

# Study guide for Exam AZ-204: Developing Solutions for Microsoft Azure

## Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

| Useful links   | Description   |
|--|---|
| <a href="#">Review the skills measured as of April 18, 2023</a>    | This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.                         |
| <a href="#">Review the skills measured prior to April 18, 2023</a> | Study this list of skills if you take your exam PRIOR to the date provided.   |
| <a href="#">Change log</a>   | You can go directly to the change log if you want to see the changes that will be made on the date provided.  |
| <a href="#">How to earn the certification</a>                      | Some certifications only require passing one exam, while others require passing multiple exams.   |
| <a href="#">Certification renewal</a>                              | Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a <b>free</b> online assessment on Microsoft Learn. |
| <a href="#">Your Microsoft Learn profile</a>                       | Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.                       |
| <a href="#">Exam scoring and score reports</a>                     | A score of 700 or greater is required to pass.  |
| <a href="#">Exam sandbox</a>                                       | You can explore the exam environment by visiting our exam sandbox.  |
| <a href="#">Request accommodations</a>                             | If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.            |

| Useful links                                    | Description  |
|---|--|
| <a href="#">Take a free Practice Assessment</a> | Test your skills with practice questions to help you prepare for the exam. |

## Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

### Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

### Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

## Skills measured as of April 18, 2023

### Audience profile

Candidates are responsible for participating in all phases of development including requirements gathering, design, development, deployment, security, maintenance, performance tuning, and monitoring. They should be proficient in Azure: SDKs, data storage options, data connections, APIs, app authentication/authorization, compute/container deployment, and debugging.

Candidates partner with cloud solution architects, DBAs, DevOps, infrastructure admins, and other stakeholders to implement solutions.

Candidates should have at least 2 years of professional development experience and experience with Microsoft Azure. They should be able to program in an Azure-supported language, and should be proficient using Azure CLI, Azure PowerShell, and other tools.

- 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%)

## Develop Azure compute solutions (25–30%)

### Implement containerized solutions

- Create and manage container images for solutions
- Publish an image to Azure Container Registry
- Run containers by using Azure Container Instance
- Create solutions by using Azure Container Apps

### Implement Azure App Service Web Apps

- Create an Azure App Service Web App
- Enable diagnostics logging
- Deploy code to a web app
- Configure web app settings including SSL, API settings, and connection strings
- Implement autoscaling

### Implement Azure Functions

- Create and configure an Azure Function App
- Implement input and output bindings
- Implement function triggers by using data operations, timers, and webhooks

## Develop for Azure storage (15–20%)

### Develop solutions that use Azure Cosmos DB

- Perform operations on containers and items by using the SDK
- Set the appropriate consistency level for operations
- Implement change feed notifications

### Develop solutions that use Azure Blob Storage

- Set and retrieve properties and metadata
- Perform operations on data by using the appropriate SDK
- Implement storage policies and data lifecycle management
- Implement static site hosting

## Implement Azure security (20–25%)

### Implement user authentication and authorization

- Authenticate and authorize users by using the Microsoft Identity platform
- Authenticate and authorize users and apps by using Microsoft Azure Active Directory (Azure AD), part of Microsoft Entra
- Create and implement shared access signatures
- Implement solutions that interact with Microsoft Graph

## Implement secure Azure solutions

- Secure app configuration data by using App Configuration or Azure Key Vault
- Develop code that uses keys, secrets, and certificates stored in Azure Key Vault
- Implement Managed Identities for Azure resources

## Monitor, troubleshoot, and optimize Azure solutions (15–20%)

### Implement caching for solutions

- Configure cache and expiration policies for Azure Cache for Redis
- Implement secure and optimized application cache patterns including data sizing, connections, encryption, and expiration
- Implement Azure CDN endpoints and profiles

### Troubleshoot solutions by using Application Insights

- Configure an app or service to use Application Insights
- Monitor and analyze metrics, logs, and traces
- Implement Application Insights web tests and alerts

## Connect to and consume Azure services and third-party services (15–20%)

### Implement API Management

- Create an APIM instance
- Create and document APIs
- Configure authentication for APIs
- Implement policies for APIs

### Develop event-based solutions

- Implement solutions that use Azure Event Grid
- Implement solutions that use Azure Event Hub

### Develop message-based solutions

- Implement solutions that use Azure Service Bus
- Implement solutions that use Azure Queue Storage queues

# Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

| Study resources               | Links to learning and documentation  |
|-------------------------------|--|
| <b>Get trained</b>            | <a href="#">Choose from self-paced learning paths and modules or take an instructor led course</a>   |
| <b>Find documentation</b>     | <a href="#">Azure documentation</a><br><a href="#">Container Registry</a><br><a href="#">Container Instances</a><br><a href="#">App Service</a><br><a href="#">Azure Functions</a><br><a href="#">Azure Cosmos DB</a><br><a href="#">Blob Storage</a><br><a href="#">Azure Active Directory (AD)</a><br><a href="#">Key Vault</a><br><a href="#">Azure Cache for Redis</a><br><a href="#">API Apps</a><br><a href="#">API Management</a><br><a href="#">Event Hubs</a><br><a href="#">Event Grid</a><br><a href="#">Service Bus</a><br><a href="#">Queue Storage</a> |
| <b>Ask a question</b>         | <a href="#">Microsoft Q&amp;A   Microsoft Docs</a>   |
| <b>Get community support</b>  | <a href="#">Azure Community Support</a>  |
| <b>Follow Microsoft Learn</b> | <a href="#">Microsoft Learn - Microsoft Tech Community</a>   |
| <b>Find a video</b>           | <a href="#">Exam Readiness Zone</a><br><a href="#">Azure Fridays</a><br><a href="#">Browse other Microsoft Learn shows</a>   |

# Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

| Skill area prior to April 18, 2023                                    | Skill area as of April 18, 2023                                       | Change    |
|---|---|-----------|
| Audience profile  |   | Minor     |
| <b>Develop Azure compute solutions</b>                                | <b>Develop Azure compute solutions</b>                                | No change |
| Implement IaaS solutions  | Implement containerized solutions                                     | Major     |
| Create Azure App Service Web Apps                                     | Implement Azure App Service Web Apps                                  | Minor     |
| Implement Azure Functions   | Implement Azure Functions   | Major     |
| <b>Develop for Azure storage</b>                                      | <b>Develop for Azure storage</b>                                      | No change |
| Develop solutions that use Cosmos DB storage                          | Develop solutions that use Azure Cosmos DB                            | Major     |
| Develop solutions that use blob storage                               | Develop solutions that use Azure Blob Storage                         | Major     |
| <b>Implement Azure security</b>                                       | <b>Implement Azure security</b>                                       | No change |
| Implement user authentication and authorization                       | Implement user authentication and authorization                       | No change |
| Implement secure cloud solutions                                      | Implement secure Azure solutions                                      | Minor     |
| <b>Monitor, troubleshoot, and optimize Azure solutions</b>            | <b>Monitor, troubleshoot, and optimize Azure solutions</b>            | No change |
| Implement caching for solutions                                       | Implement caching for solutions                                       | Minor     |
| Troubleshoot solutions by using metrics and log data                  | Troubleshoot solutions by using Application Insights                  | Minor     |
| <b>Connect to and consume Azure services and third-party services</b> | <b>Connect to and consume Azure services and third-party services</b> | No change |
| Implement API Management  | Implement API Management  | Minor     |
| Develop event-based solutions   | Develop event-based solutions   | No change |
| Develop message-based solutions                                       | Develop message-based solutions                                       | No change |

# Skills measured prior to April 18, 2023

## Audience profile

Candidates for this exam are cloud developers who participate in all phases of development from requirements definition and design to development, deployment, and maintenance. They partner with cloud DBAs, cloud administrators, and clients to implement solutions.

Candidates should be proficient in Azure SDKs, data storage options, data connections, APIs, app authentication and authorization, compute, and container deployment, debugging, performance tuning, and monitoring.

Candidates should have 1-2 years professional development experience and experience with Microsoft Azure. They should be able to program in an Azure-supported language, and should be proficient using Azure CLI, Azure PowerShell, and other tools.

- 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%)

## Develop Azure compute solutions (25–30%)

### Implement IaaS solutions

- Provision virtual machines (VMs)
- Configure, validate, and deploy ARM templates
- Configure container images for solutions
- Publish an image to Azure Container Registry
- Run containers by using Azure Container Instance

### Create Azure App Service Web Apps

- Create an Azure App Service Web App
- Enable diagnostics logging
- Deploy code to a web app
- Configure web app settings including SSL, API settings, and connection strings
- Implement autoscaling rules including scheduled autoscaling and autoscaling by operational or system metrics

### Implement Azure Functions

- Create and deploy Azure Functions apps
- Implement input and output bindings for a function
- Implement function triggers by using data operations, timers, and webhooks
- Implement Azure Durable Functions

## Develop for Azure storage (15–20%)

### Develop solutions that use Azure Cosmos DB storage

- Select the appropriate API and SDK for a solution
- Implement partitioning schemes and partition keys
- Perform operations on data and Azure Cosmos DB containers
- Set the appropriate consistency level for operations
- Manage change feed notifications

### Develop solutions that use blob storage

- Move items in Blob storage between storage accounts or containers
- Set and retrieve properties and metadata
- Perform operations on data by using the appropriate SDK
- Implement storage policies, data archiving, and retention

## Implement Azure security (20–25%)

### Implement user authentication and authorization

- Authenticate and authorize users by using the Microsoft Identity platform
- Authenticate and authorize users and apps by using Microsoft Azure Active Directory (Azure AD), part of Microsoft Entra
- Create and implement shared access signatures
- Implement solutions that interact with Microsoft Graph

### Implement secure cloud solutions

- Secure app configuration data by using App Configuration or Azure Key Vault
- Develop code that uses keys, secrets, and certificates stored in Azure Key Vault
- Implement Managed Identities for Azure resources

## Monitor, troubleshoot, and optimize Azure solutions (15–20%)

### Implement caching for solutions

- Configure cache and expiration policies for Azure Cache for Redis
- Implement secure and optimized application cache patterns including data sizing, connections, encryption, and expiration

### Troubleshoot solutions by using metrics and log data

- Configure an app or service to use Application Insights
- Review and analyze metrics and log data
- Implement Application Insights web tests and alerts



## Connect to and consume Azure services and third-party services (15–20%)

### Implement API Management

- Create an APIM instance
- Create and document APIs
- Configure authentication for APIs
- Define policies for APIs

### Develop event-based solutions

- Implement solutions that use Azure Event Grid
- Implement solutions that use Azure Event Hub

### Develop message-based solutions

- Implement solutions that use Azure Service Bus
- Implement solutions that use Azure Queue Storage queues