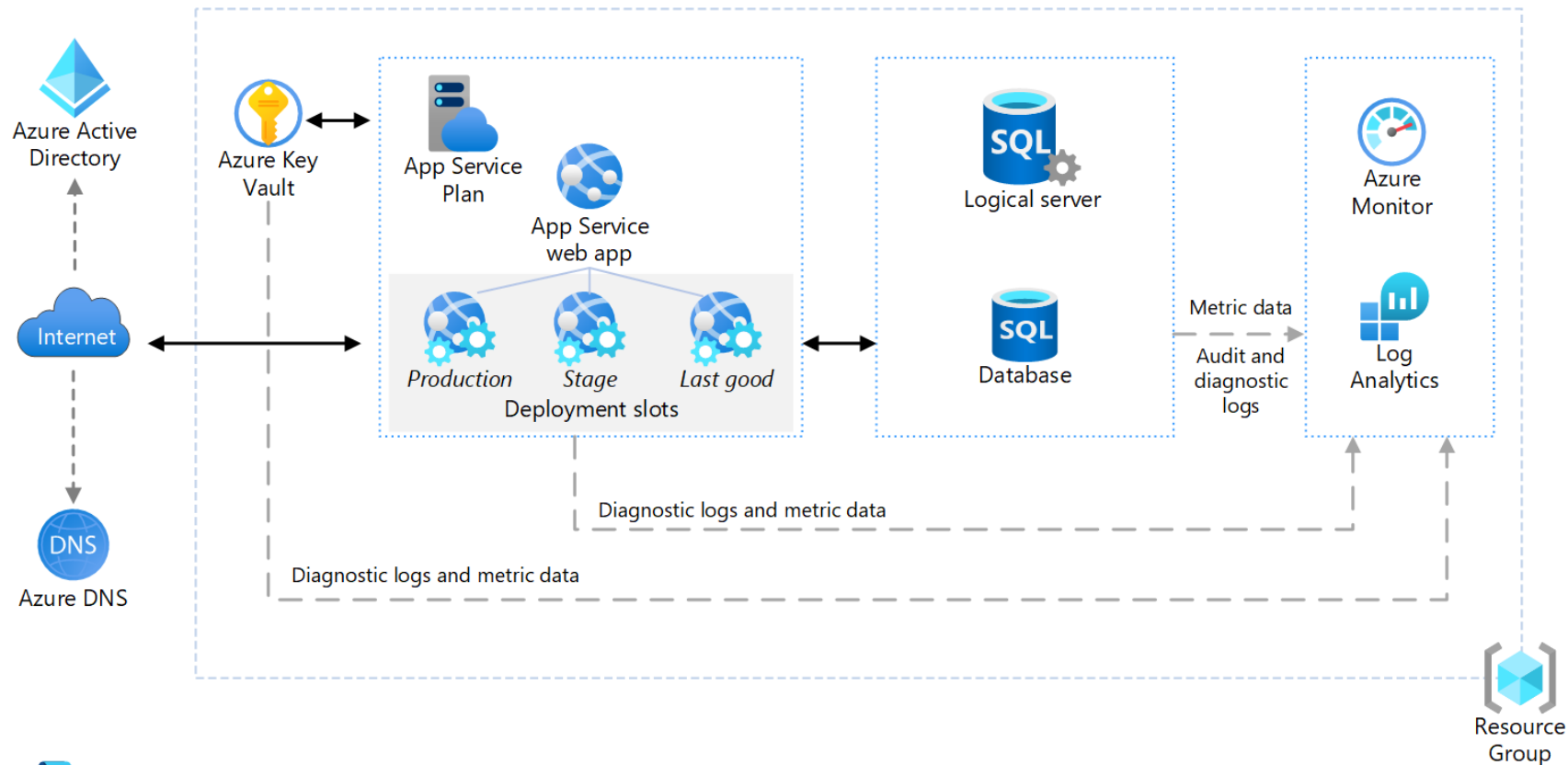


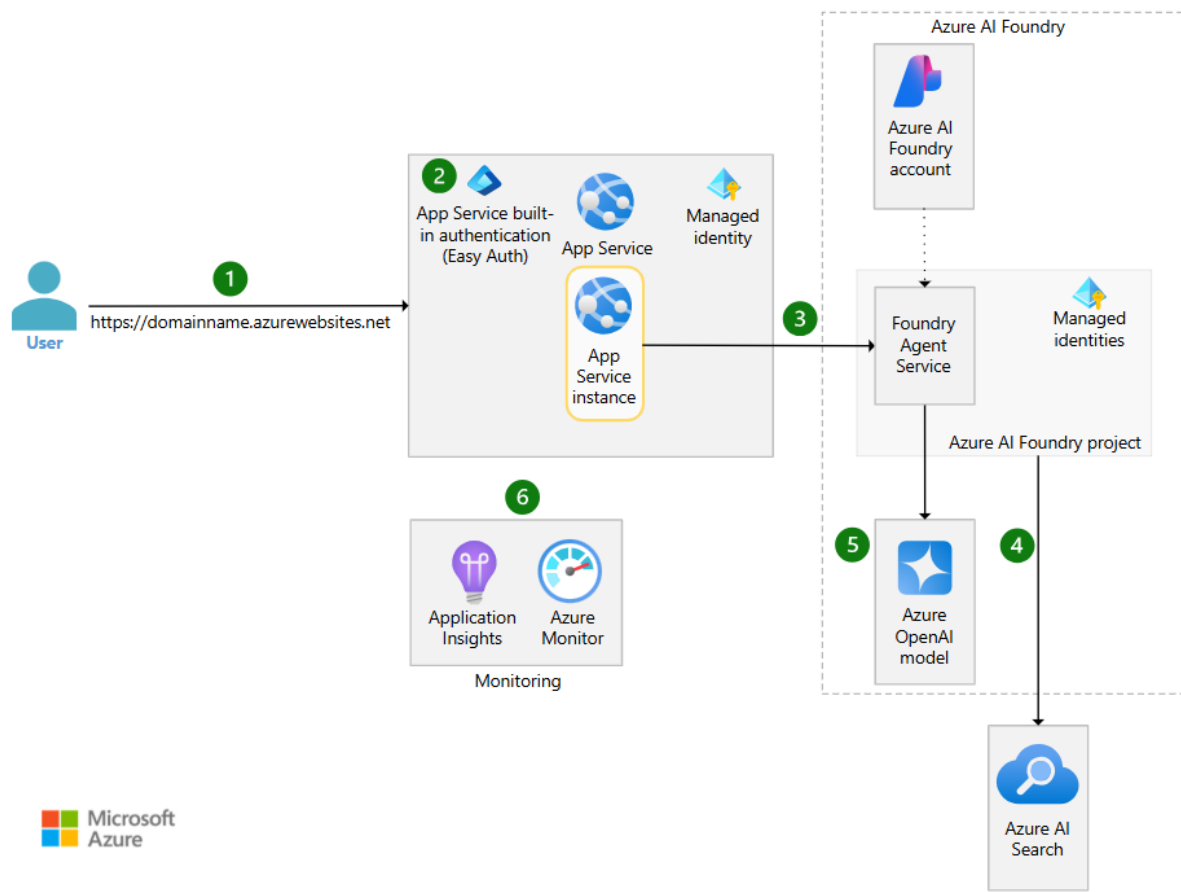
Azure App Services

- 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

<https://docs.microsoft.com/en-us/azure/app-service/overview>







Implement Azure Functions

- Create and configure an Azure Function App [see [1](#) [2](#) [3](#)]
- Implement input and output bindings [see [1](#)]
- Implement function triggers by using data operations, timers, and webhooks [see [1](#) [2](#)]



Poll 2: You need to host a backend HTTP API that handles unpredictable traffic spikes, scales automatically, and minimizes management overhead. Which Azure service is the best choice?

- Virtual Machines
- Azure Function Apps
- Azure Web Apps
- Azure Container Instances



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



Azure Functions Triggers

```
[Function("HttpExample")]  
  
public static MultiResponse Run ([HttpTrigger(AuthorizationLevel.Function, "get", "post")]  
    HttpRequestData req,  
    FunctionContext executionContext)  
{  
  
    // code  
  
}
```

<https://learn.microsoft.com/en-us/azure/azure-functions/functions-triggers-bindings>



Azure Functions Bindings

```
public class MultiResponse
```

```
{
```

```
    [QueueOutput("outqueue", Connection = "AzureWebJobsStorage")]
```

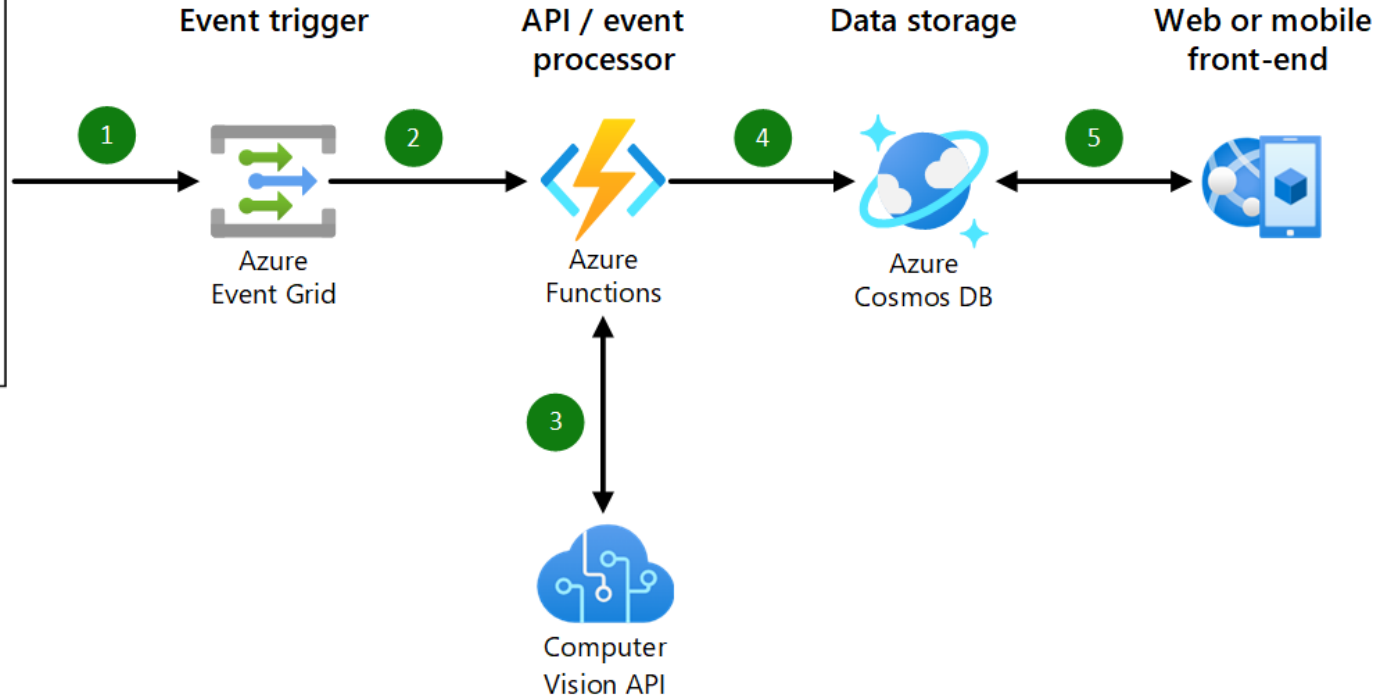
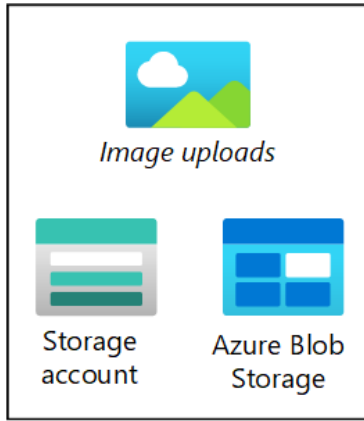
```
    public string[] Messages { get; set; }
```

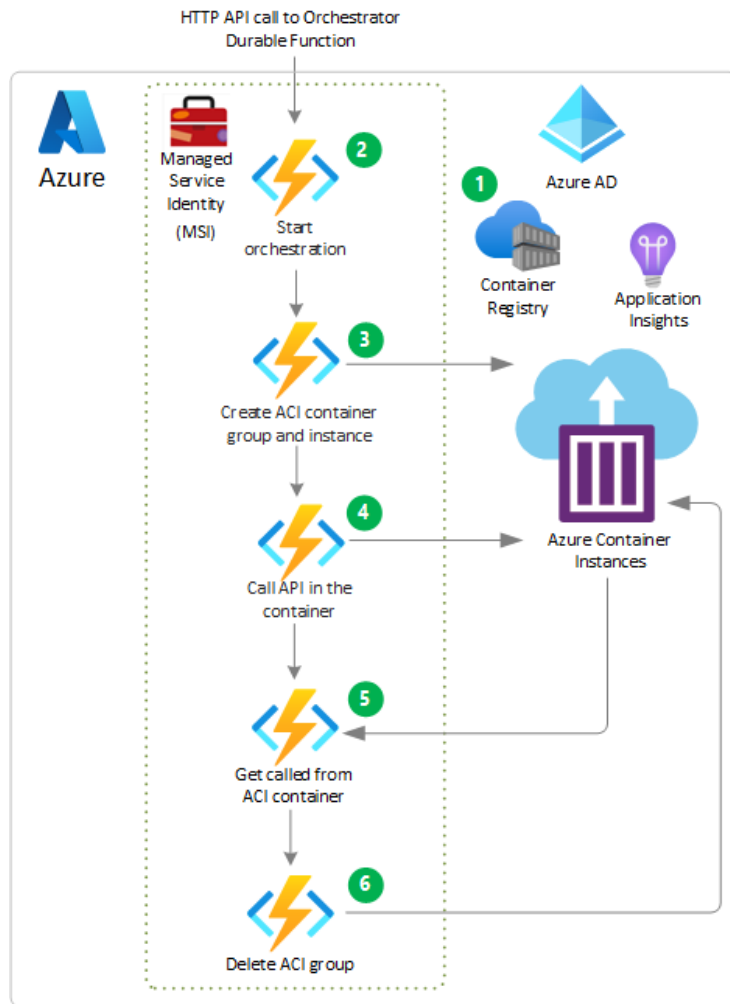
```
    public HttpResponseMessage HttpResponseMessage { get; set; }
```

```
}
```

<https://learn.microsoft.com/en-us/azure/azure-functions/functions-triggers-bindings>







**Develop for Azure Storage
(15–20%)**

Develop for Azure Storage

- Develop solutions that use Azure Cosmos DB
- Develop solutions that use Azure Blob Storage



Develop Solutions That Use Azure Cosmos DB

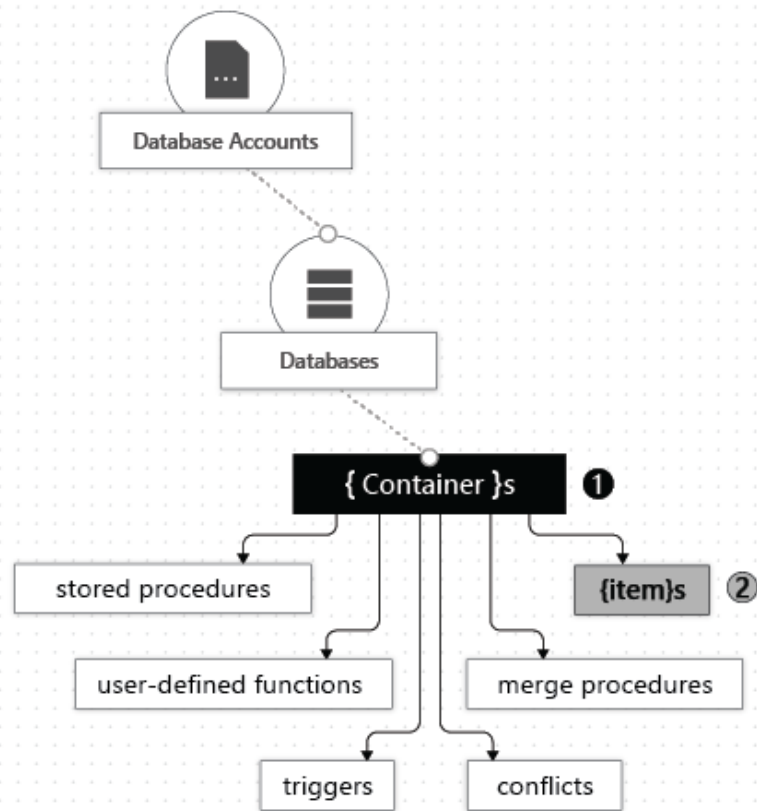
- Perform operations on containers and items by using the SDK [see [1](#) [2](#)]
- Set the appropriate consistency level for operations [see [1](#)]
- Manage change feed notifications [see [1](#), [2](#)]



Poll 3: You are developing an application that interacts with an Azure Cosmos DB container using the .NET SDK. Which method should you use to insert or update an item in the container?

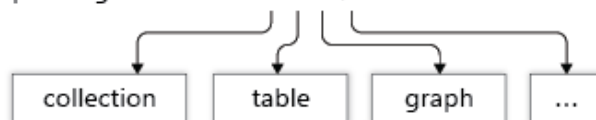
- ReplaceItemAsync
- UpsertItemAsync
- CreateItemAsync
- PatchItemAsync





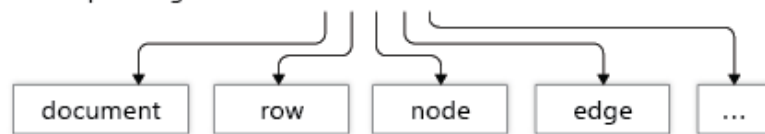
1 { Container } s

Depending on the Cosmos API, a container is realized as:



2 { item } s

Depending on the Cosmos API, an item is realized as:



System-defined property	System generated or user defined	Purpose	API for NoSQL	API for Cassandra	DB API for MongoDB	API for Gremlin	API for Table
<code>_rid</code>	System generated	Unique identifier of the item	Yes	No	No	No	No
<code>_etag</code>	System generated	Entity tag used for optimistic concurrency control	Yes	No	No	No	No
<code>_ts</code>	System generated	Time stamp of the last update of the item	Yes	No	No	No	No
<code>_self</code>	System generated	Addressable URI of the item	Yes	No	No	No	No
<code>id</code>	Either	User-defined unique name in a logical partition	Yes	Yes	Yes	Yes	Yes
Arbitrary user-defined properties	User defined	User-defined properties in API-native representation (including JSON, BSON, and CQL)	Yes	Yes	Yes	Yes	Yes

<https://learn.microsoft.com/en-us/azure/cosmos-db/resource-model>



Create a container using .NET SDK

// Create a container with a partition key and provision 400 RU/s manual throughput.

Database database = await client.**CreateDatabaseIfNotExistsAsync**(databaseId);

ContainerProperties containerProperties = new ContainerProperties()

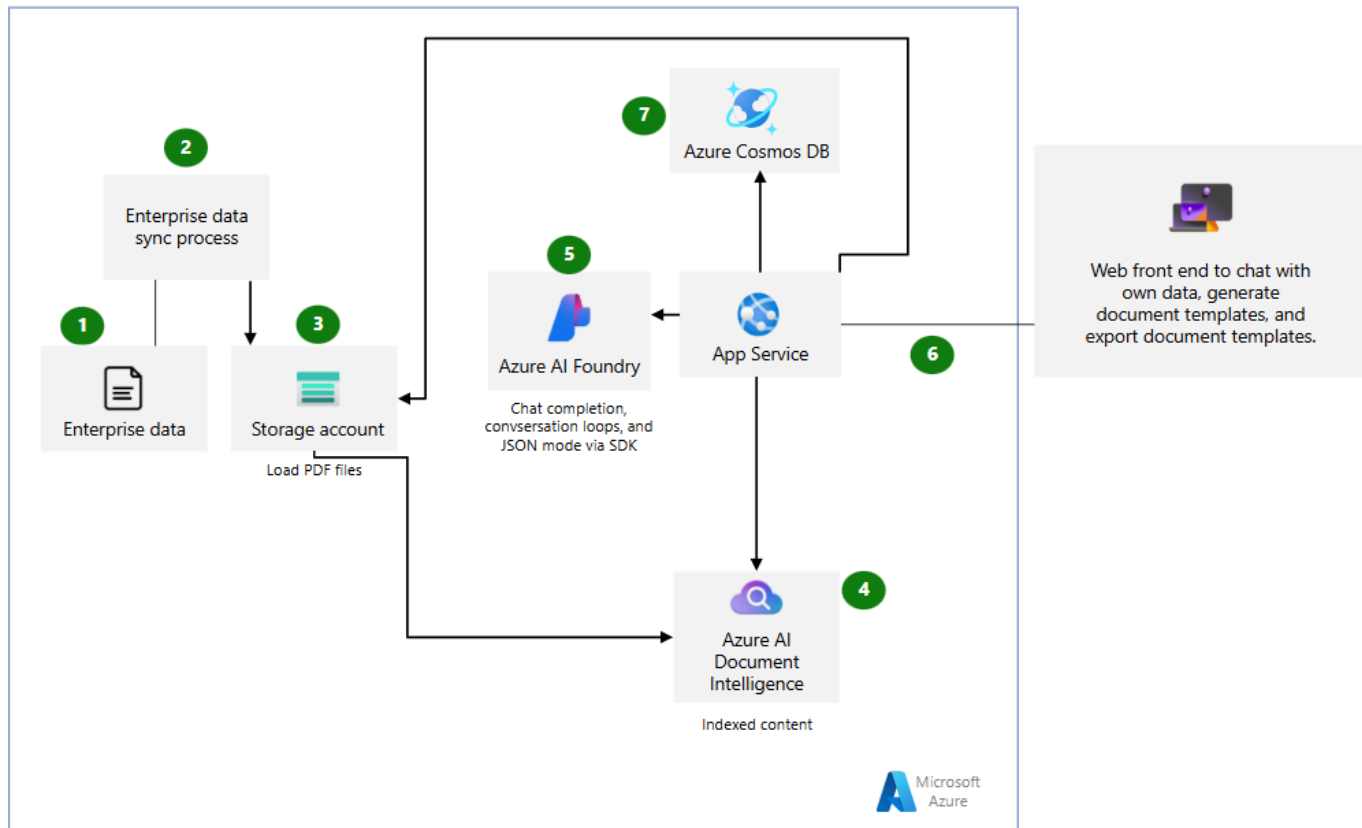
```
{  
    Id = containerId,  
    PartitionKeyPath = "/myPartitionKey"  
};
```

var throughput = ThroughputProperties.CreateManualThroughput(400);

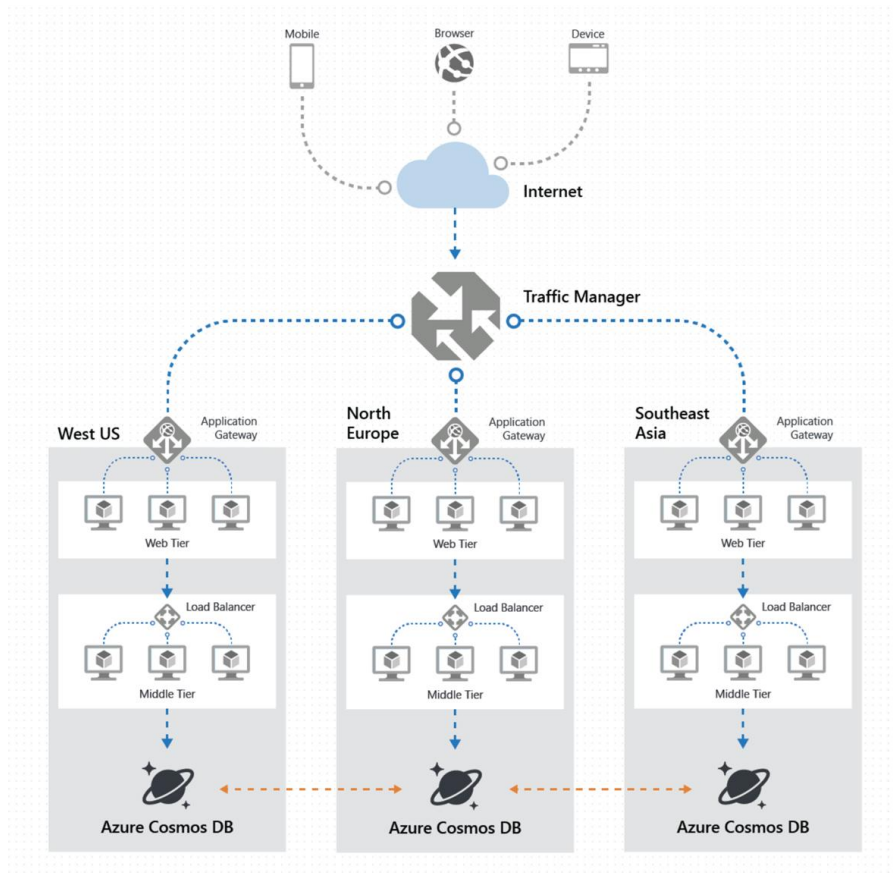
Container container = await database.**CreateContainerIfNotExistsAsync**(containerProperties, throughput);

<https://learn.microsoft.com/en-us/azure/cosmos-db/nosql/how-to-create-container>

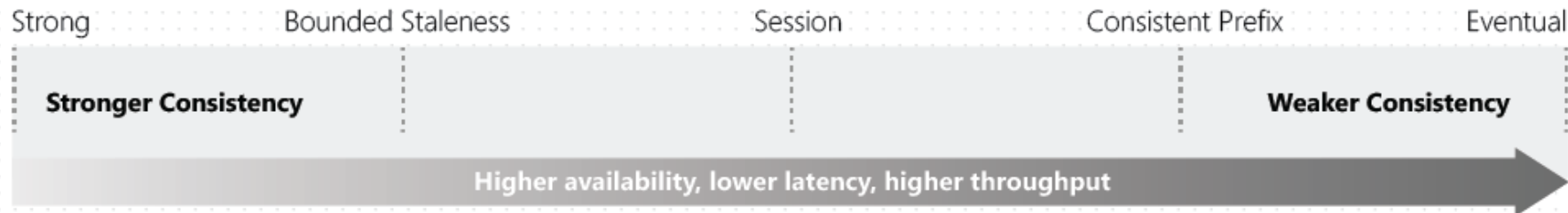




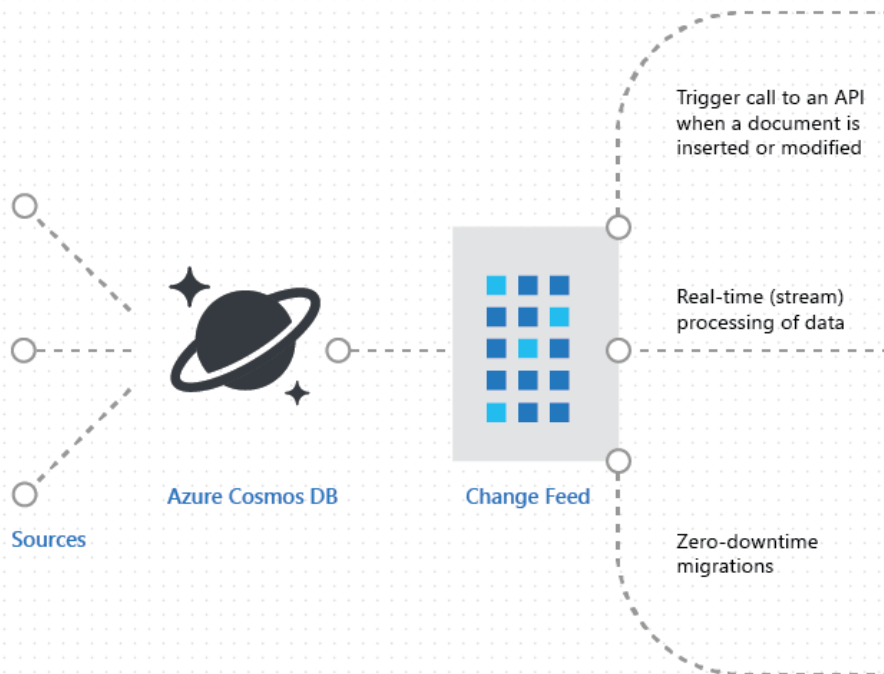
Azure Cosmos DB Multi-region Writes



Consistency Levels in Azure Cosmos DB



Azure Cosmos DB Change Feed



Event-Computing and Notifications

Retail, Gaming, Content management



Azure Functions



Azure Notification Hubs



Azure App Service

Stream Processing

IoT processing, Data Science & analytics



Azure Stream Analytics



Azure HDInsight



Apache Spark



Apache Storm

Data movement

Enterprise data management



Azure Storage Blob



Azure Storage Table



Azure Data Lake



Azure Cosmos DB

Develop Solutions That Use Azure Blob Storage

- 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 lifecycle management [see [1](#) [2](#) [3](#) [4](#)]



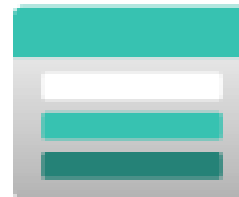
Poll 4: You are developing an application that interacts with an Azure Cosmos DB container using the .NET SDK. Which method should you use to insert or update an item in the container?

- Azure Policy
- Lifecycle Management
- Soft Delete
- Immutable Storage



Azure Storage Account

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



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



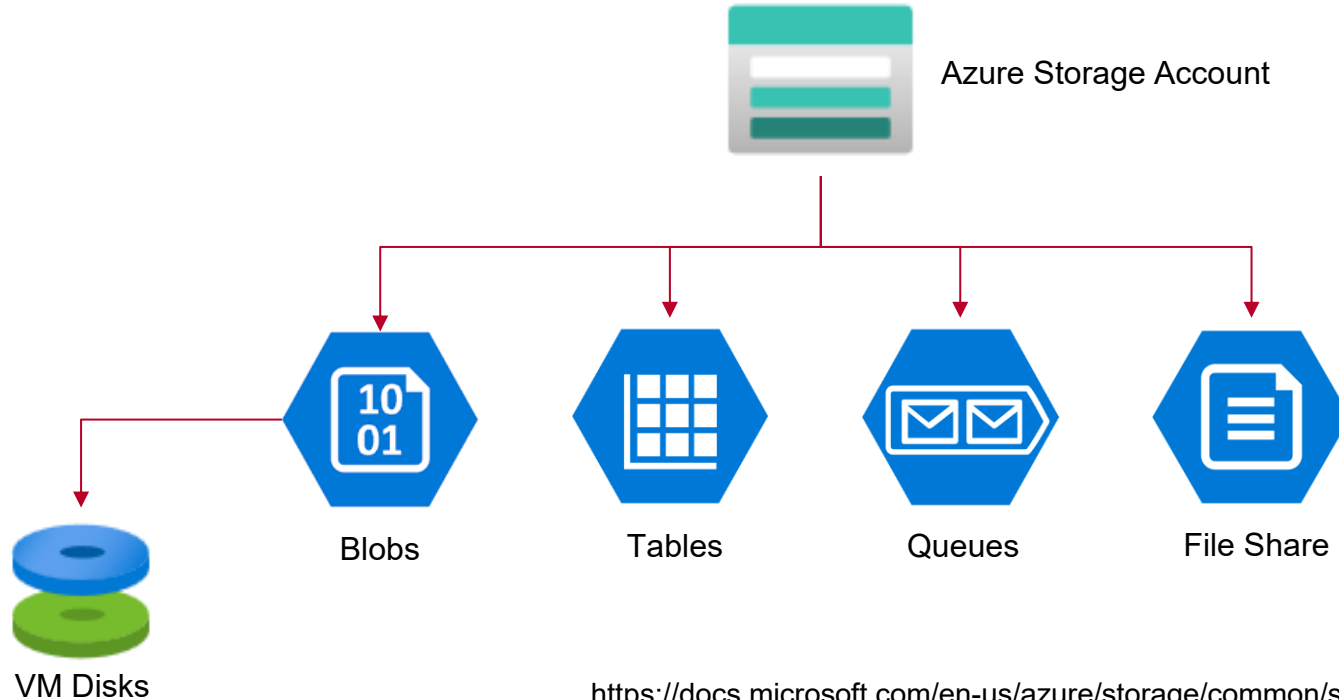
Azure Storage Account

- 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)

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



Azure Storage Services

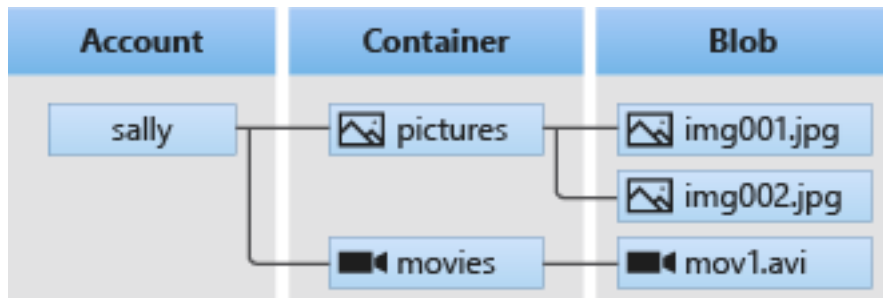


<https://docs.microsoft.com/en-us/azure/storage/common/storage-introduction>

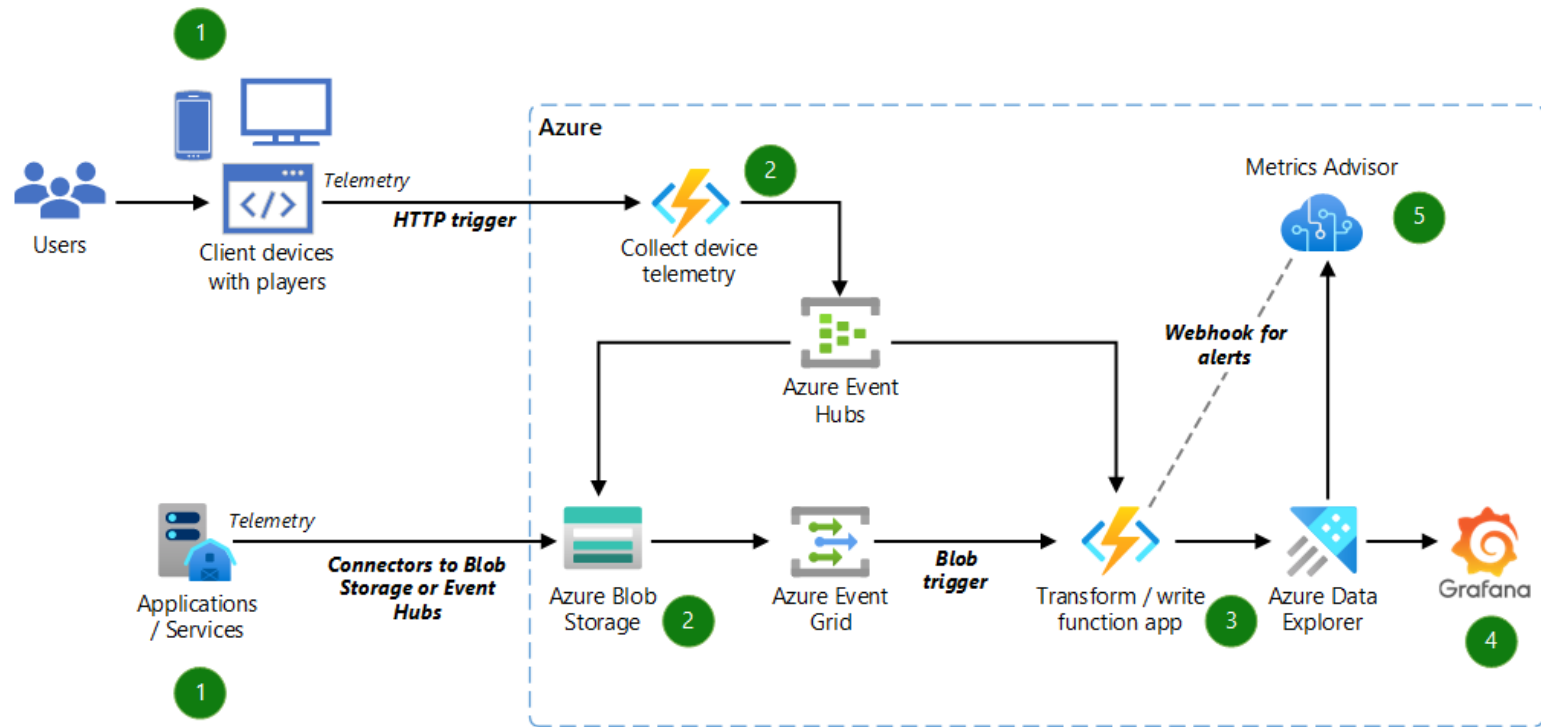


Azure Storage Account: Blobs

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



Azure Storage Account: Blobs



**Implement Azure Security
(15–20%)**

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](#) [6](#)]
- Authenticate and authorize users and apps by using Microsoft Entra ID [see [1](#) [2](#)]
- Create and implement shared access signatures [see [1](#) [2](#)]
- Implement solutions that interact with Microsoft Graph [see [1](#) [2](#) [3](#) [4](#) [5](#)]



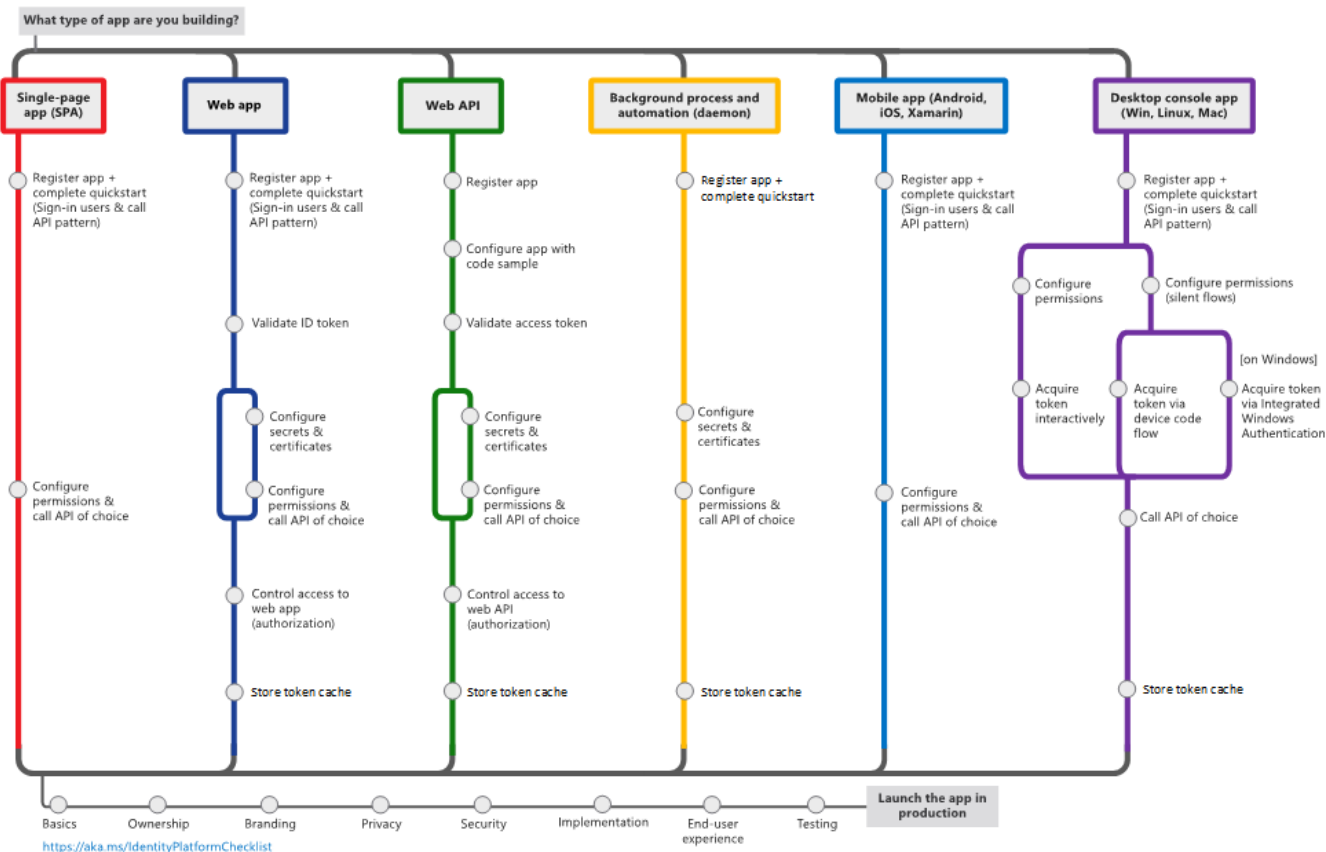
Poll: You need to retrieve a list of users from Microsoft Entra ID using Microsoft Graph API in a .NET application. Which HTTP method and endpoint should you use?

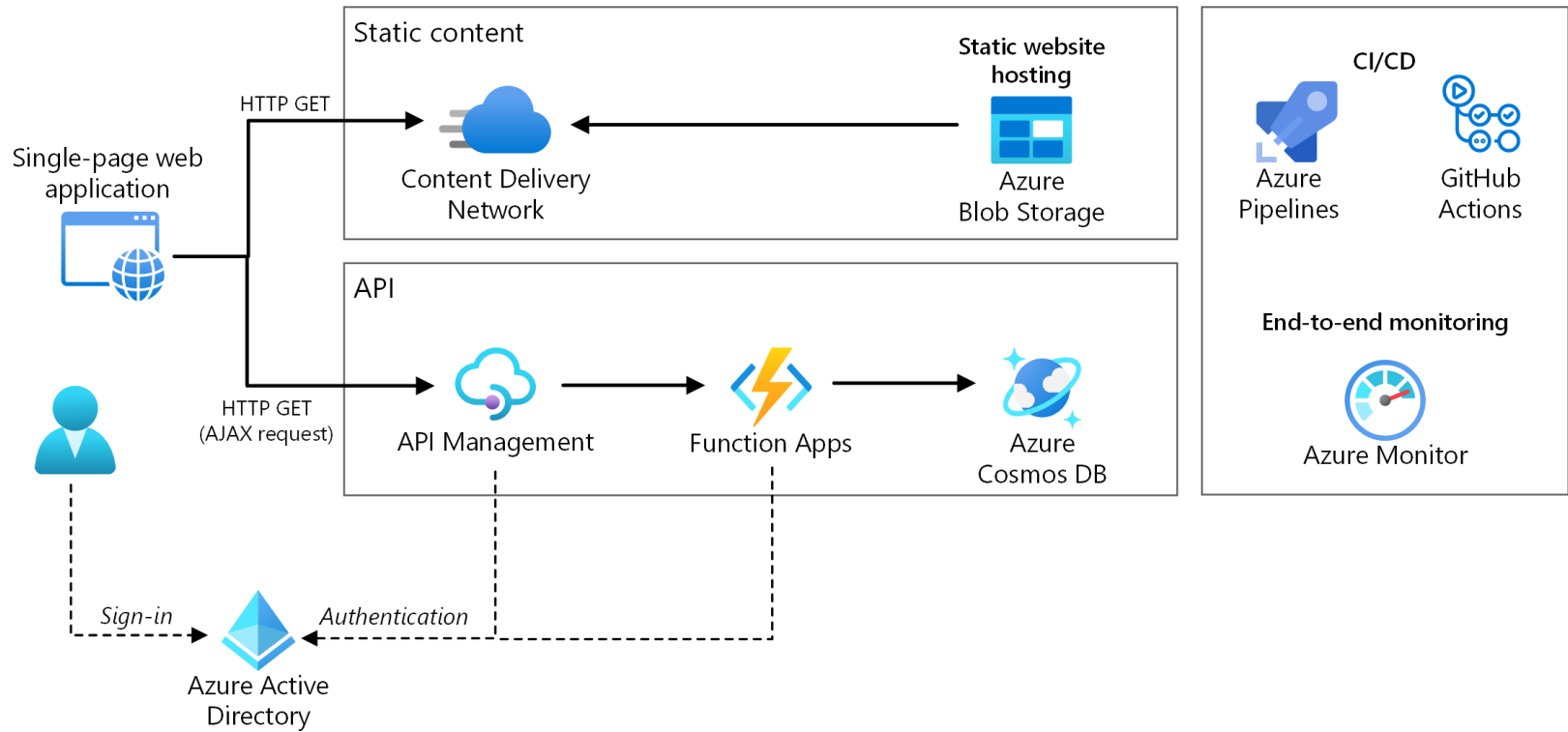
- POST /users
- GET /users
- PUT /users
- DELETE /users



Microsoft identity platform

<http://aka.ms/IdentityPlatform>





Implement Secure Cloud Solutions

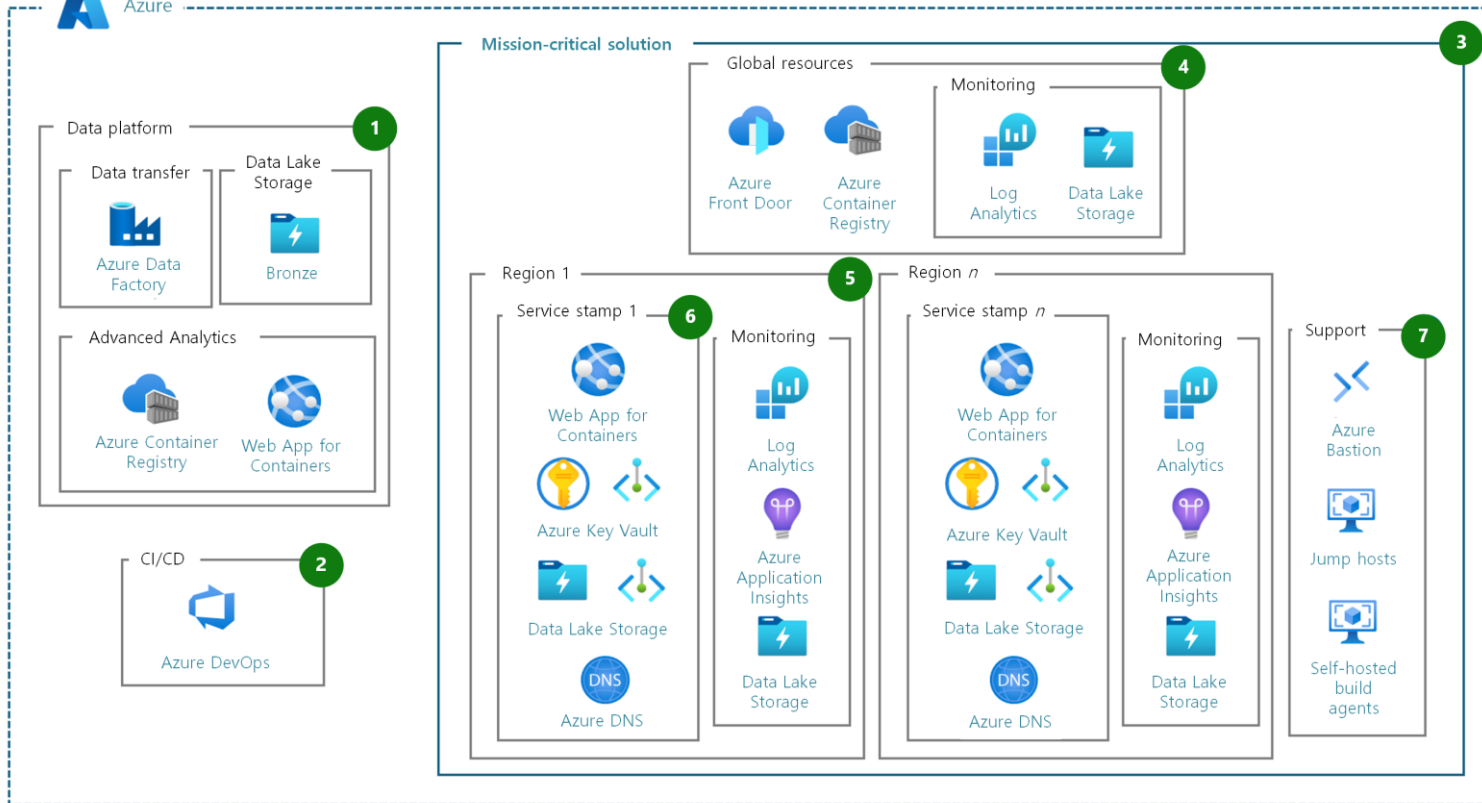
- Secure app configuration data by using App Configuration or Azure Key Vault [see [1](#) [2](#) [3](#)]
- Develop code that uses keys, secrets, and certificates stored in Azure Key Vault [see [1](#) [2](#) [3](#)]
- Implement Managed Identities for Azure resources [see [1](#) [2](#)]

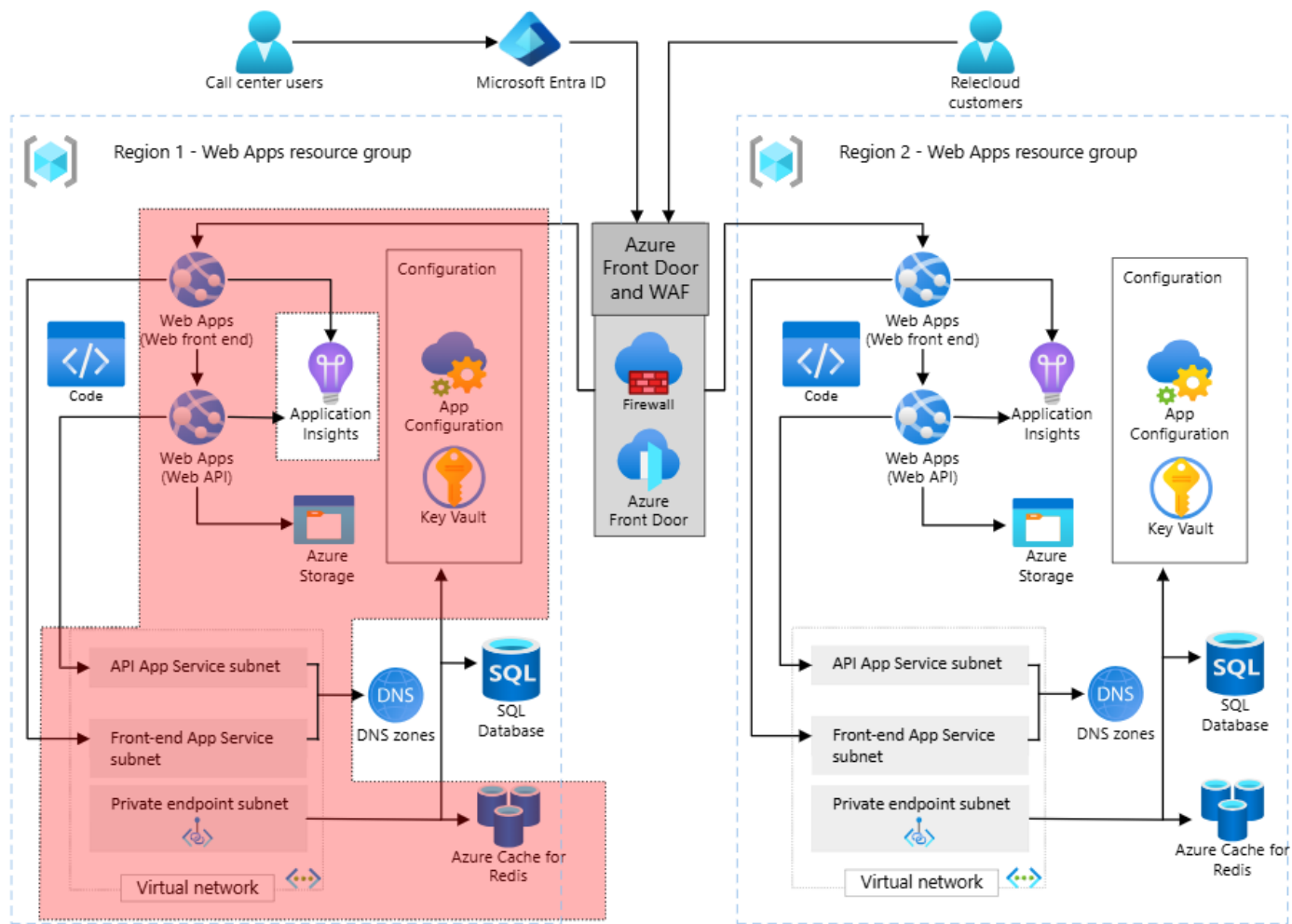


Poll 6: You are developing an application that retrieves a secret from Azure Key Vault using the Azure SDK for .NET. Which method should you use?

- `GetSecretAsync()`
- `RetrieveSecretAsync()`
- `FetchSecretAsync()`
- `ReadSecretAsync()`







Monitor and Troubleshoot Azure Solutions (5–10%)

Monitor and troubleshoot Azure solutions

- Monitor and troubleshoot solutions by using Application Insights



Monitor and Troubleshoot Solutions by Using Application Insights

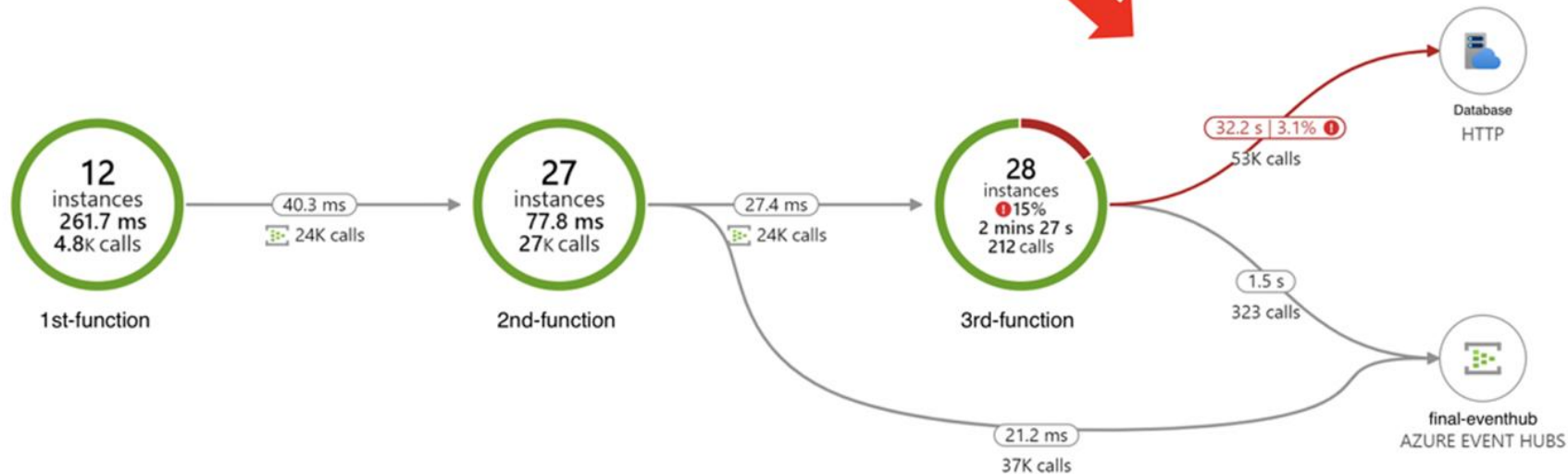
- Monitor and analyze metrics, logs, and traces [see [1](#) [2](#) [3](#) [4](#)]
- Implement Application Insights web tests and alerts [see [1](#) [2](#) [3](#)]
- Instrument an app or service to use Application Insights [see [1](#) [2](#)]



Poll 7: You need to configure availability tests in Azure Application Insights to monitor the uptime of your web application and receive alerts if it becomes unreachable. Which type of test should you use?

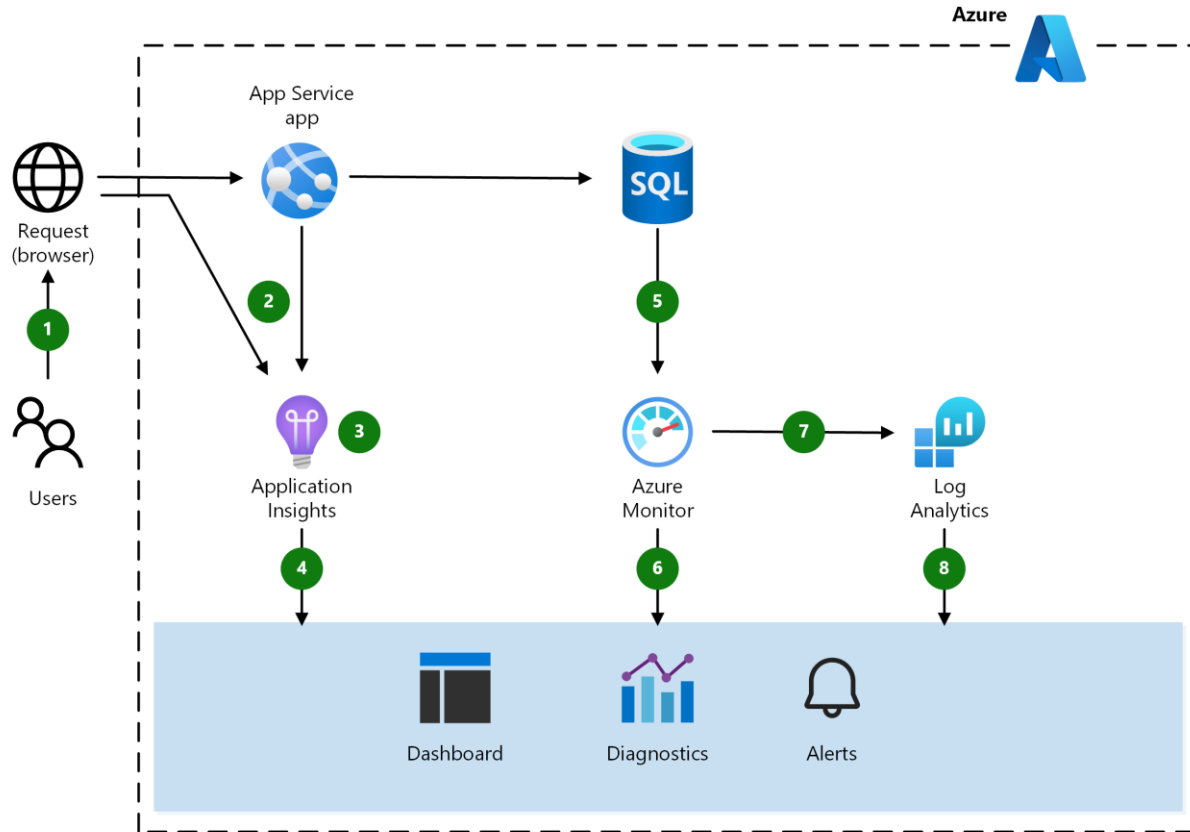
- Log-based alerts
- Performance counters
- URL ping test
- Custom events





<https://learn.microsoft.com/en-us/azure/architecture/serverless/event-hubs-functions/observability>





**Connect to and Consume Azure
Services and Third-party Services
(20–25%)**

Connect to and Consume Azure Services and Third-party Services

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



Implement API Management

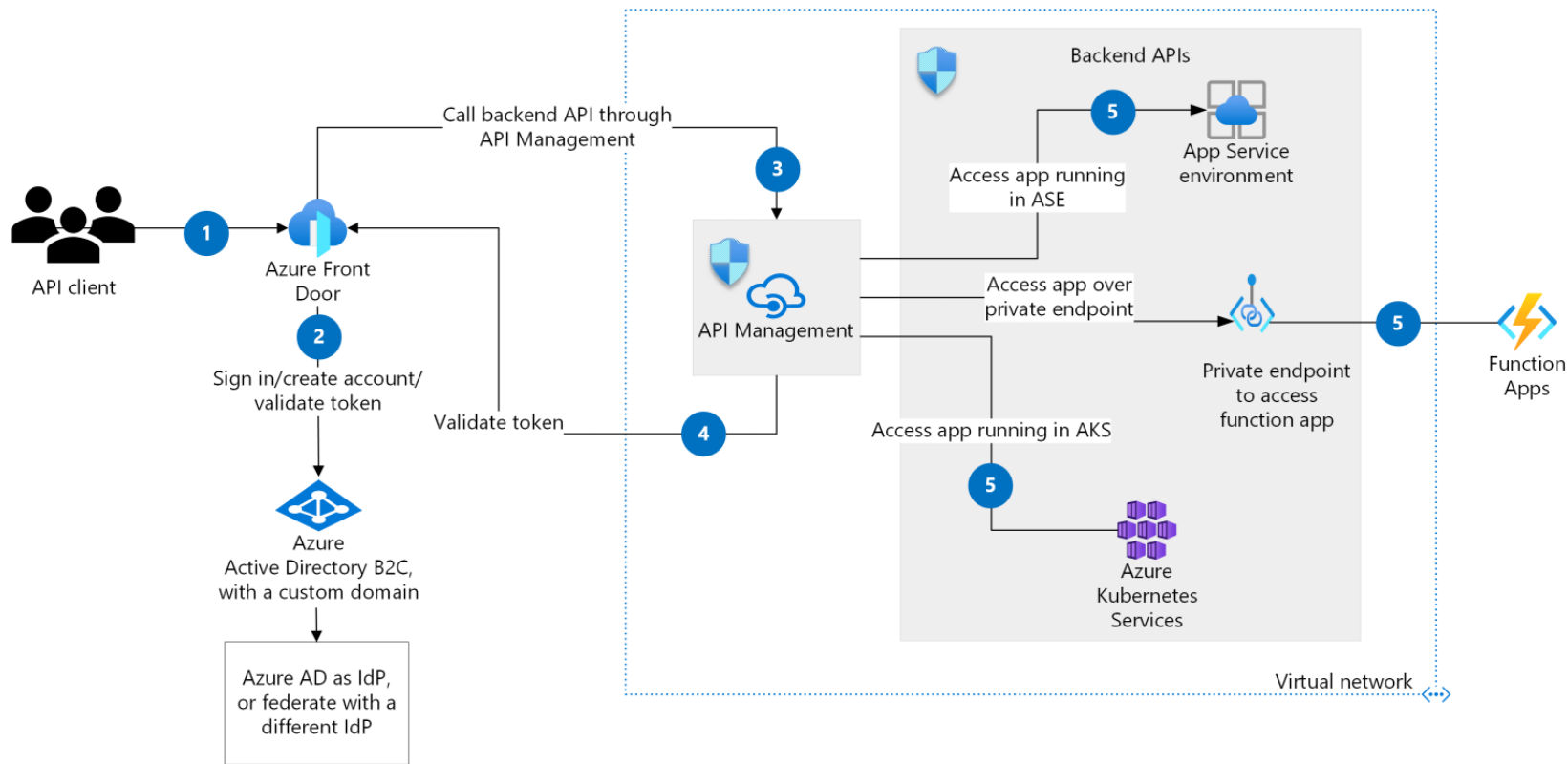
- Create an Azure API Management instance [see [1](#)]
- Create and document APIs [see [1](#)]
- Configure access to APIs [see [1](#)]
- Implement policies for APIs [see [1](#) [2](#)]



Poll 8: You need to restrict access to an Azure API Management (APIM) API so that only authenticated clients with a valid OAuth 2.0 token can call it. What should you configure?

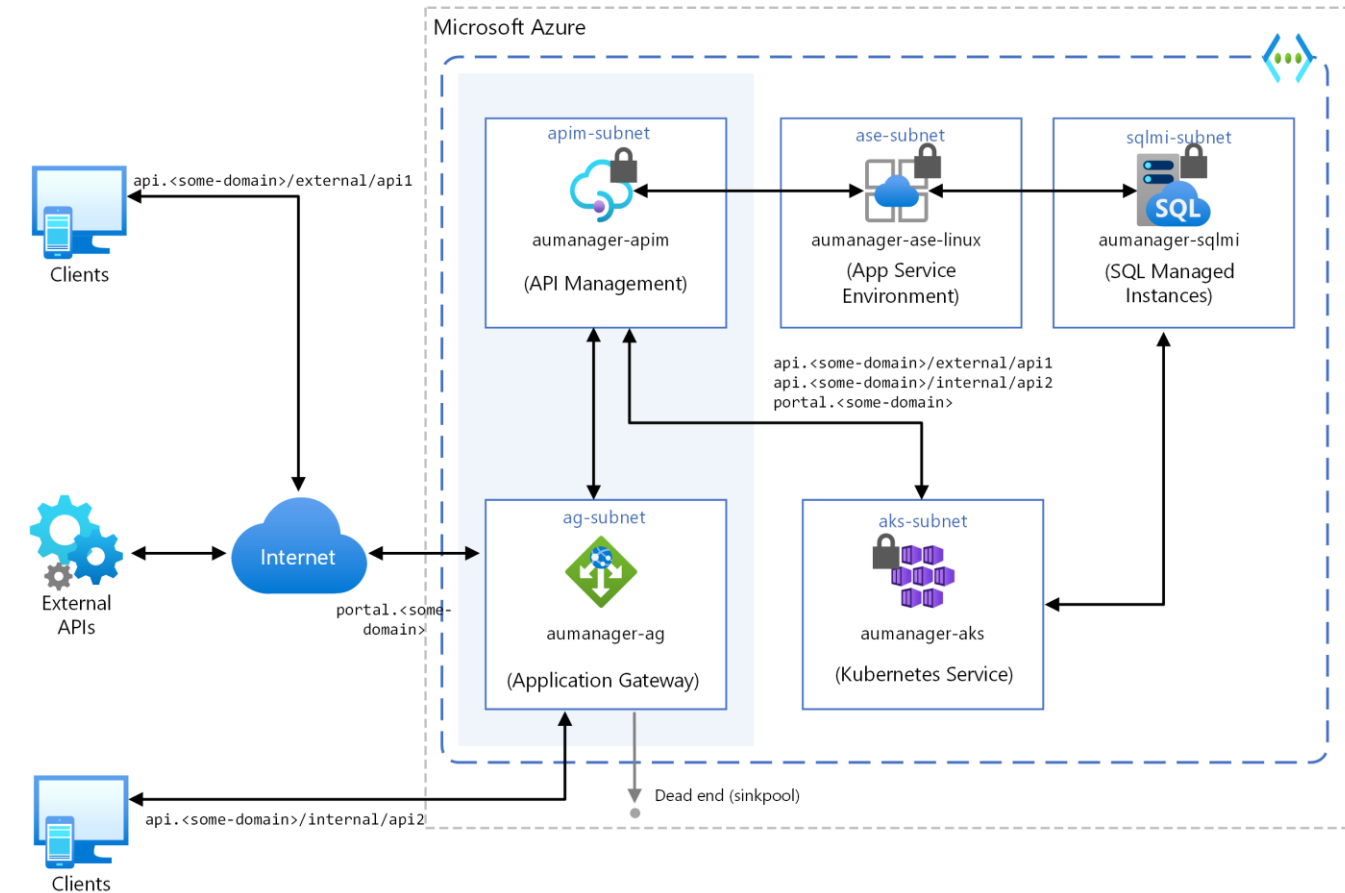
- Subscription Keys
- IP Restrictions
- OAuth 2.0 Authorization with an Identity Provider
- CORS Policy





<https://learn.microsoft.com/en-us/azure/api-management/api-management-key-concepts>





Develop Event-based Solutions

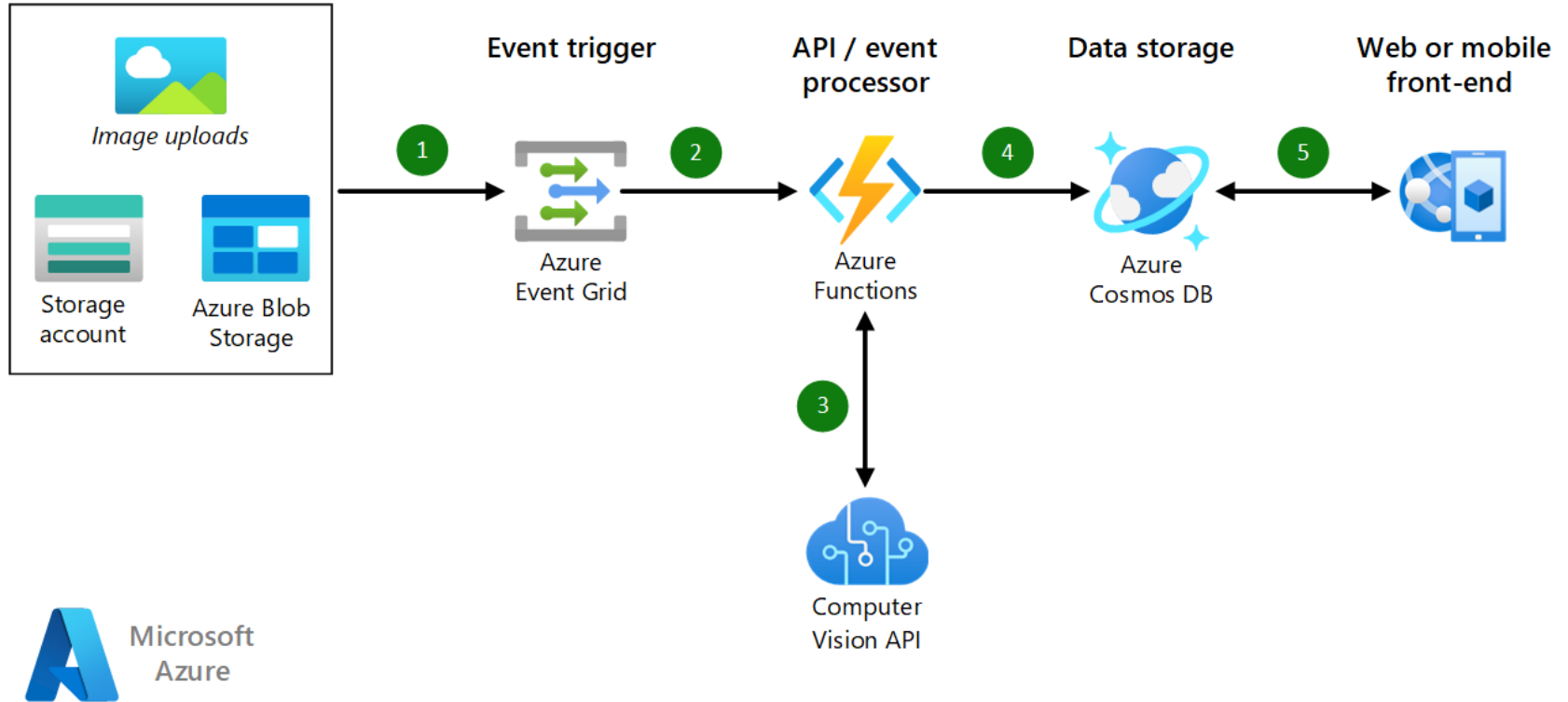
- Implement solutions that use Azure Event Grid [see [1](#) [2](#)]
- Implement solutions that use Azure Event Hubs [see [1](#) [2](#) [3](#) [4](#)]



Poll 9: You are designing an app where multiple services must react to new blob uploads in a Storage Account. Reliable event delivery with minimal management overhead is required. Which service should you use?

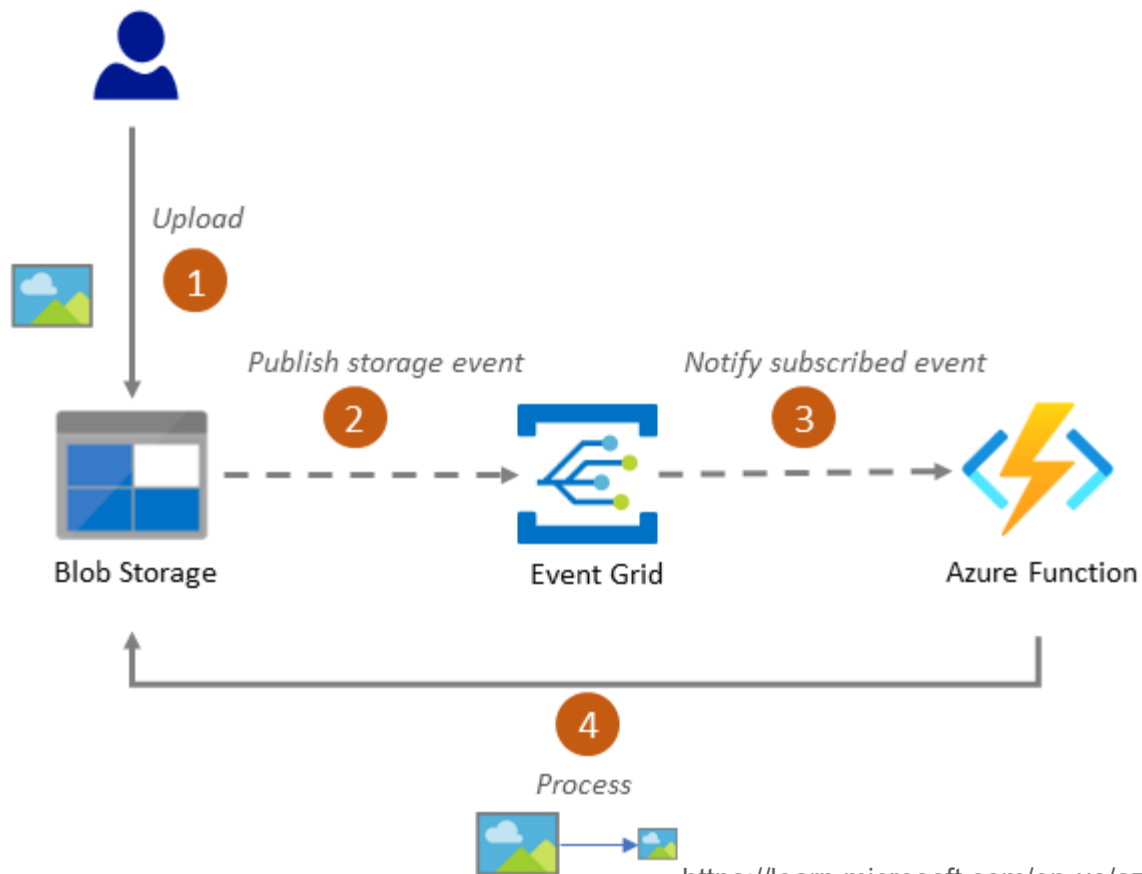
- Azure Service Bus
- Azure Event Grid
- Azure Event Hubs
- Azure Notification Hubs





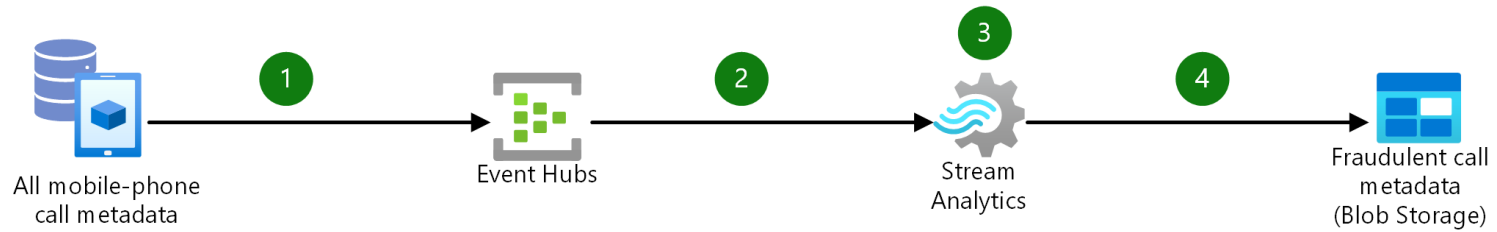
<https://learn.microsoft.com/en-us/azure/architecture/example-scenario/monitoring/monitoring-observable-systems-media>





<https://learn.microsoft.com/en-us/azure/architecture/example-scenario/monitoring/monitoring-observable-systems-media>





Develop message-based solutions

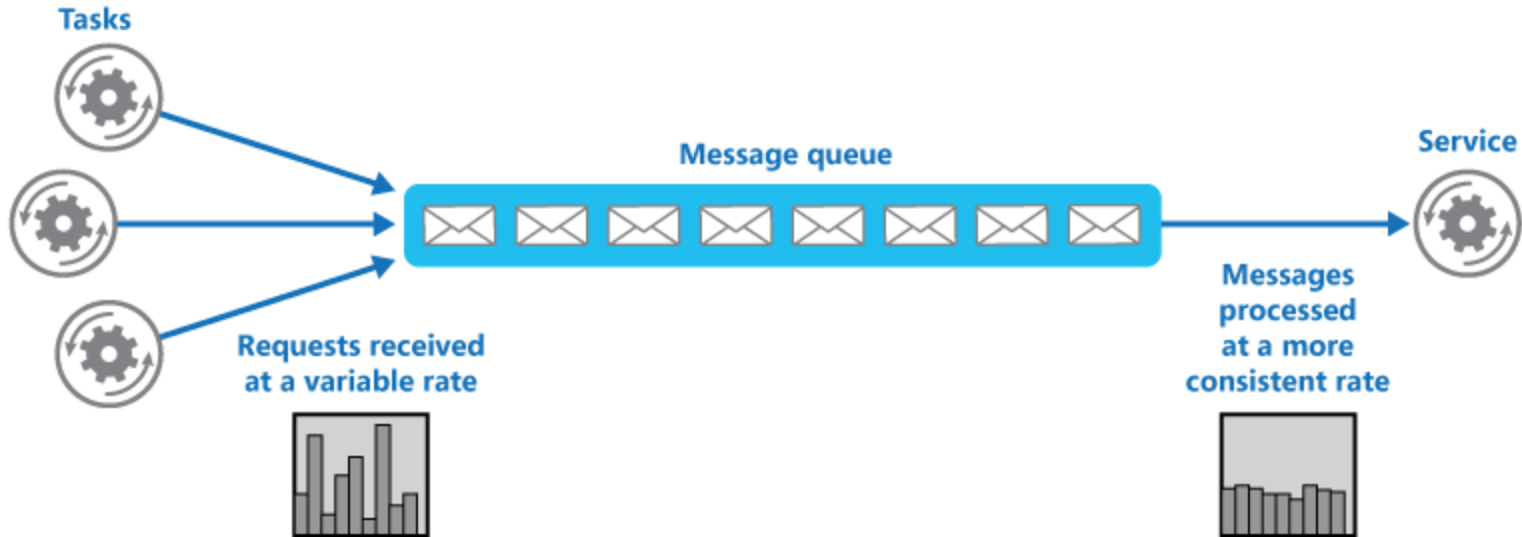
- Implement solutions that use Azure Service Bus [see [1](#) [2](#) [3](#) [4](#) [5](#)]
- Implement solutions that use Azure Queue Storage queues [see [1](#) [2](#)]



Poll 10: You are developing a .NET application to work with Azure Service Bus Queue. Which method sends a message using the `Azure.Messaging.ServiceBus` SDK?

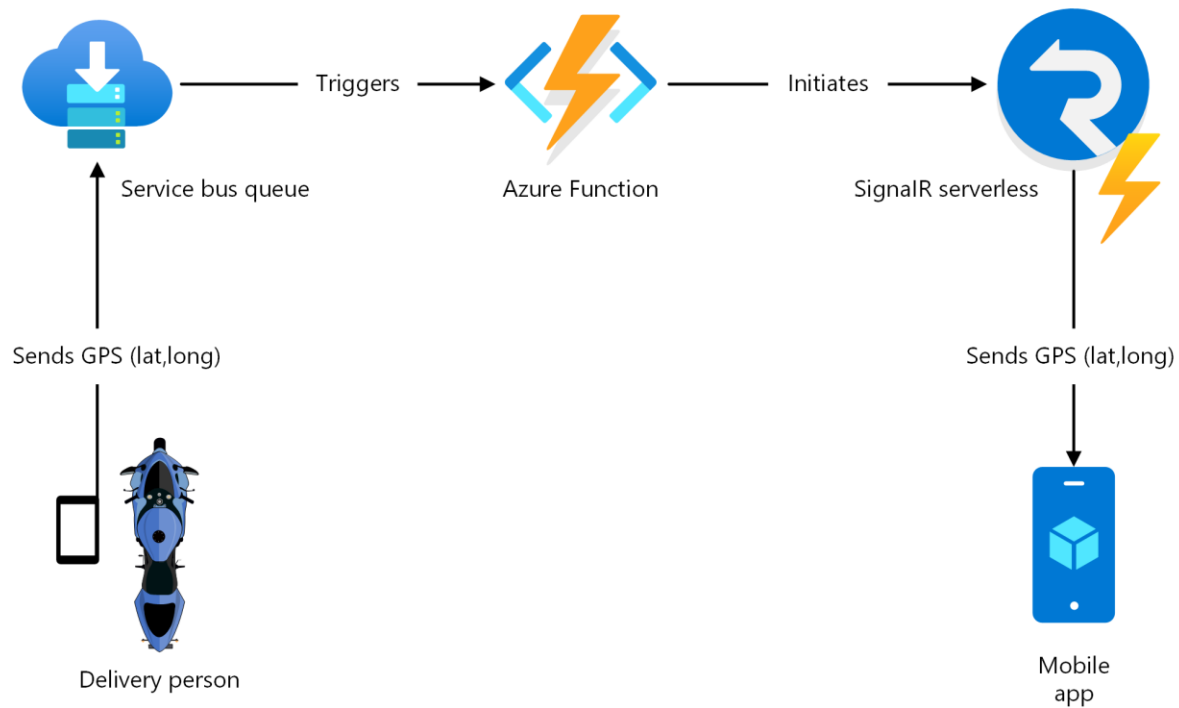
- `SendAsync()`
- `PublishAsync()`
- `SendMessageAsync()`
- `QueueMessageAsync()`

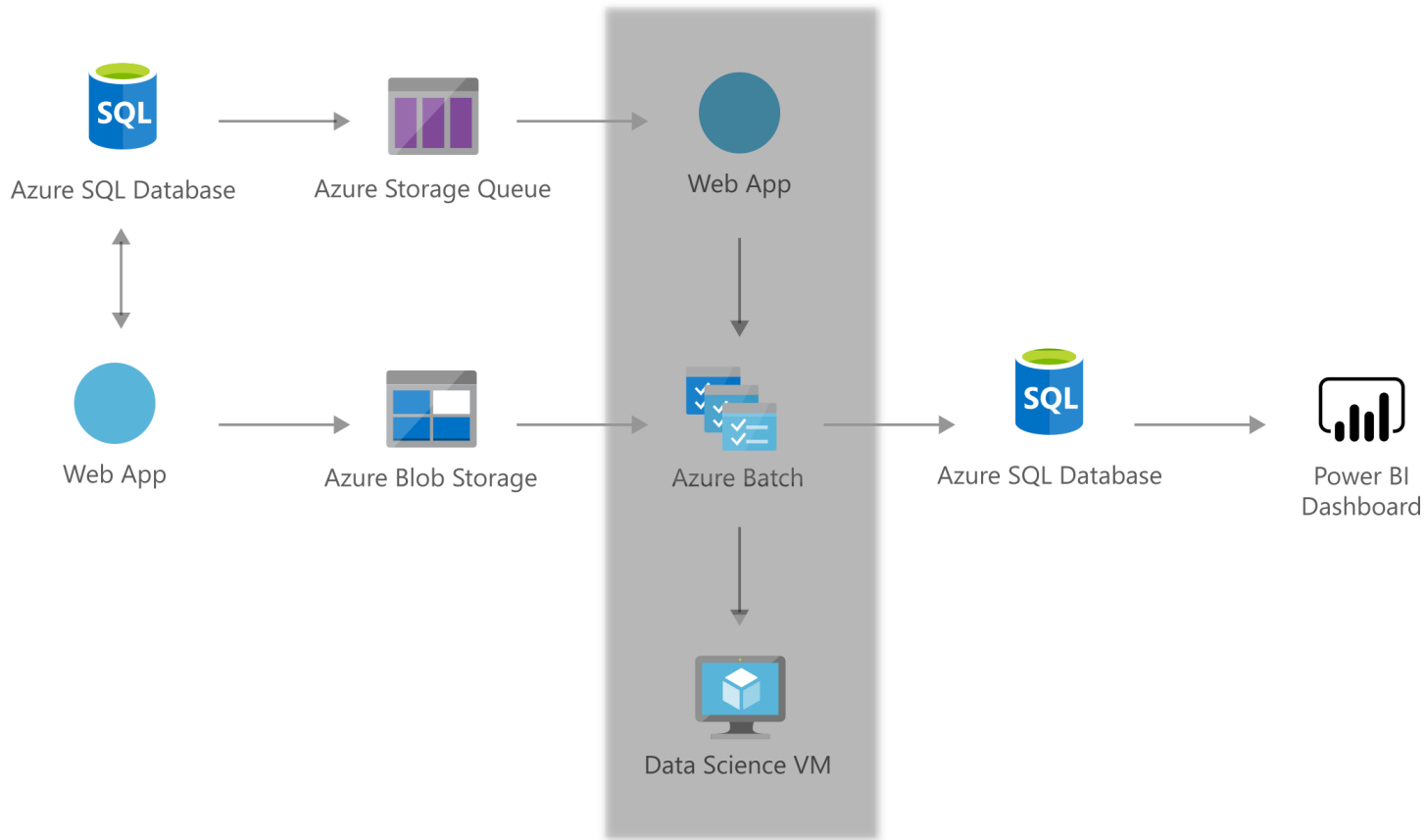




<https://learn.microsoft.com/en-us/azure/architecture/patterns/queue-based-load-leveling>







<https://learn.microsoft.com/en-us/industry/>



The Exam

Questions in AZ-204

- 45-55 questions
- Formats (multiple choice, drag and drop, scenario based, and labs)
- See the [exam sandbox](#)
- 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>



Prepare for the exam



COURSE

Developing Solutions for Microsoft Azure

[Continue course >](#)

Training in this course



AZ-204: Implement Azure App Service web apps

🕒 2 hr 3 min • Learning Path • 4 units



AZ-204: Implement Azure Functions

🕒 53 min • Learning Path • 2 units



AZ-204: Develop solutions that use Blob storage


🕒 1 hr 19 min • Learning Path • 3 units



AZ-204: Develop solutions that use Azure Cosmos DB

🕒 1 hr 10 min • Learning Path • 2 units

Take the exam

 You will have **100 minutes** to complete this assessment.

Exam policy

This exam will be proctored, and is not open book. You may have interactive components to complete as part of this exam. To learn more about exam duration and experience, visit: [Exam duration and exam experience](#).

If you fail a certification exam, don't worry. You can retake it 24 hours after the first attempt. For subsequent retakes, the amount of time varies. For full details, visit: [Exam retake policy](#).

Need accommodations?

We offer a variety of accommodations to support you.

[Learn More](#)

This exam is offered in the following languages:

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

Schedule through Pearson Vue

United States



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](#).



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



Course Repository

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



Microsoft Azure Fundamentals (AZ-900) Certification Course, 2nd Edition



4h 55m remaining

With your instructor

[Reza Salehi](#)

[+ Add to playlist](#)

Associated roles

Cloud native engineer

Cloud solutions architect

Cybersecurity engineer

Database administrator

[+1 more](#)

Skills covered

AZ-900: Microsoft Azure Fundamentals

AZ-303: Microsoft Azure Architect...

AZ-500: Microsoft Azure Security...

AI-900: Microsoft Azure AI Fundamentals



Includes quizzes

Test your knowledge during the course and with a final quiz.

 October 2024

[O'Reilly Media, Inc.](#)

Learning Outcomes

- Gain knowledge of Azure cloud concepts and services
- Explore Azure services in greater depth
- Get ready for Exam AZ-900: Microsoft Azure Fundamentals
- Comfortably work with the Azure portal

The Microsoft Azure Fundamentals (AZ-900) exam is one of the most popular certifications for those who are just beginning to work with cloud-based solutions and services or who are new to Azure. The exam certifies knowledge of cloud concepts, Azure services, workloads, security and privacy, and pricing and support.

In this self-paced course, Reza Salehi will help you get familiar with Microsoft Azure's cloud services and begin your Azure certification journey. This course is aligned to the AZ-900 exam objective domains and has recently been updated to reflect the most current version of the exam (2024). It covers all the services and concepts in the Azure ecosystem you need to know in order to prepare for the test.

What you'll learn and how to apply it

By the end of this certification course, you will understand the following:

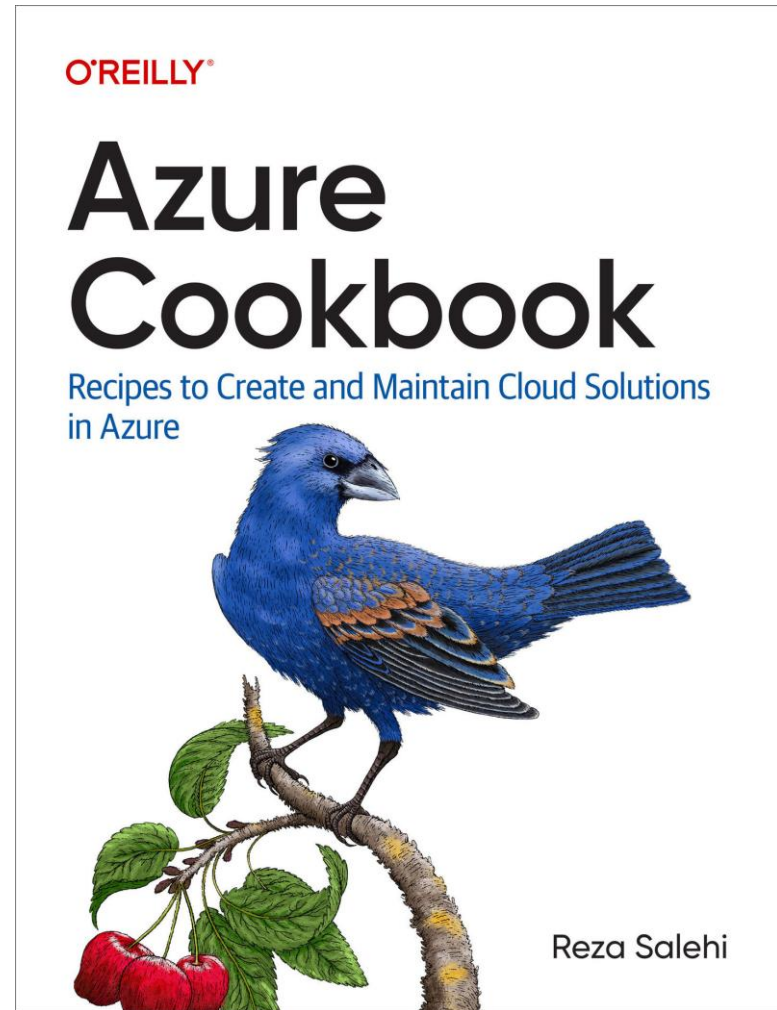
- General cloud concepts
- Core Azure services
- Core solutions and management tools on Azure
- General security and network security features
- Identity, governance, privacy, and compliance features
- Azure cost management and service-level agreements

Azure Cookbook

<https://learning.oreilly.com/library/view/azure-cookbook/9781098135782/>

<https://www.amazon.ca/Azure-Cookbook-Recipes-Maintain-Solutions/dp/1098135792/>

https://www.amazon.com/Azure-Cookbook-Recipes-Maintain-Solutions/dp/1098135792





Thank you!

Reza Salehi

[linkedin.com/in/rezasalehi2008](https://www.linkedin.com/in/rezasalehi2008)

