



# AZ 204 Developing solution for Azure Exam preparation and topics.

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# This session is all about.

- To provide over view of what the goal of exam is.
- Weight of each topics percentage wise.
- No discussion of DUMP here please.
- Certification can expire , knowledge can not.

# Candidate portfolio



- Candidates for this exam should have subject matter expertise designing, building, testing, and maintaining cloud applications and services on Microsoft Azure.
- Responsibilities for an Azure Developer include participating in all phases of cloud development from requirements definition and design, to development, deployment, and maintenance. performance tuning, and monitoring.
- Azure Developers partner with cloud solution architects, cloud DBAs, cloud administrators, and clients to implement solutions.
- A candidate for this exam should have 1-2 years professional development experience and experience with Microsoft Azure. In addition, the role should have ability programming in a language supported by Azure and 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.

# Percentage



- Develop Azure compute solutions (25-30%)
- Develop for Azure storage (10-15%)
- Implement Azure security (15-20%)
- Monitor, troubleshoot, & optimize Azure solutions (10-15%)
- Connect to & consume Azure services & third-party services (25-30%)

# Implement IaaS solutions



- Provision VMs

<https://docs.microsoft.com/en-us/azure/virtual-machines/windows/quick-create-powershell>

- Configure VMs for remote access

[Configure Just-in-time access to a VM](#)

- Create ARM templates

<https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-manager-quickstart-create-templates-use-the-portal>

- Create container images for solutions by using Docker

<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-tutorial-prepare-app>

- Publish an image to the Azure Container Registry

<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-tutorial-prepare-acr#push-image-to-azure-container-registry>

- Run containers by using Azure Container Instance

<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-tutorial-deploy-app>

# Create App service Web Apps



- Create an Azure App Service Web App
- <https://docs.microsoft.com/en-us/azure/app-service/app-service-web-get-started-dotnet>
- Enable diagnostics logging
- <https://docs.microsoft.com/en-us/azure/app-service/troubleshoot-diagnostic-logs>
- Deploy code to a web app
- <https://docs.microsoft.com/en-us/azure/app-service/deploy-zip>
- Configure web app settings including SSL, API, and connection strings
- [1. Configuring web app settings with SSL](#)
- [2. Configuring web app settings with connection strings](#)
- [3. Host Restful APIs in Azure App Service](#)
- Implement autoscaling rules, including scheduled autoscaling, and scaling by operational or system metrics
- [Azure App Service Autoscaling rules](#)
- [Scheduled Autoscaling & scaling by operational or system metrics](#)
- [Also, review the common autoscale patterns](#)

# Implement Azure functions



- Implement input and output bindings for a function
- <https://docs.microsoft.com/en-us/azure/azure-functions/functions-triggers-bindings>
- Implement function triggers by using data operations, timers, and webhooks
- <https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-timer>
- Implement Azure Durable Functions
- <https://docs.microsoft.com/en-us/azure/azure-functions/durable/durable-functions-create-portal>

# Develop for Azure Storage (10-15%)



- **Develop Solutions That Use Cosmos DB Storage**
- Select the appropriate API for your solution
- <https://docs.microsoft.com/en-us/learn/modules/choose-api-for-cosmos-db/>
- Implement partitioning schemes
- <https://docs.microsoft.com/en-us/azure/cosmos-db/how-to-model-partition-example>
- Interact with data using the appropriate SDK
- <https://docs.microsoft.com/en-us/azure/cosmos-db/sql-api-dotnet-application>
- <https://docs.microsoft.com/en-us/azure/cosmos-db/sql-api-get-started>
- Set the appropriate consistency level for operations
- <https://docs.microsoft.com/en-us/azure/cosmos-db/consistency-levels-choosing>
- Create Cosmos DB containers
- <https://docs.microsoft.com/en-us/azure/cosmos-db/how-to-create-container>



# Develop for Azure Storage (10-15%)



- Implement scaling (partitions, containers)
- [Partitioning & Horizontal scaling in Azure Cosmos DB](#)
- [Scaling Azure Cosmos DB Containers](#)
- Implement server-side programming including stored procedures, triggers, and change feed notifications
- [Learn about Server-side Programmability in Azure Cosmos DB](#)
- Stored Procedures in Azure Cosmos DB
- [1. How to write Stored Procedures in Azure Cosmos DB](#)
- [2. Writing Stored Procedures in Azure Cosmos DB](#)
- Triggers in Azure Cosmos DB
- [1. How to write Triggers in Azure Cosmos DB](#)
- [2. Writing Triggers in Azure Cosmos DB](#)
- Change Feed Notifications
- [1. Change feed in Azure Cosmos DB](#)

# Develop Solutions That Use Blob Storage



- Move items in blob storage between storage accounts or containers
- <https://docs.microsoft.com/en-us/learn/modules/copy-blobs-from-command-line-and-code/3-move-blobs-using-cli>
- Set and retrieve properties and metadata
- <https://docs.microsoft.com/en-us/azure/storage/common/storage-import-export-tool-setting-properties-metadata-import-v1>
- Interact with data using the appropriate SDK
- <https://docs.microsoft.com/en-us/azure/storage/blobs/storage-quickstart-blobs-dotnet>
- Implement data archiving and retention
- [Pluralsight: Archiving a blob](#)
- Implement hot, cool, and archive storage
- [Azure Blob storage: hot, cool, and archive access tiers](#)

# Power Shell vs Bash

- Enabling Cloud shell
- ls vs get-childitem
- New-AzResourceGroup -Name myResourceGroup -Location EastUS



New-AzVm `

```
-ResourceGroupName "myResourceGroup" `  
-Name "myVM" `  
-Location "East US" `  
-VirtualNetworkName "myVnet" `  
-SubnetName "mySubnet" `  
-SecurityGroupName "myNetworkSecurityGroup" `  
-PublicIpAddressName "myPublicIpAddress" `  
-OpenPorts 80,3389
```

Get-AzPublicIpAddress -ResourceGroupName "myResourceGroup" | Select "IpAddress"

You are creating a CLI script that creates an Azure web app and related services in Azure App Service. The web app uses the following variables:

You need to automatically deploy code from Git-Hub to the newly created web app. How should you complete the script? To answer, select the appropriate options in the answer area.

Variable name	Value
\$gitrepo	https://github.com/Contos/webapp
\$webappname	Webapp1103



## Answer Area

```
az group create - -location westeurope - -name myResourceGroup
```

▼ --name \$webappname - -resource-group myResourceGroup - -sku FREE

az webapp create
az appservice plan create
az webapp deployment
az group delete

▼ --name \$webappname - -resource-group myResourceGroup

az webapp create
az appservice plan create
az webapp deployment
az group delete

▼

--repo-url \$gitrepo - -branch master - -manual-integration
git clone \$gitrepo
--plan \$webappname

▼ source config --name \$webappname

az webapp create
az appservice plan create
az webapp deployment
az group delete

--resource-group myResourceGroup

▼
--repo-url \$gitrepo - -branch master - -manual-integration
git clone \$gitrepo
--plan \$webappname

## Answer Area

```
az group create - -location westeurope - -name myResourceGroup
```

▼
az webapp create
az appservice plan create
az webapp deployment
az group delete

```
--name $webappname - -resource-group myResourceGroup - -sku FREE
```

▼
az webapp create
az appservice plan create
az webapp deployment
az group delete

```
--name $webappname - -resource-group myResourceGroup
```

▼
--repo-url \$gitrepo - -branch master - -manual-integration
git clone \$gitrepo
--plan \$webappname

▼
az webapp create
az appservice plan create
az webapp deployment
az group delete

```
source config --name $webappname
```

```
--resource-group myResourceGroup
```

▼
--repo-url \$gitrepo - -branch master - -manual-integration
git clone \$gitrepo
--plan \$webappname



You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure

Storage Blob storage. The storage account type is General-purpose V2. When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute. You need to design the process that starts the photo processing.

Solution: Convert the Azure Storage account to a BlockBlobStorage storage account.

Does the solution meet the goal?

- **A.** Yes
- **B.** No





You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure Storage Blob storage.

The storage account type is General-purpose V2.

When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.

You need to design the process that starts the photo processing.

Solution: Trigger the photo processing from Blob storage events.

Does the solution meet the goal?

**A. Yes**

**B. No**





You are implementing a software as a service (SaaS) ASP.NET Core web service that will run as an Azure Web App.

The web service will use an on-premises SQL Server database for storage. The web service also includes a WebJob that processes data updates. Four customers will use the web service.

Each instance of the WebJob processes data for a single customer and must run as a singleton instance. Each deployment must be tested by using deployment slots prior to serving production data.

Azure costs must be minimized.

Azure resources must be located in an isolated network. You need to configure the App Service plan for the Web App.

How should you configure the App Service plan?

**Answer Area**

App service plan setting	Value
Number of VM instances	<div><div></div><div>2</div><div>4</div><div>8</div><div>16</div></div>
Pricing tier	<div><div></div><div>Isolated</div><div>Standard</div><div>Premium</div><div>Consumption</div></div>



- **Free**
- The free plan is, as you would expect, free so the web app plan has no impact on the pricing. The free tier is limited to 60 CPU minutes per day, and this limit is per app, so in reality it doesn't really matter if you put each app in its own plan or share one (there is a limit of 10 apps per free plan).
- **Shared**
- The shared plan is where things get a bit confusing. Like the free plan you are sharing hardware and you are allocated a CPU limit, this time of 240 CPU minutes per day. You can host up to 100 apps in a single app service plan, but the key thing to know here is that as with the free plan you are charged per app, **not per app service plan**. Each instance of a web app you deploy in the shared plan gets its own 240 CPU minutes limit and is charged per app. So in this scenario having multiple app plans or one app plan doesn't really make much difference (and usually a single app plan is better for management overhead).
- This is one of the key things that people often don't notice when comparing the price between shared and the higher tiers. It looks like there is a pretty large price jump, and there is if you are only hosting 1 application, but if you are hosting multiple apps then the difference can be significantly less if they are OK sharing the resources.
- **Dedicated**
- The dedicated instance tier contains most of the general workload sizes – Basic, Standard and Premium. They are called dedicated because in each of these options you are running on dedicated VM's just for you. As these VM's are dedicated to you, you get full use of all of the resources in the VM's and can run as many apps as you want on them. There are two directions you can go to change the pricing with these plans:
- Change plan – as you scale up the plans Basic -> Standard 1 -> Standard 2 etc. you increase the size of the VM you are running on and so get access to more resource
- Change the number of instances – you can stay on the same plan and scale out so you have more instances with the same resources, you will be charged per instance and all of your apps in the same plan will run on all instances
- **Isolated**

You are developing an application that uses Azure Blob storage. The application must read the transaction logs of all the changes that occur to the blobs and the blob metadata in the storage account for auditing purposes. The changes must be in the order in which they occurred, include only create, update, delete, and copy operations and be retained for compliance reasons. You need to process the transaction logs asynchronously.



What should you do?

- **A.** Process all Azure Blob storage events by using Azure Event Grid with a subscriber Azure Function app.
- **B.** Enable the change feed on the storage account and process all changes for available events.
- **C.** Process all Azure Storage Analytics logs for successful blob events.
- **D.** Use the Azure Monitor HTTP Data Collector API and scan the request body for successful blob events.

- You are developing an Azure Service application that processes queue data when it receives a message from a mobile application. Messages may not be sent to the service consistently.

You have the following requirements:

Queue size must not grow larger than 80 gigabytes (GB).

Use first-in-first-out (FIFO) ordering of messages. Minimize Azure costs.

You need to implement the messaging solution.

Solution: Use the .Net API to add a message to an Azure Service Bus Queue from the mobile application. Create an Azure Windows VM that is triggered from Azure Service Bus Queue.

Does the solution meet the goal?

**A. Yes**

**B. No**



- You are developing an Azure Service application that processes queue data when it receives a message from a mobile application. Messages may not be sent to the service consistently.
- You have the following requirements:
  - Queue size must not grow larger than 80 gigabytes (GB).
  - Use first-in-first-out (FIFO) ordering of messages.
  - Minimize Azure costs.
- You need to implement the messaging solution.
- Solution: Use the .Net API to add a message to an Azure Service Bus Queue from the mobile application. Create an Azure Function App that uses an Azure Service Bus Queue trigger.
- Does the solution meet the goal?
  - A. Yes
  - B. No



- Windows Server 2016 virtual machine  
The virtual machine (VM) runs BizTalk Server 2016. The VM runs the following workflows:  
Ocean Transport "" This workflow gathers and validates container information including container contents and arrival notices at various shipping ports.  
Inland Transport "" This workflow gathers and validates trucking information including fuel usage, number of stops, and routes.  
The VM supports the following REST API calls:  
Container API "" This API provides container information including weight, contents, and other attributes.  
Location API "" This API provides location information regarding shipping ports of call and tracking stops.  
Shipping REST API "" This API provides shipping information for use and display on the shipping website.
- Shipping Data -  
The application uses MongoDB JSON document storage database for all container and transport information.
- Shipping Web Site -  
The site displays shipping container tracking information and container contents. The site is located at <http://shipping.wideworldimporters.com/>
- Proposed solution -  
The on-premises shipping application must be moved to Azure. The VM has been migrated to a new Standard\_D16s\_v3 Azure VM by using Azure Site Recovery and must remain running in Azure to complete the BizTalk component migrations. You create a Standard\_D16s\_v3 Azure VM to host BizTalk Server. The Azure architecture diagram for the proposed solution is shown below:

- Requirements -
- Shipping Logic app -  
The Shipping Logic app must meet the following requirements:  
Support the ocean transport and inland transport workflows by using a Logic App.  
Support industry-standard protocol X12 message format for various messages including vessel content details and arrival notices.  
Secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.  
Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.
- Shipping Function app -  
Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).
- REST APIs -  
The REST API's that support the solution must meet the following requirements:  
Secure resources to the corporate VNet.  
Allow deployment to a testing location within Azure while not incurring additional costs.  
Automatically scale to double capacity during peak shipping times while not causing application downtime.  
Minimize costs when selecting an Azure payment model.
- Shipping data -  
Data migration from on-premises to Azure must minimize costs and downtime.
- Shipping website -  
Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.
- Issues -
- Windows Server 2016 VM -  
The VM shows high network latency, jitter, and high CPU utilization. The VM is critical and has not been backed up in the past.  
The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.

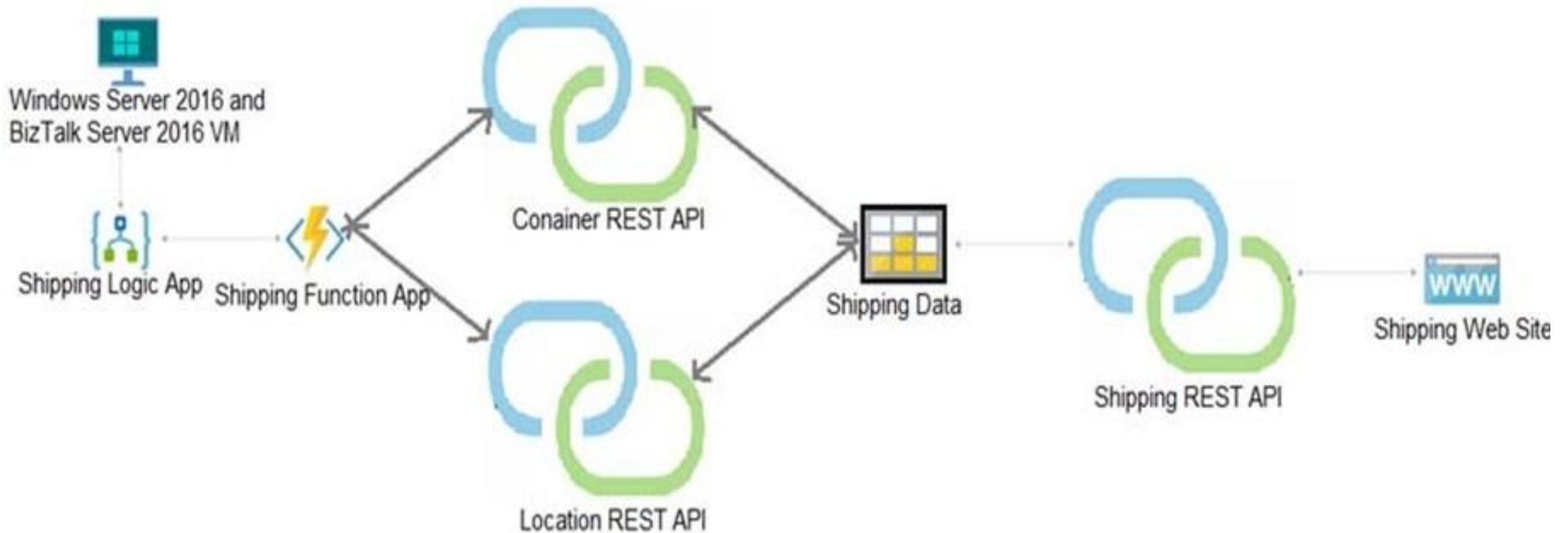




- Windows Server 2016 VM -  
The VM shows high network latency, jitter, and high CPU utilization. The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.
- Shipping website and REST APIs -  
The following error message displays while you are testing the website:  
Failed to load <http://test-shippingapi.wideworl...> No 'Access-Control-Allow-Origin' header is present on the requested resource. Origin '<http://test.wideworldimporters.com/>' is therefore not allowed access.**Question** You need to support the requirements for the Shipping Logic App.  
What should you use?



# Shipping case study



- You need to configure Azure CDN for the Shipping web site.  
Which configuration options should you use? To answer, select the appropriate options in the answer area.  
NOTE: Each correct selection is worth one point.

Answer Area

Option

Value

Tier

▼

Standard
Premium

Profile

▼

Akamai
Microsoft

Optimization

▼

general web delivery
large file download
dynamic site acceleration
video-on-demand media streaming

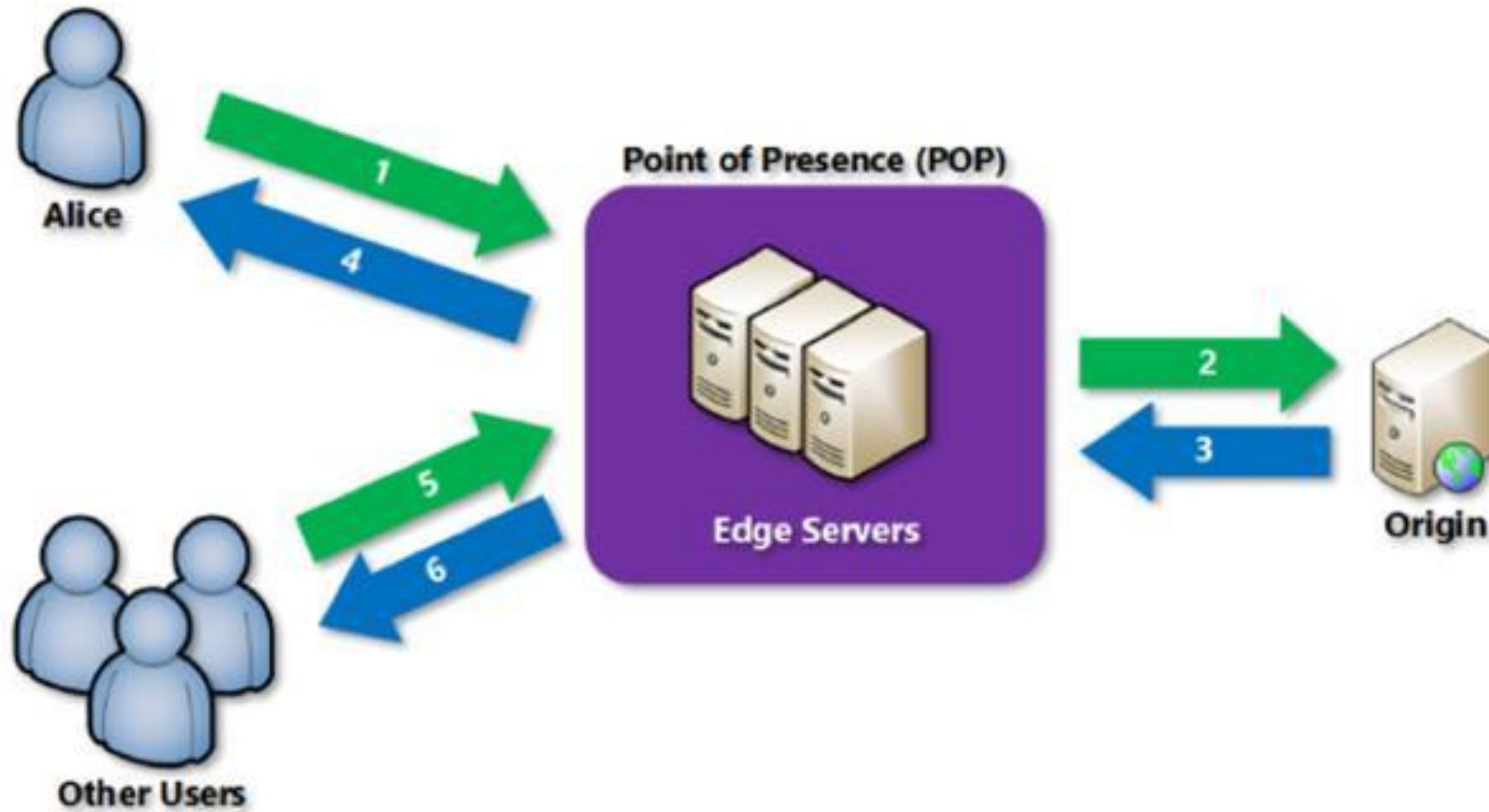


You need to secure the Shipping Function app.  
How should you configure the app? To answer, select the appropriate options in the answer area.



**Answer Area**

Setting	Value
Authorization level	<div><div></div><div>▼</div><div>Function</div><div>Anonymous</div><div>Admin</div></div>
User claims	<div><div></div><div>▼</div><div>JSON Web Token (JWT)</div><div>Shared Access Signature (SAS) token</div><div>API Key</div></div>
Trigger type	<div><div></div><div>▼</div><div>blob</div><div>HTTP</div><div>queue</div><div>timer</div></div>



- You are developing a ticket reservation system for an airline. The storage solution for the application must meet the following requirements:
- Ensure at least 99.99% availability and provide low latency.
- Accept reservations event when localized network outages or other unforeseen failures occur.
- Process reservations in the exact sequence as reservations are submitted to minimize overbooking or selling the same seat to multiple travelers.
- Allow simultaneous and out-of-order reservations with a maximum five-second tolerance window.
- You provision a resource group named `airlineResourceGroup` in the Azure South-Central US region.

You need to provision a SQL SPI Cosmos DB account to support the app. How should you complete the Azure CLI commands? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.



## Answer Area

```
resourceGroupName- +airlineResourceGroup'  
name- +docdb-airline-reservations'  
databaseName- 'docdb-tickets-database'  
collectionName- 'docdb-tickets-collection'  
consistencyLevel-
```

▼
Strong
Eventual
ConsistentPrefix
BoundedStaleness

```
az cosmosdb create \  
--name $name \  

```

▼
--enable-virtual-network true\ --enable-automatic-failover true\ --kind 'GlobalDocumentDB' \ --kind 'MongoDB'\ 

```
--resource group $resourceGroupName \  
--max interval 5 \  




```

▼
--locations 'southcentralus' --locations 'eastus' --locations'southcentralus=0 eastus=1 westus=2' --locations 'southcentralus=0' 

```
--default-consistency-level - $consistencylevel
```





- You must implement response caching for the APIM gateway. The caching mechanism must detect the user ID of the client that accesses data for a given location and cache the response for that user ID.
- You need to add the following policies to the policies file:
  -  a set-variable policy to store the detected user identity
  -  a cache-lookup-value policy
  -  a cache-store-value policy
  - a find-and-replace policy to update the profile information
- To which policy section should you add
- Select and Place:



### Answer Area

Policy section	Policy	Policy section
	Set-variable	<input type="text"/>
<input type="text" value="Inbound"/>	Cache-lookup-value	<input type="text"/>
<input type="text" value="Outbound"/>	Cache-store-value	<input type="text"/>
	Find-and-replace	<input type="text"/>

- Your company is developing an Azure API. You need to implement authentication for the Azure API. You have the following requirements:
- All API calls must be secure.
- Callers to the API must not send credentials to the API.
- Which authentication mechanism should you use?
- A. Basic
- B. Anonymous
- C. Managed identity
- D. Client certificate





- You are a developer for a SaaS company that offers many web services.
- All web services for the company must meet the following requirements:
  - Use API Management to access the services
  - Use OpenID Connect for authentication
- Prevent anonymous usage -
- A recent security audit found that several web services can be called without any authentication.
- Which API Management policy should you implement?
  - A. jsonp
  - B. authentication-certificate
  - C. check-header
  - D. validate-jwt



- You develop a web application. You need to register the application with an active Azure Active Directory (Azure AD) tenant.
- Which three actions should you perform in sequence? To answer, move all actions from the list of actions to the answer area and arrange them in the correct order.

#### Actions

Select **Manifest** from the middle-tier service registration.

In Enterprise Applications, select **New application**.

Add a Cryptographic key.

Create a new application and provide the name, account type, and redirect URL

Select the Azure AD instance.

Use an access token to access the secure resource.

In App Registrations, select **New registration**.

#### Answer Area



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You have a new Azure subscription. You are developing an internal website for employees to view sensitive data. The website uses Azure Active Directory (AzureAD) for authentication.

You need to implement multifactor authentication for the website.

Which two actions should you perform? Each correct answer presents part of the solution.

- A. Configure the website to use Azure AD B2C.
- B. In Azure AD, create a new conditional access policy.
- C. Upgrade to Azure AD Premium.
- D. In Azure AD, enable application proxy.
- E. In Azure AD conditional access, enable the baseline policy.



You are developing an ASP.NET Core Web API web service. The web service uses Azure Application Insights for all telemetry and dependency tracking. The web service reads and writes data to a database other than Microsoft SQL Server.

You need to ensure that dependency tracking works for calls to the third-party database.

Which two dependency telemetry properties should you use? Each correct answer presents part of the solution.

- A. `Telemetry.Context.Cloud.RoleInstance`
- B. `Telemetry.Id`
- C. `Telemetry.Name`
- D. `Telemetry.Context.Operation.Id`
- E. `Telemetry.Context.Session.Id`



You develop Azure solutions.

You must connect to a No-SQL globally-distributed database by using the .NET API.

You need to create an object to configure and execute requests in the database.

Which code segment should you use?

A. `new Container(EndpointUri, PrimaryKey);`

B. `new Database(Endpoint, PrimaryKey);`

C. `new CosmosClient(EndpointUri, PrimaryKey);`





# Study material

- Questpond Learn Azure step by step video lesson ( 10 hours)  
[www.questpond.com](http://www.questpond.com)
- PDF of Microsoft Syllabus
- <https://ravikirans.com/az-204-azure-exam-study-guide/>
- <https://www.examttopics.com/exams/microsoft/az-204/>
- <http://itexams.com/exam/AZ-204>