NO.1 You need to implement the bindings for the CheckUserContent function.
How should you complete the code segment? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.

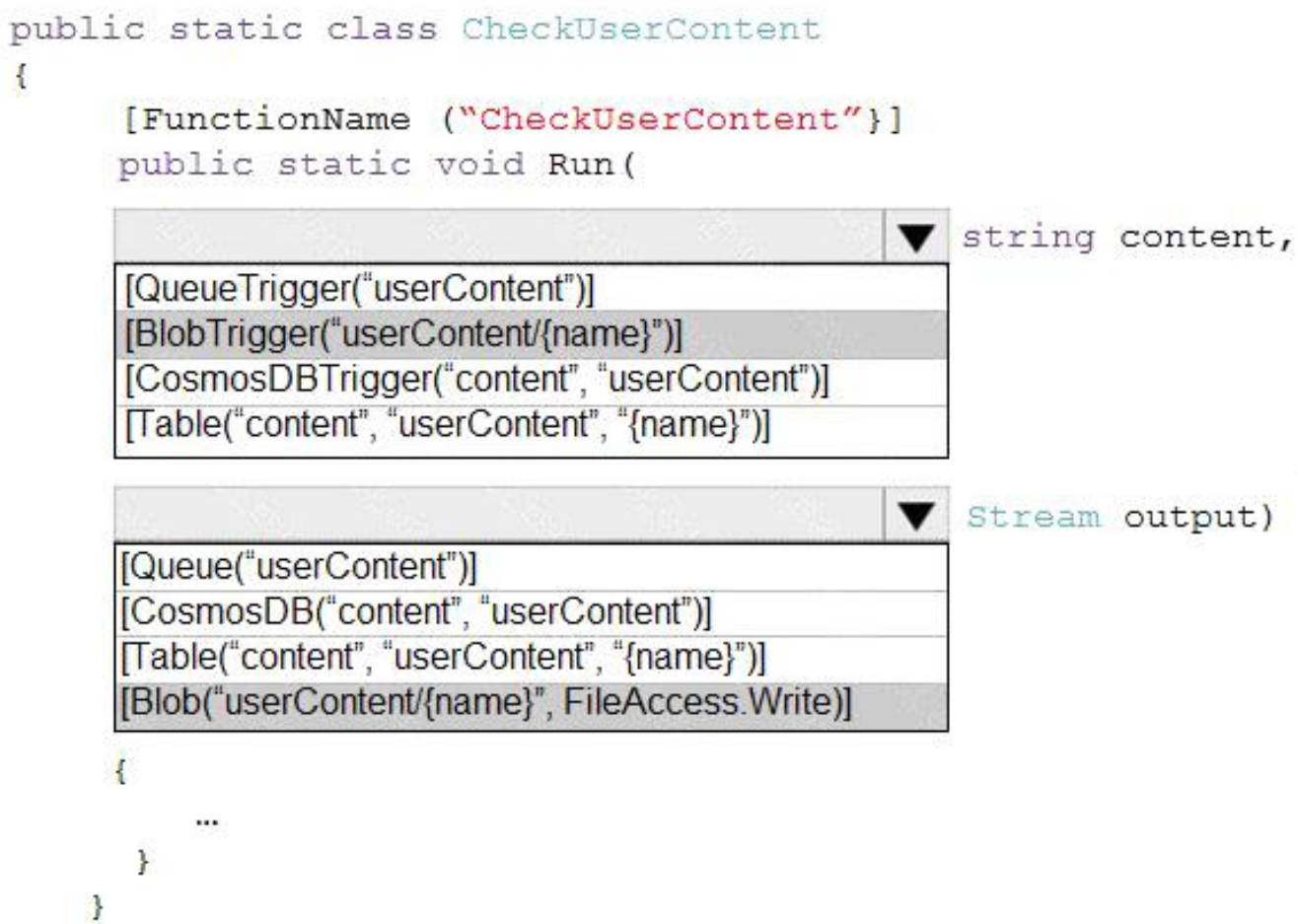
```
public static class CheckUserContent
{
    [FunctionName ("CheckUserContent")]
    public static void Run(
        [QueueTrigger("userContent")]
        [BlobTrigger("userContent/{name}")]
        [CosmosDBTrigger("content", "userContent")]
        [Table("content", "userContent", "{name}")]
        string content,
        [Queue("userContent")]
        [CosmosDB("content", "userContent")]
        [Table("content", "userContent", "{name}")]
        [Blob("userContent/{name}", FileAccess.Write)]
        Stream output)
    {
        ...
    }
}
```

Answer:

```
public static class CheckUserContent
{
      [FunctionName ("CheckUserContent")]
      public static void Run(
            [QueueTrigger("userContent")]
            [BlobTrigger("userContent/{name}")]
            [CosmosDBTrigger("content", "userContent")]
            [Table("content", "userContent", "{name}")]
            string content,

            [Queue("userContent")]
            [CosmosDB("content", "userContent")]
            [Table("content", "userContent", "{name}")]
            [Blob("userContent/{name}", FileAccess.Write)]
            Stream output)
      {
            ...
      }
}
```

Explanation



Box 1: [BlobTrigger(..)]
Box 2: [Blob(..)]
Azure Blob storage output binding for Azure Functions. The output binding allows you to modify and delete blob storage data in an Azure Function.
The attribute's constructor takes the path to the blob and a FileAccess parameter indicating read or write, as shown in the following example:
[FunctionName("ResizeImage")]
public static void Run(
[BlobTrigger("sample-images/{name}")] Stream image,
[Blob("sample-images-md/{name}", FileAccess.Write)] Stream imageSmall)
{
}
Scenario: You must create an Azure Function named CheckUserContent to perform the content checks.
The company's data science group built ContentAnalysisService which accepts user generated content as a string and returns a probable value for inappropriate content. Any values over a specific threshold must be reviewed by an employee of Contoso, Ltd.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-output
Topic 1, Contoso, Ltd
Case study
This is a case study.Case studies are not timed separately. You can use as much exam time as you would like to complete each case.However, there may be additional case studies and sections on this

exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
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To display the first question in this case study, click theNextbutton. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click theQuestionbutton to return to the question.
Background
Overview
You are a developer for Contoso, Ltd. The company has a social networking website that is developed as a Single Page Application (SPA). The main web application for the social networking website loads user uploaded content from blob storage.
You are developing a solution to monitor uploaded data for inappropriate content. The following process occurs when users upload content by using the SPA:
* Messages are sent to ContentUploadService.
* Content is processed by ContentAnalysisService.
* After processing is complete, the content is posted to the social network or a rejection message is posted in its place.
The ContentAnalysisService is deployed with Azure Container Instances from a private Azure Container Registry named contosoimages.
The solution will use eight CPU cores.
Azure Active Directory
Contoso, Ltd. uses Azure Active Directory (Azure AD) for both internal and guest accounts.
Requirements
ContentAnalysisService
The company's data science group built ContentAnalysisService which accepts user generated content as a string and returns a probable value for inappropriate content. Any values over a specific threshold must be reviewed by an employee of Contoso, Ltd.
You must create an Azure Function named CheckUserContent to perform the content checks.
Costs
You must minimize costs for all Azure services.
Manual review
To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using React and all pages and API endpoints require authentication.
In order to review content a user must be part of a ContentReviewer role. All completed reviews must include the reviewer's email address for auditing purposes.
High availability
All services must run in multiple regions. The failure of any service in a region must not impact overall

application availability.
Monitoring
An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU cores.
Security
You have the following security requirements:
* Any web service accessible over the Internet must be protected from cross site scripting attacks.
* All websites and services must use SSL from a valid root certificate authority.
* Azure Storage access keys must only be stored in memory and must be available only to the service .
* All Internal services must only be accessible from internal Virtual Networks (VNets).
* All parts of the system must support inbound and outbound traffic restrictions.
* All service calls must be authenticated by using Azure AD.
User agreements
When a user submits content, they must agree to a user agreement. The agreement allows employees of Contoso, Ltd. to review content, store cookies on user devices, and track user's IP addresses.
Information regarding agreements is used by multiple divisions within Contoso, Ltd.
User responses must not be lost and must be available to all parties regardless of individual service uptime.
The volume of agreements is expected to be in the millions per hour.
Validation testing
When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version to verify that the new version does not significantly deviate from the old version.
Issues
Users of the ContentUploadService report that they occasionally see HTTP 502 responses on specific pages.
Code
ContentUploadService

```
CS01 apiVersion: '2018-10-01'
CS02 type: Microsoft.ContainerInstance/containerGroups
CS03 location: westus
CS04 name: contentUploadService
CS05 properties:
CS06      containers:
CS07      - name: service
CS08          properties:
CS09          image: contoso/contentUploadService:latest
CS10          ports:
CS11          -  port: 80
CS12             protocol: TCP
CS13          resources:
CS14            requests:
CS15               cpu: 1.0
CS16               memoryInGB: 1.5
CS17
CS18 ipAddress:
CS19      ip: 10.23.121.112
CS20      ports:
CS21        - port: 80
CS22          protocol: TCP
CS23
CS24
CS25 networkProfile:
CS26
id: /subscriptions/98...19/resourceGroups/container/providers/Microsoft.Network/networkProfiles/subnet
```

```
AM01 {
AM02       "id" : "2b079f03-9b06-2d44-98bb-e9182901fcb6",
AM03       "appId" : "7118a7f0-b5c2-4c9d-833c-3d711396fe65",
AM04
AM05       "createdDateTime" : "2019-12-24T06:01:44Z",
AM06       "logoUrl" : null,
AM07       "logoutUrl" : null,
AM08       "name" : "ContentAnalysisService",
AM09
AM10
AM11       "orgRestrictions" : [],
AM12       "parentalControlSettings" : {
AM13         "countriesBlockedForMinors" : [],
AM14           "legalAgeGroupRule" : "Allow"
AM15       },
AM16       "passwordCredentials" : []
AM17 }
```

NO.2 You need to store the user agreements.
Where should you store the agreement after it is completed?

A. Azure Storage queue

B. Azure Event Hub

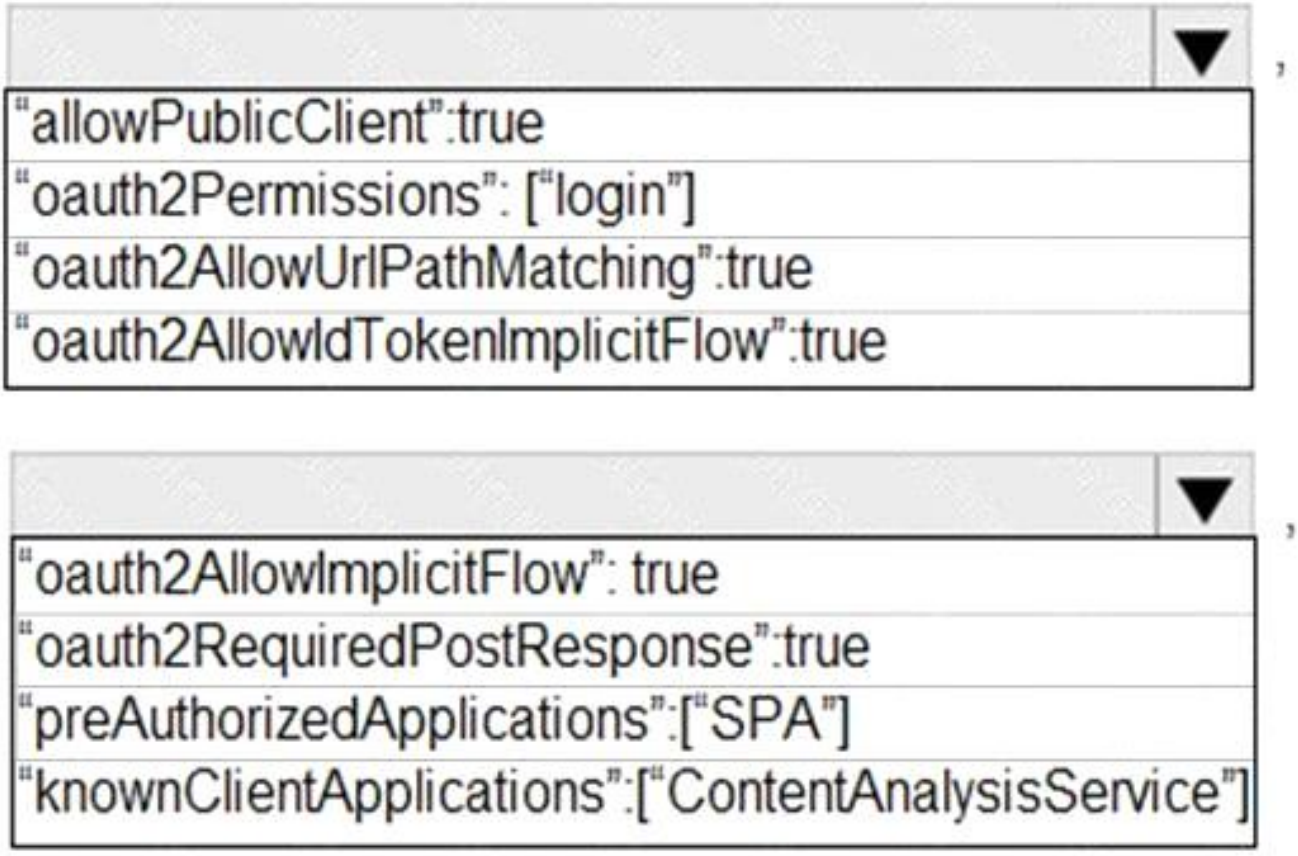
C. Azure Service Bus topic

D. Azure Event Grid topic

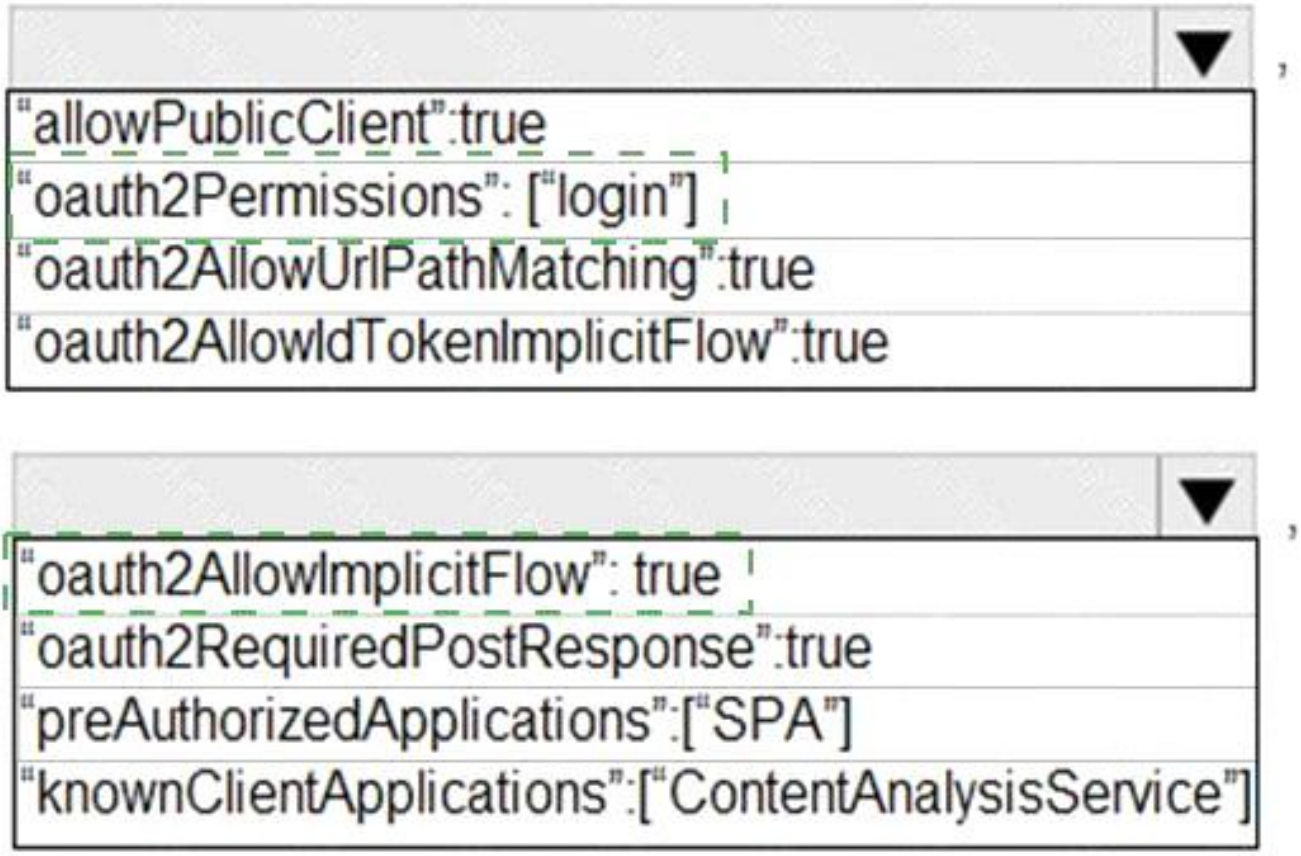
Answer: B

Explanation
Azure Event Hub is used for telemetry and distributed data streaming.
This service provides a single solution that enables rapid data retrieval for real-time processing as well as repeated replay of stored raw data. It can capture the streaming data into a file for processing and analysis.
It has the following characteristics:
* low latency
* capable of receiving and processing millions of events per second
* at least once delivery
Reference:
https://docs.microsoft.com/en-us/azure/event-grid/compare-messaging-services

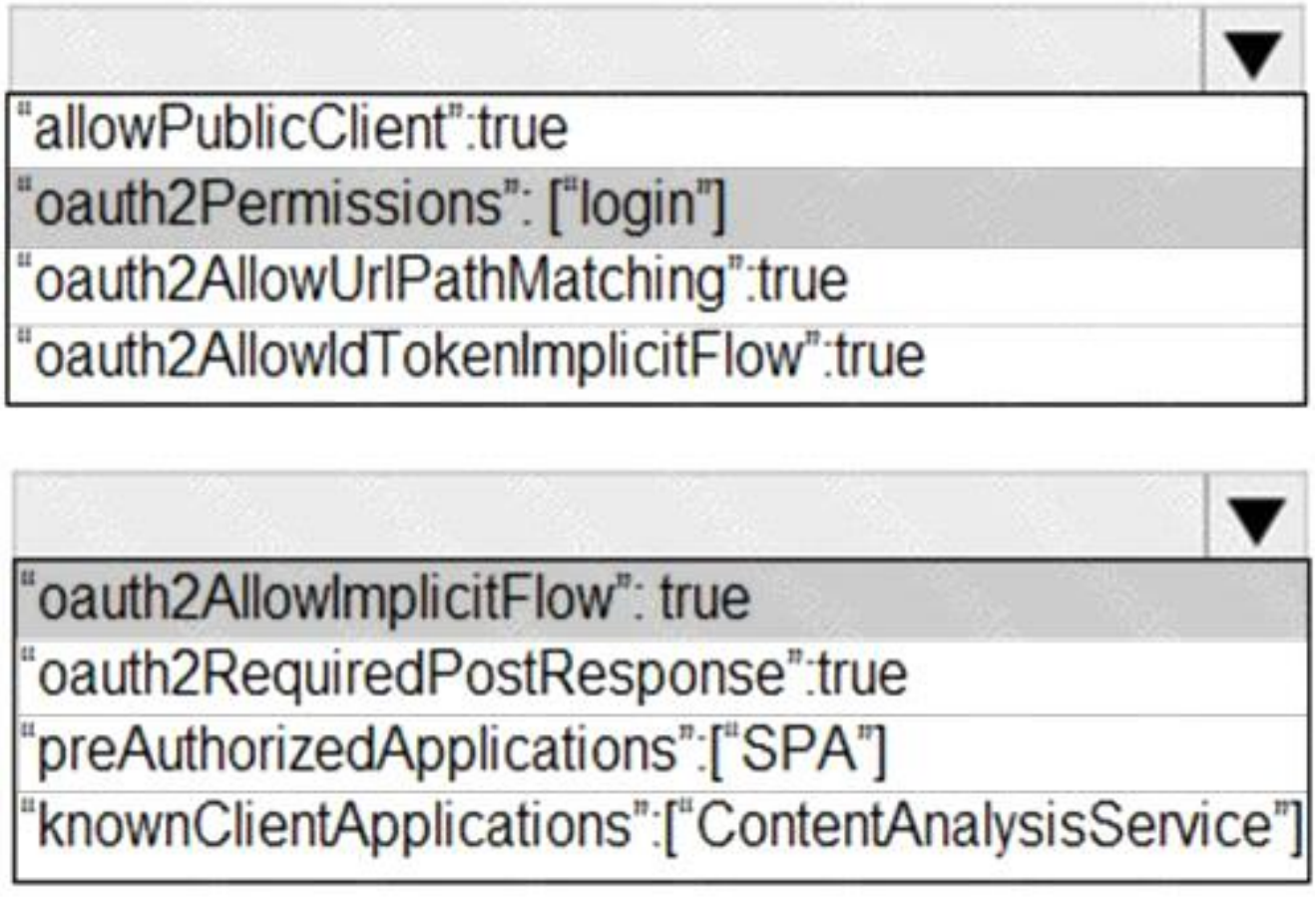
NO.3 You need to add code at line AM09 to ensure that users can review content using ContentAnalysisService.
How should you complete the code? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.



Answer:



Explanation



Box 1: "oauth2Permissions": ["login"]

oauth2Permissions specifies the collection of OAuth 2.0 permission scopes that the web API (resource) app exposes to client apps. These permission scopes may be granted to client apps during consent.
Box 2: "oauth2AllowImplicitFlow":true
For applications (Angular, Ember.js, React.js, and so on), Microsoft identity platform supports the OAuth 2.0 Implicit Grant flow.
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/develop/reference-app-manifest

NO.4 You need to configure the ContentUploadService deployment.
Which two actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.
A. Add the following markup to line CS23:
types: Private
B. Add the following markup to line CS24:
osType: Windows
C. Add the following markup to line CS24:
osType: Linux
D. Add the following markup to line CS23:
types: Public
Answer: C
Explanation
Scenario: All Internal services must only be accessible from Internal Virtual Networks (VNets) There are three Network Location types - Private, Public and Domain Reference:
https://devblogs.microsoft.com/powershell/setting-network-location-to-private/

NO.5 You need to investigate the http server log output to resolve the issue with the ContentUploadService.
Which command should you use first?
A. az webapp log
B. az ams live-output
C. az monitor activity-log
D. az container attach
Answer: C
Explanation
Scenario: Users of the ContentUploadService report that they occasionally see HTTP 502 responses on specific pages.
"502 bad gateway" and "503 service unavailable" are common errors in your app hosted in Azure App Service.
Microsoft Azure publicizes each time there is a service interruption or performance degradation.
The az monitor activity-log command manages activity logs.
Note: Troubleshooting can be divided into three distinct tasks, in sequential order:
* Observe and monitor application behavior
* Collect data
* Mitigate the issue

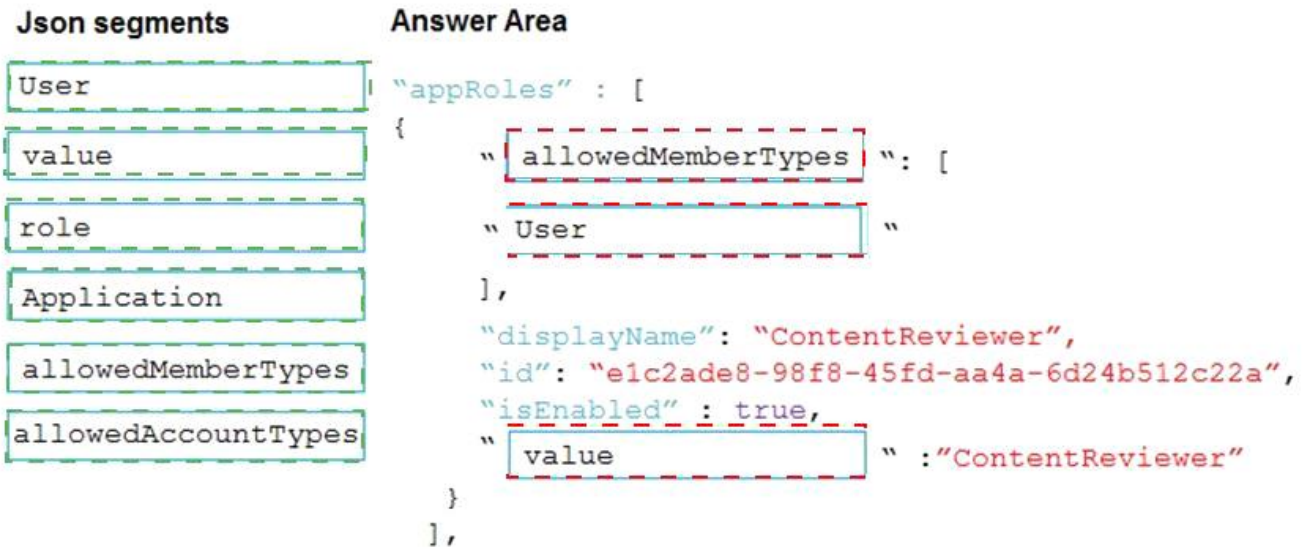
Reference:
https://docs.microsoft.com/en-us/cli/azure/monitor/activity-log

NO.6 You need to deploy the CheckUserContent Azure function. The solution must meet the security and cost requirements.
Which hosting model should you use?
A. Consumption plan
B. Premium plan
C. App Service plan
Answer: C

NO.7 You need to monitor ContentUploadService accourding to the requirements.
Which command should you use?
A. az monitor metrics alert create -n alert -g ... - -scopes ... - -condition "avg Percentage CPU > 8"
B. az monitor metrics alert create -n alert -g ... - -scopes ... - -condition "avg Percentage CPU > 800"
C. az monitor metrics alert create -n alert -g ... - -scopes ... - -condition "CPU Usage > 800"
D. az monitor metrics alert create -n alert -g ... - -scopes ... - -condition "CPU Usage > 8"
Answer: B
Explanation
Scenario: An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU-cores Reference:
https://docs.microsoft.com/sv-se/cli/azure/monitor/metrics/alert

NO.8 You need to add markup at line AM04 to implement the ContentReview role.
How should you complete the markup? To answer, drag the appropriate json segments to the correct locations.
Each json segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.
NOTE:Each correct selection is worth one point.

Answer:

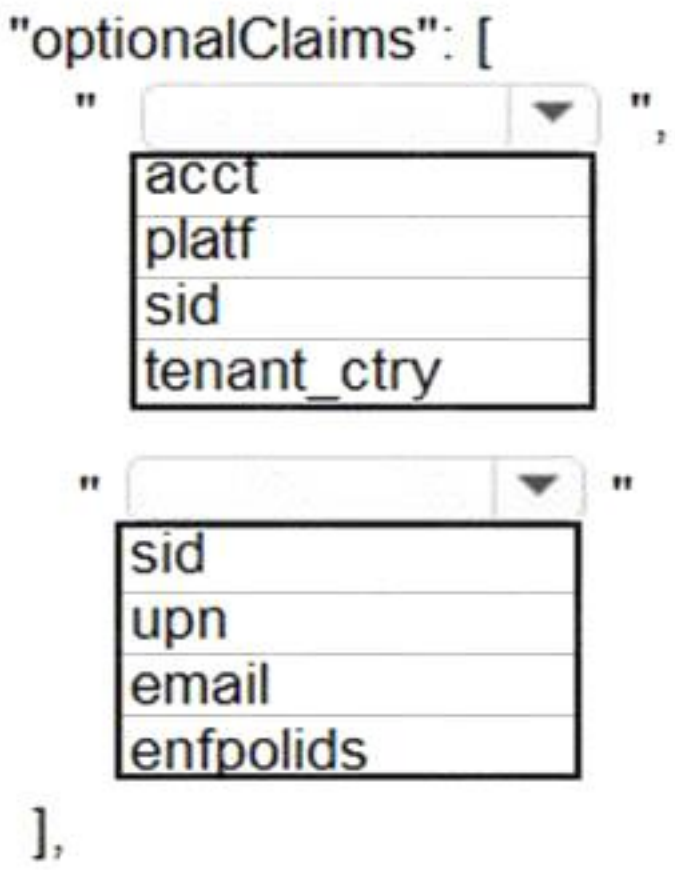


Explanation

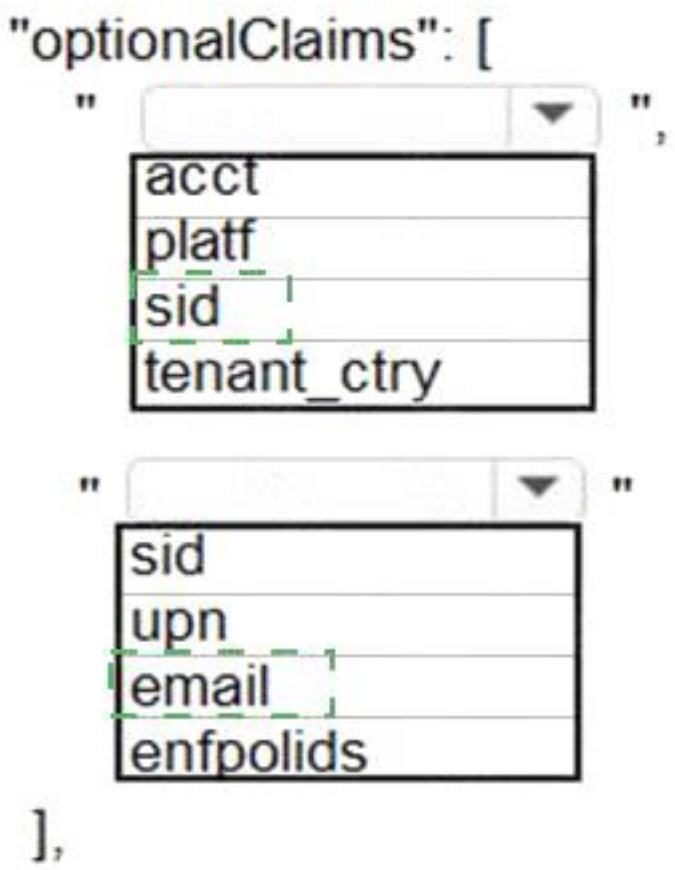
Box 1: allowedMemberTypes
allowedMemberTypes specifies whether this app role definition can be assigned to users and groups by setting to "User", or to other applications (that are accessing this application in daemon service scenarios) by setting to "Application", or to both.
Note: The following example shows the appRoles that you can assign to users.
"appId": "8763f1c4-f988-489c-a51e-158e9ef97d6a",
"appRoles": [
{
"allowedMemberTypes": [
"User"
],
"displayName": "Writer",
"id": "d1c2ade8-98f8-45fd-aa4a-6d06b947c66f",
"isEnabled": true,

"description": "Writers Have the ability to create tasks.",
"value": "Writer"
}
],
"availableToOtherTenants": false,
Box 2: User
Scenario: In order to review content a user must be part of a ContentReviewer role.
Box 3: value
value specifies the value which will be included in the roles claim in authentication and access tokens.
Reference:
https://docs.microsoft.com/en-us/graph/api/resources/approle

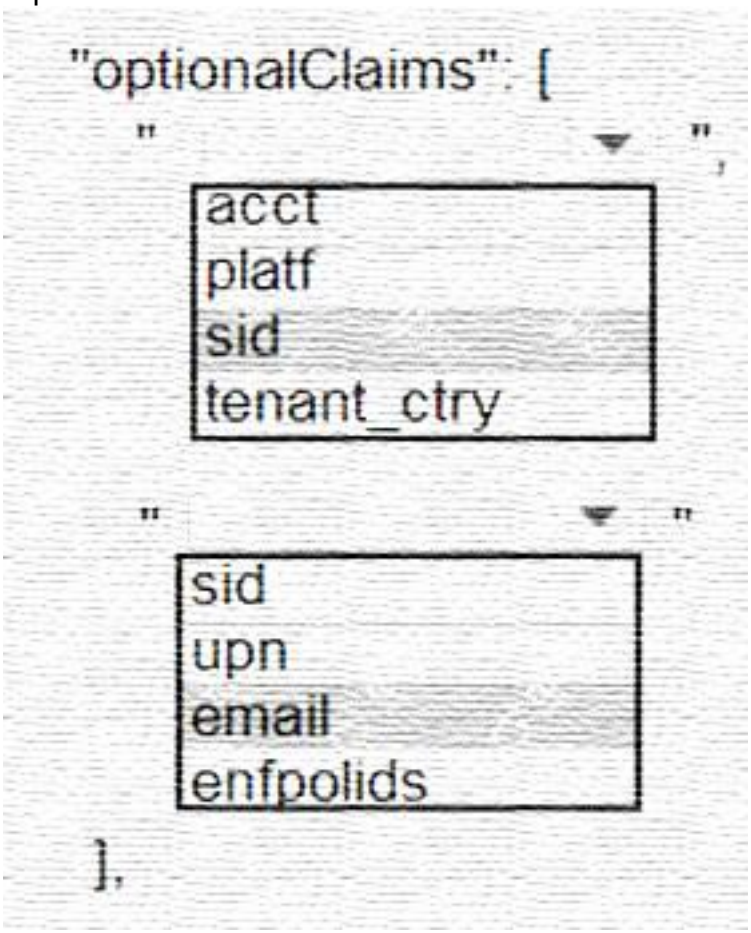
NO.9 You need to add code at line AM10 of the application manifest to ensure that the requirement for manually reviewing content can be met.
How should you complete the code? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.



Answer:



Explanation

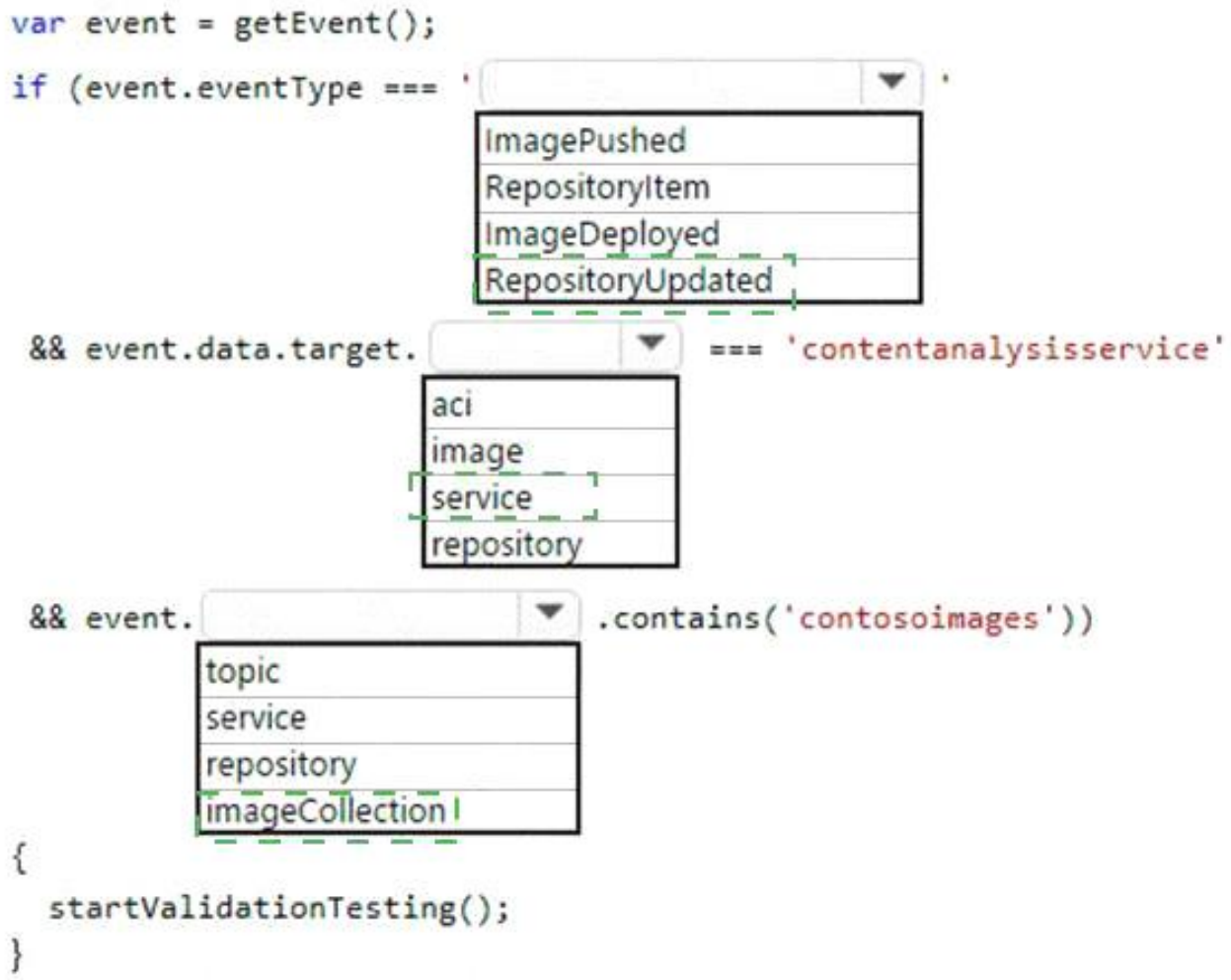


Box 1: sid
Sid: Session ID, used for per-session user sign-out. Personal and Azure AD accounts.
Scenario: Manual review
To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using React and all pages and API endpoints require authentication.
In order to review content a user must be part of a ContentReviewer role.
Box 2: email
Scenario: All completed reviews must include the reviewer's email address for auditing purposes.

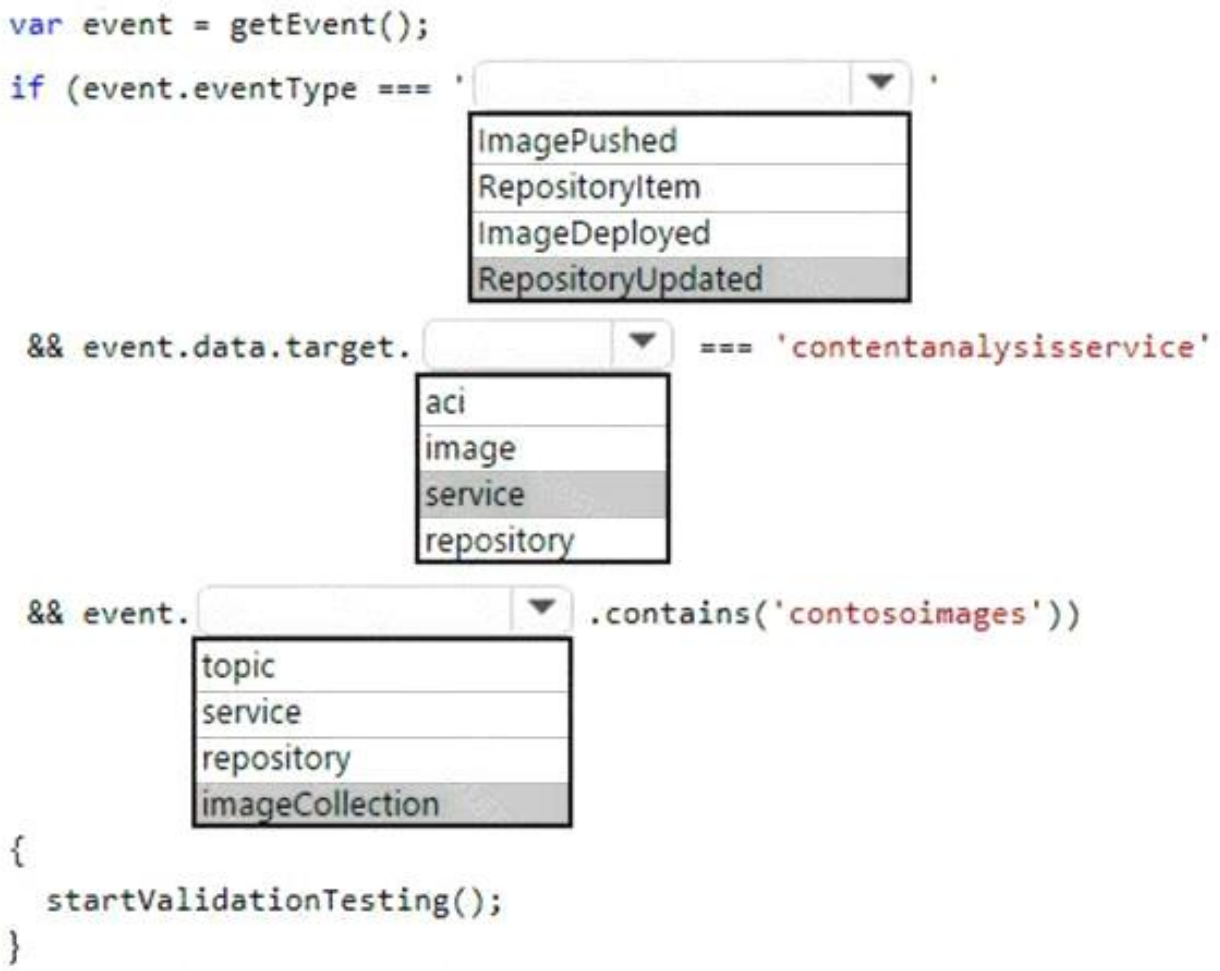
NO.10 You need to ensure that validation testing is triggered per the requirements.
How should you complete the code segment? To answer, select the appropriate values in the answer area.
NOTE:Each correct selection is worth one point.

```
var event = getEvent();
if (event.eventType === '                    '
                         ImagePushed
                         RepositoryItem
                         ImageDeployed
                         RepositoryUpdated
 && event.data.target.                       === 'contentanalysisservice'
                         aci
                         image
                         service
                         repository
 && event.                    .contains('contosoimages'))
                         topic
                         service
                         repository
                         imageCollection
{
  startValidationTesting();
}
```

Answer:

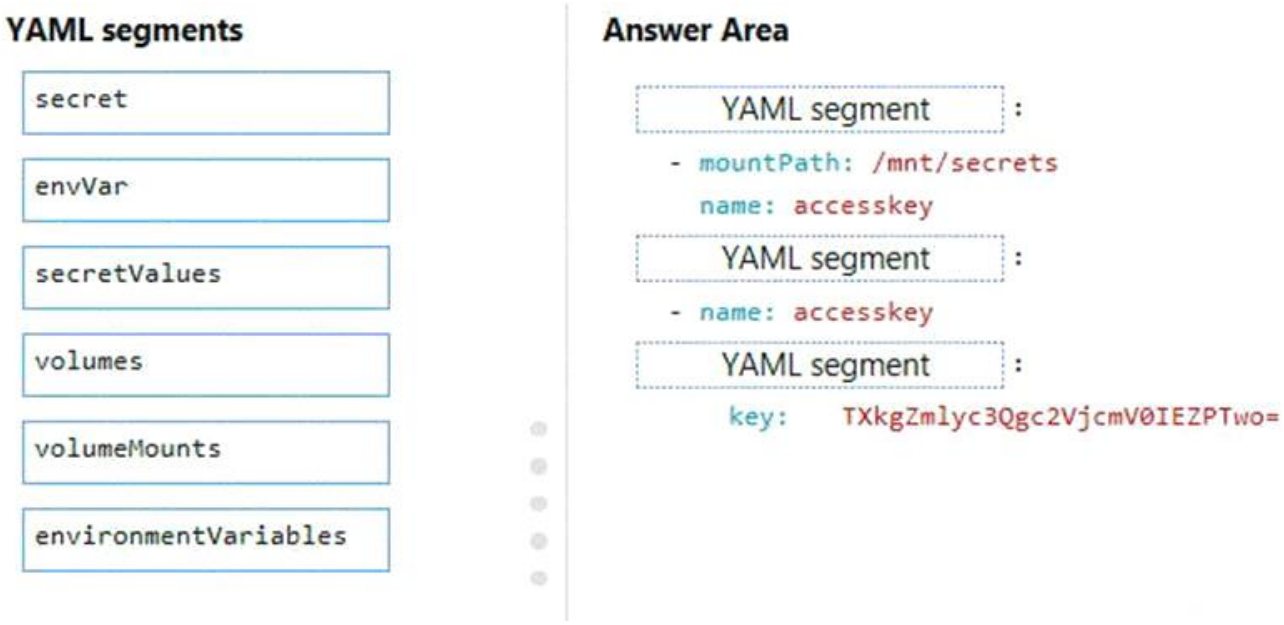


Explanation

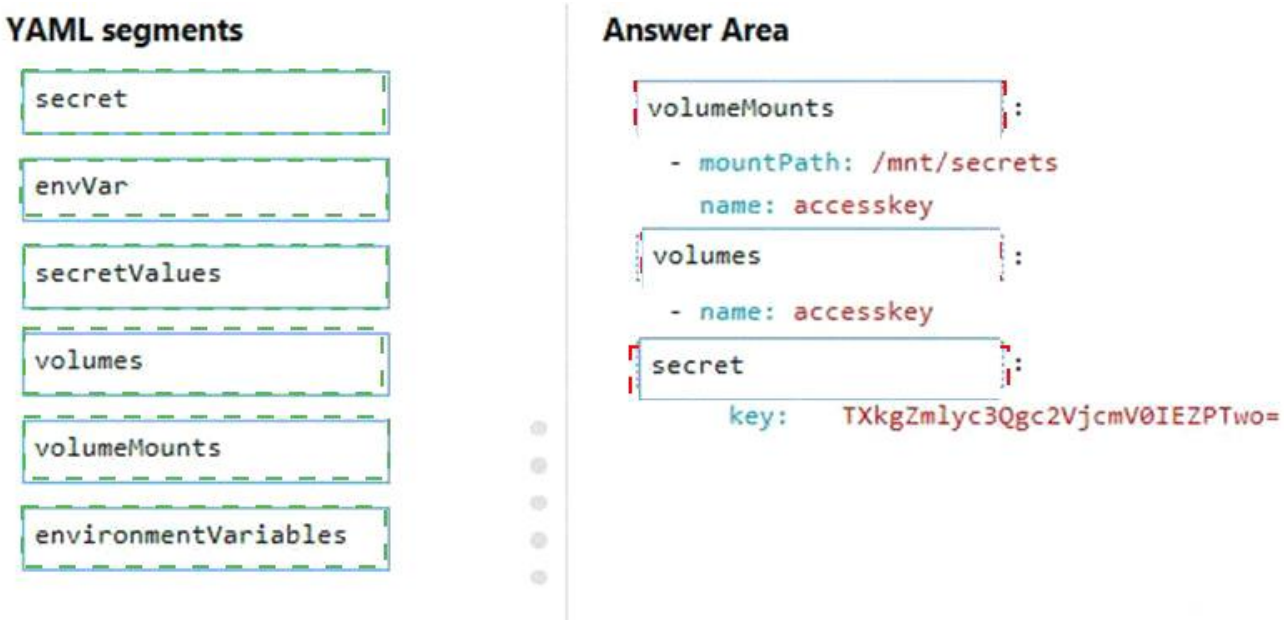


Box 1: RepositoryUpdated
When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version to verify that the new version does not significantly deviate from the old version.
Box 2: service
Box 3: imageCollection
Reference:
https://docs.microsoft.com/en-us/azure/devops/notifications/oob-supported-event-types

NO.11 You need to add YAML markup at line CS17 to ensure that the ContentUploadService can access Azure Storage access keys.
How should you complete the YAML markup? To answer, drag the appropriate YAML segments to the correct locations. Each YAML segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.
NOTE:Each correct selection is worth one point.



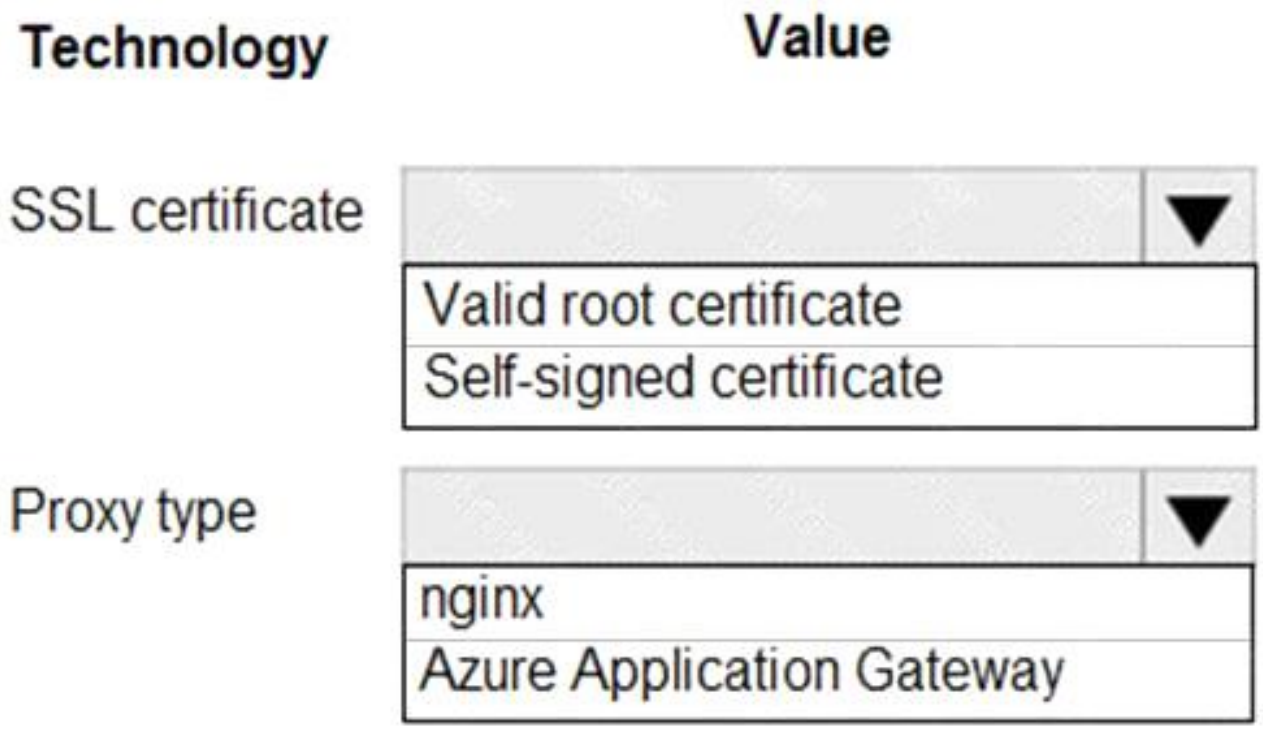
Answer:



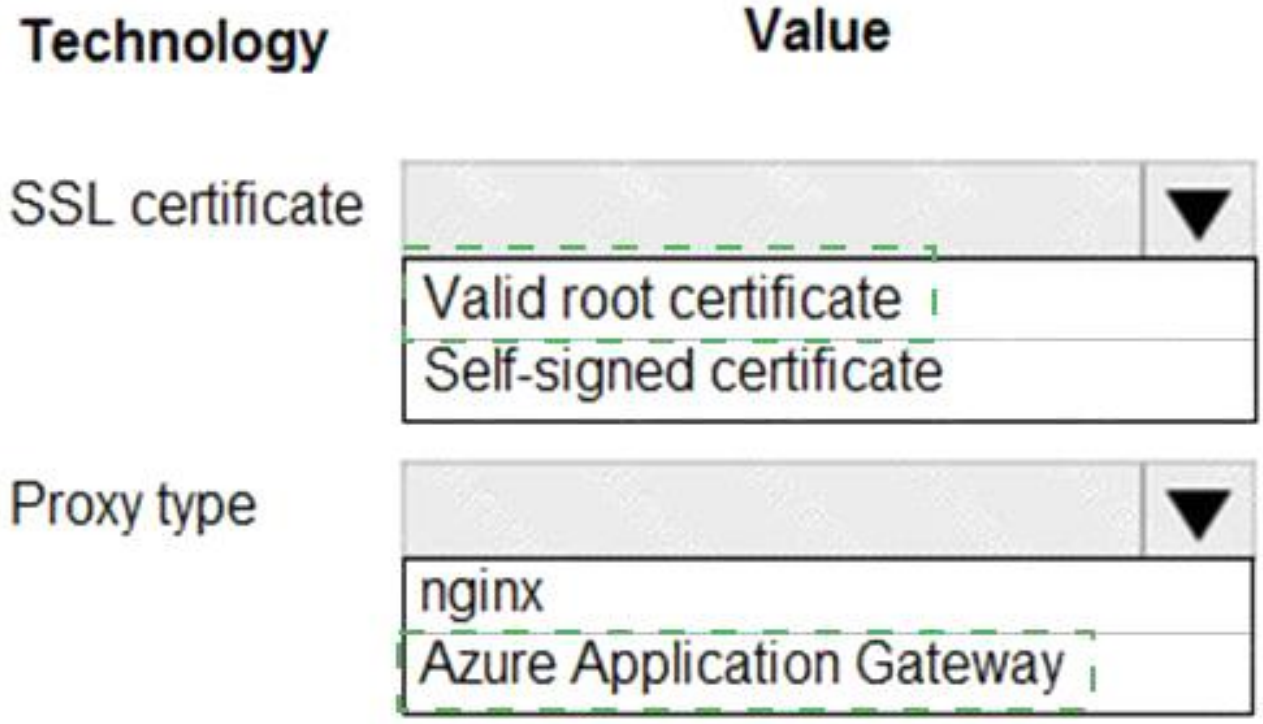
Explanation

Box 1: volumeMounts
Example:
volumeMounts:
- mountPath: /mnt/secrets
name: secretvolume1
volumes:
- name: secretvolume1
secret:
mysecret1: TXkgZmlyc3Qgc2VjcmV0IEZPTwo=
Box 2: volumes
Box 3: secret
Reference:
https://docs.microsoft.com/en-us/azure/container-instances/container-instances-volume-secret

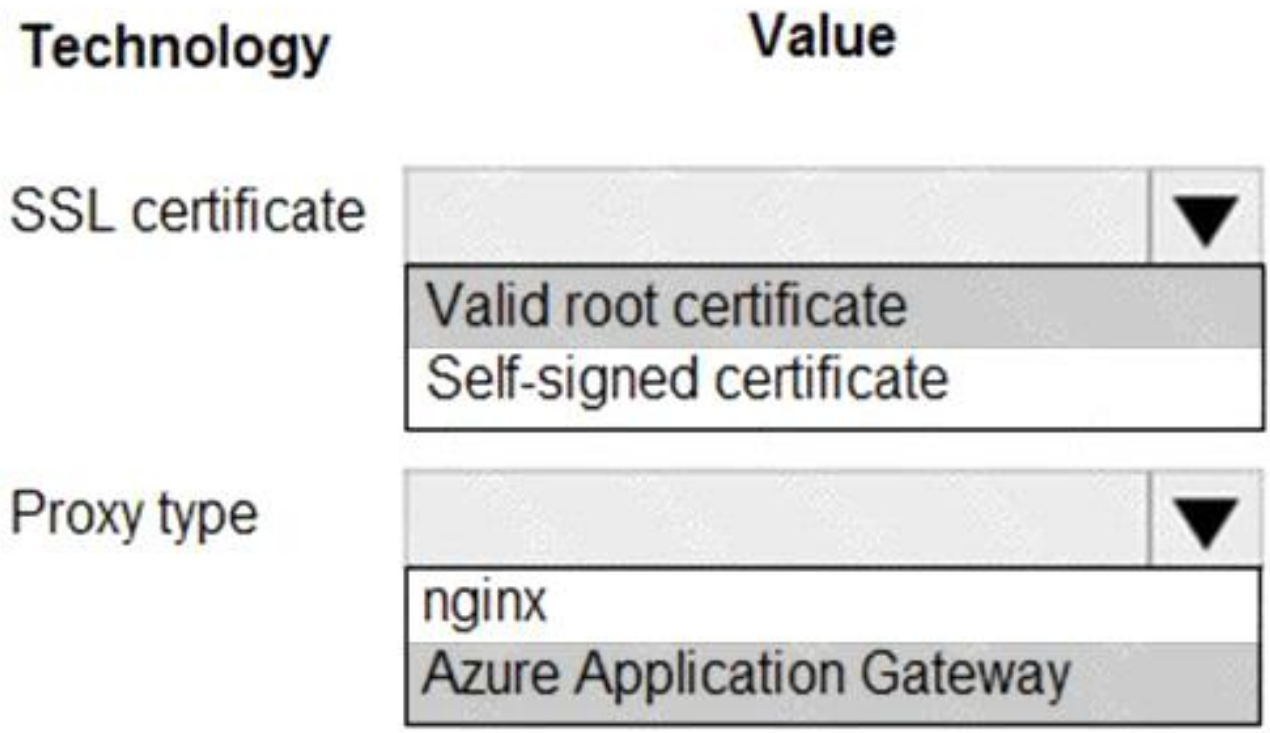
NO.12 You need to ensure that network security policies are met.
How should you configure network security? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.



Answer:



Explanation



Box 1: Valid root certificate
Scenario: All websites and services must use SSL from a valid root certificate authority.
Box 2: Azure Application Gateway
Scenario:
* Any web service accessible over the Internet must be protected from cross site scripting attacks.
* All Internal services must only be accessible from Internal Virtual Networks (VNets)
* All parts of the system must support inbound and outbound traffic restrictions.
Azure Web Application Firewall (WAF) on Azure Application Gateway provides centralized protection of your web applications from common exploits and vulnerabilities. Webapplications are increasingly targeted by malicious attacks that exploit commonly known vulnerabilities. SQL injection and cross-site scripting are among the most common attacks.
Application Gateway supports autoscaling, SSL offloading, and end-to-end SSL, a web application firewall (WAF), cookie-based session affinity, URL path-based routing, multisite hosting, redirection, rewrite HTTP headers and other features.
Note: Both Nginx and Azure Application Gateway act as a reverse proxy with Layer 7 loadbalancing features plus a WAF to ensure strong protection against common web vulnerabilities and exploits.
You can modify Nginx web server configuration/SSL for X-XSS protection. This helps to prevent cross-site scripting exploits by forcing the injection of HTTP headers with X-XSS protection.
Reference:
https://docs.microsoft.com/en-us/azure/web-application-firewall/ag/ag-overview
https://www.upguard.com/articles/10-tips-for-securing-your-nginx-deployment
Topic 2, Windows Server 2016 virtual machine
Case study
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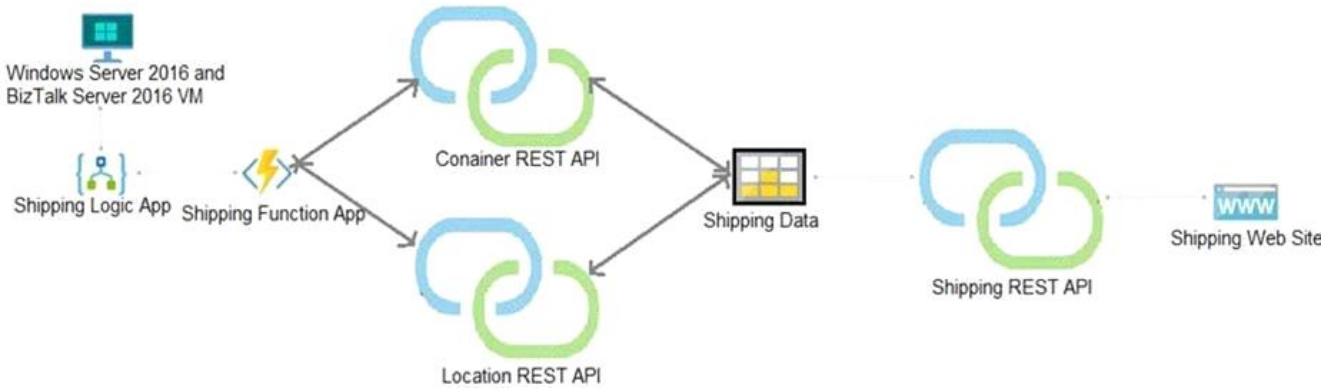
Current environment
Windows Server 2016 virtual machine
The virtual machine (VM) runs BizTalk Server 2016. The VM runs the following workflows:
* Ocean Transport - This workflow gathers and validates container information including container contents and arrival notices at various shipping ports.
* Inland 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.

Shipping website and REST APIs

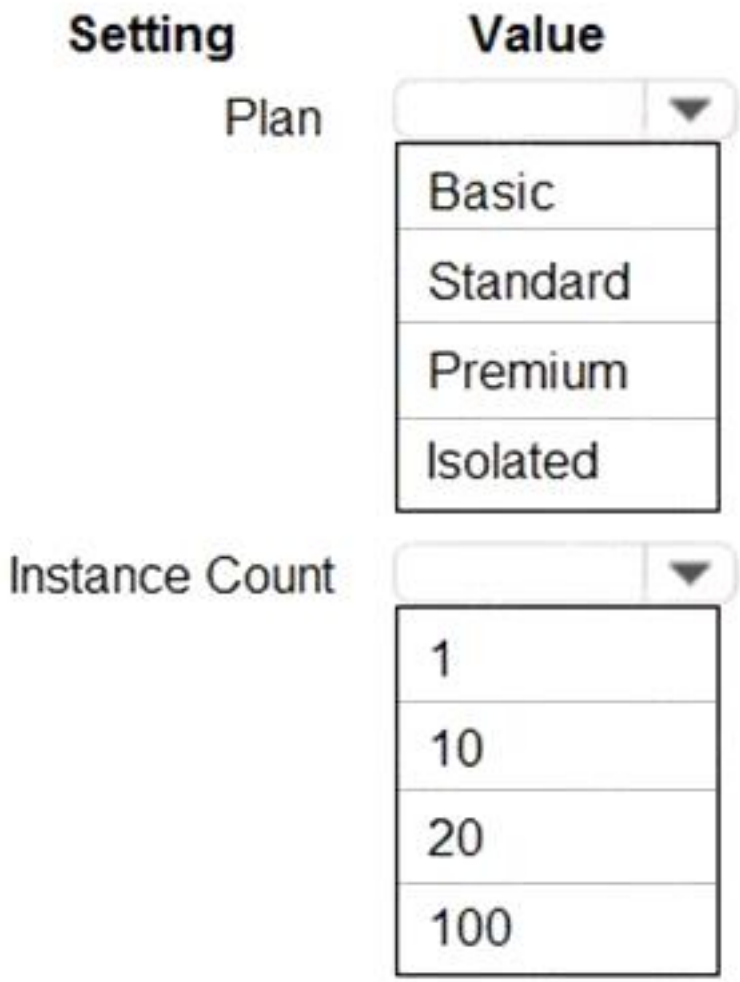
The following error message displays while you are testing the website:

Failed to load http://test-shippingapi.wideworldimporters.com/: No 'Access-Control-Allow-Origin' header is present on the requested resource. Origin 'http://test.wideworldimporters.com/' is therefore not allowed access.

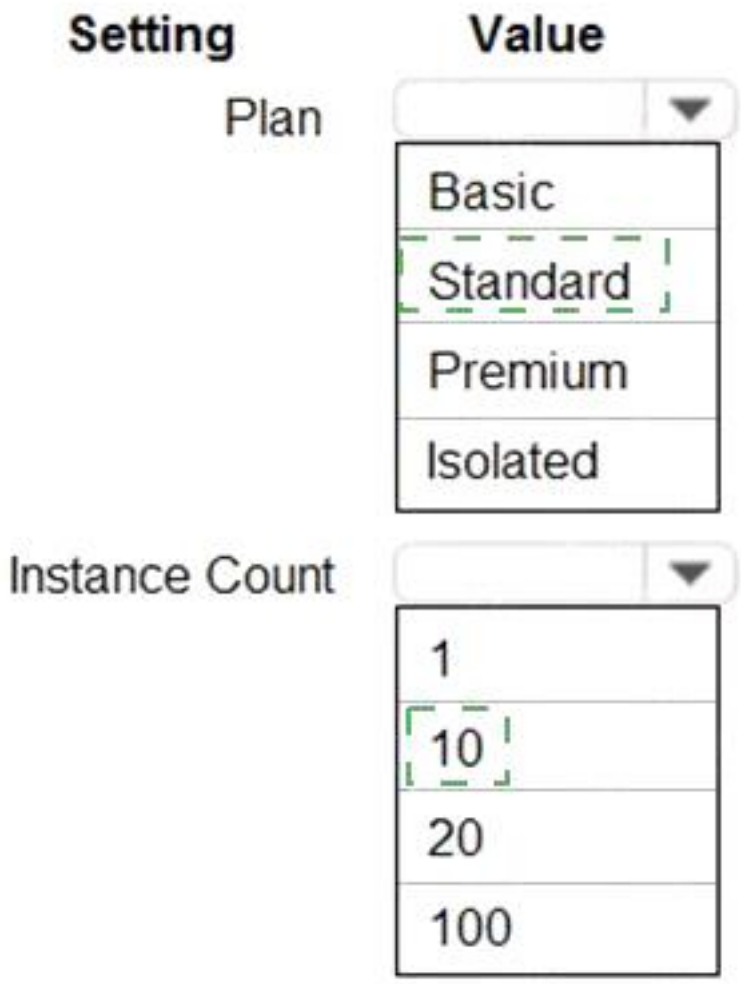
NO.13 You need to secure the Shipping Logic App.
What should you use?
A. Azure App Service Environment (ASE)
B. Azure AD B2B integration
C. Integration Service Environment (ISE)
D. VNet service endpoint
Answer: C
Explanation
Scenario: The Shipping Logic App requires secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.
You can access to Azure Virtual Network resources from Azure Logic Apps by using integration service environments (ISEs).
Sometimes, your logic apps and integration accounts need access to secured resources, such as virtual machines (VMs) and other systems or services, that are inside an Azure virtual network. To set up this access, you can create an integration service environment (ISE) where you can run your logic apps and create your integration accounts.
References:
https://docs.microsoft.com/en-us/azure/logic-apps/connect-virtual-network-vnet-isolated-environment-overview

NO.14 Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.
After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.
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 Storage Queue from the mobile application. Create an Azure Function App that uses an Azure Storage Queue trigger.
Does the solution meet the goal?
A. Yes
B. No
Answer: A

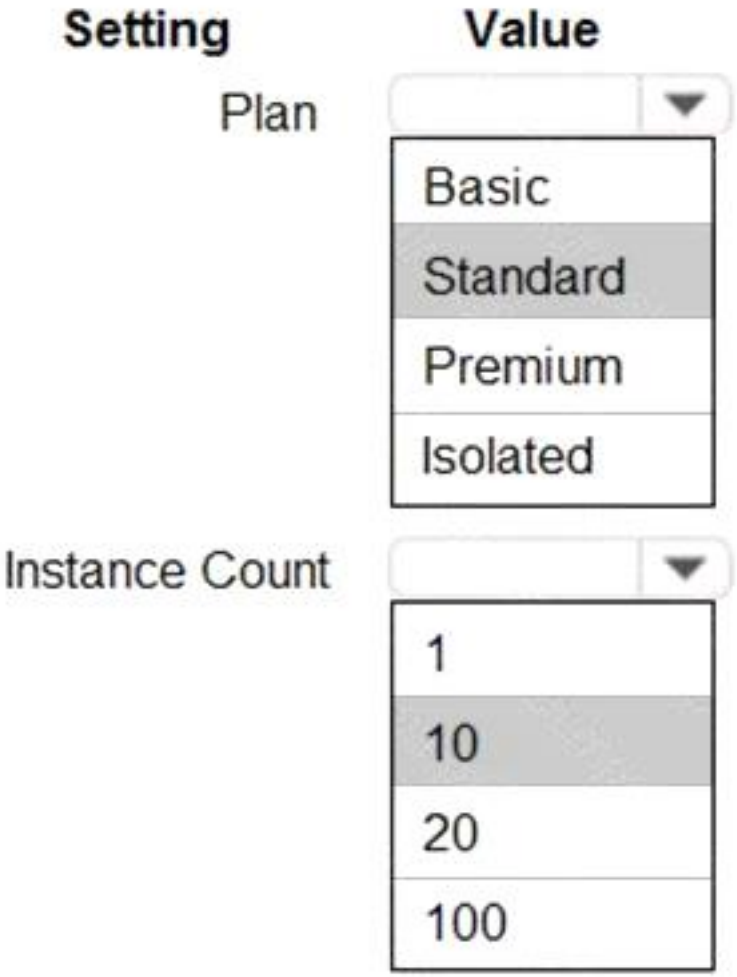
NO.15 You need to configure Azure App Service to support the REST API requirements.
Which values should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.


Setting
Value
Plan
Basic
Standard
Premium
Isolated
Instance Count
1
10
20
100

Answer:



Explanation



Plan: Standard
Standard support auto-scaling
Instance Count: 10
Max instances for standard is 10.
Scenario:
The REST API's that support the solution must meet the following requirements:
* 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.
References:
https://azure.microsoft.com/en-us/pricing/details/app-service/plans/

NO.16 Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.
After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.
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?

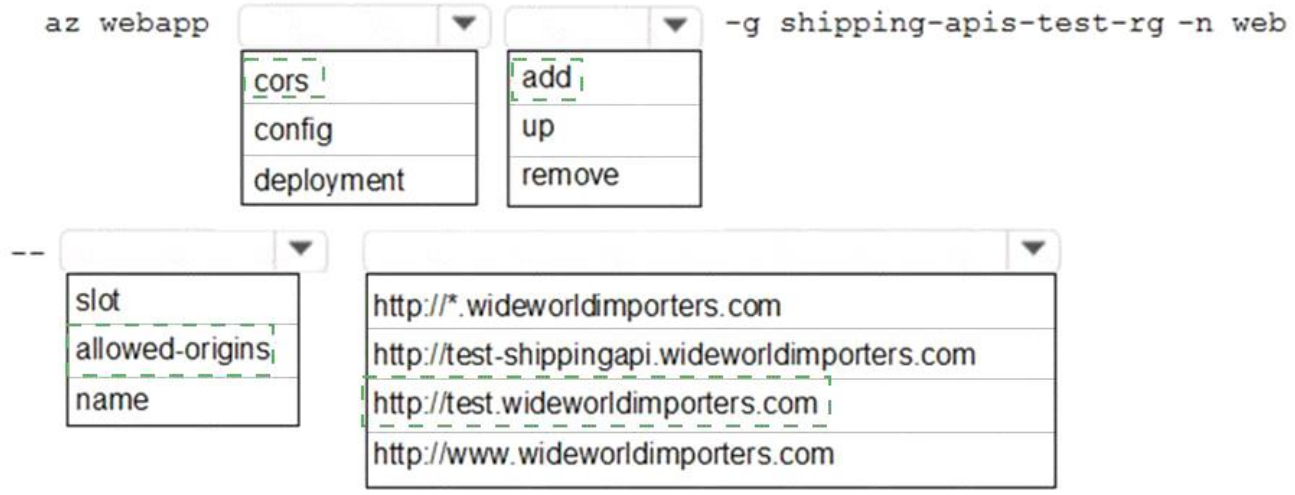
A. Yes

B. NO

Answer: B

NO.17 You need to update the APIs to resolve the testing error.
How should you complete the Azure CLI command? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Answer:



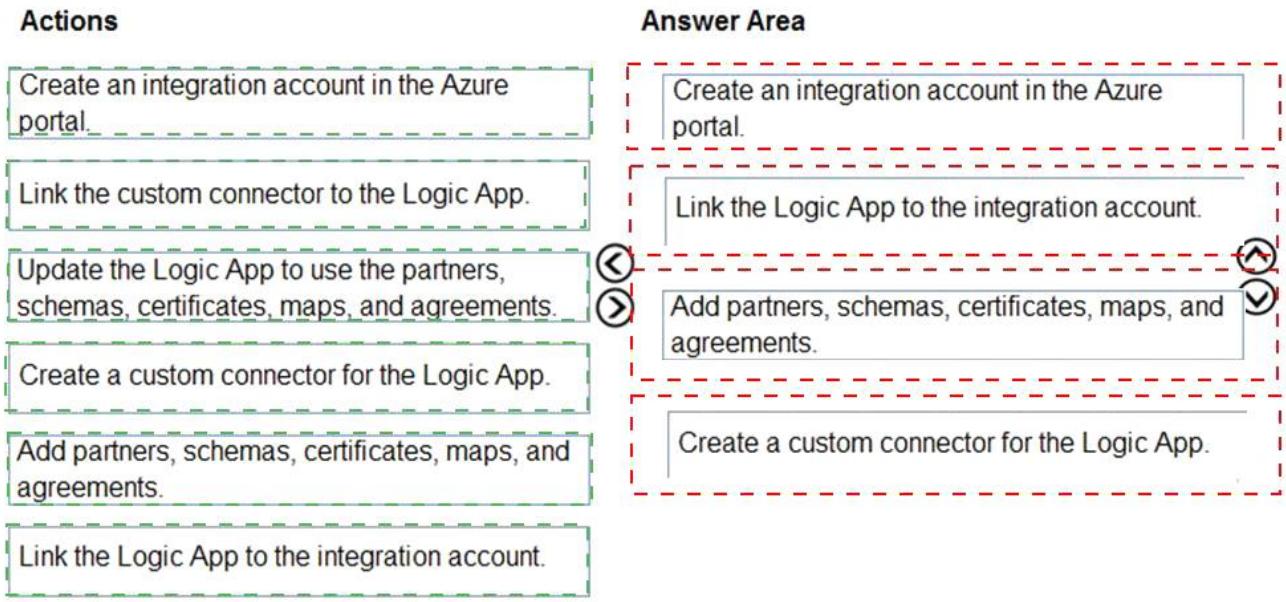
Explanation

Enable Cross-Origin Resource Sharing (CORS) on your Azure App Service Web App.
Enter the full URL of the site you want to allow to access your WEB API or * to allow all domains.
Box 1: cors
Box 2: add
Box 3: allowed-origins
Box
4: http://testwideworldimporters.com/
References:
http://donovanbr
own.com/post/How-to-clear-No-Access-Control-Allow-Origin-header-error-with-Azure-App-Service

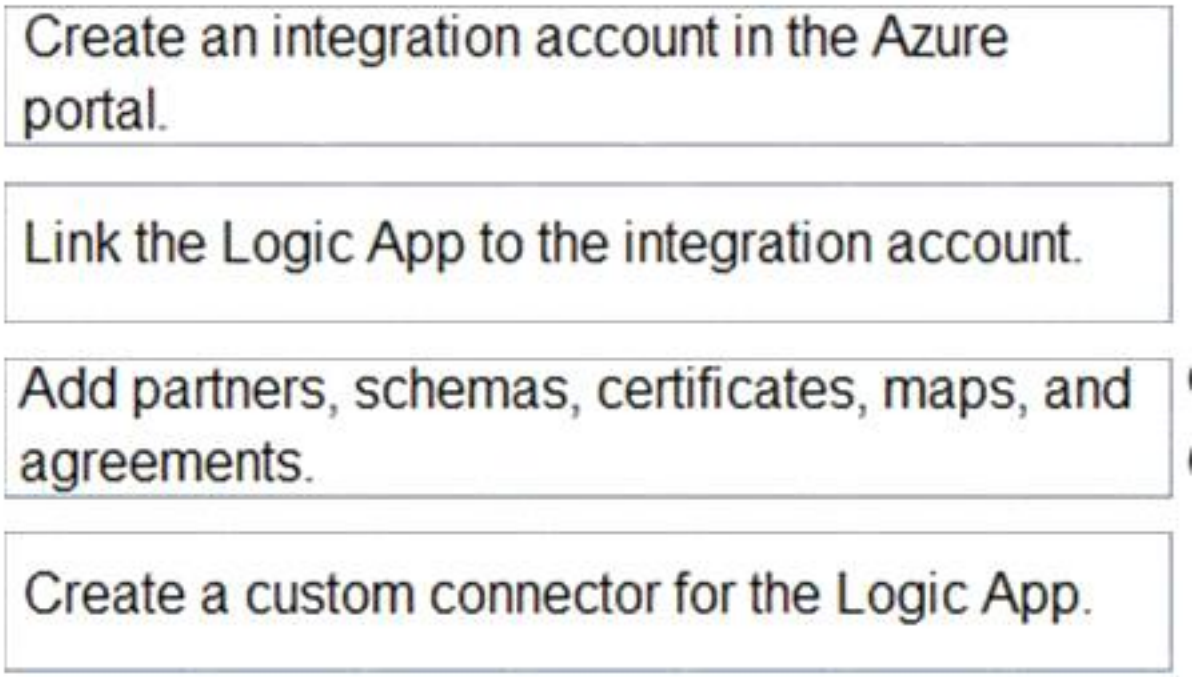
NO.18 You need to support the message processing for the ocean transport workflow.
Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions	Answer Area
Create an integration account in the Azure portal.	
Link the custom connector to the Logic App.	
Update the Logic App to use the partners, schemas, certificates, maps, and agreements.	
Create a custom connector for the Logic App.	
Add partners, schemas, certificates, maps, and agreements.	
Link the Logic App to the integration account.	

Answer:



Explanation



Step 1: Create an integration account in the Azure portal
You can define custom metadata for artifacts in integration accounts and get that metadata during runtime for your logic app to use. For example, you can provide metadata for artifacts, such as partners, agreements, schemas, and maps - all store metadata using key-value pairs.
Step 2: Link the Logic App to the integration account
A logic app that's linked to the integration account and artifact metadata you want to use.
Step 3: Add partners, schemas, certificates, maps, and agreements
Step 4: Create a custom connector for the Logic App.
References:
https://docs.microsoft.com/bs-latn-ba/azure/logic-apps/logic-apps-enterprise-integration-metadata

NO.19 You are developing an Azure Function App that generates end of day reports (or retail stores. All stores dose at 11 PM each day. Reports must be run one hour after dosing. You configure the function to use a Timer trigger that runs at midnight Customers in the Western United States Pacific Time zone (UTC - 8) report that the Azure Function runs before the stores dose. You need to ensure that the Azure Function runs at midnight in the Pacific Time zone.
What should you do?

A. Change the Timer trigger to run at 7 AM

B. Configure the Azure Function to run in the West US region.

C. Update the Azure Function to a Premium plan.

D. Add an app setting named WEBSITE_TIME_ZONE that uses the value Pacific Standard Time

Answer: B

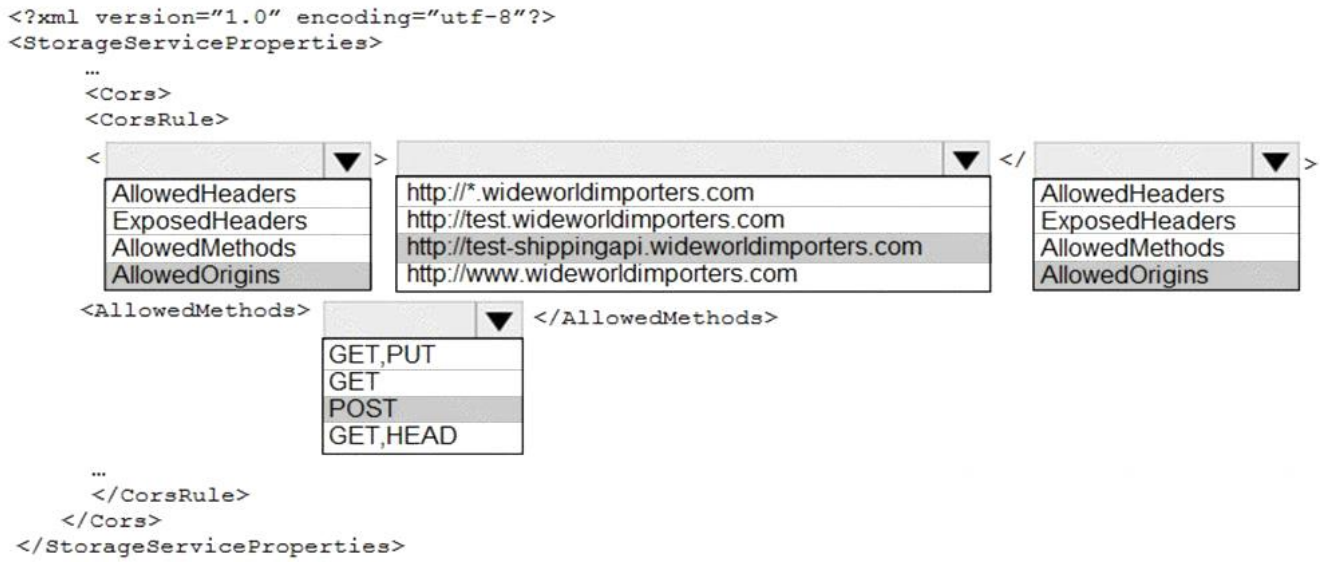
NO.20 You need to resolve the Shipping web site error.
How should you configre the Azure Table Storage service? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.

```
<?xml version="1.0" encoding="utf-8"?>
<StorageServiceProperties>
      …
      <Cors>
      <CorsRule>
      <[AllowedHeaders | ExposedHeaders | AllowedMethods | AllowedOrigins]>[http://*.wideworldimporters.com | http://test.wideworldimporters.com | http://test-shippingapi.wideworldimporters.com | http://www.wideworldimporters.com]</[AllowedHeaders | ExposedHeaders | AllowedMethods | AllowedOrigins]>
      <AllowedMethods>[GET,PUT | GET | POST | GET,HEAD]</AllowedMethods>
      …
      </CorsRule>
    </Cors>
 </StorageServiceProperties>
```

Answer:

```
<?xml version="1.0" encoding="utf-8"?>
<StorageServiceProperties>
      …
      <Cors>
      <CorsRule>
      <[AllowedHeaders | ExposedHeaders | AllowedMethods | AllowedOrigins]>[http://*.wideworldimporters.com | http://test.wideworldimporters.com | http://test-shippingapi.wideworldimporters.com | http://www.wideworldimporters.com]</[AllowedHeaders | ExposedHeaders | AllowedMethods | AllowedOrigins]>
      <AllowedMethods>[GET,PUT | GET | POST | GET,HEAD]</AllowedMethods>
      …
      </CorsRule>
    </Cors>
 </StorageServiceProperties>
```

Explanation



Box 1: AllowedOrigins

A CORS request will fail if Access-Control-Allow-Origin is missing.

Scenario:

The following error message displays while you are testing the website:

```
Failed to load http://test-shippingapi.wideworldimporters.com/: No 'Access-Control-Allow-Origin'
header is present on the requested resource. Origin 'http://testwideworldimporters.com/' is
therefore not allowed access.
```

Box

2: http://test-shippingapi.wideworldimporters.com

Syntax: Access-Control-Allow-Origin: *

Access-Control-Allow-Origin: <origin>

Access-Control-Allow-Origin: null

<origin> Specifies an origin. Only a single origin can be specified.

Box 3: AllowedOrigins

Box 4: POST

The only allowed methods are GET, HEAD, and POST. In this case POST is used.

"<Corsrule>" "allowedmethods" Failed to load no "Access-control-Origin" header is present

References:

https://developer.mozilla.org/en-US/docs/Web/HTTP/Headers/Access-Control-Allow-Origin

NO.21 You need to support the requirements for the Shipping Logic App.

What should you use?

A. Azure Active Directory Application Proxy

B. Point-to-Site (P2S) VPN connection

C. Site-to-Site (S2S) VPN connection

D. On-premises Data Gateway

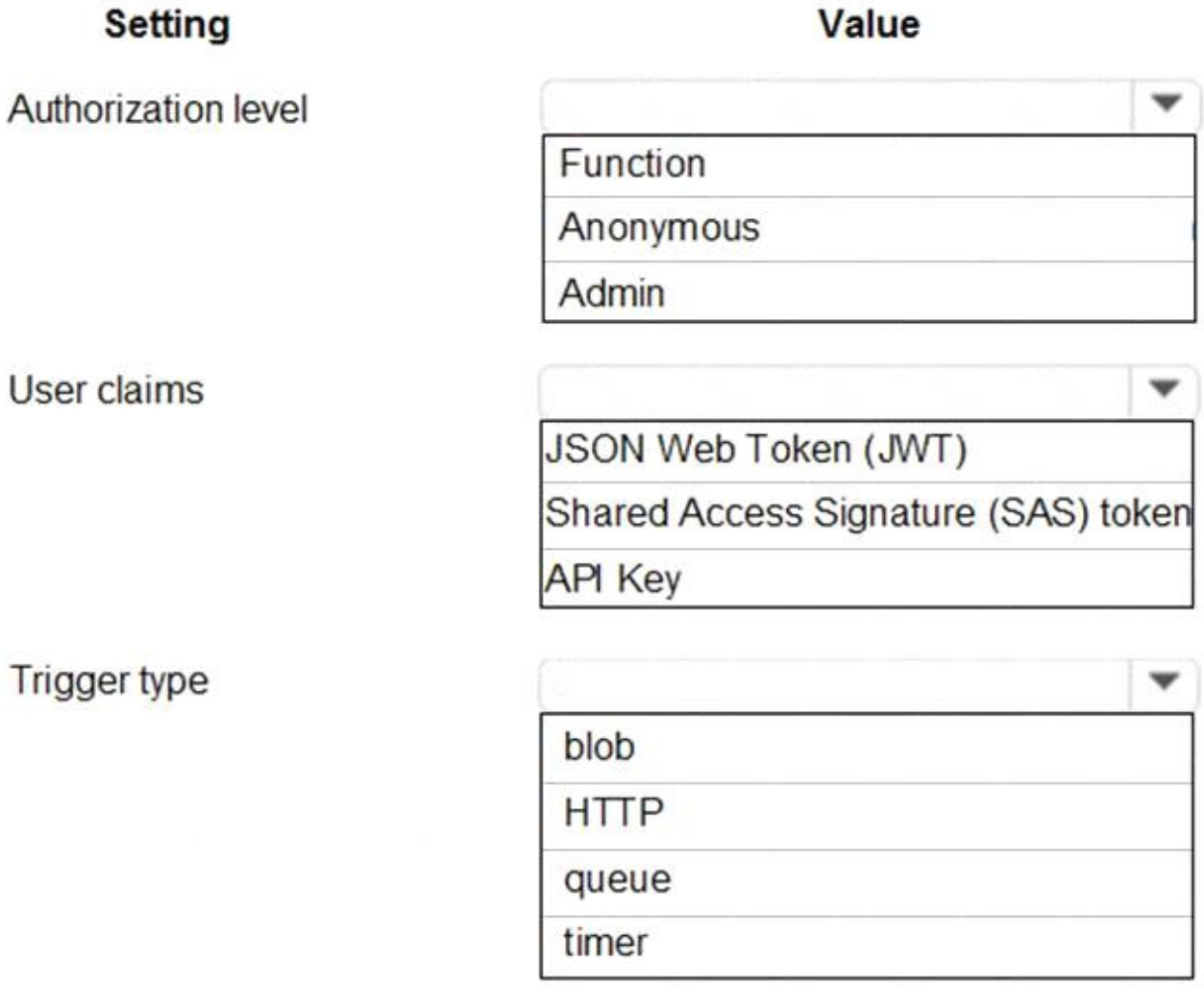
Answer: D

Explanation

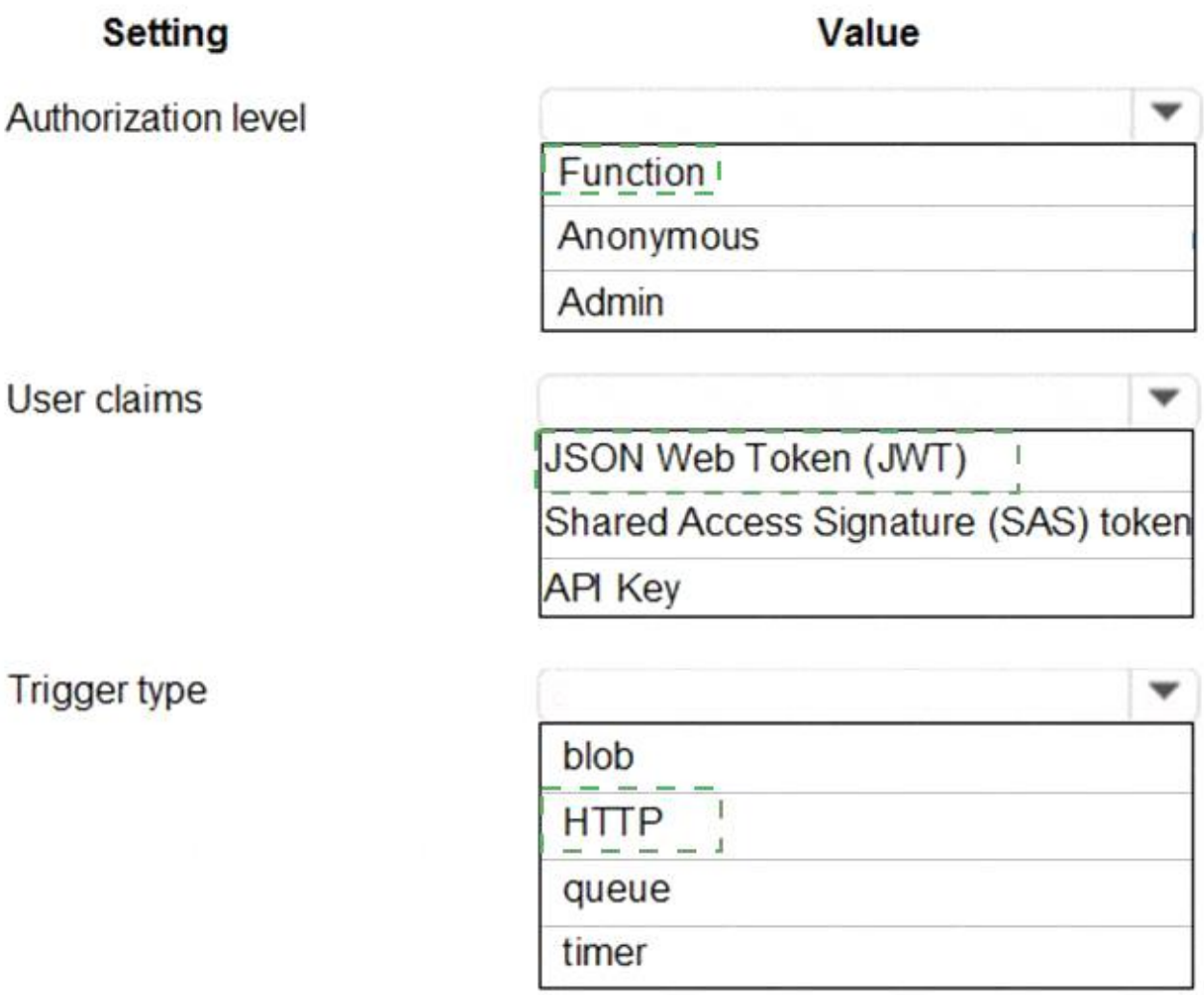
Before you can connect to on-premises data sources from Azure Logic Apps, download and install the on-premises data gateway on a local computer. The gateway works as a bridge that provides quick data transfer and encryption between data sources on premises (not in the cloud) and your logic

apps.
The gateway supports BizTalk Server 2016.
Note: Microsoft have now fully incorporated the Azure BizTalk Services capabilities into Logic Apps and Azure App Service Hybrid Connections.
Logic Apps Enterprise Integration pack bring some of the enterprise B2B capabilities like AS2 and X12, EDI standards support Scenario: 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.
Reference:
https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-gateway-install

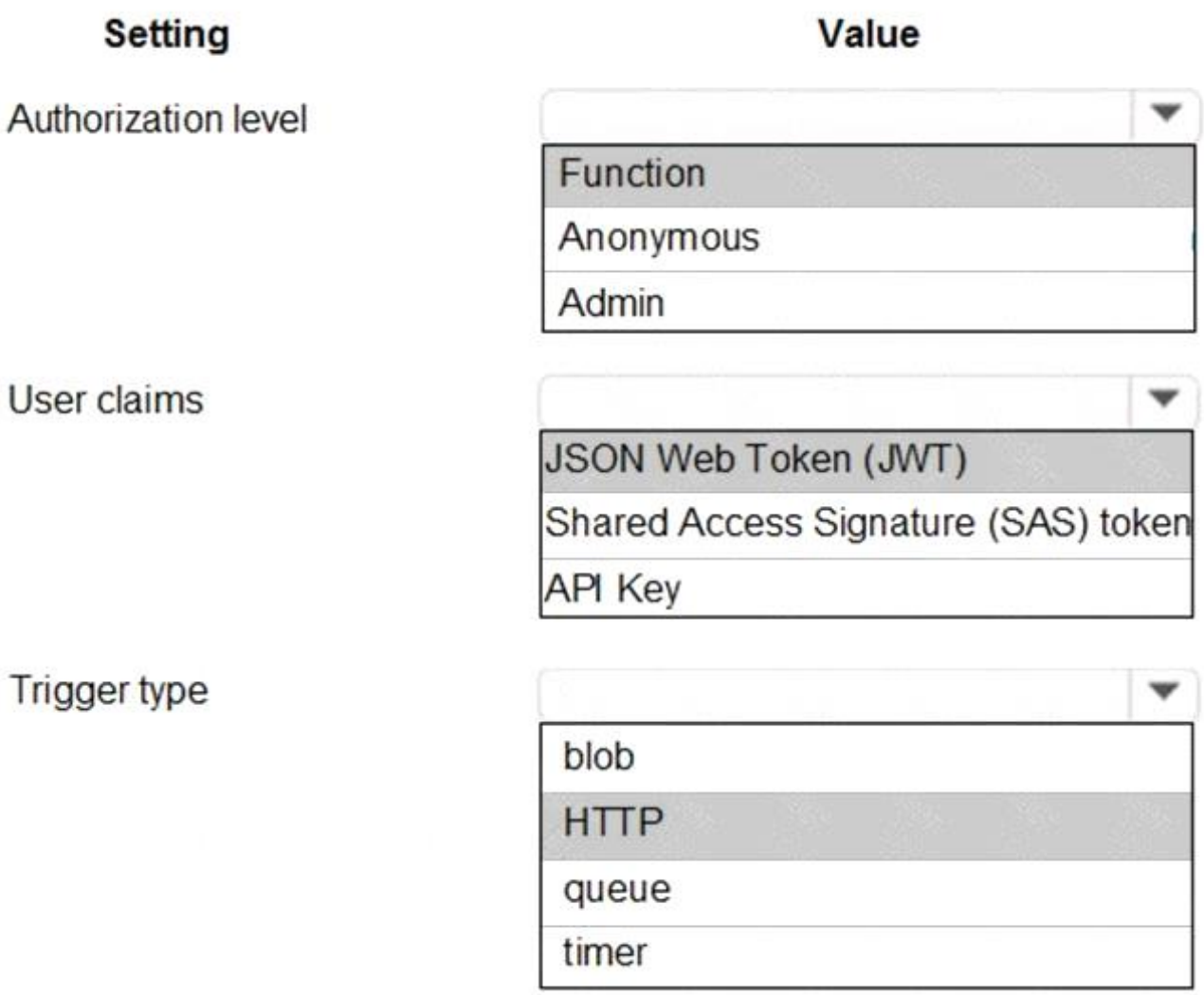
NO.22 You need to secure the Shipping Function app.
How should you configure the app? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.



Answer:

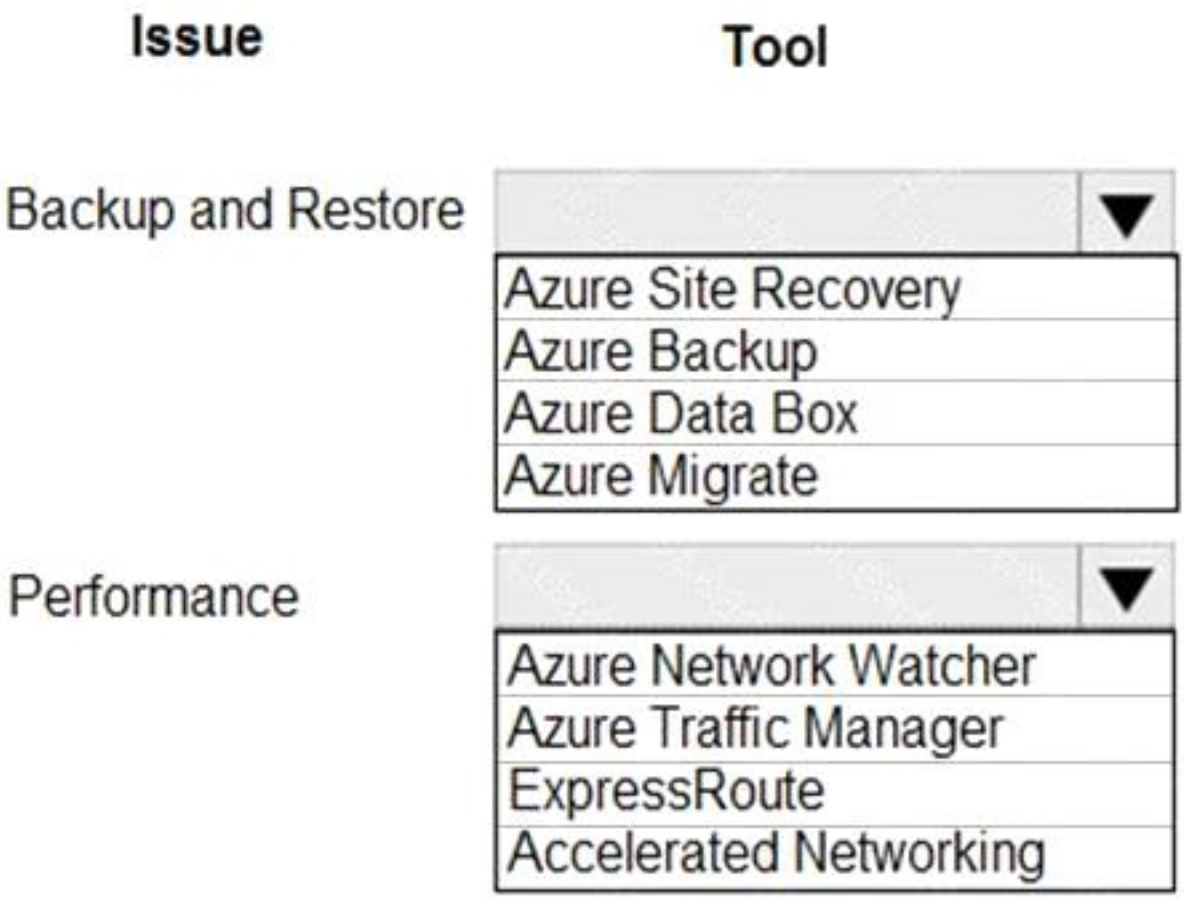


Explanation

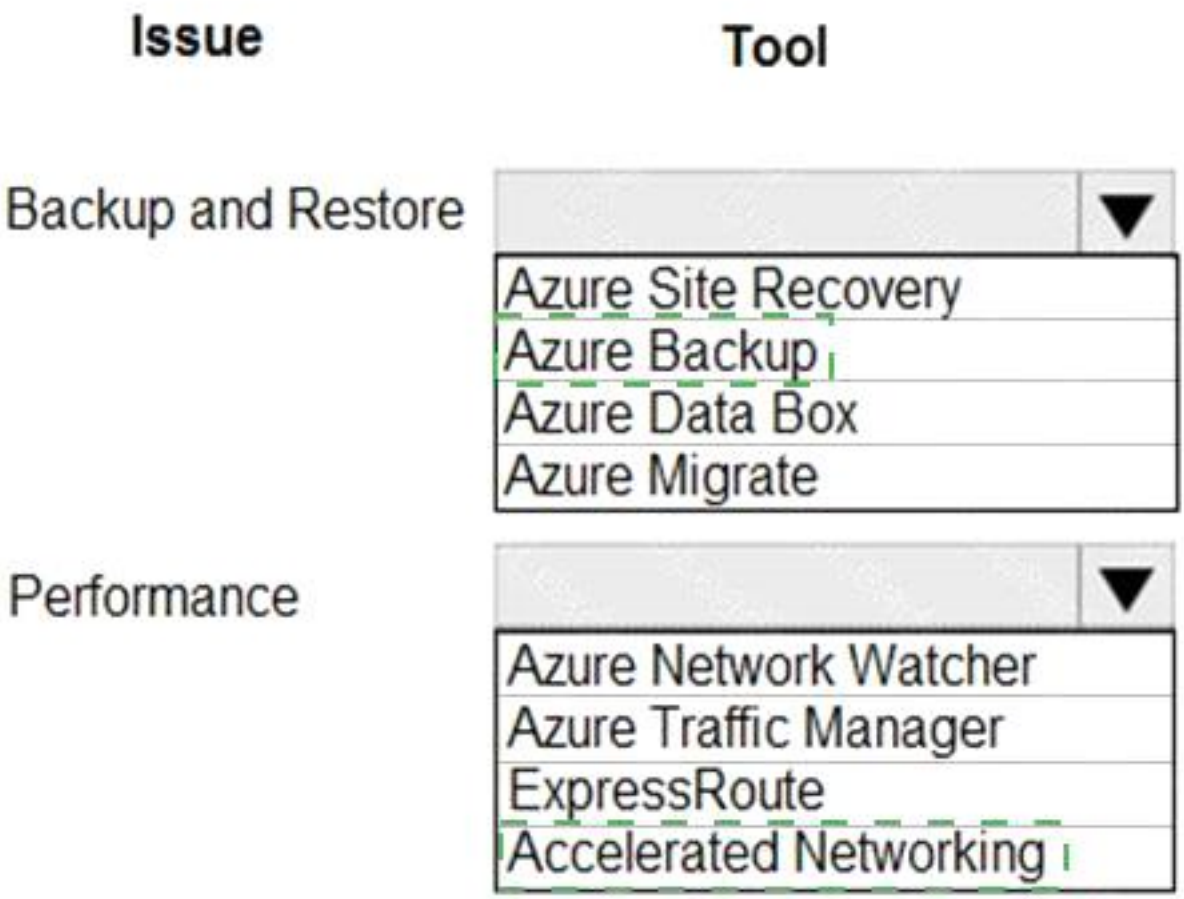


Scenario: Shipping Function app: Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).
Box 1: Function
Box 2: JSON based Token (JWT)
Azure AD uses JSON based tokens (JWTs) that contain claims
Box 3: HTTP
How a web app delegates sign-in to Azure AD and obtains a token
User authentication happens via the browser. The OpenID protocol uses standard HTTP protocol messages.
References:
https://docs.microsoft.com/en-us/azure/active-directory/develop/authentication-scenarios

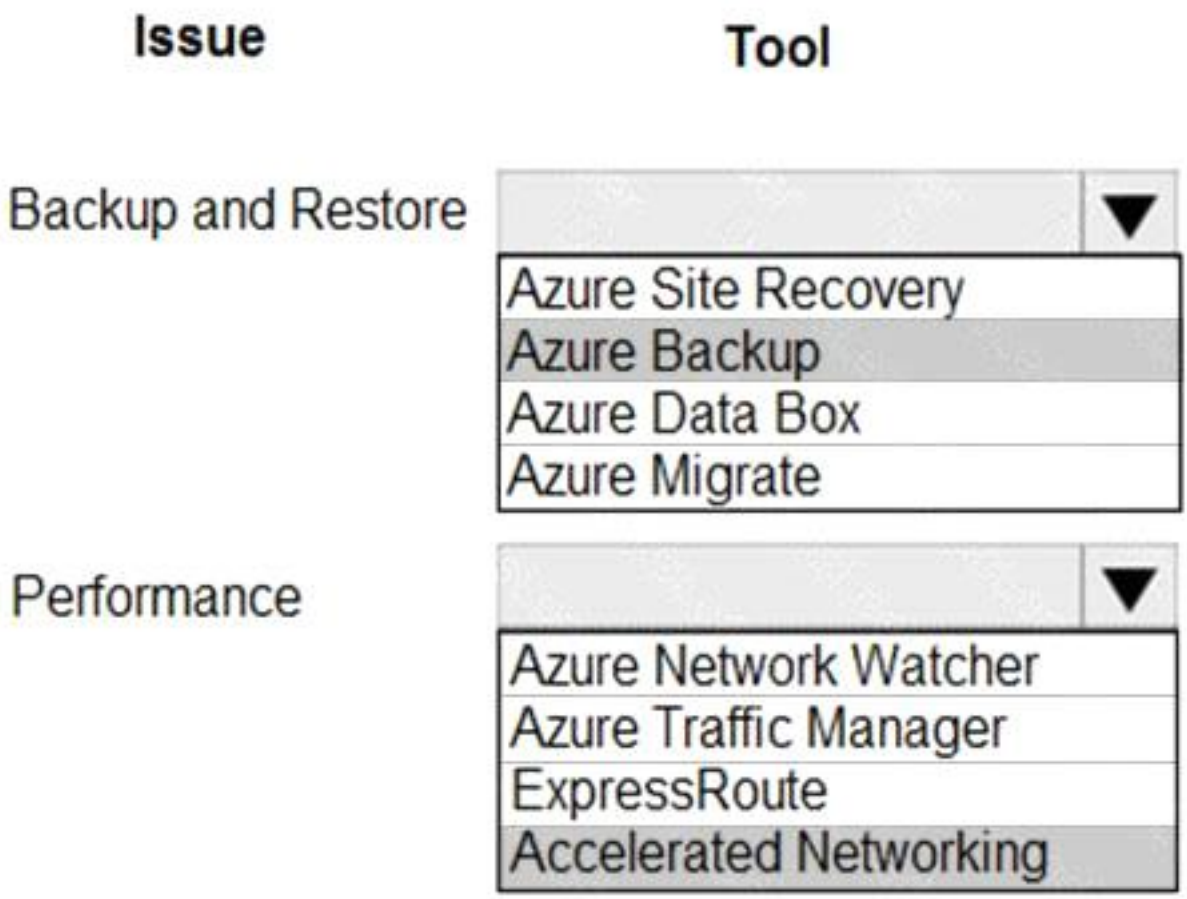
NO.23 You need to correct the VM issues.
Which tools should you use? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.


Issue
Tool
Backup and Restore
Azure Site Recovery
Azure Backup
Azure Data Box
Azure Migrate
Performance
Azure Network Watcher
Azure Traffic Manager
ExpressRoute
Accelerated Networking

Answer:

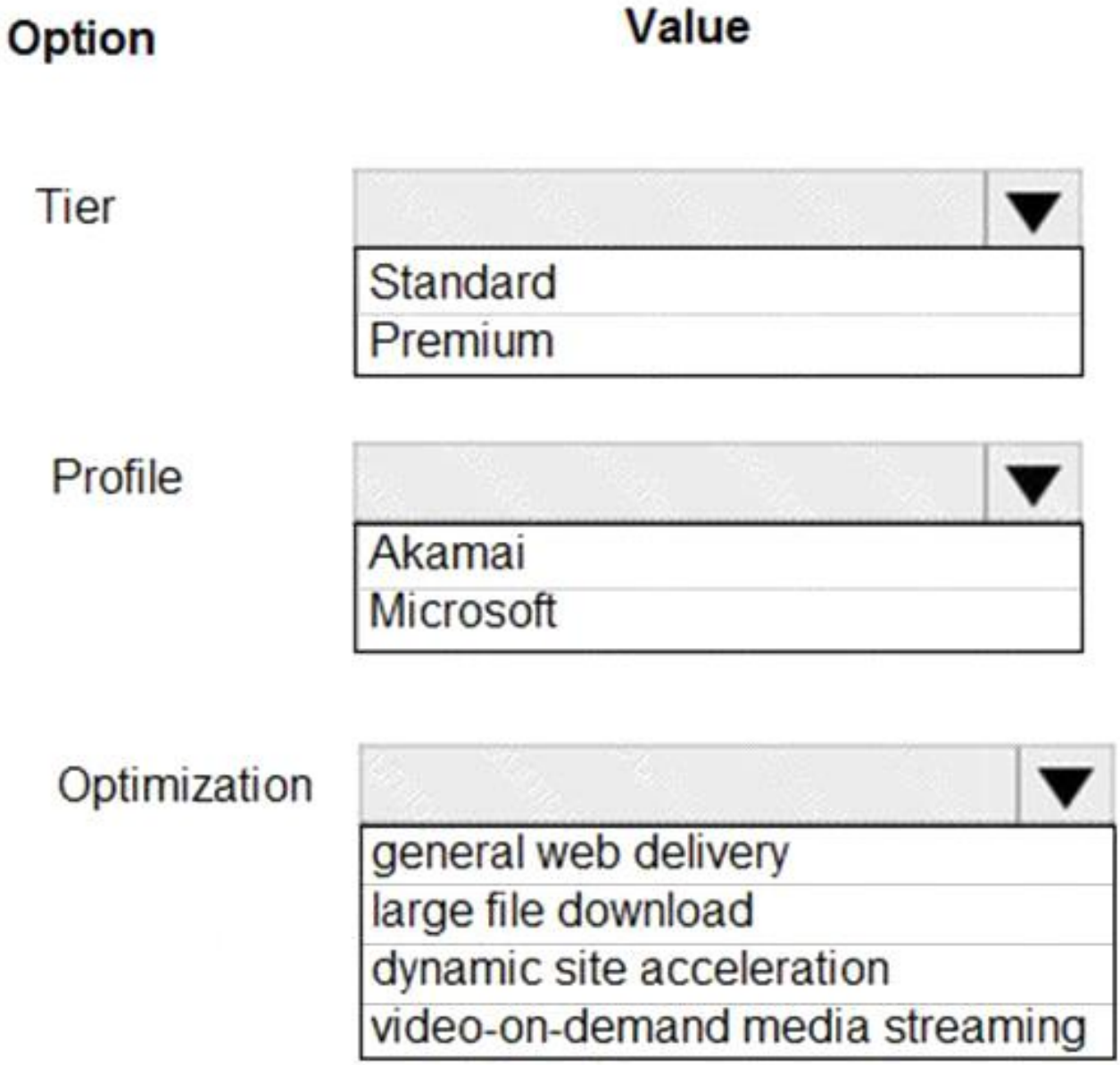


Explanation

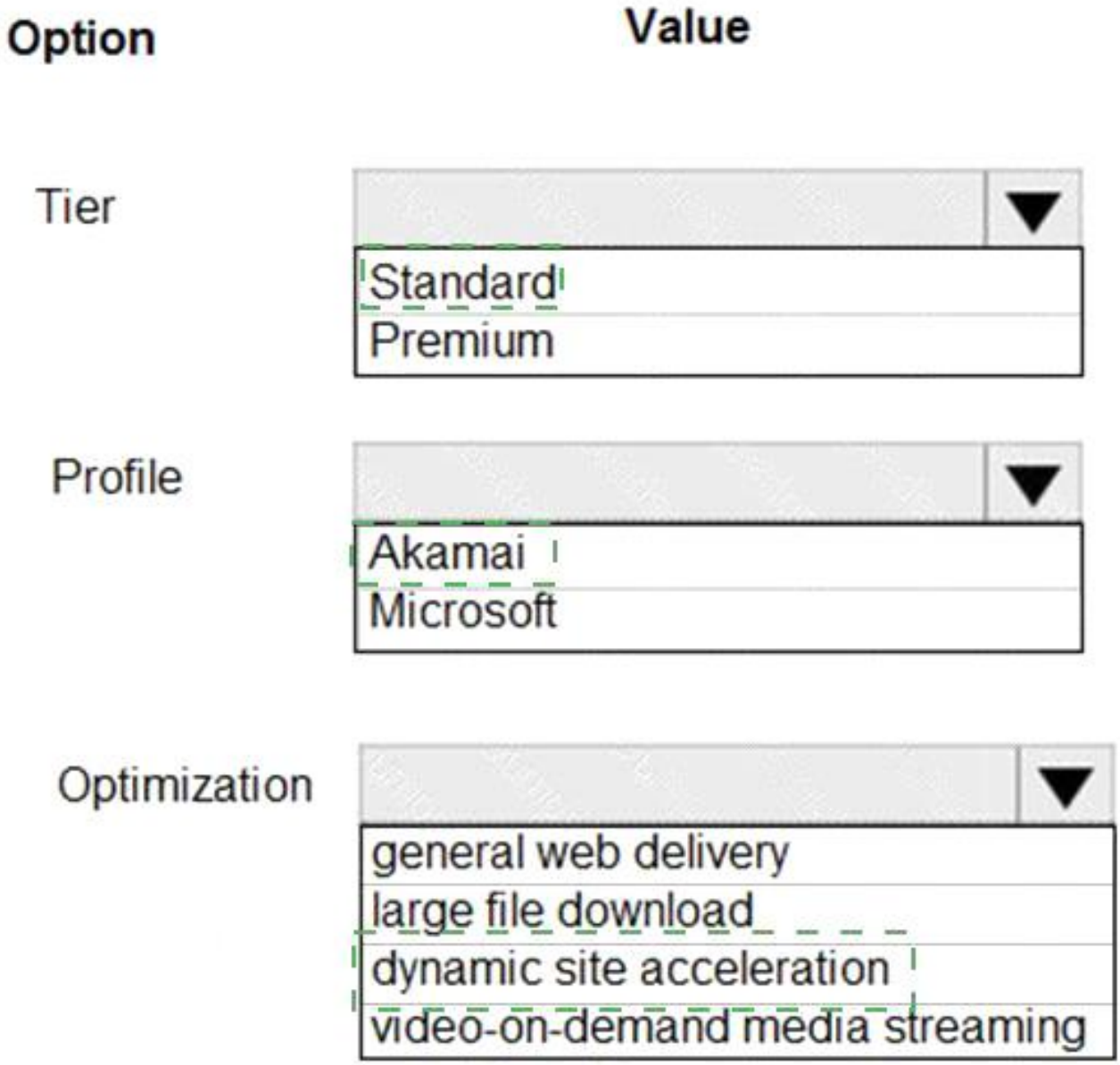


Backup and Restore: Azure Backup
Scenario: The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.
In-Place restore of disks in IaaS VMs is a feature of Azure Backup.
Performance: Accelerated Networking
Scenario: The VM shows high network latency, jitter, and high CPU utilization.
Accelerated networking enables single root I/O virtualization (SR-IOV) to a VM, greatly improving its networking performance. This high-performance path bypasses the host from the datapath, reducing latency, jitter, and CPU utilization, for use with the most demanding network workloads on supported VM types.
References:
https://azure.microsoft.com/en-us/blog/an-easy-way-to-bring-back-your-azure-vm-with-in-place-restore/

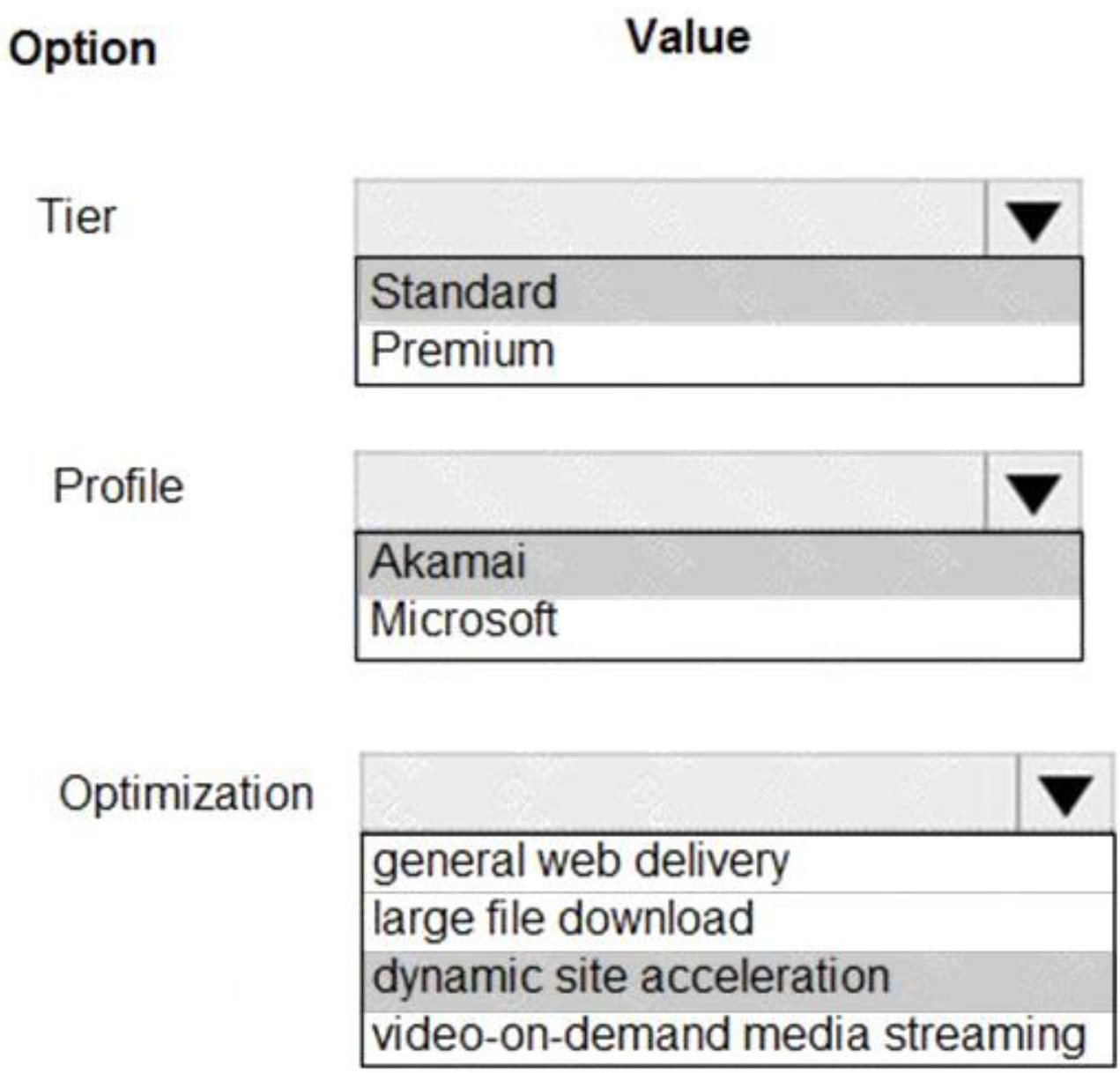
NO.24 You need to configure Azure CDN for the Shipping web site.
Which configuration options should you use? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.


Option
Value
Tier
Standard
Premium
Profile
Akamai
Microsoft
Optimization
general web delivery
large file download
dynamic site acceleration
video-on-demand media streaming

Answer:



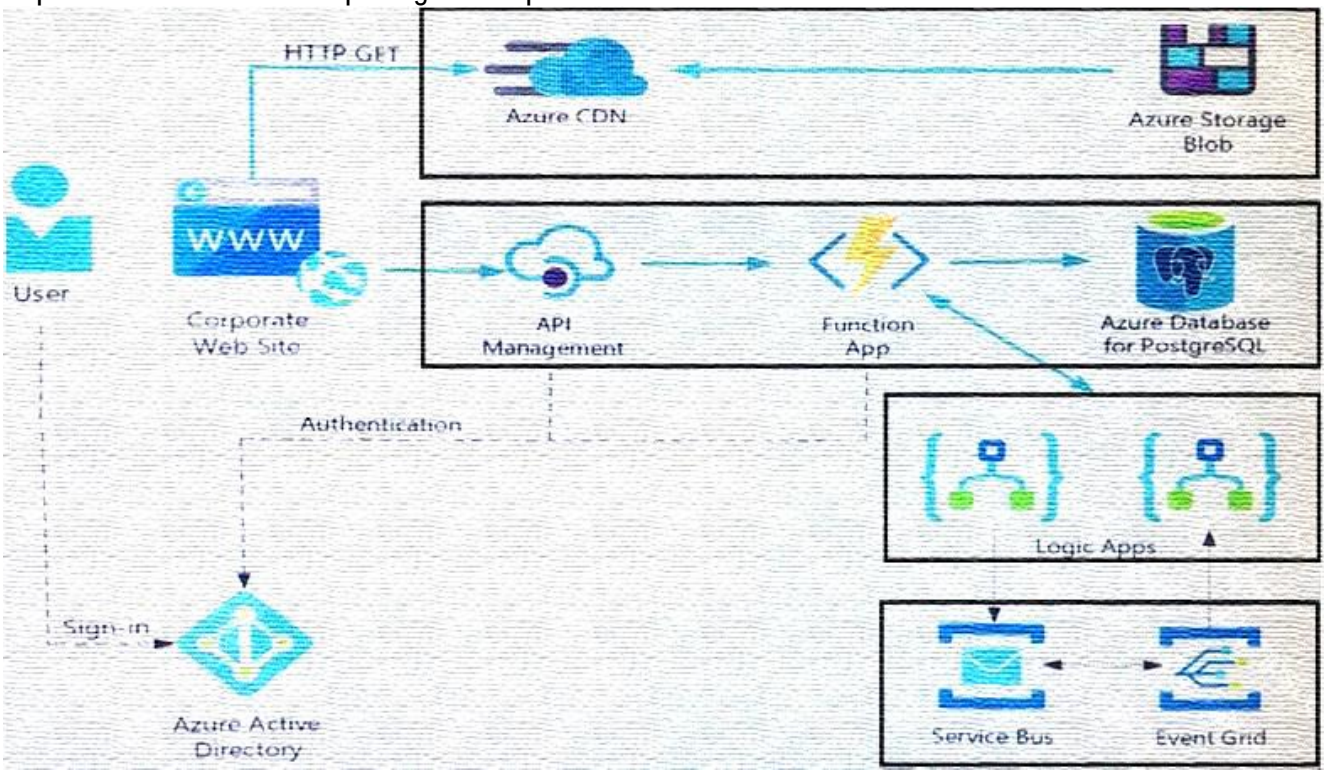
Explanation



Scenario: Shipping website
Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.
Tier: Standard
Profile: Akamai
Optimization: Dynamic site acceleration
Dynamic site acceleration (DSA) is available for Azure CDN Standard from Akamai, Azure CDN Standard from Verizon, and Azure CDN Premium from Verizon profiles.
DSA includes various techniques that benefit the latency and performance of dynamic content. Techniques include route and network optimization, TCP optimization, and more.
You can use this optimization to accelerate a web app that includes numerous responses that aren't cacheable.
Examples are search results, checkout transactions, or real-time data. You can continue to use core Azure CDN caching capabilities for static data.
Reference:
https://docs.microsoft.com/en-us/azure/cdn/cdn-optimization-overview

NO.25 You need to migrate on-premises shipping data to Azure.
What should you use?
A. Azure Migrate
B. Azure Cosmos DB Data Migration tool (dt.exe)
C. AzCopy
D. Azure Database Migration service
Answer: D
Explanation
Migrate from on-premises or cloud implementations of MongoDB to Azure Cosmos DB with minimal downtime by using Azure Database Migration Service. Perform resilient migrations of MongoDB data at scale and with high reliability.
Scenario: Data migration from on-premises to Azure must minimize costs and downtime.
The application uses MongoDB JSON document storage database for all container and transport information.
References:
https://azure.microsoft.com/en-us/updates/mongodb-to-azure-cosmos-db-online-and-offline-migrations-are-now-
Topic 3, City Power & Light
Case study
This is a case study.Case studies are not timed separately. You can use as much exam time as you would like to complete each case.However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click theNextbutton. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click theQuestionbutton to return to the question.
Background
City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses.
The company is migrating solutions to Azure.
Current environment
Architecture overview
The
company has a public website located at http://www.cpandl.com/. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.
The solution uses Application Insights, Azure Monitor, and Azure Key Vault.
Architecture diagram
The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication
The following steps detail the user authentication process:
* The user selectsSign inin the website.
* The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
* The user signs in.
* Azure AD redirects the user's session back to the web application. The URL includes an access token.
* The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
* The back-end API validates the access token.
Requirements
Corporate website
* Communications and content must be secured by using SSL.
* Communications must use HTTPS.
* Data must be replicated to a secondary region and three availability zones.
* Data storage costs must be minimized.
Azure Database for PostgreSQL
The database connection string is stored in Azure Key Vault with the following attributes:
* Azure Key Vault name: cpandlkeyvault

* Secret name: PostgreSQLConn
* Id: 80df3e46ffcd4f1cb187f79905e9a1e8

The connection information is updated frequently. The application must always use the latest information to connect to the database.

Azure Service Bus and Azure Event Grid

* Azure Event Grid must use Azure Service Bus for queue-based load leveling.
* Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
* Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

Security

* All SSL certificates and credentials must be stored in Azure Key Vault.
* File access must restrict access by IP, protocol, and Azure AD rights.
* All user accounts and processes must receive only those privileges which are essential to perform their intended function.

Compliance

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.

Issues

Corporate website

While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.

Function app

You perform local testing for the RequestUserApproval function. The following error message displays:
'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'

The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:

```
FunctionAppLogs
| where FunctionName = = "RequestUserApproval"
```

Logic app

You test the Logic app in a development environment. The following error message displays:
'400 Bad Request'

Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.

Code

Corporate website

Security.cs:

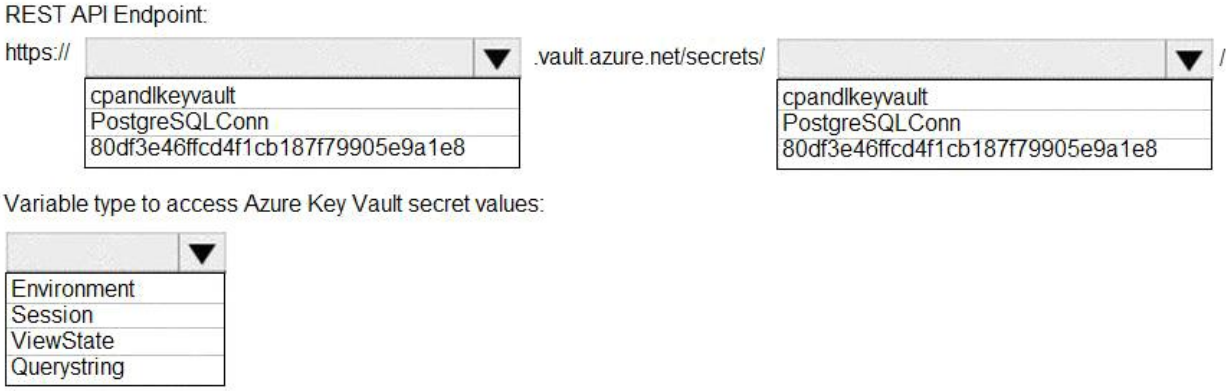
```
SC01 public class Security
SC02 {
SC03 var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04 var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05 var certName = cert.FriendlyName;
SC06 }
```

Function app

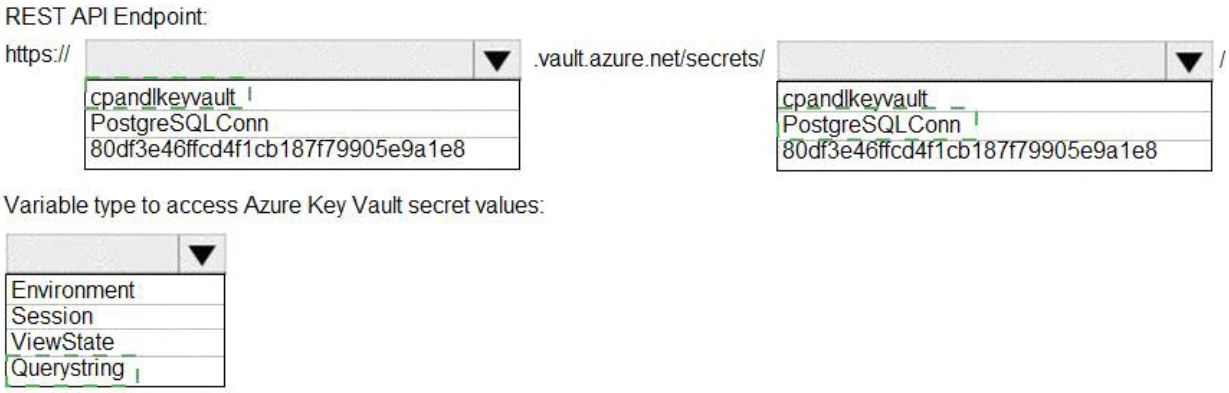
RequestUserApproval.cs:

```
RA01 public static class RequestUserApproval
RA02 {
RA03 [FunctionName("RequestUserApproval")]
RA04 public static async Task<IActionResult> Run(
RA05 [HttpTrigger(AuthorizationLevel.Function, "get", "post", Route = null)] HttpRequest req.
ILogger log)
RA06 {
RA07    log.LogInformation("RequestUserApproval function processed a request.");
RA08 ...
RA09 return ProcessRequest(req)
RA10    ? (ActionResult)new OkObjectResult($"User approval processed")
RA11    : new BadRequestObjectResult("Failed to process user approval");
RA12 }
RA13 private static bool ProcessRequest(HttpRequest req)
RA14 {
RA15    ...
RA16 }
RA17 }
```

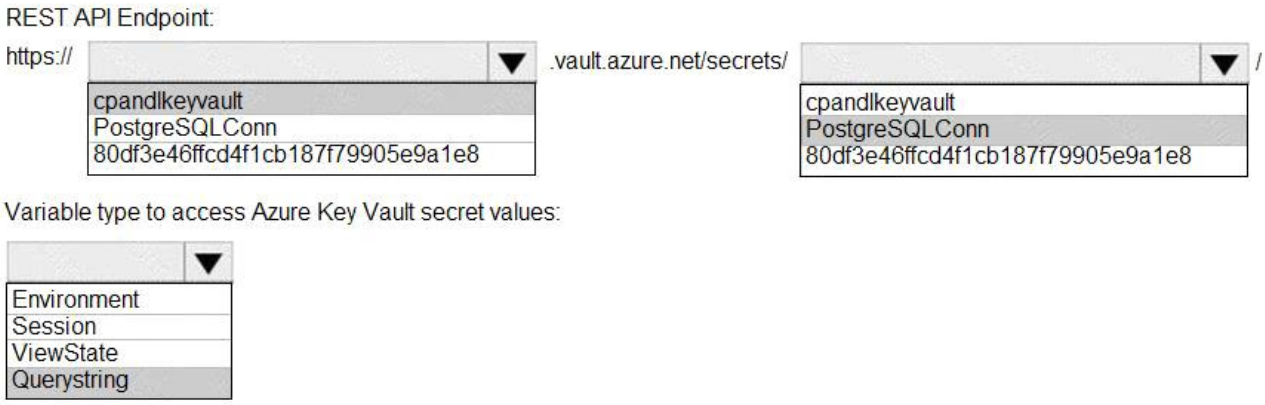
NO.26 You need to retrieve the database connection string.
Which values should you use? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.



Answer:



Explanation



Azure database connection string retrieve REST API vault.azure.net/secrets/ Box 1: cpandlkeyvault
We specify the key vault, cpandlkeyvault.
Scenario: The database connection string is stored in Azure Key Vault with the following attributes:
Azure Key Vault name: cpandlkeyvault
Secret name: PostgreSQLConn
Id: 80df3e46ffcd4f1cb187f79905e9a1e8
Box 2: PostgreSQLConn
We specify the secret, PostgreSQLConn
Example, sample request:
https://myvault.vault.azure.net//secrets/mysecretname/4387e9f3d6e14c459867679a90fd0f79?api-version=7.1 Box 3: Querystring Reference:
https://docs.microsoft.com/en-us/rest/api/keyvault/getsecret/getsecret

NO.27 You need to authenticate the user to the corporate website as indicated by the architectural diagram.
Which two values should you use? Each correct answer presents part of the solution.
NOTE:Each correct selection is worth one point.

A. ID token signature

B. ID token claims

C. HTTP response code

D. Azure AD endpoint URI

E. Azure AD tenant ID

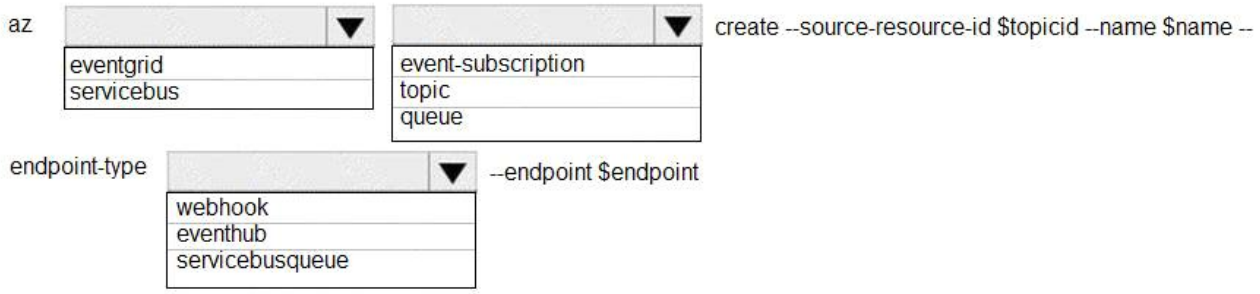
Answer: A D

Explanation
Claims in access tokens
JWTs (JSON Web Tokens) are split into three pieces:
* Header - Provides information about how to validate the token including information about the type of token and how it was signed.
* Payload - Contains all of the important data about the user or app that is attempting to call your service.
* Signature - Is the raw material used to validate the token.
Your client can get an access token from either the v1.0 endpoint or the v2.0 endpoint using a variety of protocols.
Scenario: User authentication (see step 5 below)
The following steps detail the user authentication process:

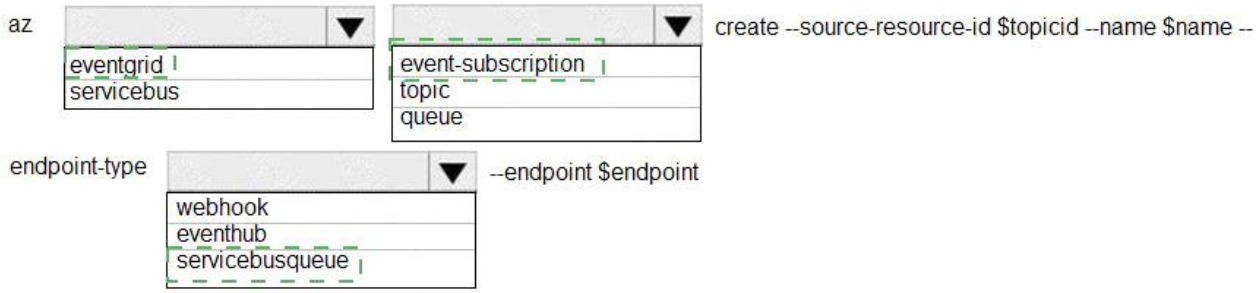
* The user selects Sign in in the website.
* The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
* The user signs in.
* Azure AD redirects the user's session back to the web application. The URL includes an access token.
* The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
* The back-end API validates the access token.

Reference:
https://docs.microsoft.com/en-us/azure/api-management/api-management-access-restriction-policies

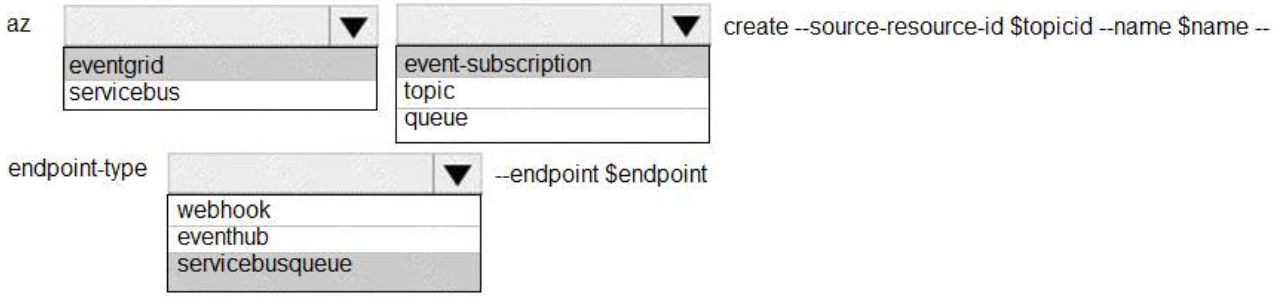
NO.28 You need to configure the integration for Azure Service Bus and Azure Event Grid.
How should you complete the CLI statement? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.



Answer:



Explanation

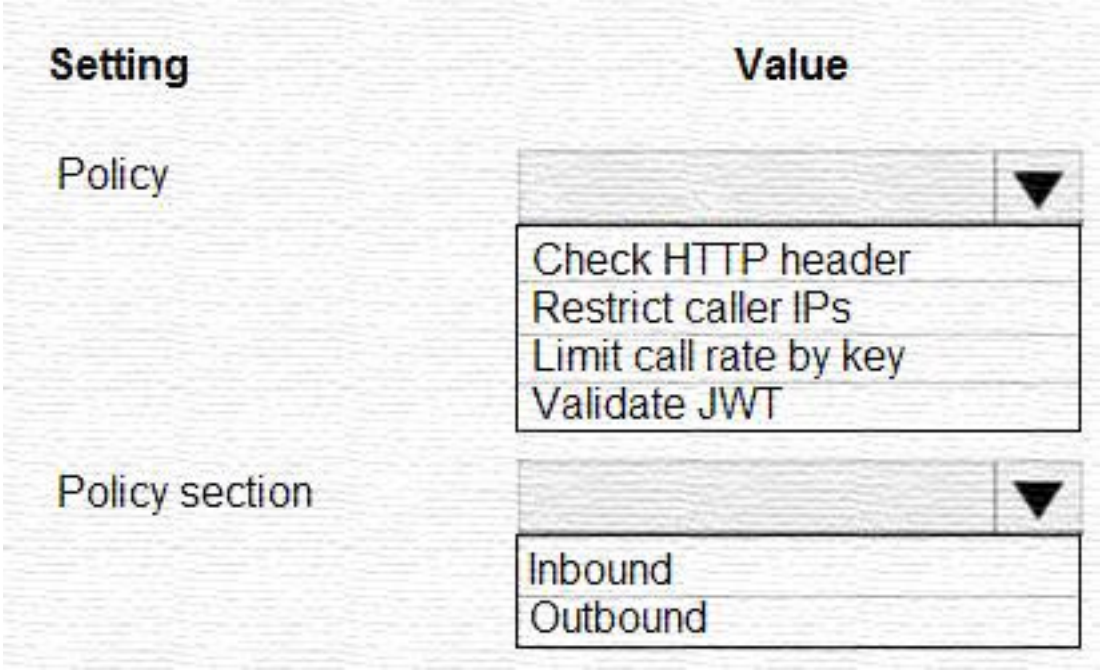


Box 1: eventgrid
To create event subscription use: az eventgrid event-subscription create Box 2: event-subscription
Box 3: servicebusqueue Scenario: Azure Service Bus and Azure Event Grid Azure Event Grid must use Azure Service Bus for queue-based load leveling.
Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event

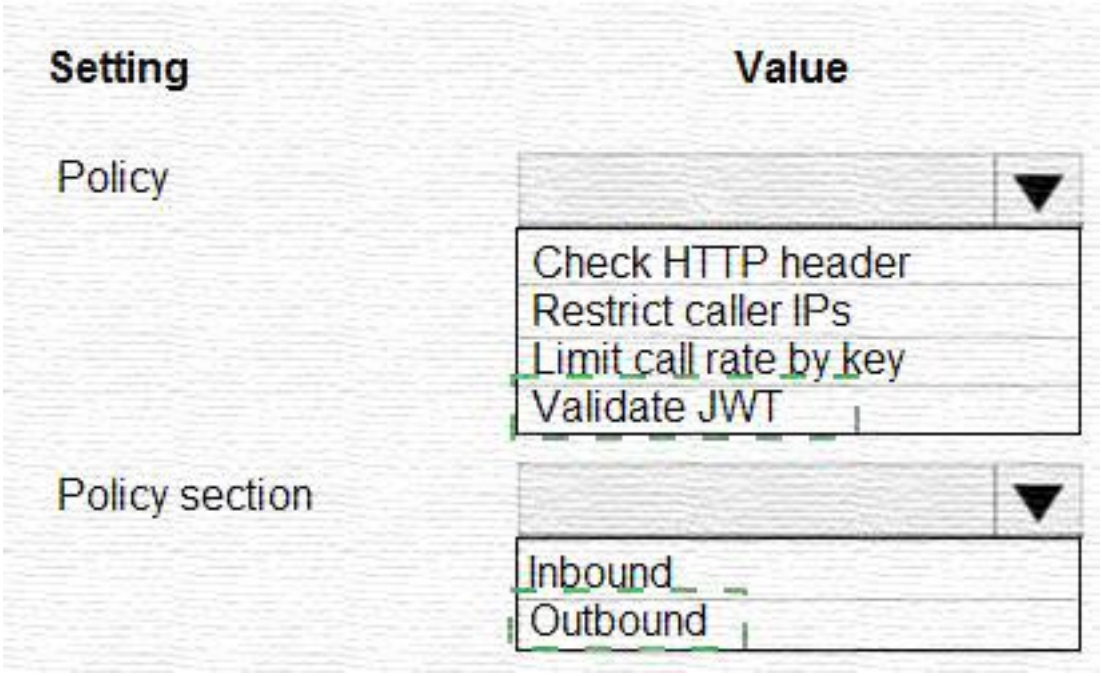
Grid for processing.
Reference:
https://docs.microsoft.com/en-us/cli/azure/eventgrid/event-subscription?view=azure-cli-latest#az_eventgrid_eve

NO.29 You need to ensure that all messages from Azure Event Grid are processed.
What should you use?
A. Azure Event Grid topic
B. Azure Service Bus topic
C. Azure Service Bus queue
D. Azure Storage queue
E. Azure Logic App custom connector
Answer: B
Explanation
As a solution architect/developer, you should consider using Service Bus queues when:
* Your solution needs to receive messages without having to poll the queue. With Service Bus, you can achieve it by using a long-polling receive operation using the TCP-based protocols that Service Bus supports.
Reference:
https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-azure-and-service-bus-queues-compa

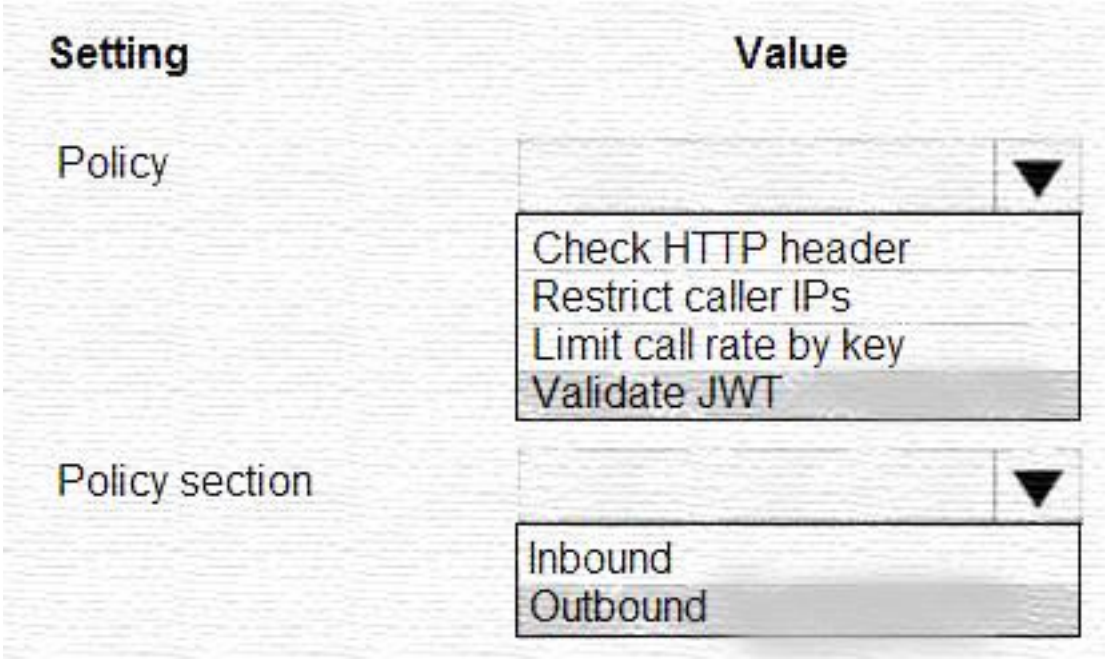
NO.30 You need to configure API Management for authentication.
Which policy values should you use? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.



Answer:



Explanation



Box 1: Validate JWT

The validate-jwt policy enforces existence and validity of a JWT extracted from either a specified HTTP Header or a specified query parameter.

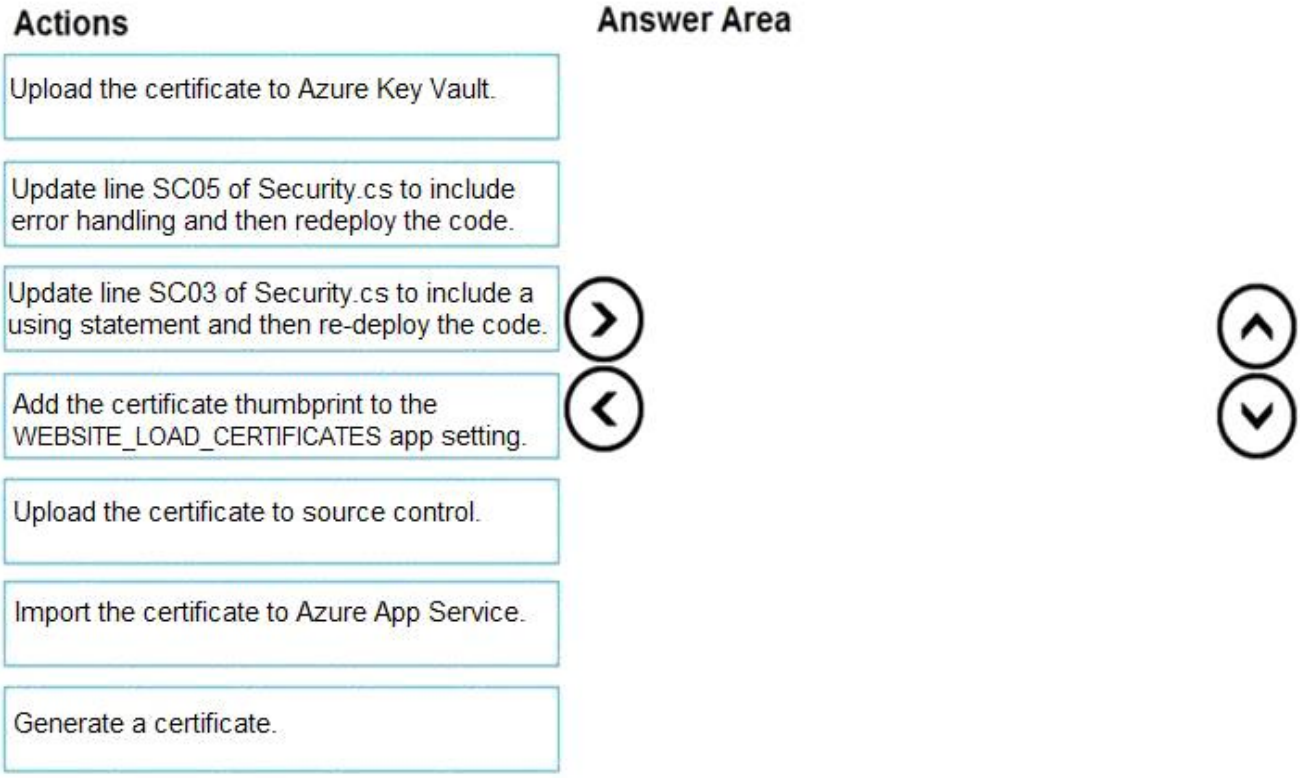
Scenario: User authentication (see step 5 below)

The following steps detail the user authentication process:

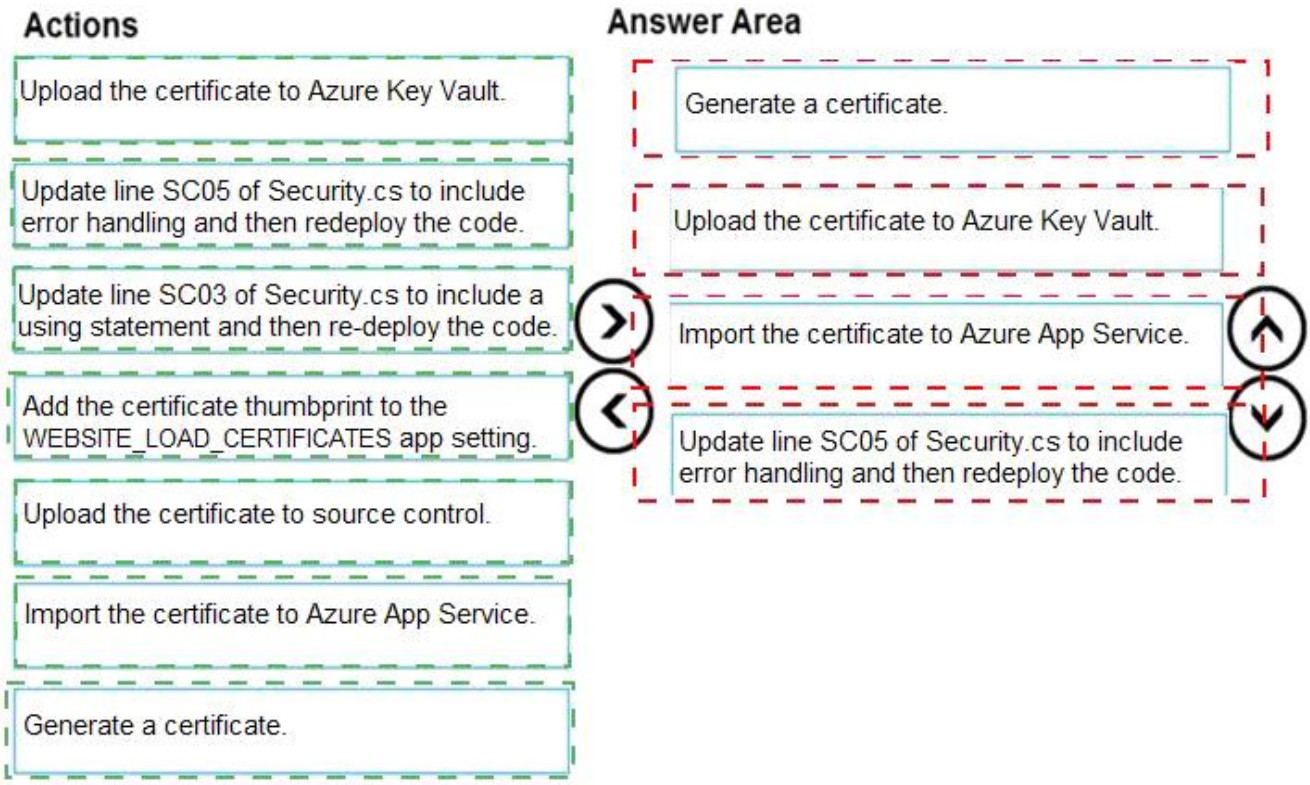
* The user selects Sign in in the website.
* The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
* The user signs in.
* Azure AD redirects the user's session back to the web application. The URL includes an access token.
* The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.

* The back-end API validates the access token.
Box 2: Outbound
Reference:
https://docs.microsoft.com/en-us/azure/api-management/api-management-access-restriction-policies

NO.31 You need to correct the corporate website error.
Which four actions should you recommend be performed in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.



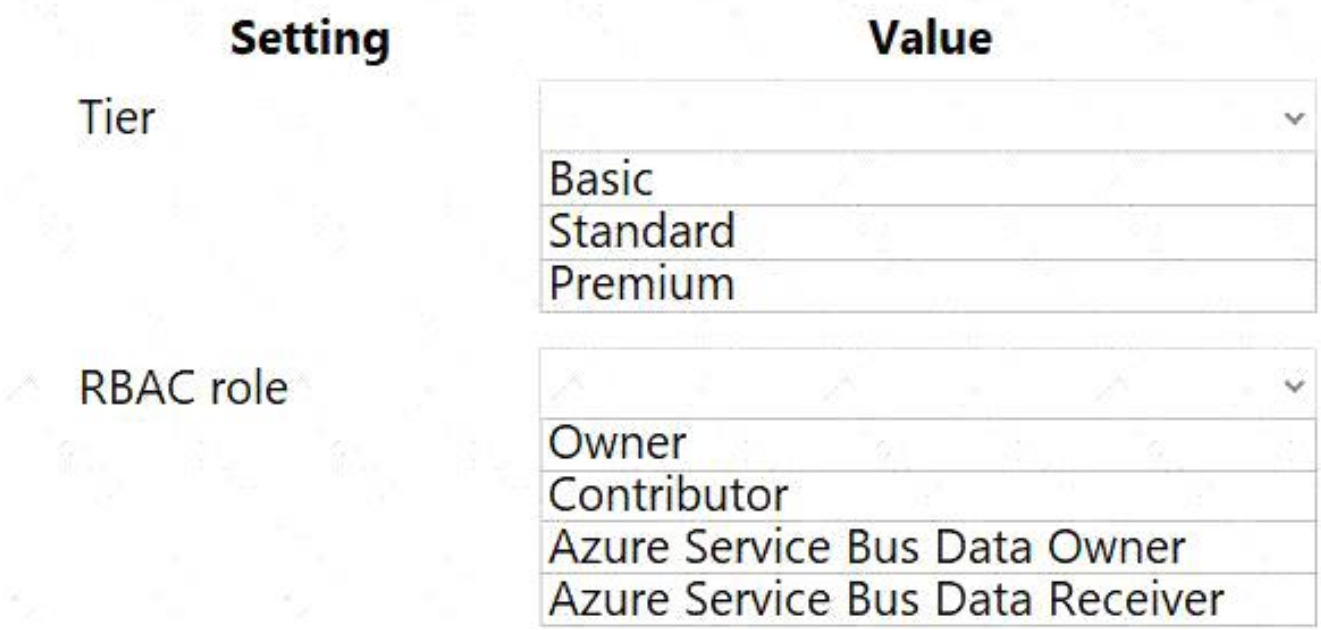
Answer:



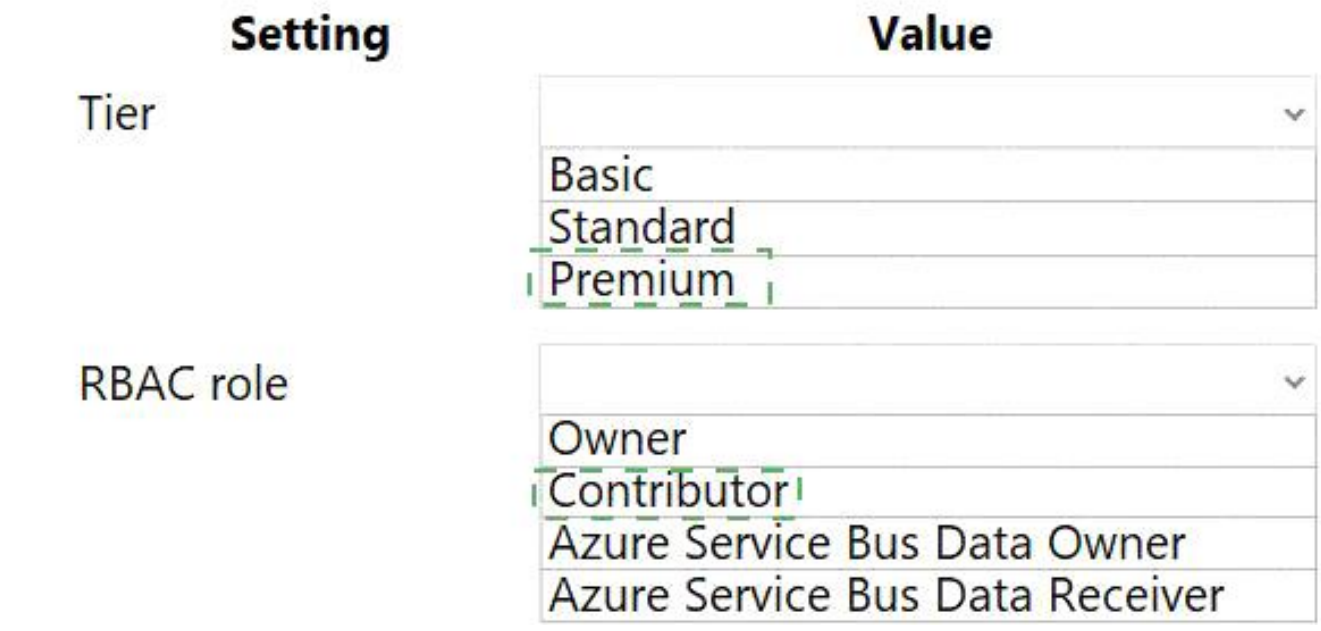
Explanation

Scenario: Corporate website
While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.
Step 1: Generate a certificate
Step 2: Upload the certificate to Azure Key Vault
Scenario: All SSL certificates and credentials must be stored in Azure Key Vault.
Step 3: Import the certificate to Azure App Service
Step 4: Update line SCO5 of Security.cs to include error handling and then redeploy the code
Reference:
https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate

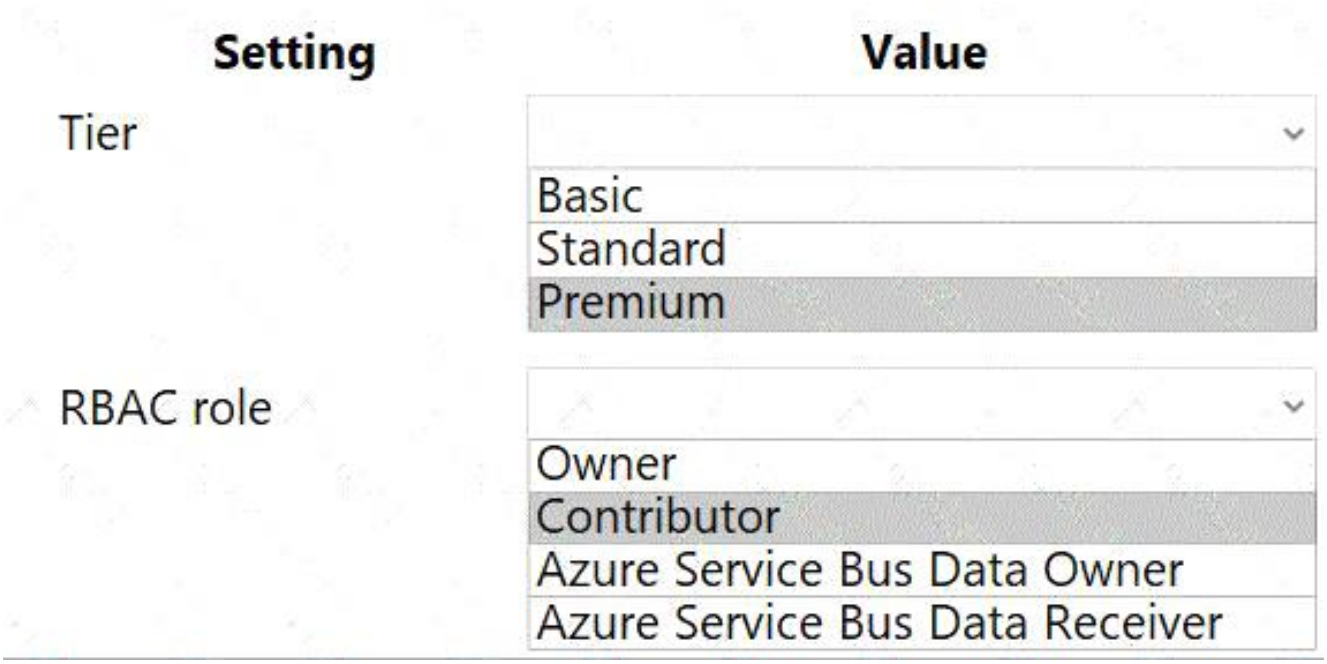
NO.32 You need to configure Azure Service Bus to Event Grid integration.
Which Azure Service Bus settings should you use? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.



Answer:

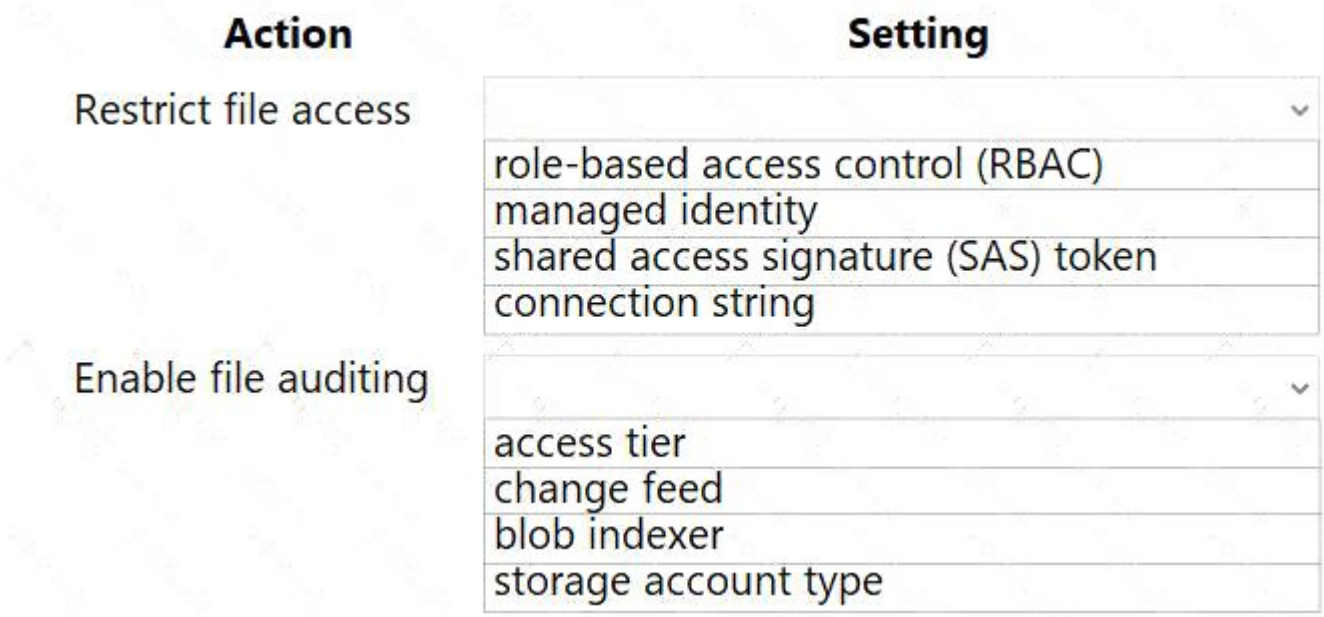


Explanation

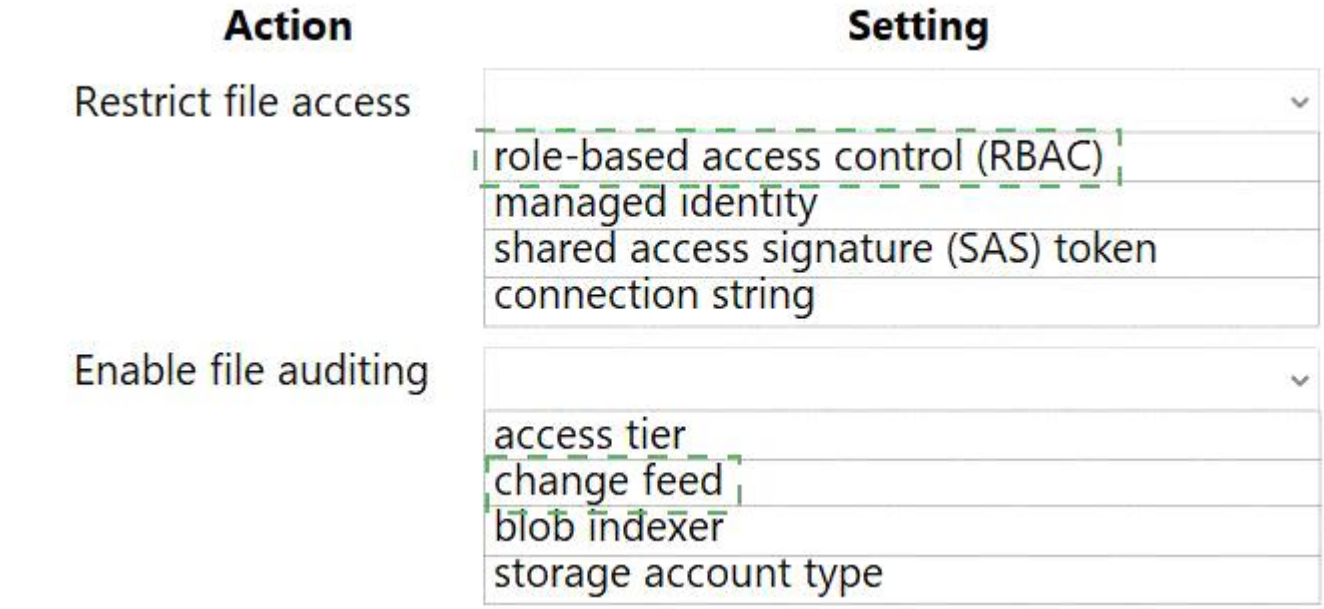


Box 1: Premium
Service Bus can now emit events to Event Grid when there are messages in a queue or a subscription when no receivers are present. You can create Event Grid subscriptions to your Service Bus namespaces, listen to these events, and then react to the events by starting a receiver. With this feature, you can use Service Bus in reactive programming models.
To enable the feature, you need the following items:
A Service Bus Premium namespace with at least one Service Bus queue or a Service Bus topic with at least one subscription.
Contributor access to the Service Bus namespace.
Box 2: Contributor
Reference:
https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-to-event-grid-integration-concept

NO.33 You need to configure security and compliance for the corporate website files.
Which Azure Blob storage settings should you use? To answer, select the appropriate options in the answer area.
NOTE:Each correct selection is worth one point.



Answer:

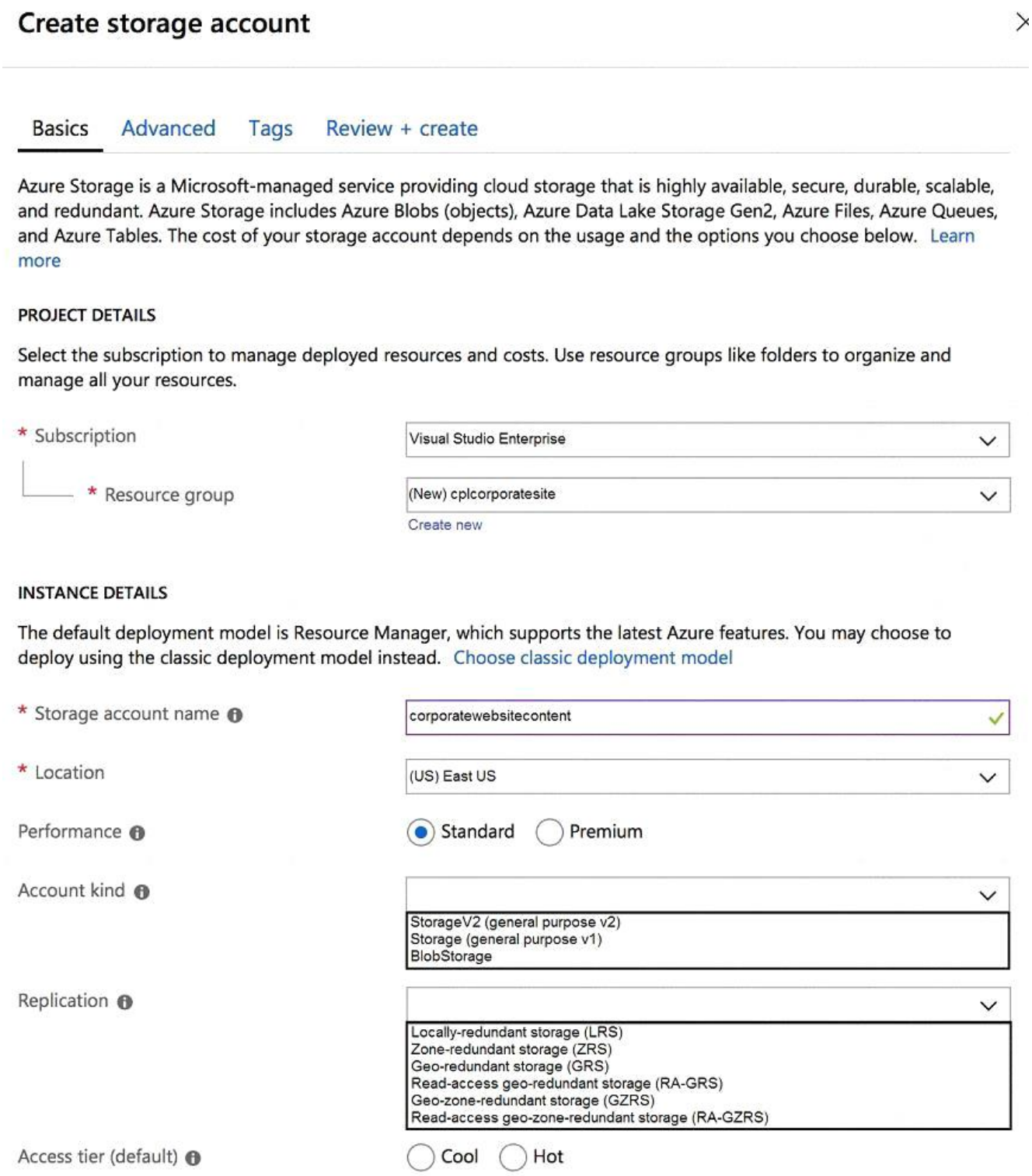


Explanation
Box 1: role-based access control (RBAC)
Azure Storage supports authentication and authorization with Azure AD for the Blob and Queue services via Azure role-based access control (Azure RBAC).
Scenario: File access must restrict access by IP, protocol, and Azure AD rights.
Box 2: change feed
The purpose of the change feed is to provide transaction logs of all the changes that occur to the blobs and the blob metadata in your storage account.
The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.
Reference:
https://docs.microsoft.com/en-us/azure/cdn/cdn-sas-storage-support
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed?tabs=azure-portal

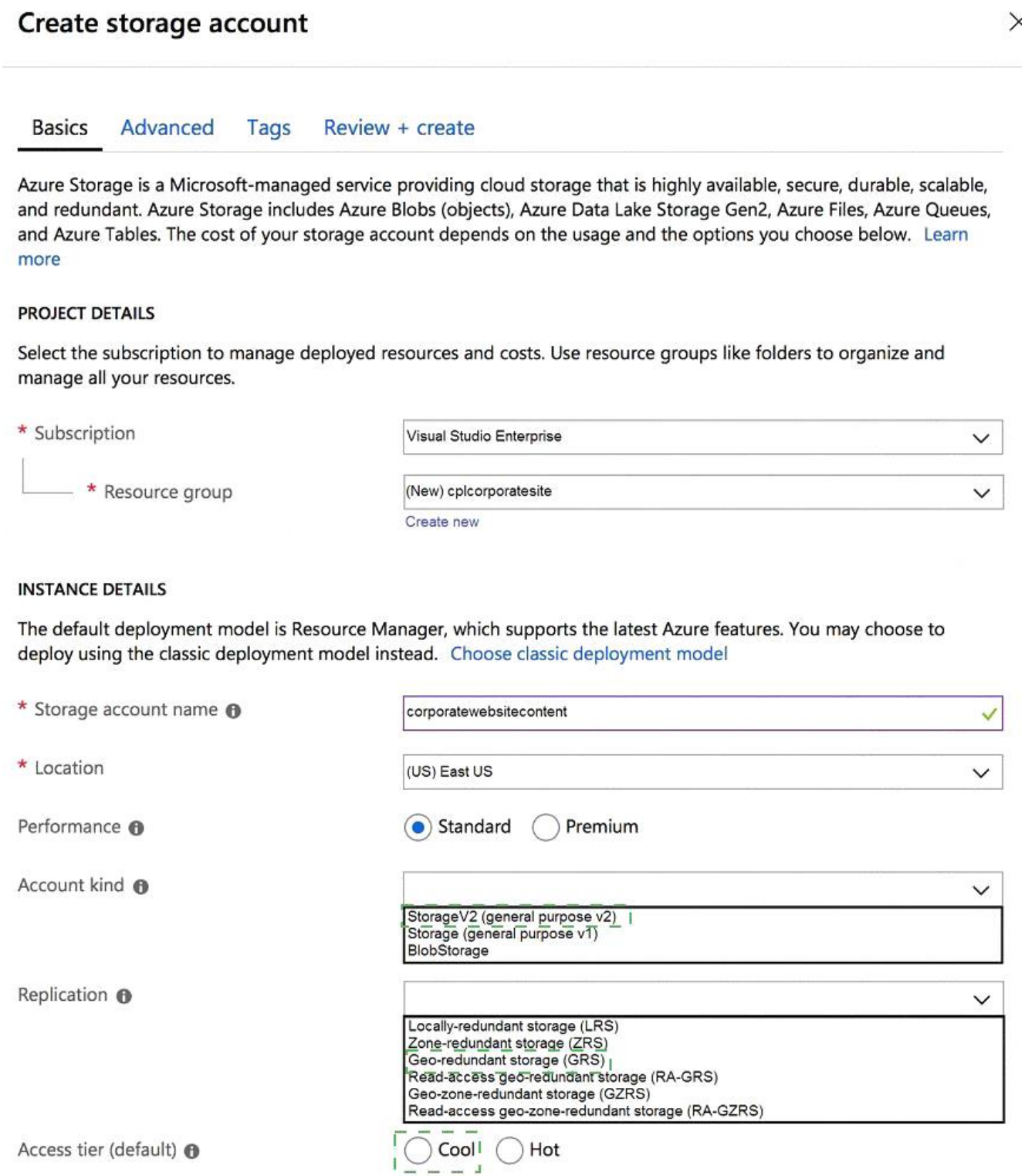
NO.34 You need to investigate the Azure Function app error message in the development

environment.
What should you do?
A. Connect Live Metrics Stream from Application Insights to the Azure Function app and filter the metrics.
B. Create a new Azure Log Analytics workspace and instrument the Azure Function app with Application Insights.
C. Update the Azure Function app with extension methods from Microsoft.Extensions.Logging to log events by using the log instance.
D. Add a new diagnostic setting to the Azure Function app to send logs to Log Analytics.
Answer: A
Explanation
Azure Functions offers built-in integration with Azure Application Insights to monitor functions.
The following areas of Application Insights can be helpful when evaluating the behavior, performance, and errors in your functions:
Live Metrics: View metrics data as it's created in near real-time.
Failures
Performance
Metrics
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-monitoring

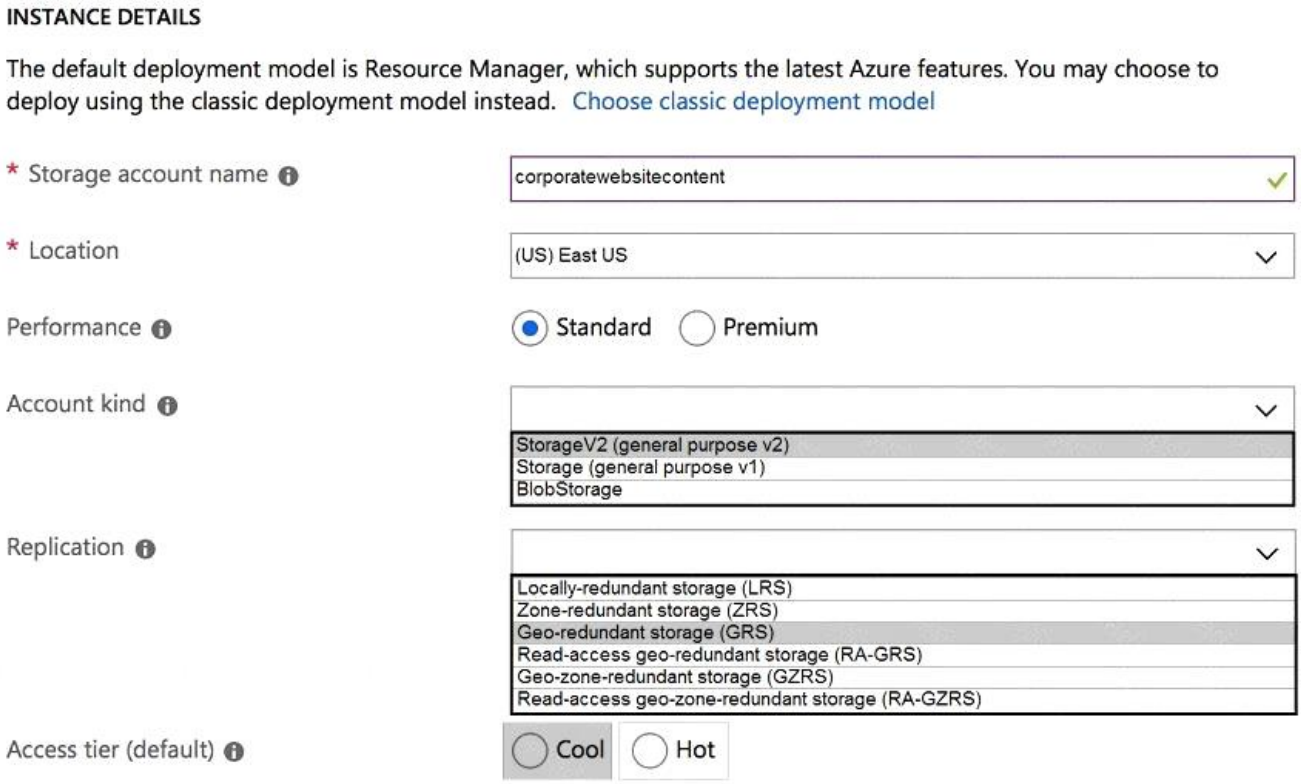
NO.35 You need to configure the Account Kind, Replication, and Storage tier options for the corporate website's Azure Storage account.
How should you complete the configuration? To answer, select the appropriate options in the dialog box in the answer area.
NOTE:Each correct selection is worth one point.


Create storage account
Basics
Advanced
Tags
Review + create
Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. Learn more
PROJECT DETAILS
Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.
* Subscription
Visual Studio Enterprise
* Resource group
(New) cplcorporatesite
Create new
INSTANCE DETAILS
The default deployment model is Resource Manager, which supports the latest Azure features. You may choose to deploy using the classic deployment model instead. Choose classic deployment model
* Storage account name
corporatewebsitecontent
* Location
(US) East US
Performance
Standard
Premium
Account kind
StorageV2 (general purpose v2)
Storage (general purpose v1)
BlobStorage
Replication
Locally-redundant storage (LRS)
Zone-redundant storage (ZRS)
Geo-redundant storage (GRS)
Read-access geo-redundant storage (RA-GRS)
Geo-zone-redundant storage (GZRS)
Read-access geo-zone-redundant storage (RA-GZRS)
Access tier (default)
Cool
Hot

Answer:



Explanation



Account Kind: StorageV2 (general-purpose v2)
Scenario: Azure Storage blob will be used (refer to the exhibit). Data storage costs must be minimized.
General-purpose v2 accounts: Basic storage account type for blobs, files, queues, and tables. Recommended for most scenarios using Azure Storage.
Reference:
https://docs.microsoft.com/en-us/azure/storage/common/storage-account-overview
https://docs.microsoft.com/en-us/azure/storage/common/storage-redundancy
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-storage-tiers?tabs=azure-portal