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Question #26

Topic 6

You are developing an e-commerce solution that uses a microservice architecture.

You need to design a communication backplane for communicating transactional messages between various parts of the solution. Messages must be communicated in first-in-first-out (FIFO) order.

What should you use?

- A. Azure Storage Queue
- B. Azure Event Hub
- C. Azure Service Bus
- D. Azure Event Grid

Correct Answer: A

As a solution architect/developer, you should consider using Service Bus queues when:

⇒ Your solution requires the queue to provide a guaranteed first-in-first-out (FIFO) ordered delivery.

Reference:

<https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-azure-and-service-bus-queues-compared-contrasted>

Community vote distribution

C (100%)

✉  **rahulrai19** Highly Voted 3 years, 5 months ago

Answer Should be C, even explanation is saying so

upvoted 164 times

✉  **fearoffree** 2 years, 1 month ago

Correct:

Use Service Bus when your solution requires transactional behavior and atomicity when sending or receiving multiple messages from a queue.

upvoted 2 times

✉  **RaviNikkam** 1 year, 10 months ago

Absolutely correct. Consider using service bus when,

Your solution requires the queue to provide a guaranteed first-in-first-out (FIFO) ordered delivery.

upvoted 1 times

✉  **cloud_exam1** 3 years, 4 months ago

I think so.

<https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-azure-and-service-bus-queues-compared-contrasted>

upvoted 4 times

✉  **Juanlu** 3 years, 1 month ago

Yes, I Agree !

upvoted 3 times

✉  **Ash111** Highly Voted 3 years, 4 months ago

Choose Service Bus queues if:

You need an At-Most-Once delivery guarantee.

You need a FIFO guarantee.

You need to group messages into transactions.

You want to receive messages without polling the queue.

You need to provide a role-based access model to the queues.

You need to handle messages larger than 64 KB but less than 256 KB.

Your queue size will not grow larger than 80 GB.

You would like to be able to publish and consume batches of messages.

Queue storage isn't quite as feature-rich, but if you don't need any of those features, it can be a simpler choice. In addition, it's the best solution if your app has any of the following requirements.

Choose Queue storage if:

You need an audit trail of all messages that pass through the queue.

You expect the queue to exceed 80 GB in size.

You want to track progress for processing a message inside of the queue.

upvoted 61 times

✉  **Ash111** 3 years, 4 months ago

C will be the answer...

upvoted 5 times

 **Maskoo** 2 months, 1 week ago

Thanks, very useful summary

I have doubt about "You want to receive messages without polling the queue." though

You can use Queue storage and queue trigger function to consume messages, that won't need polling either

upvoted 1 times

 **Zhenyuan_Zhang** Most Recent 2 months, 1 week ago

The answers and explanations are as contradictory as ever.

upvoted 2 times

 **Zhenyuan_Zhang** 2 months, 1 week ago

The answer is C.

upvoted 1 times

 **CarlosTheBoldest** 4 months, 3 weeks ago

Selected Answer: C

If FIFO -> Service bus

upvoted 2 times

 **dddddd111** 5 months, 3 weeks ago

C is the right answer.

upvoted 1 times

 **nekkilodeon** 11 months, 2 weeks ago

Selected Answer: C

Service bus

<https://learn.microsoft.com/en-us/training/modules/discover-azure-message-queue/2-choose-queue-solution>

upvoted 1 times

 **at_sayali** 1 year, 5 months ago

Correct Answer: C

Got this one 10/2022

upvoted 2 times

 **OPT_001122** 1 year, 5 months ago

Selected Answer: C

Azure Service Bus

upvoted 2 times

 **Satish_Babu** 1 year, 8 months ago

Selected Answer: C

C is the correct answer

upvoted 1 times

 **Pize** 1 year, 9 months ago

Selected Answer: C

Another wrong answer on this site

Correct answer C

upvoted 1 times

 **AZAdam22** 1 year, 9 months ago

Selected Answer: C

C - Because service bus holds a FIFO data structure and is used to send business data such as transactions.

upvoted 1 times

 **Eltooth** 1 year, 9 months ago

Selected Answer: C

C is correct answer.

upvoted 1 times

 **AZAdam22** 1 year, 9 months ago

Selected Answer: C

Because service bus guarantees first in first out delivery and is used to send messages between components, for example transferring order processing data.

upvoted 1 times

 **zhongzi** 1 year, 10 months ago

Selected Answer: C

Answer should be C. This question show in the ESI, the answer given C.

upvoted 1 times

 **ivan0590** 1 year, 11 months ago

Selected Answer: C

Admin, please correct the given answer.

It's C.

Even the explanation says is C.

upvoted 1 times

 **ivan0590** 1 year, 11 months ago

Selected Answer: C

Admin, please correct this answer.

C is the correct answer. The explanation in the solution clearly says it's C.

upvoted 1 times

 **[Removed]** 1 year, 12 months ago

Agree with C.

upvoted 1 times

Question #27

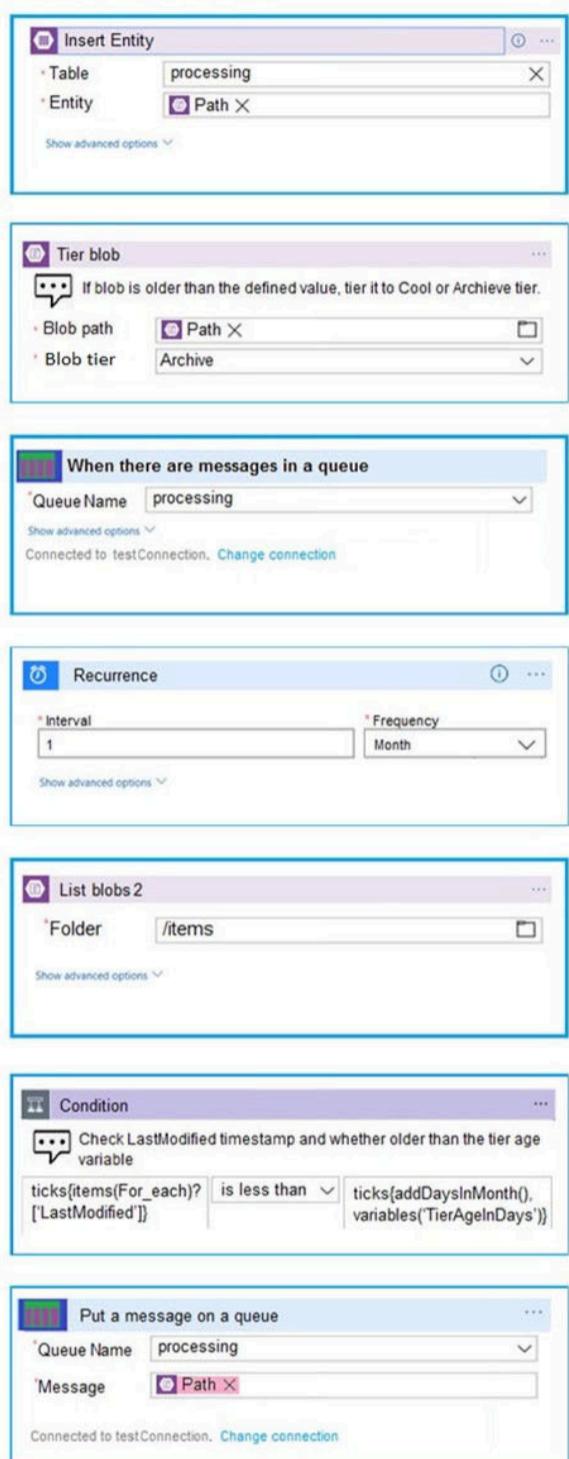
DRAG DROP -

A company backs up all manufacturing data to Azure Blob Storage. Admins move blobs from hot storage to archive tier storage every month. You must automatically move blobs to Archive tier after they have not been modified within 180 days. The path for any item that is not archived must be placed in an existing queue. This operation must be performed automatically once a month. You set the value of `TierAgeInDays` to -180. How should you configure the Logic App? To answer, drag the appropriate triggers or action blocks to the correct trigger or action slots. Each trigger or action block 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.

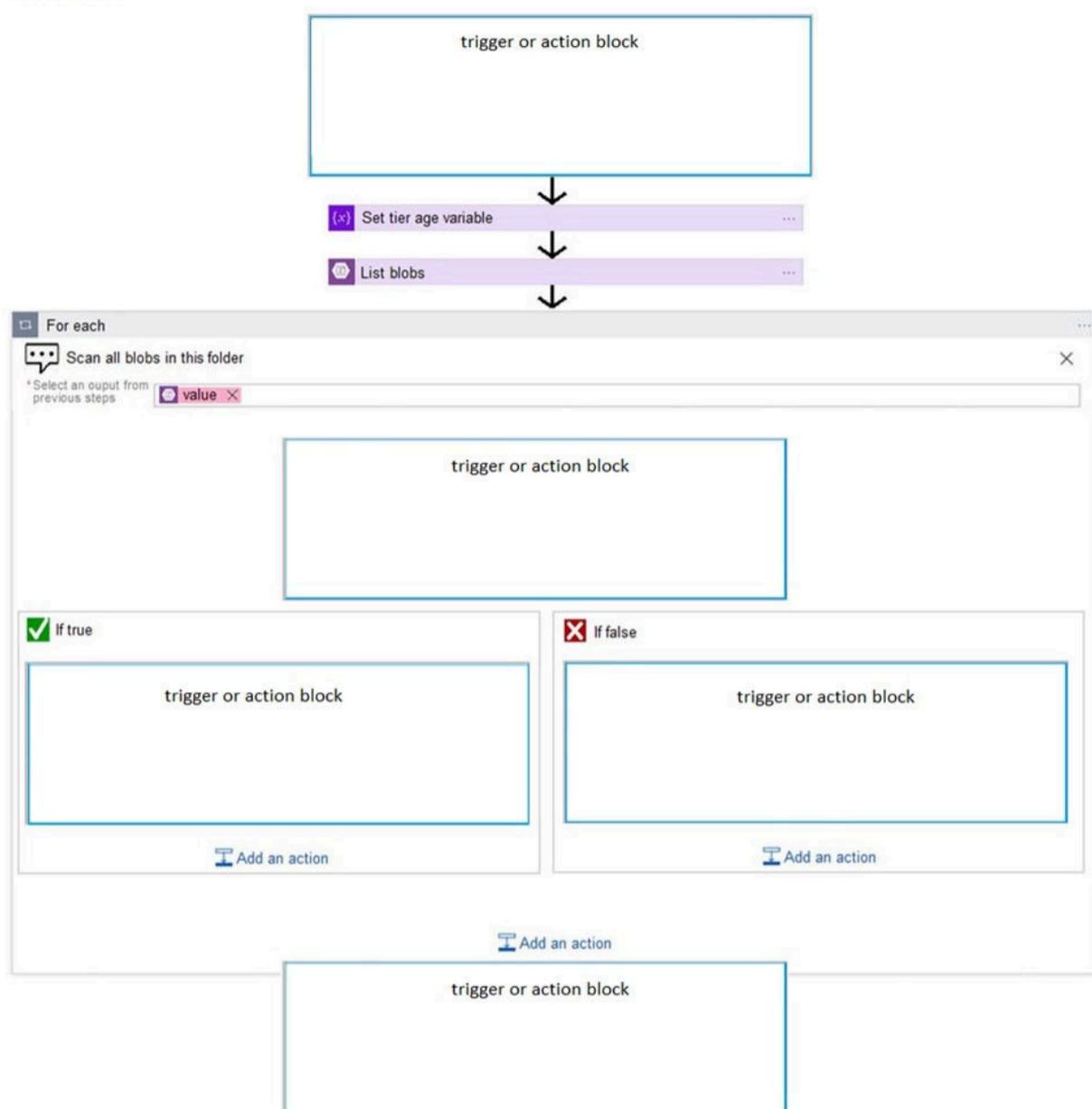
NOTE: Each correct selection is worth one point.

Select and Place:

Triggers and action blocks



Answer area



Correct Answer:

Triggers and action blocks

Answer area

```

graph TD
    Recurrence[Recurrence: Interval 1, Frequency Month] --> ForEach[For each: Scan all blobs in this folder]
    ForEach --> Condition[Condition: Check LastModified timestamp and whether older than the tier age variable]
    Condition -- If true --> Queue[When there are messages in a queue: Queue Name processing]
    Queue --> ListBlobs2[List blobs2: Folder /items]
    Condition -- If false --> Tierblob[Tier blob: Blob path Path X, Blob tier Archive]
  
```

Box 1: Reoccurrence..

To regularly run tasks, processes, or jobs on specific schedule, you can start your logic app workflow with the built-in Recurrence - Schedule trigger. You can set a date and time as well as a time zone for starting the workflow and a recurrence for repeating that workflow.

Set the interval and frequency for the recurrence. In this example, set these properties to run your workflow every week.

Box 2: Condition..

To run specific actions in your logic app only after passing a specified condition, add a conditional statement. This control structure compares the data in your workflow against specific values or fields. You can then specify different actions that run based on whether or not the data meets the condition.

Box 3: Put a message on a queue -

The path for any item that is not archived must be placed in an existing queue.

Note: Under If true and If false, add the steps to perform based on whether the condition is met.

Box 4: ..tier it to Cool or Archive tier.

Archive item.

Box 5: List blobs 2 -

Reference:

<https://docs.microsoft.com/en-us/azure/connectors/connectors-native-recurrence> <https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-control-flow-loops> <https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-control-flow-conditional-statement>

✉  **Cricketer** Highly Voted 2 years, 11 months ago

Logic App is not part of 204 exam since March 2021
upvoted 119 times

✉  **if54uran** 2 years, 9 months ago

In the official document logic apps are still included.

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

Can you provide a source?

upvoted 2 times

✉  **nocap** 2 years, 9 months ago

In the linked document it actually confirms Logic Apps are no longer part of the criteria in the comparison of this section "Connect to and consume Azure services and third-party services"

upvoted 6 times

✉  **jay158** 2 years, 9 months ago

See Notes from 'fabulousethiopia': we still get questions about logic app
<https://www.examtopics.com/exams/microsoft/az-204/>

upvoted 2 times

✉  **SnakePlissken** 2 years, 11 months ago

You're right!! Let's not waste our time with questions about Logic Apps anymore!
Please upvote Cricketer!
upvoted 7 times

✉  **MariusN** Highly Voted 3 years, 5 months ago

For Box 3, refer to the answer's text that says "Put a message on a queue". The answer's graphic implies "When there are messages in a queue" for Box 3 by mistake.
upvoted 41 times

✉  **ivan0590** Most Recent 1 year, 11 months ago

Admin, please correct this answer.
The box 3 shown in the image (When there are messages in a queue) differs from the solution (Put a message on a queue).
"Put a message on a queue" is the right answer!
upvoted 3 times

✉  **ning** 2 years, 7 months ago

No idea, what is the last box ...

For the condition, tick less than is older than ...

upvoted 2 times

✉  **crepatata** 2 years, 11 months ago

Probably, you should use "Insert Entity" in case it should be archived and in the 5th step archive all the entities in that path?
upvoted 2 times

✉  **Pomphard** 3 years ago

It is clear that :
box 1 should be recurrence
box 2 should be the condition

However, there is confusion about the condition, and rightly so:

the right half, ticks(addDaysInMonth(), variables("TierAgeInDays")) has a few problems,
first off: addDaysInMonth() doesn't exist as a function at all
Second, ticks does not accept two parameters as is done here.

(see reference:<https://docs.microsoft.com/en-us/azure/logic-apps/workflow-definition-language-functions-reference#date-and-time-functions>)

So, the condition block is bogus. However, they probably wanted to write something like: addDays(utcNow(), variables("TierAgeInDays")) which IS valid.

The less-than will return true for anything older, which leaves the next boxes to be:

box 3: Tier blob

box 4: Message queue

box 5: optional, they probably want to show the results with list blob2

upvoted 13 times

✉  **BrettusMaximus** 2 years, 11 months ago

Totally agree, however Box 5 should be "Insert Entity" as it occurs for every blob. A good developer would want to track "Processing" and record the state of an archive transaction or not.

upvoted 1 times

 **XYZ2** 3 years ago

About condition

"the Ticks property to display the number of ticks that have elapsed since the beginning of the twenty-first century"

Basically, if left side has a bigger value, then it's been updated less than 180 days ago, and should not be archived

Condition says "if left value less than right value", then we have:

If yes (true), it should be archived (left value less than right value, less ticks, older than 180 days)

If no (false) - do not put it to archive (left value greater than right value, more ticks, newer than 180 days)

So, current answer is

Box 1 Recurrence

Box 2 Condition

Box 3 Tier blob (item last modified < current date - 180 days)

Box 4 Put a message on a queue

Box 5 still not sure...

upvoted 6 times

 **gchen** 3 years, 1 month ago

BOX 1: Recurrence

BOX 2: Condition

BOX 3: Tier blob ==> condition is older than 180 days

BOX 4: Put a message on a queue

BOX 5: List blob2 ==> check the next one

upvoted 6 times

 **pieronegri** 3 years, 1 month ago

I think the false branch needs "The path for any item that is not archived must be placed in an existing queue." as it is about items which are not archived (last modified is >= adddays(-180)).

the true branch needs archiving.

Last action, listing, is not needed per se. Just to show the results.

upvoted 1 times

 **minsma** 3 years, 1 month ago

I think this is the correct answer: <http://prntscr.com/zqmpjl>

upvoted 5 times

 **cbn** 3 years, 2 months ago

Box 1 Recurrence

Box 2 Condition

Box 3 Tier blob (item last modified < current date - 180 days)

Box 4 Put a message on a queue

Box 5 When there are messages in a queue / blank

upvoted 18 times

 **Juanlu** 3 years, 1 month ago

I thing, after analyse all comments, this is the good one !

upvoted 2 times

 **clarionprogrammer** 2 years, 11 months ago

This is the right answer.

upvoted 1 times

 **ning** 2 years, 7 months ago

No, you cannot do multiple trigger in the designer

In code view, you can

upvoted 1 times

 **atomicicebreaker** 2 years, 12 months ago

Box 3 - you need to tier blob when modified > currentDate - 180 days, and the condition is set to "less than" so true -> blobs to ignore, false -> blobs to tier

upvoted 4 times

 **Archimedes** 3 years, 2 months ago

The condition is "LastModified" "less than" (Date - 180). (TierAgeInDays is a negative value of -180). If this statement is true, it means that the blob has been modified before 180 days from now. Hence it should be archived. So boxes 3 and 4 should be swapped. Correct me if I am wrong. Box 5 is immaterial. Not covered in the question scope. So, I am Ok with listing the blobs for Box 5.

upvoted 7 times

 **jvyas** 2 years, 7 months ago

"You must automatically move blobs to Archive tier after they have not been modified within 180 days. " If condition block returns true meaning the block has been modified within 180 days and should not be archived.

upvoted 1 times

 **jvyas** 2 years, 7 months ago

Sorry I did not realize it was -180.

upvoted 1 times

✉ **Kibb** 3 years, 2 months ago

Aren't 3 and 4 swapped?

The question sais place in queue if the messages AREN'T archived (so not older than 180 days)

upvoted 5 times

✉ **rajwit** 3 years, 2 months ago

there is different discussion

<https://www.examtopics.com/exams/microsoft/az-203/view/7/>

I believe

Box 1 Recurrence

Box 2 Condition

Box 3 Put a message on a queue

Box 4 Tier blob

Box 5 List Blob

upvoted 8 times

✉ **xofowi5140** 3 years, 2 months ago

But the workflow is not the same

upvoted 1 times

✉ **sleepyboy777** 3 years, 3 months ago

It might make sense to List blobs 2 to see what files are there at the end of the operation, but the question does not specify that

upvoted 1 times

✉ **reggina** 3 years, 3 months ago

for the condition, True means the blob is older than the limit so 3 and 4 should be switched.

<https://docs.microsoft.com/en-us/azure/logic-apps/workflow-definition-language-functions-reference#ticks>

upvoted 16 times

✉ **borntolearn** 3 years, 3 months ago

I disagree because if you read the condition, it is saying that if the item is less than age(180) which is different from the condition's description.

upvoted 3 times

✉ **[Removed]** 3 years, 3 months ago

No, it says "if the item was modified at a time more than 180 days ago". Notice that "TierAgeInDays" is a negative value of -180. So if you add it to the current date it is 180 days ago. In Pesudcode this would be : If("LastModified" < Today-180d)

upvoted 10 times

✉ **internalK** 3 years, 2 months ago

Yes, condition is Ticks(item.LastModified)<Ticks(today-180) --> Box3 & Box4 should be switched. If the condition is true means that the item must be archived.

upvoted 7 times

✉ **Member777** 3 years, 3 months ago

Box 1 Recurrence

Box 2 Condition

Box 3 Put a message on a queue

Box 4 Tier blob

Box 5 When there are messages in a queue

upvoted 11 times

✉ **Cornholioz** 3 years, 3 months ago

Wrong for 4 & 5. The WHEN is not a condition like in a WHEN block of code. It gets processed after the IF condition. So in the IF condition for true, you want to put into the queue already. Box 5 should either be empty or (just for fun) list the blobs.

upvoted 3 times

✉ **xofowi5140** 3 years, 3 months ago

Cornholioz what is the correct order for you?

upvoted 1 times

✉ **cfn** 3 years, 2 months ago

I think it should be

Box 3 Tier blob (item last modified < current date - 180 days)

Box 4 Put a message on a queue

upvoted 9 times

✉ **altafpatel1984** 2 years, 4 months ago

Please don't misguide people.

upvoted 2 times

Question #28

Topic 6

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 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

Correct Answer: A

You can create a function that is triggered when messages are submitted to an Azure Storage queue.

Reference:

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-create-storage-queue-triggered-function>

Community vote distribution

A (91%) 9%

✉  **gunencali**  3 years, 3 months ago

Yes, is correct answer

upvoted 34 times

✉  **kemtin**  3 years, 4 months ago

i enjoys questions on azure functions a lot :)

upvoted 17 times

✉  **betepah987** 3 years, 1 month ago

Probably, cuz it's common to use so easy to answer.

upvoted 3 times

✉  **cb98160**  3 weeks, 4 days ago

Selected Answer: A

Yes, Azure service Bus supports FIFO and maximum size of 80 GB of storage!

upvoted 1 times

✉  **uffuchsi** 1 year, 1 month ago

Selected Answer: A

Solution meetss the goal!

upvoted 1 times

✉  **nvtienanh** 1 year, 4 months ago

On exam December 2, 2022

upvoted 3 times

✉  **gmishra88** 1 year, 6 months ago

How is the first requirement satisfied? How will the queue size not exceed 80 GB with Service bus queue and functions? But I guess the majority of people attempting this exam are already in the Microsoft stable and do not find anything missing with these pattern of questions. Sympathies
upvoted 2 times

✉  **coffecold** 1 year, 5 months ago

If messages exceed 80 GB in the queue , additional incoming messages will be rejected and the caller receives an exception.

upvoted 2 times

✉  **Perplex** 1 year, 8 months ago

Selected Answer: A

A is correct

upvoted 2 times

  **AZAdam22** 1 year, 9 months ago**Selected Answer: B**

No - Because you should use storage queues instead, as this provides FIFO ordered delivery and is cheaper than service bus, therefore minimising costs.

upvoted 1 times

  **scruffy** 1 year, 6 months ago

Some people get high before leaving a comment

upvoted 4 times

  **Knightie** 1 year, 7 months ago<https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-azure-and-service-bus-queues-compared-contrasted>

Storage Queue no FIFO see the comparison table.

upvoted 2 times

  **Eltooth** 1 year, 9 months ago**Selected Answer: A**

A is correct answer.

upvoted 2 times

  **xRiot007** 2 years agoThe answer is Yes, but the link is wrong. It is not important how the implementation looks. What is important is that you satisfy those 3 conditions in the problem, which you can find in a much better link, here: <https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-service-bus-trigger>

upvoted 1 times

  **xRiot007** 2 years agoCorrection. Link is here: <https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-azure-and-service-bus-queues-compared-contrasted>

upvoted 1 times

  **meoukg** 2 years ago

Got it on 03/2022, I chose A. Yes

upvoted 2 times

  **Freidrich** 2 years, 1 month ago**Selected Answer: A**

The correct answer is A: Yes.

upvoted 2 times

  **Netspud** 2 years, 1 month ago**Selected Answer: A**

It is correct

upvoted 2 times

  **lugospod** 2 years, 2 months ago

Got this one 01/2022. Went with YES

upvoted 4 times

  **MiraA** 2 years, 6 months ago

The URL link in the answer mentions Azure Function and Storage Queue.

This link is better - Azure Function and Service Bus Queue:

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-service-bus-trigger>

upvoted 3 times

  **fbffffbb** 2 years, 11 months ago

Correctomundo

upvoted 2 times

  **paru123456789** 3 years, 1 month ago

Answer: Yes

upvoted 2 times

Question #29

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 solution to collect point-of-sale (POS) device data from 2,000 stores located throughout the world. A single device can produce 2 megabytes (MB) of data every 24 hours. Each store location has one to five devices that send data.

You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.

You need to implement a solution to receive the device data.

Solution: Provision an Azure Notification Hub. Register all devices with the hub.

Does the solution meet the goal?

A. Yes

B. No

Correct Answer: B

Instead use an Azure Service Bus, which is used for order processing and financial transactions.

Reference:

<https://docs.microsoft.com/en-us/azure/event-grid/compare-messaging-services>

Community vote distribution

B (100%)

✉  **Justing_Gao**  3 years, 8 months ago

Azure event Hub is the best choice

upvoted 36 times

✉  **Genere** 3 years, 8 months ago

Azure Event Hub is for telemetry and distributed data broadcasting, while Azure Service Bus can be used for order processing and financial transactions.

What is clearly specified in the statement: "You are developing an Azure solution to collect point-of-sale (POS) device data from 2,000 stores ...".

It's Service Bus

upvoted 47 times

✉  **quokka** 3 years, 7 months ago

Event Hub won't work as message size is currently limited to 1MB (unless each device will upload more than once a day or you put an API in front to pre-process data to two 1MB blocks).

upvoted 2 times

✉  **Adol** 3 years, 3 months ago

Yes but we're talking about 2 MB in 24 hours and not every message. So still Azure Event Hub is the best choice and should be the primary choice when it comes to IoT or data from many devices

upvoted 6 times

✉  **clarionprogrammer** 3 years ago

Event Hub is incorrect. Event Hub is for streaming real-time data.

<https://azure.microsoft.com/en-us/services/event-hubs/>

upvoted 1 times

✉  **clarionprogrammer** 3 years ago

Service Bus is designed for financial transactions.

<https://docs.microsoft.com/en-us/azure/event-grid/compare-messaging-services>

upvoted 1 times

✉  **Nabeelcp** 3 years, 7 months ago

I think this scenario is more suited on message based not event based notification

upvoted 8 times

✉  **RaviNikkam** 1 year, 10 months ago

Answer is B, but however it does not seem like Event Hubs because of the fact, they mentioned "Device data must be correlated based on a device identifier." Correlation id is a property of ServiceBus. So it should be Azure Service Bus.

upvoted 1 times

✉  **adilkhan** 1 year, 2 months ago

<https://learn.microsoft.com/en-us/dotnet/api/azure.messaging.eventhubs.eventdata.correlationid?view=azure-dotnet>

upvoted 1 times

✉ **Knightie** 1 year, 7 months ago

It is Event Hub, this is a main differentiator between Event Hub and Service Bus, technically Event Hub is pushing and Service Bus is pulling, so Event Hub is more for Publisher oriented use, but assuming the subscriber can digest the message in time, else exception thrown. Service bus is pulling, so messages will stack until the subscriber pick up the next job. This question has a huge demand of data pushing.. and it didn't mention on subscriber, so Event Hub, see the hybrid model for the use of both. Answer is correct
<https://www.linkedin.com/pulse/azure-event-grid-vs-service-bus-eklavya-gupta/>

upvoted 3 times

✉ **Knightie** 1 year, 7 months ago

I mean, the answer is A, it is correct

upvoted 1 times

✉ **Knightie** 1 year, 7 months ago

My apology, event hub is out because the size is limited to 1 Mb.

upvoted 1 times

✉ **Knightie** 1 year, 7 months ago

but it said the data size is over 24 hours.... I am not sure.. but to be that's why we have event hub.

upvoted 1 times

✉ **Camios** Highly Voted 3 years, 9 months ago

Explanation should be that notification hub is for pushing to mobile devices?

upvoted 25 times

✉ **AnkanG** 3 years, 8 months ago

True, notification hub is for pushing the data, to a mobile device, not for collecting the data.

upvoted 9 times

✉ **Eltooth** Most Recent 1 year, 9 months ago

Selected Answer: B

B is correct answer.

Event Hub would be a solution here NOT Notification Hub.

upvoted 2 times

✉ **Evo_Morales** 1 year, 11 months ago

IMO, not a well-worded question, but since Svc Bus (Prem) is limited to 1MB/message and they specify each device may send up to 2mb / day, but don't specify whether uploads are done at the end of the day or streamed throughout the day in smaller chunks, you have to assume the former and so it must be Event Hub. It's dated, but here is a good article on the two services for general knowledge:
<https://www.serverless360.com/blog/azure-event-hubs-vs-service-bus>

upvoted 1 times

✉ **meoukg** 2 years ago

Got it on 03/2022, I chose B. No

upvoted 3 times

✉ **Adediwura** 2 years, 1 month ago

Azure notification hub is used to push messages to

upvoted 1 times

✉ **Netspud** 2 years, 1 month ago

Selected Answer: B

Answer is no

upvoted 1 times

✉ **Mev4953** 2 years, 3 months ago

Selected Answer: B

B is better choice

<https://docs.microsoft.com/en-us/azure/event-grid/compare-messaging-services>

upvoted 1 times

✉ **kondapaturi** 2 years, 9 months ago

Answer is NO

upvoted 2 times

✉ **rdemontis** 3 years ago

In my opinion EventHub is the best choice for the following reason:

1. Faster in elaborating millions of data every day.
2. No problem for future expansions of POS as assumed in the question
3. It is a slender system than Service bus
4. It is not required advanced features like transactions, ordering, duplicate detection, and instantaneous consistency as service bus provide
5. The requirement here is to manage huge quantity of streaming data

In a similar question (i don't remember whether on udemy or testpreptraining web site) the correct answer is Event Hub.

upvoted 3 times

✉ **debolahQ** 1 year, 5 months ago

I think most of POS data are transactions and should detect duplication. and event it has more than 15000 devices, the volume is still not comparable with most of telemetry data. I prefer Service bus

upvoted 1 times

✉ **Chulbul_Pandey** 3 years ago

Az event hub is a better choice

upvoted 3 times

✉ **paru123456789** 3 years, 1 month ago

Answer: No

upvoted 2 times

✉ **aditya_2016** 3 years, 2 months ago

<https://docs.microsoft.com/en-us/azure/event-grid/compare-messaging-services#comparison-of-services>

upvoted 5 times

✉ **tom999** 3 years, 3 months ago

No - Notification Hub is for outbound communication

upvoted 7 times

Question #30

You are building a loyalty program for a major snack producer. When customers buy a snack at any of 100 participating retailers the event is recorded in Azure

Event Hub. Each retailer is given a unique identifier that is used as the primary identifier for the loyalty program.

Retailers must be able to be added or removed at any time. Retailers must only be able to record sales for themselves.

You need to ensure that retailers can record sales.

What should you do?

- A. Use publisher policies for retailers.
- B. Create a partition for each retailer.
- C. Define a namespace for each retailer.

Correct Answer: A

Event Hubs enables granular control over event publishers through publisher policies. Publisher policies are run-time features designed to facilitate large numbers of independent event publishers. With publisher policies, each publisher uses its own unique identifier when publishing events to an event hub.

Incorrect:

Not C: An Event Hubs namespace is a management container for event hubs (or topics, in Kafka parlance). It provides DNS-integrated network endpoints and a range of access control and network integration management features such as IP filtering, virtual network service endpoint, and Private Link.

Reference:

<https://docs.microsoft.com/en-us/azure/event-hubs/event-hubs-features>

Community vote distribution

A (100%)

 **finnishr** Highly Voted 1 year, 7 months ago

Given answer is correct!

upvoted 9 times

 **KingChuang** 1 year, 3 months ago

On my exam 2022-12-26.

Chose: A

upvoted 5 times

 **FeriAZ** Most Recent 1 month, 3 weeks ago

Selected Answer: A

In Azure Event Hubs, a publisher is essentially an identity or role that can send events to an event hub. Publisher policies allow you to define rules or policies that control how and what data can be published to an event hub. Using publisher policies, you can assign a unique identifier to each retailer (publisher) when they send data to the event hub. This approach enables fine-grained control over event data ingress, ensuring that retailers can only submit data for themselves.

upvoted 1 times

 **paunski7** 11 months, 3 weeks ago

ChatGPT:

Sorry, but the correct answer is B.

Creating a partition for each retailer ensures that each retailer only sees the events that pertain to them, as each partition in Event Hubs is an independent stream of events. This also allows for easy addition and removal of retailers, as you can simply add or remove partitions accordingly.

Using publisher policies for retailers or defining a namespace for each retailer are not the correct solutions for this scenario.

upvoted 1 times

 **macobuzi** 7 months, 2 weeks ago

ChatGPT is not a reliable source for Azure.

upvoted 5 times

 **nekkilodeon** 11 months, 2 weeks ago

B is incorrect.

The number of partitions is specified at the time an Event Hubs is created and can't be changed.

<https://learn.microsoft.com/en-us/training/modules/azure-event-hubs/2-event-hubs-overview>

upvoted 3 times

 **Ciupaz** 5 months, 1 week ago

ChatGPT gives me A as correct answer.

"Using publisher policies allows you to control and manage access to the Azure Event Hub at a more granular level. You can create separate publisher policies for each retailer, and each policy can have its own set of permissions, including the ability to send events to the event hub. This approach ensures that each retailer can only record sales for themselves, and it allows for easy management of retailer access, including adding or removing retailers as needed."

upvoted 2 times

 **OPT_001122** 1 year, 4 months ago

Selected Answer: A

A. Use publisher policies for retailers.

upvoted 2 times

Question #31

DRAG DROP -

You develop and deploy a web app to Azure App Service in a production environment. You scale out the web app to four instances and configure a staging slot to support changes.

You must monitor the web app in the environment to include the following requirements:

☞ Increase web app availability by re-routing requests away from instances with error status codes and automatically replace instances if they remain in an error state after one hour.

☞ Send web server logs, application logs, standard output, and standard error messaging to an Azure Storage blob account.

You need to configure Azure App Service.

Which values should you use? To answer, drag the appropriate configuration value to the correct requirements. Each configuration value 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.

Select and Place:

Configuration values

Health check

Diagnostic setting

Deployment slot

Autoscale rule

Zone redundancy

Answer Area**Requirement**

Increase availability

Send logs

Configuration value

Configuration value

Configuration value

Correct Answer:

Configuration values

Health check

Diagnostic setting

Deployment slot

Autoscale rule

Zone redundancy

Answer Area**Requirement**

Increase availability

Send logs

Configuration value

Health check

Diagnostic setting

Box 1: Health check -

Health check increases your application's availability by re-routing requests away from unhealthy instances, and replacing instances if they remain unhealthy. Your App Service plan should be scaled to two or more instances to fully utilize Health check.

Box 2: Diagnostic setting -

Azure provides built-in diagnostics to assist with debugging an App Service app.

With the new Azure Monitor integration, you can create Diagnostic Settings to send logs to Storage Accounts, Event Hubs and Log Analytics.

Reference:

<https://docs.microsoft.com/en-us/azure/app-service/monitor-instances-health-check> <https://docs.microsoft.com/en-us/azure/app-service/troubleshoot-diagnostic-logs>

 **OPT_001122**  1 year, 4 months ago

Box 1: Health check

Box 2: Diagnostic setting

upvoted 38 times

 **le129** Highly Voted 1 year, 7 months ago

disregard my answer please

upvoted 25 times

 **CarlosTheBoldest** Most Recent 4 months ago

I got this question on my exam, 2023Dec, go with what I remember was the most voted answer. Score 902, most of the questions were here, slightly different on wording because the Azure Ad <-> Entra Id change. Case was City Power & Light. Good luck!

Important tip, you have access to microsoft learn during the exam!

upvoted 5 times

 **Ranzzan** 1 year, 2 months ago

<https://learn.microsoft.com/en-us/azure/app-service/monitor-instances-health-check?tabs=dotnet#what-happens-if-my-app-is-running-on-a-single-instance>

upvoted 2 times

 **Billabongs** 1 year, 5 months ago

The answer looks correct,

<https://learn.microsoft.com/en-us/azure/app-service/monitor-instances-health-check?tabs=dotnet#what-happens-if-my-app-is-running-on-a-single-instance>

upvoted 7 times

 **Dani_ac7** 1 year, 7 months ago

looks ok

upvoted 4 times

 **le129** 1 year, 7 months ago

1. Autoscale rule
2. Diagnostic setting

upvoted 21 times

 **surprise0011** 12 months ago

There is specified that you have configured four instances, it seems like it is an requirement , so autoscale doesn't fit

upvoted 6 times

Question #32

You develop a solution that uses Azure Virtual Machines (VMs).

The VMs contain code that must access resources in an Azure resource group. You grant the VM access to the resource group in Resource Manager.

You need to obtain an access token that uses the VM's system-assigned managed identity.

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

- A. From the code on the VM, call Azure Resource Manager using an access token.
- B. Use PowerShell on a remote machine to make a request to the local managed identity for Azure resources endpoint.
- C. Use PowerShell on the VM to make a request to the local managed identity for Azure resources endpoint.
- D. From the code on the VM, call Azure Resource Manager using a SAS token.
- E. From the code on the VM, generate a user delegation SAS token.

Correct Answer: BD

Community vote distribution

AC (100%)

✉  **le129** Highly Voted 1 year, 7 months ago

Selected Answer: AC

<https://docs.microsoft.com/en-us/azure/active-directory/managed-identities-azure-resources/tutorial-windows-vm-access-arm>

upvoted 23 times

✉  **Ciupaz** Most Recent 4 months ago

VM are not out-of-scope for AZ-204 exam?

upvoted 3 times

✉  **CarlosTheBoldest** 4 months ago

Selected Answer: AC

What makes C and not B the correct answer is the "remote machine" versus VM. It takes me a while to realize about it. Hope this help others

upvoted 1 times

✉  **Razvan_C** 4 months, 2 weeks ago

I am pretty sure VMs are out from AZ-204.

upvoted 1 times

✉  **dddddd111** 5 months, 3 weeks ago

Selected Answer: AC

A and C are correct answers.

upvoted 1 times

✉  **aragones** 11 months ago

Got this 2023-05-12.

my cases:

case: You need to configure authorization.

case: You need to ensure the app does not time out and processes the blob data

case study: VanArsdel Inc Canada

upvoted 3 times

✉  **adilkhan** 12 months ago

A, C chatGPT

upvoted 1 times

✉  **red0400** 1 year ago

Selected Answer: AC

Two parts of the question - Code, PowerShell, for code version, A is definitely the choice, and for PowerShell, since it's for virtual machine, we will do it for virtual machine, so it's C.

upvoted 2 times

✉  **adilkhan** 1 year, 1 month ago

AC chatGPT

upvoted 1 times

✉ **Bear_Polar** 1 year, 4 months ago

Selected Answer: AC

a and c

upvoted 1 times

✉ **OPT_001122** 1 year, 5 months ago

Selected Answer: AC

a and c

upvoted 2 times

✉ **POOOJAAAAAA** 1 year, 3 months ago

IMO .. option B

Now that you've created a Remote Desktop Connection with the virtual machine, open PowerShell in the remote session.

Using the Invoke-WebRequest cmdlet, make a request to the local managed identity for Azure resources endpoint to get an access token for Azure Resource Manager.

Reference: <https://learn.microsoft.com/en-us/azure/active-directory/managed-identities-azure-resources/tutorial-windows-vm-access-arm>

upvoted 1 times

✉ **POOOJAAAAAA** 1 year, 3 months ago

My bad its A and C

upvoted 2 times

✉ **lombster** 1 year, 5 months ago

Selected Answer: AC

From le129 link

1. Call local managed identity: C

```
$response = Invoke-WebRequest -Uri 'http://169.254.169.254/metadata/identity/oauth2/token?api-version=2018-02-01&resource=https://management.azure.com/' -Method GET -Headers @{Metadata="true"}
```

2. Extract token and call Azure Resource Manager using the access token: A

```
(Invoke-WebRequest -Uri https://management.azure.com/subscriptions/<SUBSCRIPTION ID>/resourceGroups/<RESOURCE GROUP>?api-version=2016-06-01 -Method GET -ContentType "application/json" -Headers @{ Authorization = "Bearer $ArmToken" }).content
```

upvoted 4 times

✉ **VACAS** 1 year, 6 months ago

Selected Answer: AC

<https://docs.microsoft.com/en-us/azure/active-directory/managed-identities-azure-resources/tutorial-windows-vm-access-arm>

upvoted 4 times

Question #33

You are developing a road tollway tracking application that sends tracking events by using Azure Event Hubs using premium tier. Each road must have a throttling policy uniquely assigned. You need to configure the event hub to allow for per-road throttling. What should you do?

- A. Use a unique consumer group for each road.
- B. Ensure each road stores events in a different partition.
- C. Ensure each road has a unique connection string.
- D. Use a unique application group for each road.

Correct Answer: B*Community vote distribution*

D (89%) 8%

✉  **le129** Highly Voted 1 year, 7 months ago

Selected Answer: D

<https://docs.microsoft.com/en-us/azure/event-hubs/event-hubs-features>.

Application groups

An application group is a collection of client applications that connect to an Event Hubs namespace sharing a unique identifying condition such as the security context - shared access policy or Azure Active Directory (Azure AD) application ID.

Azure Event Hubs enables you to define resource access policies such as throttling policies for a given application group and controls event streaming (publishing or consuming) between client applications and Event Hubs.

For more information, see Resource governance for client applications with application groups.

upvoted 20 times

✉  **gmishra88** Highly Voted 1 year, 6 months ago

Selected Answer: D

Definitely D. Never heard of before and wondering how many things to remember

upvoted 6 times

✉  **CarlosTheBoldest** Most Recent 4 months, 3 weeks ago

Selected Answer: D

Here it show you how to define a throttling policy for an application group

<https://learn.microsoft.com/en-us/azure/event-hubs/resource-governance-with-app-groups?tabs=portal#apply-throttling-policies>

upvoted 1 times

✉  **wkosten** 4 months, 3 weeks ago

A: (bing chat)

o allow for per-road throttling, you should use a unique consumer group for each road. Consumer groups are used to read the events from an event hub and can be used to apply different policies to different groups of consumers 1. By using a unique consumer group for each road, you can apply a unique throttling policy to each road 1.

Option B is incorrect because partitioning is used to distribute the load across multiple nodes and is not related to throttling 1. Option C is incorrect because connection strings are used to authenticate and authorize access to an event hub and are not related to throttling 1. Option D is incorrect because application groups are used to manage the lifecycle of an event processor host and are not related to throttling 1.

upvoted 1 times

✉  **dddddd111** 5 months, 3 weeks ago

Selected Answer: D

D?????

upvoted 1 times

✉  **TusharChandak** 7 months, 1 week ago

Selected Answer: A

A is the correct option

upvoted 1 times

✉  **Dats1987** 11 months, 4 weeks ago

Selected Answer: D

Correct ans: D

upvoted 1 times

 **Sulzirsha** 1 year, 2 months ago

Looks like option D

Refer: <https://learn.microsoft.com/en-us/azure/event-hubs/resource-governance-overview>

Azure Event Hubs enables you to govern event streaming workloads of client applications that connect to Event Hubs. You can create logical groups known as application groups where each group is a collection of client applications, and then apply quota and access management policies for an application group (group of client applications).

Application groups are available only in premium and dedicated tiers

Each application group can contain zero or more policies that control the data plane access of the client applications that are part of the application group. Application groups currently support throttling policies.

upvoted 1 times

 **Osip21** 1 year, 2 months ago

Selected Answer: A

ChatGPT: A. Use a unique consumer group for each road.

In order to configure the Event Hub to allow for per-road throttling, you can use a unique consumer group for each road. This way, you can assign a unique throttling policy to each consumer group, which in turn controls the number of events that can be sent and received by the corresponding road.

Option B and C are not correct solutions to this problem, because partitioning and unique connection strings are not related to throttling policies.

Option D is not correct solution too, application groups are not related to throttling policies and they are used to group related Event Hubs together.

upvoted 2 times

 **adilkhan** 1 year, 1 month ago

In many questions ChatGPT is wrong. For this one as well D is a correct answer!

upvoted 1 times

 **adilkhan** 1 year, 1 month ago

Application groups

An application group is a collection of client applications that connect to an Event Hubs namespace sharing a unique identifying condition such as the security context - shared access policy or Azure Active Directory (Azure AD) application ID.

Azure Event Hubs enables you to define resource access policies such as throttling policies for a given application group and controls event streaming (publishing or consuming) between client applications and Event Hubs.

upvoted 2 times

 **MoroMind** 11 months, 2 weeks ago

Seriously? Do we, software developers, want to use chatGPT as the oracle? Just familiarize yourself with the basic working principles of chatGPT to know that this is not a good idea in case of this kind of test.

I recommend asking chatGPT why D is the correct answer, and you'll get a "credible" explanation too ;).

upvoted 2 times

 **Ciupaz** 5 months, 1 week ago

In my case, ChatGPT choose B.

upvoted 1 times

 **Ciupaz** 4 months, 3 weeks ago

Bard choose D instead.

upvoted 1 times

 **Saurabh0074321** 1 year, 3 months ago

Selected Answer: B

B is the correct answer

upvoted 1 times

 **David_123** 1 year, 3 months ago

Can you share the resource you used to claim this answer ?

upvoted 2 times

 **Nhiendo** 1 year, 3 months ago

Selected Answer: B

upvoted 2 times

 **finnisher** 1 year, 7 months ago

Selected Answer: D

D is correct.

upvoted 4 times

 **Junius** 1 year, 7 months ago

Answer is correct

upvoted 2 times

Question #34

Topic 6

You develop and deploy an ASP.NET Core application that connects to an Azure Database for MySQL instance. Connections to the database appear to drop intermittently and the application code does not handle the connection failure. You need to handle the transient connection errors in code by implementing retries. What are three possible ways to achieve this goal? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Close the database connection and immediately report an error.
- B. Disable connection pooling and configure a second Azure Database for MySQL instance.
- C. Wait five seconds before repeating the connection attempt to the database.
- D. Set a maximum number of connection attempts to 10 and report an error on subsequent connections.
- E. Increase connection repeat attempts exponentially up to 120 seconds.

Correct Answer: ACD*Community vote distribution*

CDE (100%)

✉  **Amy_ant** Highly Voted 1 year, 7 months ago
C,D,E

The first and second case are fairly straight forward to handle. Try to open the connection again. When you succeed, the transient error has been mitigated by the system. You can use your Azure Database for MySQL again. We recommend having waits before retrying the connection. Back off if the initial retries fail. This way the system can use all resources available to overcome the error situation. A good pattern to follow is:

Wait for 5 seconds before your first retry.
For each following retry, the increase the wait exponentially, up to 60 seconds.
Set a max number of retries at which point your application considers the operation failed.

<https://docs.microsoft.com/en-us/azure/mysql/single-server/concepts-connectivity>
upvoted 15 times

✉  **deborahQ** 1 year, 5 months ago
but in E, it says increase the attempts exponentially to 120 seconds (but it might be typo). Agree if that is wait exponentially.
upvoted 1 times

✉  **Nokaido** Highly Voted 1 year, 6 months ago
Selected Answer: CDE
C, D, E are the only ones implementing retries
upvoted 7 times

✉  **dddddd111** Most Recent 5 months, 3 weeks ago
Selected Answer: CDE
Option A ("Close the database connection and immediately report an error") is not a suitable retry strategy as it does not involve retrying the connection after a transient failure.
upvoted 1 times

✉  **JH81** 9 months, 3 weeks ago
Selected Answer: CDE
C, D, E
It says use retries so A and B Are not correct.
upvoted 2 times

✉  **AQMA** 1 year ago
Selected Answer: CDE
A transient error is an error that will resolve itself. Transient errors can occur for example when hardware or network failure happens.
A best practice for designing and developing applications in the cloud is to expect transient errors. Assume they can happen in any component at any time and have the appropriate logic to handle these situations.
Transient errors should be handled using retry logic.
A good pattern to follow is:

Wait for 5 seconds before your first retry.
For each following retry, the increase the wait exponentially, up to 60 seconds.
Set a max number of retries at which point your application considers the operation failed.

Reference: <https://learn.microsoft.com/en-us/azure/mysql/single-server/concepts-connectivity#handling-transient-errors>

upvoted 1 times

 **NombreFalso** 1 year, 1 month ago

Selected Answer: CDE

C, D, E because A and B are just "give up"

upvoted 2 times

 **adilkhan** 1 year, 2 months ago

C,D,E

upvoted 3 times

 **OPT_001122** 1 year, 3 months ago

Selected Answer: CDE

C, D, E

upvoted 4 times

 **at_sayali** 1 year, 5 months ago

Got this in 10/2022

Went with C, D, E

upvoted 6 times

 **RochaG2** 1 year, 6 months ago

Selected Answer: CDE

CDE for sure

upvoted 7 times

 **finnishr** 1 year, 7 months ago

Correct answers are C, D, E

upvoted 6 times

 **Junius** 1 year, 7 months ago

Given answers are correct

upvoted 4 times

Question #35

You are building a B2B web application that uses Azure B2B collaboration for authentication. Paying customers authenticate to Azure B2B using federation.

The application allows users to sign up for trial accounts using any email address.

When a user converts to a paying customer, the data associated with the trial should be kept, but the user must authenticate using federation.

You need to update the user in Azure Active Directory (Azure AD) when they convert to a paying customer.

Which Graph API parameter is used to change authentication from one-time passcodes to federation?

- A. resetRedemption
- B. Status
- C. userFlowType
- D. invitedUser

Correct Answer: B*Community vote distribution*

A (92%)	8%
---------	----

✉️  **finnishr** Highly Voted 1 year, 7 months ago

Selected Answer: A

"When a user redeems a one-time passcode and later obtains an MSA, Azure AD account, or other federated account, they'll continue to be authenticated using a one-time passcode. If you want to update the user's authentication method, you can reset their redemption status."

<https://docs.microsoft.com/en-us/azure/active-directory/external-identities/one-time-passcode#user-experience-for-one-time-passcode-guest-users>

upvoted 11 times

✉️  **warchoon** 1 year, 1 month ago

invitedUser is also used :)

<https://learn.microsoft.com/en-us/azure/active-directory/external-identities/reset-redemption-status#:~:text=reset%3E%3E%22%20%20%0A%7D%2C%20%0A%22-,resetRedemption,-%22%3A%20true>

Who asks such questions?

upvoted 1 times

✉️  **damianadalid** 10 months, 3 weeks ago

It is involved in the process, but the fact that invitedUser is an object instead of a boolean, makes me stick with resetRedemption regardless.

upvoted 1 times

✉️  **Dhanishetty** Highly Voted 1 year, 4 months ago

Selected Answer: A

<https://learn.microsoft.com/en-us/azure/active-directory/external-identities/reset-redemption-status>

upvoted 7 times

✉️  **raymond_abcd** Most Recent 2 months ago

Selected Answer: A

<https://learn.microsoft.com/en-us/entra/external-id/reset-redemption-status#use-microsoft-graph-api-to-reset-redemption-status>

upvoted 1 times

✉️  **Ciupaz** 5 months, 1 week ago

Selected Answer: C

To change the authentication method from one-time passcodes to federation when a user converts to a paying customer in Azure Active Directory (Azure AD), you should use the Graph API parameter: userFlowType

upvoted 1 times

✉️  **dddddd111** 5 months, 3 weeks ago

Selected Answer: A

A and B are applicable, but A is more relevant to the question.

Resetting redemption effectively allows a user to be re-invited, and this process can be used to change the authentication method for the user, such as from one-time passcodes to federation. The resetRedemption property is used to reset the redemption status for a user, allowing them to go through the invitation process again, potentially changing the authentication method in the process.

upvoted 1 times

✉️  **applepie** 8 months, 2 weeks ago

got this question today, answer A - 7/30/2023, score 895/1000

upvoted 4 times

✉ **red0400** 1 year, 1 month ago

The correct answer is C.

The Graph API parameter used to change authentication from one-time passcodes to federation is `userFlowType`. This parameter is used to update the user flow type for a user in Azure AD B2B collaboration.

Option A, `resetRedemption`, is a parameter used to reset the invitation redemption status of a user in Azure AD B2B collaboration.

Option B, `Status`, is a parameter used to update the status of a user in Azure AD, such as activating or deactivating a user account.

Option D, `invitedUser`, is a parameter used to invite a user to an Azure AD tenant.

Therefore, the correct answer is C, `userFlowType`. This parameter should be used to update the user's authentication method from one-time passcodes to federation when they convert to a paying customer in the B2B web application.

upvoted 2 times

✉ **adilkhan** 1 year, 2 months ago

A is correct . When a user redeems a one-time passcode and later obtains an MSA, Azure AD account, or other federated account, they'll continue to be authenticated using a one-time passcode. If you want to update the user's authentication method, you can reset their redemption status.

<https://learn.microsoft.com/en-us/azure/active-directory/external-identities/one-time-passcode>

upvoted 2 times

✉ **Osip21** 1 year, 2 months ago

Selected Answer: C

C. `userFlowType`

upvoted 2 times

✉ **OPT_001122** 1 year, 3 months ago

Selected Answer: A

A. `resetRedemption` Most Voted

upvoted 3 times

✉ **LGWJ12** 1 year, 4 months ago

Selected Answer: A

<https://learn.microsoft.com/en-us/azure/active-directory/external-identities/reset-redemption-status>

upvoted 4 times

✉ **coffecold** 1 year, 5 months ago

Selected Answer: A

<https://learn.microsoft.com/en-us/azure/active-directory/external-identities/reset-redemption-status>

upvoted 3 times

✉ **willchenxa** 1 year, 7 months ago

Selected Answer: A

I would select A

<https://docs.microsoft.com/en-us/azure/active-directory/external-identities/one-time-passcode#user-experience-for-one-time-passcode-guest-users>

upvoted 3 times

✉ **le129** 1 year, 7 months ago

Selected Answer: A

<https://docs.microsoft.com/en-us/azure/active-directory/external-identities/redemption-experience>

upvoted 3 times

Question #36

Topic 6

HOTSPOT

You develop an image upload service that is exposed using Azure API Management. Images are analyzed after upload for automatic tagging.

Images over 500 KB are processed by a different backend that offers a lower tier of service that costs less money. The lower tier of service is denoted by a header named x-large-request. Images over 500 KB must never be processed by backends for smaller images and must always be charged the lower price.

You need to implement API Management policies to ensure that images are processed correctly.

How should you complete the API Management inbound policy? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Answer Area

Correct Answer:

kytborad Highly Voted 8 months ago

I got this question on 6th August 2023. chose given answers. passed with 904. I got Case study: city and Lights. All questions are from ExamTopics.

upvoted 11 times

 sphinx0005 4 months, 3 weeks ago

Where did you refer case studies. Can you please tell me

upvoted 1 times

✉ **Veeresh114** Most Recent 1 month, 3 weeks ago

Correction : Images below 500 KB are processed by a different backend that offers a lower tier of service that costs less money. The lower tier of service is denoted by a header named x-large-request. Images over 500 KB must never be processed by backends for smaller images and must always be charged the lower price

upvoted 1 times

✉ **SSR999** 2 months, 3 weeks ago

In question it is mentioned 'Images over 500kb' in both scenarios, ideally in second place it should be 'Images less than 500KB must never process'

upvoted 1 times

✉ **CarlosTheBoldest** 4 months ago

I got this question on my exam, 2023Dec, go with what I remember was the most voted answer. Score 902, most of the questions were here, slightly different on wording because the Azure Ad <-> Entra Id change. Case was City Power & Light. Good luck!

Important tip, you have access to microsoft learn during the exam!

upvoted 3 times

✉ **Firo** 8 months, 2 weeks ago

The given answer looks correct

the condition here is for "Images < 500KB" so based on the below reference we need to delete the header.

<https://learn.microsoft.com/en-us/azure/api-management/set-header-policy#attributes>

This is also the reference for back end service

<https://learn.microsoft.com/en-us/azure/api-management/set-backend-service-policy>

upvoted 3 times

✉ **VarunDashora26** 7 months, 3 weeks ago

In my opinion, why would there be a need to Delete the header when " The lower tier of service is denoted by a header named x-large-request" instead it should be override, set-backend, baseURI

upvoted 2 times

✉ **Heighte** 1 year ago

question seem broken, it doesn't make any sense to me to have delete and value true below.

upvoted 2 times

✉ **damianadalid** 10 months, 3 weeks ago

Indeed. And if the answer were override (to set it to true), we would need a complementary set-header for x-large-request to false in the otherwise block...

upvoted 1 times

✉ **adilkhan** 1 year, 1 month ago

```
<when condition="@((int)context.Request.Headers.GetValueOrDefault("Content-Length", "0") > 500000)">
<set-header name="x-large-request" exists-action="override">
<value>true</value>
</set-header>
<set-backend-service base-url="https://backend-large-service.com" />
</when>
<otherwise>
<set-header name="x-large-request" exists-action="override">
<value>false</value>
</set-header>
<set-backend-service base-url="https://backend-small-service.com" />
</otherwise> chat gpt
```

upvoted 4 times

✉ **JustHereToLearn** 1 year, 2 months ago

The given answer looks correct

<https://learn.microsoft.com/en-us/azure/api-management/set-header-policy#attributes>

<https://learn.microsoft.com/en-us/azure/api-management/set-backend-service-policy>

upvoted 2 times

✉ **daothanhuyen** 1 year, 1 month ago

Size < 512 should process.

Why is it delete?

upvoted 3 times

✉ **NK203** 1 year, 1 month ago

x-large-request should be set on Size>=512.if Size<512kb,remove this header.

upvoted 9 times

✉ **IvanIco** 9 months, 2 weeks ago

it's definitely not delete

upvoted 1 times

Question #37

HOTSPOT

You develop several Azure Functions app functions to process JSON documents from a third-party system. The third-party system publishes events to Azure Event Grid to include hundreds of event types, such as billing, inventory, and shipping updates.

Events must be sent to a single endpoint for the Azure Functions app to process. The events must be filtered by event type before processing. You must have authorization and authentication control to partition your tenants to receive the event data.

You need to configure Azure Event Grid.

Which configuration should you use? To answer, select the appropriate values in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Requirement

Third-party system endpoint to send events

Configuration Value

system topic
custom topic
event domain
event subscription

Azure Functions app endpoint to handle filtered events

system topic
custom topic
event domain
event subscription

Answer Area

Requirement

Third-party system endpoint to send events

Configuration Value

system topic
custom topic
event domain
event subscription

Correct Answer:

Azure Functions app endpoint to handle filtered events

system topic
custom topic
event domain
event subscription

  **MatejB**  1 year ago

Check this from official training material:

<https://learn.microsoft.com/en-us/training/modules/azure-event-grid/2-event-grid-overview>

1. custom topic

Because according to link:

"Topics. The event grid topic provides an endpoint where the source sends events(...)Custom topics are application and third-party topics"

2. event subscription

Because according to link:

"Event subscriptions. A subscription tells Event Grid which events on a topic you're interested in receiving. When creating the subscription, you provide an endpoint for handling the event"

upvoted 30 times

  **Chris2349** 9 months, 4 weeks ago

Received the same question today on the exam, 15th of June 2023. Scored 887.

Answered the same.

upvoted 3 times

✉  **mmdex**  1 year, 1 month ago

I don't know, but from the description of the event domain, I'd say the correct answer is:

1. event domain
2. event subscription

<https://learn.microsoft.com/en-us/azure/event-grid/event-domains>

1. event domain: Using event domain, the third party system does not send data directly to topics. Event domain provides a single endpoint for the system to publish events.

2. event subscription: Azure functions are event handlers. They use subscriptions. It is true that the event domain also provides a single subscription endpoint, but the handler would then receive all events, not just a filtered set as required:

"Event domains also allow for domain-scope subscriptions. An event subscription on an event domain will receive all events sent to the domain regardless of the topic the events are sent to."

<https://learn.microsoft.com/en-us/azure/event-grid/event-domains#domain-scope-subscriptions>

upvoted 9 times

✉  **warchoon** 1 year, 1 month ago

So. It must be

1. event domain
2. event domain

You can see the endpoint is the same

<https://learn.microsoft.com/en-us/azure/event-grid/includes/media/event-grid-domain-example-use-case/contoso-construction-example.png>

upvoted 1 times

✉  **warchoon** 1 year, 1 month ago

<https://learn.microsoft.com/en-us/azure/event-grid/how-to-event-domains?tabs=azurecli#create-topics-and-subscriptions:~:text=topics/demotopic1%22%20%5C-,%2D%2Dendpoint,-https%3A//contoso.azurewebsites>

upvoted 1 times

✉  **FeriAZ**  2 months, 1 week ago

1. event domain

management tool within Azure Event Grid that provides a layer for routing and security. It is designed for scenarios with multiple publishers and subscribers, making it ideal for situations where events are coming from a third-party system intended for multiple tenants.

2. event subscription

sed to subscribe to events from an Event Grid topic, system topic, or domain. It directs specific events to a handler based on filter criteria, which in this case would be the Azure Functions app.

upvoted 1 times

✉  **130nk3r5** 3 months, 3 weeks ago

Third Party system to send events? Event Domain or Custom Topic (Both should be right)

<https://learn.microsoft.com/en-us/azure/event-grid/event-domains>

<https://learn.microsoft.com/en-us/training/modules/azure-event-grid/2-event-grid-overview>

Azure functions app endpoint to handle filtered events? Event Subscription

Explanation:

Event Domains are a management and authentication scope for event topics. They provide an endpoint where publishers can send events to, and they are useful when you want to provide multi-tenant isolation.

Event Subscription is a mechanism to deliver events from event handlers such as Azure Functions, Logic Apps, or your own custom HTTP listener. You can filter the events that a subscription receives by specifying filter criteria.

upvoted 1 times

✉  **CarlosTheBoldest** 4 months ago

I got this question on my exam, 2023Dec, go with what I remember was the most voted answer. Score 902, most of the questions were here, slightly different on wording because the Azure Ad <-> Entra Id change. Case was City Power & Light. Good luck!

Important tip, you have access to microsoft learn during the exam!

upvoted 2 times

✉  **AndySmith** 5 months, 2 weeks ago

According to below link / Figure:

- 1) 3rd party publishes to Domain EP of Event Grid service
- 2) Azure Functions and others subscribe to Event Subscription.

<https://learn.microsoft.com/en-us/azure/event-grid/event-domains?tabs=event-grid-event-schema#example-use-case>

The excerpt from that page, which supports the Q's requirements (for event domain):

"Use event domains to:

- 1) Manage multitenant eventing architectures at scale.
- 2) Manage your authentication and authorization.
- 3) Partition your topics without managing each individually.
- 4) Avoid individually publishing to each of your topic endpoints. "

So, I would go with: 1) event domain 2) event subscription

upvoted 1 times

✉ **devex** 7 months ago

1. event domain
2. event subscription

Regarding 1....

Requirement: "You must have authorization and authentication control to partition your tenants to receive the event data."

From: <https://learn.microsoft.com/en-us/azure/event-grid/event-domains>

"Domains also give you authentication and authorization control over each topic so you can partition your tenants"

upvoted 1 times

✉ **kvtborad** 8 months ago

I got this question on 6th August 2023. I was confused so chose a custom topic for the both boxes passed with 904. I got a Case study: city and Lights. All questions are from ExamTopics.

upvoted 4 times

✉ **dy0917** 10 months, 4 weeks ago

1. Custom topic
2. Event subscriptions

upvoted 1 times

✉ **nekkilodeon** 11 months, 2 weeks ago

1. Custom topic
2. Event domain

upvoted 2 times

✉ **surprise0011** 11 months, 4 weeks ago

I received this one on 2023-04-17, I did not know what to do I selected custom topic twice. I passed with 926. This definitely need more research because it is still there

upvoted 5 times

✉ **adilkhan** 11 months, 3 weeks ago

were all the questions from exam topics? please reply

upvoted 2 times

✉ **adilkhan** 1 year ago

Custom topic for both ChatGPT.

You should use a custom topic to configure the third-party system to send events to Azure Event Grid. A custom topic allows you to specify the endpoint that the events should be sent to, and it provides you with control over authentication and authorization for the topic.

A custom topic allows you to define your own schema and can be used to filter events based on event type, subject, and other criteria. You can also control access to the custom topic by configuring authorization and authentication.

upvoted 1 times

✉ **warchoon** 1 year, 1 month ago

1. event domain
2. event domain => "You must have authorization and authentication control ..."

upvoted 1 times

✉ **red0400** 1 year, 1 month ago

Third party system endpoint to send events= custom topic
Azure functions app endpoint to handle filtered events= event subscription

upvoted 2 times

✉ **Asten** 1 year, 1 month ago

custom topic for third-party topics

upvoted 1 times

✉ **Asten** 1 year, 1 month ago

the first one should be custom topic

upvoted 1 times

✉ **Luza93** 1 year, 2 months ago

1. I'd say that the first one is custom topic because:

"Custom topics are application and third-party topics" - and we know from the question requirements that there is a third-party app that is sending the events

reference: <https://learn.microsoft.com/en-us/azure/event-grid/custom-topics>

Additionally :

"Only Azure services can publish events to system topics. Therefore, you don't get an endpoint or access keys that you can use to publish events like you do for custom topics or event domains." - but we need an endpoint for the third-party app

reference: <https://learn.microsoft.com/en-us/azure/event-grid/system-topics>

2. As ManuKuns wrote the event domain is right because of requirement for "authorization and authentication control ..."

reference: <https://learn.microsoft.com/en-us/azure/event-grid/event-domains>

upvoted 6 times

Question #38

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

A.

```
az group create
  --name fridge-rg
  --location fridge-loc
```

B.

```
New-AzureRmServiceBusQueue
  -ResourceGroupName fridge-rg
  -NamespaceName fridge-ns
  -Name fridge-q
  -EnablePartitioning $False
```

C.

```
connectionString=$(az servicebus namespace authorization-rule keys list
  --resource-group fridge-rg
  --namespaceName fridge-ns
  --name RootManageSharedAccessKey
  --query primaryConnectionString --output tsv)
```

D.

```
az servicebus namespace create
  --resource-group fridge-rg
  --name fridge-ns
  --location fridge-loc
```

Correct Answer: B

Community vote distribution

B (71%)

D (29%)

✉  **Net_IT**  1 year, 1 month ago

Selected Answer: B

The next step in the process should be to create a queue IMO (as discussed in similar questions earlier). How the commands looks depends on what type of command prompt you are using (Azure CLI, PowerShell, Bash, ...).

upvoted 10 times

✉  **130nk3r5**  3 months, 3 weeks ago

Selected Answer: B

As per previous exact same question

upvoted 1 times

✉  **dom271219** 5 months ago

Selected Answer: D

None of the answers satisfy : "...by providing a name, pricing tier, subscription, resource group, and location". I think the right answer is truncated. I guess it's D.

upvoted 1 times

✉  **Shayman204** 6 months ago

there is a keyword to note in the question ..'Central location' I will go with B since it has enablePartitioning = false

upvoted 1 times

✉  **davidkerr7** 10 months ago

Selected Answer: B

We have been over this before, its B
Bus already exist and look at the location for D makes no sense

upvoted 4 times

✉ **jga_private** 10 months, 1 week ago

Selected Answer: D

NewAzureRmServiceBusQueue looks obsolete and replaced by New-AzServiceBusQueue, it needs first a Namespace
upvoted 2 times

✉ **JustHereToLearn** 1 year, 2 months ago

Selected Answer: D

The answer should be D based on solution provided here <https://learn.microsoft.com/en-us/azure/service-bus-messaging/service-bus-quickstart-cli#provision-resources>

Also looks like there is no command like New-AzureRmServiceBusQueue

upvoted 3 times

✉ **mabdo** 1 year, 1 month ago

Agreed, B method was deprecated!

upvoted 1 times

✉ **ajayasa** 1 year, 2 months ago

there were similar question earlier it is posted as answer B. as service bus already exists we need to complete the configuration which is queue.

the command is available :<https://learn.microsoft.com/zh-cn/powershell/module/azurerm.servicebus/new-azurermservicebusqueue?view=azurermmps-6.13.0&viewFallbackFrom=azurermmps-6.11.0>

upvoted 8 times

✉ **Michael2023** 1 year, 2 months ago

and also the --location value in D looks wrong... so B. would be the only right answer

upvoted 5 times

Question #39

Topic 6

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

- New-AzureRmServiceBusNamespace**
A. `-ResourceGroupName fridge-rg
-NamespaceName fridge-ns
-Location fridge-loc`
- New-AzureRmResourceGroup**
B. `-Name fridge-rg
-Location fridge-loc`
- New-AzureRmServiceBusQueue**
C. `-ResourceGroupName fridge-rg
-NamespaceName fridge-ns
-Name fridge-q
-EnablePartitioning $False`
- D.
`connectionString=$(az servicebus namespace authorization-rule keys list
--resource-group fridge-rg
--namespaceName fridge-ns
--name RootManageSharedAccessKey
--query primaryConnectionString --output tsv)`

Correct Answer: C

Community vote distribution

C (100%)

✉  **halfway** Highly Voted 11 months, 3 weeks ago

Selected Answer: C

Service Bus Queue

upvoted 5 times

✉  **macobuzi** Most Recent 7 months, 2 weeks ago

Lol, there are so many duplications for this question!

upvoted 4 times

✉  **Chris2349** 10 months, 1 week ago

The answer seems correct although uses an outdated command:

<https://learn.microsoft.com/en-us/azure/service-bus-messaging/service-bus-quickstart-powershell>

upvoted 1 times

Question #40

Topic 6

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

- ```
az group create
A. --name fridge-rg
 --location fridge-loc

New-AzureRmServiceBusNamespace
B. -ResourceGroupName fridge-rg
 -NamespaceName fridge-ns
 -Location fridge-loc

New-AzureRmServiceBusQueue
 -ResourceGroupName fridge-rg
C. -NamespaceName fridge-ns
 -Name fridge-q
 -EnablePartitioning $False

New-AzureRmResourceGroup
D. -Name fridge-rg
 -Location fridge-loc
```

**Correct Answer: C**

*Community vote distribution*

B (80%)

C (20%)

 **damianadalid** Highly Voted 10 months, 3 weeks ago

I found this question three times already, please admins, avoid duplicated (triplicated) questions, I did not pay my contributor access for this.  
upvoted 24 times

 **paunski7** Highly Voted 11 months, 3 weeks ago

C is the correct as answer is similar to previous same questions  
upvoted 6 times

 **de8a1d8** Most Recent 1 month, 1 week ago

**Selected Answer: C**  
C, same as previous questions.  
upvoted 1 times

 **InversaRadice** 1 month, 3 weeks ago

LOL ONCE MORE!  
upvoted 1 times

 **Tomtss** 2 months, 2 weeks ago

I think correct one is C  
upvoted 2 times

 **yusuf\_eb** 4 months, 2 weeks ago

**Selected Answer: B**  
Where the admins at?  
upvoted 4 times

 **ENGs** 6 months, 1 week ago

One of these Frige Questions where my exam 2023-10 before the Update of the Exam  
upvoted 1 times

Question #41

DRAG DROP

You develop and deploy several APIs to Azure API Management.

You create the following policy fragment named APICounts:

```
<fragment>
 <emit-metric value="1" namespace="custom-metrics">
 <dimension name="User ID" />
 <dimension name="Operation ID" />
 <dimension name="API ID" />
 <dimension name="Client IP" value="@{context.RequestIpAddress}" />
 </emit-metric>
</fragment>
```

The policy fragment must be reused across various scopes and APIs. The policy fragment must be applied to all APIs and run when a calling system invokes any API.

You need to implement the policy fragment.

### XML elements

name  
 inbound  
 outbound  
 set-variable  
 fragment-id  
 include-fragment

### Answer Area

```
<policies>
 < XML >
 < XML fragment-id = "APICounts" />
 <base />
 </ XML >
 ...
</policies>
```

### Answer Area

```
<policies>
 < inbound >
 < include-fragment fragment-id = "APICounts" />
 <base />
 </ inbound >
 ...
</policies>
```

 juanckar  9 months, 1 week ago

This was on the exam (July 2023). Went with proposed answer. Scored 917

upvoted 11 times

 phantom31 9 months ago

how many percentage of questions come from examtopics?

upvoted 1 times

✉ **rishabh12307** 6 months, 1 week ago

around 60-70%

upvoted 2 times

✉ **arunkuml** Most Recent 3 months, 4 weeks ago

Got it in the exam 14/12/23. Went with provided answer. Scored 912/1000. All questions are from ExamTopics. Case study - VanArsdel, Ltd (11 questions)

upvoted 3 times

✉ **calmriver44** 10 months, 2 weeks ago

Answers are correct. Here is an explanation of Policy fragments

<https://learn.microsoft.com/en-us/azure/api-management/policy-fragments>

For example, insert the policy fragment named ForwardContext in the inbound policy section:

```
<policies>
<inbound>
<include-fragment fragment-id="ForwardContext" />
<base />
</inbound>
[...]
```

upvoted 1 times

✉ **e1odie** 11 months, 4 weeks ago

provided answer seems correct according to <https://learn.microsoft.com/en-us/azure/api-management/include-fragment-policy>

upvoted 4 times

Question #42

HOTSPOT

You are developing a solution that uses several Azure Service Bus queues. You create an Azure Event Grid subscription for the Azure Service Bus namespace. You use Azure Functions as subscribers to process the messages.

You need to emit events to Azure Event Grid from the queues. You must use the principle of least privilege and minimize costs.

Which Azure Service Bus values should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

### Answer Area

Configuration	Value
Tier	<input type="checkbox"/> Basic <input type="checkbox"/> Standard <input type="checkbox"/> Premium
Access control (IAM) level	<input type="checkbox"/> Contributor <input type="checkbox"/> Data Receiver <input type="checkbox"/> Data Sender <input type="checkbox"/> Data Owner

### Answer Area

Configuration	Value
Tier	<input type="checkbox"/> Basic <input type="checkbox"/> Standard <input checked="" type="checkbox"/> Premium
Access control (IAM) level	<input checked="" type="checkbox"/> Contributor <input type="checkbox"/> Data Receiver <input type="checkbox"/> Data Sender <input type="checkbox"/> Data Owner

 **adilkhan**  11 months, 2 weeks ago

Remember with Service bus + event grid its always premium  
upvoted 23 times

 **surprise0011** 10 months, 2 weeks ago

Exactly, this requires Service Bus Premium tier: <https://learn.microsoft.com/en-us/azure/service-bus-messaging/service-bus-to-event-grid-integration-concept?tabs=event-grid-event-schema>  
upvoted 2 times

 **kvtborad**  8 months ago

I got this question on 6th August 2023. chose given answers. passed with 904. I got Case study: city and Lights. All questions are from ExamTopics.

upvoted 6 times

 **BaoNguyen2411**  8 months, 2 weeks ago

got this question on 29/06/2023

upvoted 4 times

 **Chris2349** 9 months, 4 weeks ago

Received the question, 15th of June 2023. Scored 887.

Went with the given answers.

upvoted 4 times

 **SharpZx** 11 months, 3 weeks ago

Looks correct:

<https://learn.microsoft.com/en-us/azure/service-bus-messaging/service-bus-to-event-grid-integration-concept?tabs=event-grid-event-schema>

upvoted 3 times

 **halfway** 11 months, 3 weeks ago

Correct.

Ref: <https://learn.microsoft.com/en-us/azure/service-bus-messaging/service-bus-to-event-grid-integration-concept?tabs=event-grid-event-schema>

upvoted 2 times

## Question #43

You are developing several Azure API Management (APIM) hosted APIs.

The APIs have the following requirements:

- Require a subscription key to access all APIs.
- Include terms of use that subscribers must accept to use the APIs.
- Administrators must review and accept or reject subscription attempts.
- Limit the count of multiple simultaneous subscriptions.

You need to implement the APIs.

What should you do?

- Configure and apply header-based versioning.
- Create and publish a product.
- Configure and apply query string-based versioning.
- Add a new revision to all APIs. Make the revisions current and add a change log entry.

**Correct Answer: C**

*Community vote distribution*

B (100%)

 **HoneyMax** Highly Voted 9 months ago

**Selected Answer: B**

Only product allows to set the terms of use  
upvoted 6 times

 **kvtborad** Highly Voted 8 months ago

I got this question on 6th August 2023. chose highly voted B. passed with 904. I got Case study: city and Lights. All questions are from ExamTopics.  
upvoted 6 times

 **arunkuml** Most Recent 3 months, 4 weeks ago

Got it in the exam 14/12/23. Went with provided answer. Scored 912/1000. All questions are from ExamTopics. Case study - VanArsdel, Ltd (11 questions)  
upvoted 2 times

 **dddddd111** 5 months, 3 weeks ago

**Selected Answer: B**

B is the right answer.  
upvoted 1 times

 **EliteAllen** 8 months, 2 weeks ago

**Selected Answer: B**

B. Create and publish a product.

To meet the requirements of needing a subscription key, including terms of use, having administrators review subscriptions, and limiting simultaneous subscriptions for Azure API Management hosted APIs, you should create and publish a product  
upvoted 3 times

 **lyggwtwtczxnhznebw** 8 months, 2 weeks ago

**Selected Answer: B**

Voting B  
upvoted 2 times

 **75daltonic** 9 months ago

**Selected Answer: B**

I think B  
upvoted 2 times

 **AbidooKing** 9 months ago

The given answer is wrong. The correct solution is B "Create and publish a product".

<https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-add-products?tabs=azure-portal#create-and-publish-a-product>

upvoted 4 times

 **junix\_** 9 months ago

I believe it's B

refs: <https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-add-products?tabs=azure-portal>

upvoted 2 times

## Question #44

## HOTSPOT

You are developing a solution by using the Azure Event Hubs SDK. You create a standard Azure Event Hub with 16 partitions. You implement eight event processor clients.

You must balance the load dynamically when an event processor client fails. When an event processor client fails, another event processor must continue processing from the exact point at which the failure occurred. All events must be aggregate and upload to an Azure Blob storage account.

You need to implement event processing recovery for the solution.

Which SDK features should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

## Answer Area

## Requirement

Ensure that event process clients mark the position within an event sequence.

## Feature

- Offset
- Checkpoint
- Namespace
- Capture

Mark the event processor client position within a partition event sequence.

- Offset
- Checkpoint
- Namespace
- Capture

## Answer Area

## Requirement

Ensure that event process clients mark the position within an event sequence.

## Feature

- Offset
- Checkpoint
- Namespace
- Capture

## Correct Answer:

Mark the event processor client position within a partition event sequence.

- Offset
- Checkpoint
- Namespace
- Capture

  **AbidooKing**  9 months ago

This is a really stupid and confusing question but I think it's checkpoint to ensure marking and offset to mark...

This ref says: "Checkpointing is a process by which readers mark or commit their position within a partition event sequence." <https://learn.microsoft.com/en-us/azure/event-hubs/event-hubs-features#checkpointing>

But this ref here says: "Consumers also engage in checkpointing. Through this process, subscribers use offsets to mark their position within a partition event sequence. An offset is a placeholder that works like a bookmark to identify the last event that the consumer read." <https://learn.microsoft.com/en-us/azure/architecture/reference-architectures/event-hubs/partitioning-in-event-hubs-and-kafka#dataflow>

upvoted 8 times

  **AbidooKing** 8 months, 4 weeks ago

I actually got this on my exam 2023July13!! I chickened out and selected checkpoint on both just to make sure i at least get one them correct. Scored 917.

upvoted 13 times

✉ **emysa341** Most Recent 2 months, 3 weeks ago

"Mark the position" --> Checkpoint  
Offset  
upvoted 1 times

✉ **EliteAllen** 8 months, 2 weeks ago

Checkpoint for both.

The features needed to implement event processing recovery for the solution, and specifically to handle the marking of the event processor client position within a partition event sequence, are related to checkpointing. Checkpointing is the process of tracking the processing of events within a partition and is essential for ensuring that processing can continue from the exact point at which a failure occurred.

1. Ensure that event process clients mark the position within an event sequence: Again, use Checkpointing. By regularly recording checkpoints, the event processor clients can ensure that they mark their progress through the event stream, allowing for recovery from failures.

2. Mark the event processor client position within a partition event sequence: Use Checkpointing. This allows an event processor to record its position in the event stream and resume from that position if it's restarted.

upvoted 1 times

✉ **lyggwtwtczxnhznebw** 8 months, 2 weeks ago

An offset is the position of an event within a partition.  
Checkpointing is a process by which readers mark or commit their position within a partition event sequence.  
Can't make my mind, I'll say select checkpoint on both and call it a day.

upvoted 4 times

✉ **junix\_** 9 months ago

I believe the given answer is correct.

refs: <https://learn.microsoft.com/en-us/azure/event-hubs/event-hubs-features>

upvoted 2 times

✉ **RenatoJr** 9 months ago

Should it be both checkpoint?

Checkpoints allow an event processor client to keep track of its progress within the event stream by storing the offset or sequence number of the last event it successfully processed.

upvoted 2 times

## Question #45

## HOTSPOT

You are developing a new API to be hosted by Azure API Management (APIM). The backend service that implements the API has not been completed. You are creating a test API and operation.

You must enable developers to continue with the implementation and testing of the APIM instance integrations while you complete the backend API development.

You need to configure a test API response.

How should you complete the configuration? To answer, select the appropriate options in the answer area.

**Answer Area****APIM Configuration Setting      APIM Configuration Value**

Policy

proxy
set-status
mock-response
forward-request

Policy section

inbound
backend
on-error
outbound

HTTP response code

200
400
500
501

**Answer Area****APIM Configuration Setting      APIM Configuration Value**

Policy

proxy
set-status
mock-response
forward-request

Policy section

inbound
backend
on-error
outbound

Correct Answer:

HTTP response code

200
400
500
501

✉  **AbidooKing**  9 months ago

Answer is wrong. It should be inbound not backend.  
Correct is: Mock-response, inbound and 200

<https://learn.microsoft.com/en-us/azure/api-management/mock-api-responses?tabs=azure-portal#enable-response-mocking>  
upvoted 20 times

✉  **junix**  9 months ago

Answer should be:  
1. mock-response  
2. inbound  
3. 200

refs: <https://learn.microsoft.com/en-us/azure/api-management/mock-api-responses?tabs=azure-cli>  
upvoted 12 times

✉  **applepie** 8 months, 2 weeks ago

got this question today, went with this answer - 7/30/2023, score 895/1000  
upvoted 5 times

✉  **sekelsenmat**  2 months ago

I just tested it on Azure. The documentation and the examtopics answer are wrong, it says:

Usage Policy sections: inbound, outbound, on-error

here: <https://learn.microsoft.com/en-us/azure/api-management/mock-response-policy>

But if I put <mock-response> inside <backend> I get an error:

Error in element 'mock-response' on line 18, column 10: Policy is not allowed in this section

The correct place is <inbound> beyond any doubt.

So the answer is:

1. mock-response
2. inbound
3. 200

upvoted 3 times

✉  **sekelsenmat** 2 months ago

ah, I see the list actually doesn't include <backend> as a possibility :D So the docs are right, I just need glasses.  
upvoted 1 times

## Question #46

You are developing several Azure API Management (APIM) hosted APIs.

You must inspect request processing of the APIs in APIM. Requests to APIM by using a REST client must also be included. The request inspection must include the following information:

- requests APIM sent to the API backend and the response it received
- policies applied to the response before sending back to the caller
- errors that occurred during the processing of the request and the policies applied to the errors
- original request APIM received from the caller and the policies applied to the request

You need to inspect the APIs.

Which three actions should you do? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- Enable the Allow tracing setting for the subscription used to inspect the API.
- Add the Ocp-Apim-Trace header value to the API call with a value set to true.
- Add the Ocp-Apim-Subscription-Key header value to the key for a subscription that allows access to the API.
- Create and configure a custom policy. Apply the policy to the inbound policy section with a global scope.
- Create and configure a custom policy. Apply the policy to the outbound policy section with an API scope.

**Correct Answer: ACE**

*Community vote distribution*

ABC (75%) ACE (19%) 6%

✉  **75daltonic** Highly Voted 8 months, 3 weeks ago

**Selected Answer: ABC**

From: <https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-api-inspector>  
 -To trace request processing, you must enable the Allow tracing setting for the subscription used to debug your API.  
 -When making requests to API Management using curl, a REST client such as Postman, or a client app, enable tracing by adding the following request headers:  
 Ocp-Apim-Trace - set value to true  
 Ocp-Apim-Subscription-Key - set value to the key for a tracing-enabled subscription that allows access to the API  
 upvoted 6 times

✉  **uncledana** 8 months, 3 weeks ago

Agree - ABC.

<https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-api-inspector>

upvoted 1 times

✉  **NPE** Most Recent 5 months, 2 weeks ago

**Selected Answer: ACE**

How about E? E is definitely the only correct answer to fulfill the outbound response requirement in the question description or? So the answer should be ABCE. In this case, the provided answer can be correct  
 upvoted 3 times

✉  **EliteAllen** 8 months, 2 weeks ago

**Selected Answer: ABC**

In Azure API Management (APIM), you can inspect the request processing of APIs, including the details mentioned in the question, by performing certain actions.

Here's how you can achieve the requirements:

Enable the Allow tracing setting for the subscription used to inspect the API:

This will allow you to trace the requests and responses, including details of the policies applied and any errors that occurred.

Add the Ocp-Apim-Trace header value to the API call with a value set to true:

This header tells APIM to include trace information in the response. It will include details about the request and response, policies applied, and errors that occurred.

Add the Ocp-Apim-Subscription-Key header value to the key for a subscription that allows access to the API: This header is used to pass the subscription key, which is required to call an API if the subscription key is mandated.

upvoted 2 times

✉️ **MikeAWS** 5 months, 3 weeks ago

what is this, a ChatGPT answer?

upvoted 4 times

✉️ **RenatoJr** 9 months ago

**Selected Answer: BCD**

I believe the answer should be BCD

B. This header enables request and response tracing for the API call.

C. This header ensures that the API call is associated with a valid subscription.

D. Apply the policy to the inbound policy section with a global scope. By applying the custom policy to the inbound section with a global scope, you can inspect the original request received by APIM, apply policies to the request, inspect requests sent to the API backend, and capture responses received from the backend. This allows you to gather the requested information about the request processing, applied policies, and errors.

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

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

<https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-api-inspector>

upvoted 1 times

✉️ **AbidooKing** 9 months ago

I think it should be ABC.

Ocp-Apim-Trace - set value to true and set value to the Ocp-Apim-Subscription-Key when making requests to API Management using curl or a REST client such as Postman,

And to trace request processing, you must enable the Allow tracing setting for the subscription used to debug your API.

No need to configure a custom policy when tracing Outbound shows the policies applied to the response before sending back to the caller. Right?

<https://learn.microsoft.com/en-us/azure/governance/policy/tutorials/create-custom-policy-definition>

upvoted 3 times

✉️ **junix\_** 9 months ago

**Selected Answer: ABC**

I believe the answer should be A,B,C

refs: <https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-api-inspector>

upvoted 4 times

✉️ **75daltonic** 9 months ago

From: <https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-api-inspector>

-To trace request processing, you must enable the Allow tracing setting for the subscription used to debug your API.

-When making requests to API Management using curl, a REST client such as Postman, or a client app, enable tracing by adding the following request headers:

Ocp-Apim-Trace - set value to true

Ocp-Apim-Subscription-Key - set value to the key for a tracing-enabled subscription that allows access to the API

upvoted 1 times

## Question #47

## Topic 6

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

- A. 

```
Get-AzureRmServiceBusKey
 -ResourceGroupName fridge-rg
 -Namespace fridge-ns
 -Name RootManageSharedAccessKey
```
- B. 

```
New-AzureRmResourceGroup
 -Name fridge-rg
 -Location fridge-loc
```
- C. 

```
New-AzureRmServiceBusNamespace
 -ResourceGroupName fridge-rg
 -NamespaceName fridge-ns
 -Location fridge-loc
```
- D. 

```
New-AzureRmServiceBusQueue
 -ResourceGroupName fridge-rg
 -NamespaceName fridge-ns
 -Name fridge-q
 -EnablePartitioning $False
```

**Correct Answer: D**

*Community vote distribution*

D (100%)

 **Rodikito** Highly Voted 7 months, 3 weeks ago  
this question is repeated several times in this site  
upvoted 10 times

 **dom271219** Most Recent 3 months ago  
Selected Answer: D  
yes D seems to be relevant  
upvoted 1 times

 **nardk** 7 months ago  
Selected Answer: D  
Must be D  
upvoted 2 times

## Question #48

## HOTSPOT

You plan to implement an Azure Functions app.

The Azure Functions app has the following requirements:

- Must be triggered by a message placed in an Azure Storage queue.
- Must use the queue name set by an app setting named `input_queue`.
- Must create an Azure Blob Storage named the same as the content of the message.

You need to identify how to reference the queue and blob name in the `function.json` file of the Azure Functions app.

How should you reference the names? To answer, select the appropriate values in the answer area.

NOTE: Each correct selection is worth one point.

## Answer Area

## Reference type    Value

Queue name	<input style="width: 150px; height: 100px; border: 1px solid black; border-radius: 5px; padding: 5px;" type="text" value="input_queue"/>
Blob name	<input style="width: 150px; height: 100px; border: 1px solid black; border-radius: 5px; padding: 5px;" type="text" value="queueTrigger"/>

## Answer Area

## Reference type    Value

Queue name	<input style="width: 150px; height: 100px; border: 1px solid black; border-radius: 5px; padding: 5px;" type="text" value="input_queue"/>
Correct Answer:	<input style="width: 150px; height: 100px; border: 1px solid black; border-radius: 5px; padding: 5px;" type="text" value="input_queue"/>
Blob name	<input style="width: 150px; height: 100px; border: 1px solid black; border-radius: 5px; padding: 5px;" type="text" value="queueTrigger"/>

 **Firo** Highly Voted  8 months, 2 weeks ago

Queue name: `%input_queue%`

Reference: <https://learn.microsoft.com/en-us/azure/azure-functions/functions-bindings-expressions-patterns#binding-expressions---app-settings>

Blob name: `{queueTrigger}`

Reference: <https://learn.microsoft.com/en-us/azure/azure-functions/functions-bindings-expressions-patterns#trigger-metadata>

Blobname

upvoted 19 times

 **Ayaz\_b** Most Recent  6 months, 2 weeks ago

```
{
 "bindings": [
 {
 "type": "queueTrigger",
 "name": "myQueueItem",
 "direction": "in",
 "queueName": "%input_queue%" // Reference the input_queue app setting
 },
 {
 "type": "blob",
 "name": "outputBlob",
 "path": "{QueueTrigger}", // Use the value from the queue message as the blob name
 "connection": "AzureWebJobsStorage",
 "direction": "out",
 "containerName": "%output_blobcontainer%" // Reference the output_blobcontainer app setting
 }
]
}
```

upvoted 4 times

## Question #49

## HOTSPOT

You have an Azure API Management instance named API1 that uses a managed gateway.

You plan to implement a policy that will apply at a product scope and will set the header of inbound requests to include information about the region hosting the gateway of API1. The policy definition contains the following content:

```
<policies>
 <inbound>
 TARGET1
 <set-header name="x-request-context-data" exists-action="override">
 <value>@(TARGET2.Deployment.Region)</value>
 </set-header>
 </inbound>
</policies>
```

You have the following requirements for the policy definition:

- Ensure that the header contains the information about the region hosting the gateway of API1.
- Ensure the policy applies only after any global level policies are processed first.

You need to complete the policy definition.

Which values should you choose? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

**Answer Area**

Target	Value
TARGET1	<base/> <value>root</value> <wait for="all"></wait>
TARGET2	context config policy

**Answer Area**

Target	Value
TARGET1	<base/> <value>root</value> <wait for="all"></wait>
Correct Answer:	context config policy

✉ **james2033** 4 weeks ago

TARGET1: <base/>

TARGET2: context

upvoted 2 times

✉ **130nk3r5** 3 months, 3 weeks ago

Correct

<https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-deploy-multi-region>

upvoted 3 times

✉ **Capital** 6 months, 3 weeks ago

Given answer is correct:

<https://learn.microsoft.com/en-us/azure/api-management/api-management-howto-policies#use-policy-expressions-to-modify-requests>

upvoted 3 times

✉ **oCaio** 8 months ago

Given answer correct.

Ref: <https://safe.menlosecurity.com/>

Article Section: Use policy expressions to modify requests

upvoted 4 times

✉ **Firo** 8 months, 2 weeks ago

<base /> is correct: <https://learn.microsoft.com/en-us/azure/azure-functions/functions-bindings-expressions-patterns#trigger-metadata>

upvoted 2 times

## Question #50

You are developing several Azure API Management (APIM) hosted APIs.

You must make several minor and non-breaking changes to one of the APIs. The API changes include the following requirements:

- Must not disrupt callers of the API.
- Enable roll back if you find issues.
- Documented to enable developers to understand what is new.
- Tested before publishing.

You need to update the API.

What should you do?

- A. Configure and apply header-based versioning.
- B. Create and publish a product.
- C. Configure and apply a custom policy.
- D. Add a new revision to the API.
- E. Configure and apply query string-based versioning.

**Correct Answer: E**

*Community vote distribution*

D (100%)

✉️  **james2033** 4 weeks ago

**Selected Answer: D**

Question 'need to update the API'? --> Correct answer 'Add a new revision to the API'  
upvoted 1 times

✉️  **sky\_may** 2 months, 2 weeks ago

D is the correct answer:  
<https://learn.microsoft.com/en-us/azure/api-management/api-management-revisions>  
upvoted 1 times

✉️  **subarna530** 3 months, 2 weeks ago

version might introduce breaking changes!  
upvoted 1 times

✉️  **dddddd111** 5 months, 3 weeks ago

**Selected Answer: D**  
D is more relevant.  
upvoted 1 times

✉️  **Ciupaz** 6 months, 3 weeks ago

The best approach for making non-breaking changes to an APIM-hosted API is to create a new revision of the API.  
upvoted 2 times

✉️  **lyggwtwtczxnhznebw** 7 months, 3 weeks ago

**Selected Answer: D**  
Voting D  
upvoted 2 times

✉️  **kabbas** 8 months ago

Should be revision and not versioning. Anew version will disrupt current use  
upvoted 2 times

✉️  **Firo** 8 months, 2 weeks ago

**Selected Answer: D**  
D is correct:  
In Azure API Management, use revisions to make non-breaking API changes so you can model and test changes safely. When ready, you can

make a revision current and replace your current API.

<https://learn.microsoft.com/en-us/azure/api-management/api-management-get-started-revise-api?tabs=azure-portal>

upvoted 4 times

## Question #51

## HOTSPOT

You are developing an application to store millions of images in Azure blob storage.

The application has the following requirements:

- Store the Exif (exchangeable image file format) data from the image as blob metadata when the application uploads the image.
- Retrieve the Exif data from the image while minimizing bandwidth and processing time.
- Utilizes the REST API.

You need to use the image Exif data as blob metadata in the application.

Which HTTP verbs should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

## Answer Area

**Application Metadata Action    HTTP Verb**

Store Exif data.

GET  
PUT  
POST  
HEAD

Retrieve Exif data.

PUT  
POST  
HEAD  
CONNECT

## Answer Area

**Application Metadata Action    HTTP Verb**

Store Exif data.

GET  
**PUT**  
POST  
HEAD

**Correct Answer:**

Retrieve Exif data.

PUT  
POST  
**HEAD**  
CONNECT

 **oCaio**  8 months ago

Retrieve via HEAD because

"For example, if your application needs the Exif (exchangeable image format) data from a photo, it can retrieve the photo and extract it. To save bandwidth and improve performance, your application can store the Exif data in the blob's metadata when the application uploads the photo. You can then retrieve the Exif data in metadata using only a HEAD request."

Ref: <https://learn.microsoft.com/en-us/azure/storage/blobs/storage-performance-checklist#use-metadata>  
upvoted 6 times

 **sky\_may**  2 months, 2 weeks ago

answers are correct:

<https://learn.microsoft.com/en-us/rest/api/storageservices/get-blob-metadata?tabs=microsoft-entra-id#authorization>

<https://learn.microsoft.com/en-us/rest/api/storageservices/set-blob-metadata?tabs=microsoft-entra-id#authorization>

<https://learn.microsoft.com/en-us/azure/storage/blobs/storage-blob-properties-metadata>

upvoted 1 times

 **130nk3r5** 3 months, 3 weeks ago

To store Exif data, you should use the PUT verb.

To retrieve Exif data, you should use the HEAD verb.

Explanation:

PUT is used to upload the blob to Azure Storage and set the blob's metadata at the same time. The metadata is sent in the headers of the PUT request.

HEAD is used to retrieve the metadata of a blob without downloading the blob itself. This minimizes bandwidth and processing time as only the headers of the response (which contain the metadata) are sent.

upvoted 3 times

 **danisancho** 5 months, 2 weeks ago

According to ChatGPT, first answer is correct: "When storing Exif data from an image as blob metadata in Azure Blob Storage, you can use the HTTP 'PUT' method. This method is commonly used for uploading a resource to the specified URI, which in this case would be the URL of your Azure Blob Storage container. When making the 'PUT' request, you can include the Exif data as metadata headers in the request to associate the metadata with the uploaded blob."

upvoted 1 times

 **Ciupaz** 6 months, 3 weeks ago

Strange question and answers. The response should be POST and GET.

upvoted 2 times

 **Fabiann** 8 months ago

we want to store as Metadata :

so PUT for set and GET/HEAD to retrieve.

<https://learn.microsoft.com/en-us/training/modules/work-azure-blob-storage/6-set-retrieve-properties-metadata-rest?ns-enrollment-type=learningpath&ns-enrollment-id=learn.wwl.develop-solutions-that-use-blob-storage>

upvoted 4 times

 **the\_odd\_one** 5 months, 2 weeks ago

I see where you come from on the link, however generally POST is for new data and PUT is for overriding existing data.

When the question is phrased "Store the Exif (exchangeable image file format) data from the image as blob metadata when the application uploads the image." I lean towards using POST and not PUT

upvoted 1 times

 **kvtborad** 8 months ago

I got this question on 6th August 2023. chose highly voted first box: PUT, Second Box: POST. passed with 904. I got a Case study: city and Lights. All questions are from ExamTopics.

upvoted 4 times

 **NguyenDo** 8 months, 1 week ago

Store can be PUT or POST, make no sense, I think Head for store and retrieve.

upvoted 3 times

 **Firo** 8 months, 2 weeks ago

Store: Head (not sure)

Retrieve: Head

<https://learn.microsoft.com/en-us/azure/storage/blobs/storage-performance-checklist#use-metadata>

upvoted 1 times

## Question #52

You are developing several microservices to run on Azure Container Apps for a company. External TCP ingress traffic from the internet has been enabled for the microservices.

The company requires that the microservices must scale based on an Azure Event Hub trigger.

You need to scale the microservices by using a custom scaling rule.

Which two Kubernetes Event-driven Autoscaling (KEDA) trigger fields should you use? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. metadata
- B. type
- C. authenticationRef
- D. name
- E. metricType

**Correct Answer: AB**

*Community vote distribution*

AB (100%)

 **applepie** Highly Voted 8 months, 2 weeks ago

<https://keda.sh/docs/2.11/scalers/azure-event-hub/>  
upvoted 8 times

 **james2033** Most Recent 4 weeks ago

**Selected Answer: AB**  
Scale the microservices by using a custom scaling rule --> Choose two Kubernetes event-driven auto-scaling trigger: metadata + type.  
upvoted 1 times

 **nardk** 7 months ago

**Selected Answer: AB**  
A. metadata  
B. type  
upvoted 4 times

## Question #53

## Topic 6

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

- New-AzureRmResourceGroup**
- A. `-Name fridge-rg  
-Location fridge-loc  
az servicebus queue create`
  - B. `--resource-group fridge-rg  
--namespace-name fridge-ns  
--name fridge-q`
  - C.
  - `connectionString=$(az servicebus namespace authorization-rule keys list  
--resource-group fridge-rg  
--fridge-ns fridge-ns  
--name RootManageSharedAccessKey  
--query primaryConnectionString --output tsv)`
  - New-AzureRmServiceBusNamespace**
  - D. `-ResourceGroupName fridge-rg  
-NamespaceName fridge-ns  
-Location fridge-loc`

**Correct Answer: B**

*Community vote distribution*

B (100%)

 **james2033** 4 weeks ago

**Selected Answer: B**

`az servicebus queue create --resource-group fridge-rg --namespace-name fridge-ns --name fridge-q`  
upvoted 1 times

 **LJNZ2049** 3 months ago

I've seen this question at least 5 times in topic 6  
upvoted 2 times

 **Ciupaz** 5 months ago

**Selected Answer: B**

Correct answer, you have to create the queue.  
upvoted 1 times

## Question #54

## Topic 6

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

- A. 

```
az servicebus queue create
--resource-group fridge-rg
--namespace-name fridge-ns
--name fridge-q
```
- B. 

```
New-AzureRmServiceBusNamespace
-ResourceGroupName fridge-rg
-NamespaceName fridge-ns
-Location fridge-loc
```
- C. 

```
az servicebus namespace create
--resource-group fridge-rg
--name fridge-ns
--location fridge-loc
```
- D. 

```
az group create
--name fridge-rg
--location fridge-loc
```

**Correct Answer: A**

*Community vote distribution*

A (83%)

D (17%)

 **james2033** 4 weeks ago

**Selected Answer: A**

`az servicebus queue create --resource-group fridge-rg --namespace-name fridge-ns --name fridge-q`  
upvoted 1 times

 **130nk3r5** 3 months, 3 weeks ago

**Selected Answer: A**

As per the same question over and over again.  
upvoted 2 times

 **yusuf\_eb** 4 months, 2 weeks ago

**Selected Answer: D**

I think this question is broken as the correct answer is not here  
upvoted 1 times

 **Ciupaz** 5 months, 1 week ago

**Selected Answer: A**

Correct.  
After creating the Azure Service Bus instance, you will need to set up the necessary queues.  
upvoted 2 times

## Question #55

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

A.

```
az group create
 --name fridge-rg
 --location fridge-loc
```

B.

```
az servicebus queue create
 --resource-group fridge-rg
 --namespace-name fridge-ns
 --name fridge-q
```

C.

```
connectionString=$(az servicebus namespace authorization-rule keys list
 --resource-group fridge-rg
 --namespace-name fridge-ns
 --name RootManageSharedAccessKey
 --query primaryConnectionString --output tsv)
```

D.

```
az servicebus namespace create
 --resource-group fridge-rg
 --name fridge-ns
 --location fridge-loc
```

**Correct Answer: B**

*Community vote distribution*

B (100%)

✉  **james2033** 4 weeks ago

**Selected Answer: B**

az servicebus queue create --resource-group fridge-rg --namespace-name fridge-ns --name fridge-q  
upvoted 1 times

✉  **Joengi** 1 month, 3 weeks ago

how is this question in the catalogue with 20 different sets of answers?  
upvoted 1 times

✉  **kotireddy4120** 4 months, 2 weeks ago

answer is correct  
upvoted 1 times

## Question #56

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 implementing an application by using Azure Event Grid to push near-real-time information to customers.

You have the following requirements:

- You must send events to thousands of customers that include hundreds of various event types.
- The events must be filtered by event type before processing.
- Authentication and authorization must be handled by using Microsoft Entra ID.
- The events must be published to a single endpoint.

You need to implement Azure Event Grid.

Solution: Publish events to an event domain. Create a custom topic for each customer.

Does the solution meet the goal?

A. Yes

B. No

**Correct Answer: B**

*Community vote distribution*

A (55%)

B (45%)

✉  **FeriAZ** 2 months, 1 week ago

**Selected Answer: B**

Creating a custom topic for each customer would be unnecessarily complex and not scalable for thousands of customers. It could also complicate the management and the goal of publishing events to a single endpoint.

upvoted 4 times

✉  **FeriAZ** 1 month, 2 weeks ago

I was wrong.

The solution suggests publishing events to an event domain, which is a logical grouping mechanism. This aligns well with the requirement of handling events for thousands of customers with various event types.

Creating a custom topic for each customer ensures that events can be filtered by event type before processing, as each customer's topic can be subscribed to only the relevant event types.

It's not explicitly mentioned in the solution, but handling authentication and authorization via Microsoft Entra ID can be achieved at the event domain level, ensuring secure access to all topics within the domain.

The events being published to a single endpoint can be interpreted as all events being managed within the context of the event domain, providing a centralized location for event management.

upvoted 1 times

✉  **Junak** 2 months, 2 weeks ago

**Selected Answer: A**

Probably the answer is Yes.

<https://learn.microsoft.com/en-us/azure/event-grid/event-domains?tabs=event-grid-event-schema#example-use-case>

upvoted 2 times

✉  **dom271219** 2 months, 4 weeks ago

**Selected Answer: B**

No. It should be custom topic.

upvoted 1 times

✉  **RDTAus** 3 months ago

**Selected Answer: A**

<https://learn.microsoft.com/en-us/azure/event-grid/event-domains?tabs=event-grid-event-schema>

An event domain is a management tool for large number of Event Grid topics related to the same application. You can think of it as a meta-topic that can have thousands of individual topics. It provides one publishing endpoint for all the topics in the domain. When publishing an event, the publisher must specify the target topic in the domain to which it wants to publish. The publisher can send an array or a batch of events where

events are sent to different topics in the domain. See the Publishing events to an event domain section for details.

Domains also give you authentication and authorization control over each topic so you can partition your tenants. This article describes how to use event domains to manage the flow of custom events to your various business organizations, customers, or applications.

upvoted 4 times

## Question #57

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 implementing an application by using Azure Event Grid to push near-real-time information to customers.

You have the following requirements:

- You must send events to thousands of customers that include hundreds of various event types.
- The events must be filtered by event type before processing.
- Authentication and authorization must be handled by using Microsoft Entra ID.
- The events must be published to a single endpoint.

You need to implement Azure Event Grid.

Solution: Publish events to a custom topic. Create an event subscription for each customer.

Does the solution meet the goal?

A. Yes

B. No

**Correct Answer: B**

*Community vote distribution*

B (63%)

A (38%)

 **FeriAZ** 1 month, 3 weeks ago

Azure Event Grid Domains

Event subscriptions within the domain

can then be configured for each customer or customer group, with filtering rules applied to ensure that subscribers only receive the events that are relevant to them. This architecture effectively addresses the need for event filtering before processing.

upvoted 1 times

 **egaws** 2 months ago

**Selected Answer: B**

Custom topics per Azure subscription: 100

When the limit is reached, you can consider a different region or consider using domains, which can support 100,000 topics.

upvoted 2 times

 **raymond\_abcd** 2 months ago

**Selected Answer: B**

The number of subscriptions per custom topic is limited to 500. See: <https://learn.microsoft.com/en-us/azure/event-grid/quotas-limits#custom-topic-system-topic-and-partner-topic-resource-limits>

You have thousands of customers so you will not manage with this solution

upvoted 2 times

 **FeriAZ** 2 months, 1 week ago

**Selected Answer: B**

Scalability and Management: Managing an event subscription for each customer could become cumbersome as the number of customers grows. This approach might not efficiently scale or simplify the management of event types and customer-specific filtering.

Single Endpoint Requirement: Publishing events to a custom topic does meet the requirement of a single endpoint for publishing. However, the management and scalability of subscriptions could pose challenges.

Filtering by Event Type: While event subscriptions can be configured to filter events based on type, the proposed solution might not be the most efficient way to handle hundreds of event types, especially if the filtering needs are complex or highly dynamic.

upvoted 1 times

 **vpsrini1981** 3 months ago

**Selected Answer: A**

Yes, the proposed solution meets the requirements. Publishing events to a custom topic and creating an event subscription for each customer allows for filtering events by event type before processing. This way, each customer's subscription can specify the specific event types they are

interested in receiving.

Additionally, using Azure Event Grid provides built-in support for authentication and authorization through Microsoft Entra ID, ensuring secure access to the events. Furthermore, by having a separate subscription for each customer, events can be sent to multiple customers while directing them to a single endpoint, thus fulfilling the requirement to push near-real-time information to thousands of customers via a single endpoint.

upvoted 3 times

 **dom271219** 2 months, 4 weeks ago

I agree with you  
upvoted 2 times

Question #58

Topic 6

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.

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You are implementing an application by using Azure Event Grid to push near-real-time information to customers.

You have the following requirements:

- You must send events to thousands of customers that include hundreds of various event types.
- The events must be filtered by event type before processing.
- Authentication and authorization must be handled by using Microsoft Entra ID.
- The events must be published to a single endpoint.

You need to implement Azure Event Grid.

Solution: Enable ingress, create a TCP scale rule, and apply the rule to the container app.

Does the solution meet the goal?

A. Yes

B. No

**Correct Answer: B**

*Community vote distribution*

B (100%)

 **james2033** 4 weeks ago

**Selected Answer: B**

Did not meet the goal.

upvoted 1 times

 **dom271219** 2 months, 4 weeks ago

**Selected Answer: B**

No. What the hell is TCP scale rule?

upvoted 2 times

### Question #59

## HOTSPOT

- 10

## Case study

- 10

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## To start the case study

- 30

To display the first question in this case study, click the Next button. 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 the Question button to return to the question.

## Background

- 10

Munson's Pickles and Preserves Farm is an agricultural cooperative corporation based in Washington, US, with farms located across the United States. The company supports agricultural production resources by distributing seeds fertilizers, chemicals, fuel, and farm machinery to the farms.

## Current Environment

- 10

The company is migrating all applications from an on-premises datacenter to Microsoft Azure. Applications support distributors, farmers, and internal company staff.

## Corporate website

- The company hosts a public website located at <http://www.munsonspicklesandpreservesfarm.com>. The site supports farmers and distributors who request agricultural production resources.

## Farms

- 10

- The company created a new customer tenant in the Microsoft Entra admin center to support authentication and authorization for applications.

## Distributors

- 

- Distributors integrate their applications with data that is accessible by using APIs hosted at

<http://www.munsonspicklesandpreservesfarm.com/api> to receive and update resource data.

## Requirements

-

The application components must meet the following requirements:

### Corporate website

-

- The site must be migrated to Azure App Service.
- Costs must be minimized when hosting in Azure.
- Applications must automatically scale independent of the compute resources.
- All code changes must be validated by internal staff before release to production.
- File transfer speeds must improve, and webpage-load performance must increase.
- All site settings must be centrally stored, secured without using secrets, and encrypted at rest and in transit.
- A queue-based load leveling pattern must be implemented by using Azure Service Bus queues to support high volumes of website agricultural production resource requests.

### Farms

-

- Farmers must authenticate to applications by using Microsoft Entra ID.

### Distributors

-

- The company must track a custom telemetry value with each API call and monitor performance of all APIs.
- API telemetry values must be charted to evaluate variations and trends for resource data.

### Internal staff

-

- App and API updates must be validated before release to production.
- Staff must be able to select a link to direct them back to the production app when validating an app or API update.
- Staff profile photos and email must be displayed on the website once they authenticate to applications by using their Microsoft Entra ID.

### Security

-

- All web communications must be secured by using TLS/HTTPS.
- Web content must be restricted by country/region to support corporate compliance standards.
- The principle of least privilege must be applied when providing any user rights or process access rights.
- Managed identities for Azure resources must be used to authenticate services that support Microsoft Entra ID authentication.

### Issues

-

### Corporate website

-

- Farmers report HTTP 503 errors at the same time as internal staff report that CPU and memory usage are high.
- Distributors report HTTP 502 errors at the same time as internal staff report that average response times and networking traffic are high.
- Internal staff report webpage load sizes are large and take a long time to load.
- Developers receive authentication errors to Service Bus when they debug locally.

## Distributors

- Many API telemetry values are sent in a short period of time. Telemetry traffic, data costs, and storage costs must be reduced while preserving a statistically correct analysis of the data points sent by the APIs.

You need to provide internal staff access to the production site after a validation.

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.

**Answer Area**

```
<a href="https://www.munsonspicklesandpreservesfarm.com/?"
">Go back to production app
```

x-ms-app	=	self
x-ms-user	=	staging
x-ms-routing-name	=	production
x-ms-client-request-id		

**Answer Area**

**Correct Answer:** ">Go back to production app</a>

x-ms-app	=	self
x-ms-user	=	staging
<b>x-ms-routing-name</b>	=	<b>production</b>
x-ms-client-request-id		

 **Jedi** Highly Voted 3 months ago

This looks to be right based on: <https://learn.microsoft.com/en-us/azure/app-service/deploy-staging-slots?tabs=portal>

"The string x-ms-routing-name=self specifies the production slot. After the client browser accesses the link, it's redirected to the production slot. Every subsequent request has the x-ms-routing-name=self cookie that pins the session to the production slot."

upvoted 7 times

 **james2033** Most Recent 4 weeks ago

<a href="https://www.munsonspicklesandpreservesfarm.com/?x-ms-routing-name=self">Go back to production app</a>

It is "x-ms-routing-name=self"

upvoted 1 times

 **james2033** 4 weeks ago

<https://learn.microsoft.com/en-us/azure/app-service/deploy-staging-slots?tabs=portal#route-production-traffic-automatically>

upvoted 1 times

## Question #60

## Topic 6

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.

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You are implementing an application by using Azure Event Grid to push near-real-time information to customers.

You have the following requirements:

- You must send events to thousands of customers that include hundreds of various event types.
- The events must be filtered by event type before processing.
- Authentication and authorization must be handled by using Microsoft Entra ID.
- The events must be published to a single endpoint.

You need to implement Azure Event Grid.

Solution: Publish events to a partner topic. Create an event subscription for each customer.

Does the solution meet the goal?

A. Yes

B. No

**Correct Answer: A**

*Community vote distribution*

B (78%)

A (22%)

✉  **james2033** 4 weeks ago

**Selected Answer: B**

The question is wrong. Change 'partner topic' to 'custom topic' . With 'custom topic', it did not meet the goal, need 'event domain'  
upvoted 1 times

✉  **raymond\_abcd** 2 months ago

**Selected Answer: B**

The only possible solution is an event domain, not a custom topic. Because a custom topic is limited to 500 subscriptions. Which does not meet the requirement.

upvoted 3 times

✉  **4d6c887** 2 months, 3 weeks ago

**Selected Answer: B**

I don't think that parter topic si correct. Should be custom topic.

upvoted 1 times

✉  **emysa341** 2 months, 3 weeks ago

**Selected Answer: A**

<https://github.com/MicrosoftDocs/azure-docs/blob/main/articles/event-grid/partner-events-overview-for-partners.md#:~:text=You%20want%20a%20mechanism%20to%20make%20your%20events%20available%20to%20your%20customers%20on%20Azure.%20Your%20users%20can%20filter%20and%20route%20those%20events%20by%20using%20partner%20topics%20and%20event%20subscriptions%20they%20own%20and%20manage.%20You%20could%20use%20other%20integration%20approaches%20such%20as%20topics%20and%20domains.>

upvoted 1 times

✉  **dom271219** 2 months, 4 weeks ago

**Selected Answer: B**

No. It sould be custom topic.

upvoted 2 times

✉  **4cca361** 3 months ago

Solution B. We should create Event Subscriptions with Filtering not just Event Subscriptions

upvoted 1 times

✉️  **Ciupaz** 3 months ago

**Selected Answer: A**

Yes is the correct answer.

upvoted 1 times

Question #61

Topic 6

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.

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You are implementing an application by using Azure Event Grid to push near-real-time information to customers.

You have the following requirements:

- You must send events to thousands of customers that include hundreds of various event types.
- The events must be filtered by event type before processing.
- Authentication and authorization must be handled by using Microsoft Entra ID.
- The events must be published to a single endpoint.

You need to implement Azure Event Grid.

Solution: Publish events to a system topic. Create an event subscription for each customer.

Does the solution meet the goal?

A. Yes

B. No

**Correct Answer: B**

*Community vote distribution*

B (100%)

✉️  **james2033** 4 weeks ago

**Selected Answer: B**

'system topic' --> nothing called like this. Just 'custom topic' or 'event domain'

upvoted 1 times

✉️  **warchoon** 1 week, 2 days ago

No it exists <https://learn.microsoft.com/en-us/azure/event-grid/system-topics>

But thousands of subscriptions are too many.

upvoted 1 times

✉️  **dom271219** 2 months, 4 weeks ago

**Selected Answer: B**

No. It should be custom topic.

upvoted 2 times

## Topic 7 - Testlet 1

### Question #1

### Topic 7

#### Introductory Info

Case study -

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To start the case study -

To display the first question in this case study, click the Next button. 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 the Question button to return to the question.

Background -

Wide World Importers is moving all their datacenters to Azure. The company has developed several applications and services to support supply chain operations and would like to leverage serverless computing where possible.

Current environment -

Windows Server 2016 virtual machine

This 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 trucking stops.

Shipping REST API `" This API provides shipping information for use and display on the shipping website.

Shipping Data -

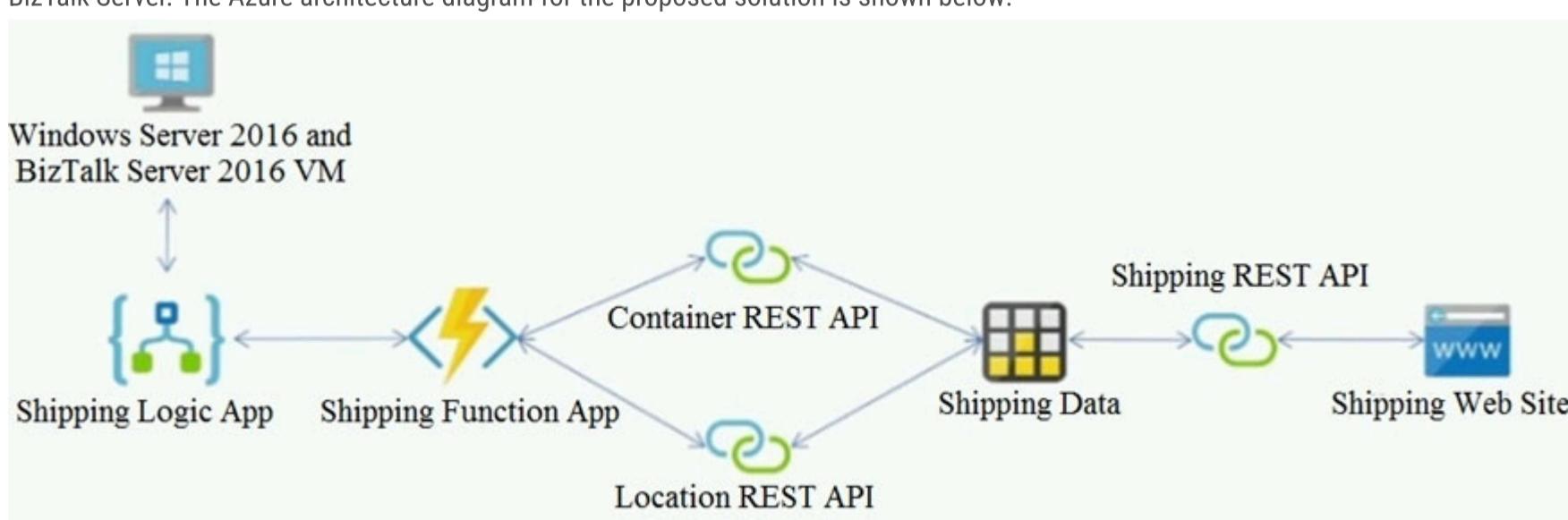
The application uses MongoDB JSON document storage database for all container and transport information.

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.

**Question****HOTSPOT -**

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.

Hot Area:

## Answer Area

Option	Value
Tier	<input type="button" value="▼"/> Standard Premium
Profile	<input type="button" value="▼"/> Akamai Microsoft
Optimization	<input type="button" value="▼"/> general web delivery large file download dynamic site acceleration video-on-demand media streaming

## Answer Area

Option	Value
Tier	<input type="button" value="▼"/> Standard Premium
Correct Answer: Profile	<input type="button" value="▼"/> Akamai Microsoft
Optimization	<input type="button" value="▼"/> general web delivery large file download dynamic site acceleration video-on-demand media streaming

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>

✉ **coffecold** Highly Voted 1 year, 5 months ago

To prevent reading the cases multiple times:

Please see the spots below where you can find the questions (page/topic/question/subject)

Wide World Importers

46 7 1 Azure CDN tiers

46 7 2 azure tools on/with VM

49 12 1 secure Function app : auth + token + trigger type

49 12 2 secure Logic App : tool used

55 23 1 setup workflow in logic app

55 23 2 setup network to trigger logic app from external server

upvoted 33 times

✉ **OPT\_001122** 1 year, 4 months ago

Great help

upvoted 4 times

✉ **SoftSol** Highly Voted 1 year, 11 months ago

Correct. Standard Akamai does support dynamic site acceleration. Microsoft requires front door, meaning additional costs. Verizon should also work I suppose, but isn't an options, so let's ignore that.

upvoted 10 times

✉ **Tyrel** 6 months, 1 week ago

Akamai is retiring. Standard - Microsoft - General Web Delivery should be used instead.

General web delivery Note:

"If you are using an Azure CDN Standard from Akamai profile, select this optimization type if your average file size is smaller than 10 MB. Otherwise, if your average file size is larger than 10 MB, select Large file download from the Optimized for drop-down list."

Reference: <https://learn.microsoft.com/en-us/azure/cdn/cdn-optimization-overview#general-web-delivery>

upvoted 3 times

✉ **130nk3r5** Most Recent 3 months, 1 week ago

I got the Farmers case... which wasn't on here...

Score 927 (Just use the MS Learn that's available. You'll find the answers)

upvoted 3 times

✉ **Weam** 4 months, 1 week ago

Although Akamai has been deprecated and I think this question will be updated in the exam however, Microsoft -general web delivery by itself doesn't support dynamic acceleration and dynamic content , if we want dynamic acceleration for Microsoft, we use Azure front door as per this page: <https://learn.microsoft.com/en-us/azure/cdn/cdn-optimization-overview#general-web-delivery>

upvoted 1 times

✉ **dddddd111** 4 months, 4 weeks ago

There must be other options aside from Microsoft. If ever this question shows in exam, they won't let you just select Microsoft. Akamai option will be replaced by other options. Unless they remove box2.

upvoted 2 times

✉ **EliteAllen** 8 months, 2 weeks ago

Azure CDN from Akamai is scheduled to be retired on October 31, 2023. You can no longer create new Azure CDN from Akamai after June 1, 2023. For more information, see Migrate CDN provider for guidance on migrating to another Azure CDN provider.

<https://learn.microsoft.com/en-us/azure/cdn/cdn-features>

upvoted 3 times

✉ **uncledana** 8 months, 3 weeks ago

Standard

Microsoft

General Web Delivery

<https://learn.microsoft.com/en-us/azure/cdn/cdn-features>

upvoted 4 times

✉ **ExamDev** 9 months, 3 weeks ago

About Akamai... here some note:

Azure CDN from Akamai is scheduled to be retired on October 31, 2023. You can no longer create new Azure CDN from Akamai after June 1, 2023. For more information, see Migrate CDN provider for guidance on migrating to another Azure CDN provider.

upvoted 4 times

✉ **ExamDev** 9 months, 3 weeks ago

Sorry Akamai made some typo :)

upvoted 1 times

✉ **phantom31** 9 months ago

how many case study have you got totally?

upvoted 1 times

✉ **yosri\_c\_sharp** 10 months ago

Azure CDN will be retiring Azure CDN Standard from Akamai on 31 October 2023

I think the question will be removed

source: <https://azure.microsoft.com/en-us/updates/azure-cdn-will-be-retiring-azure-cdn-standard-from-akamai-on-31-october-2023-transition-to-another-cdn-profile-to-avoid-serv/>

upvoted 1 times

## Introductory Info

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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 trucking stops.

Shipping REST API - This API provides shipping information for use and display on the shipping website.

### Shipping Data -

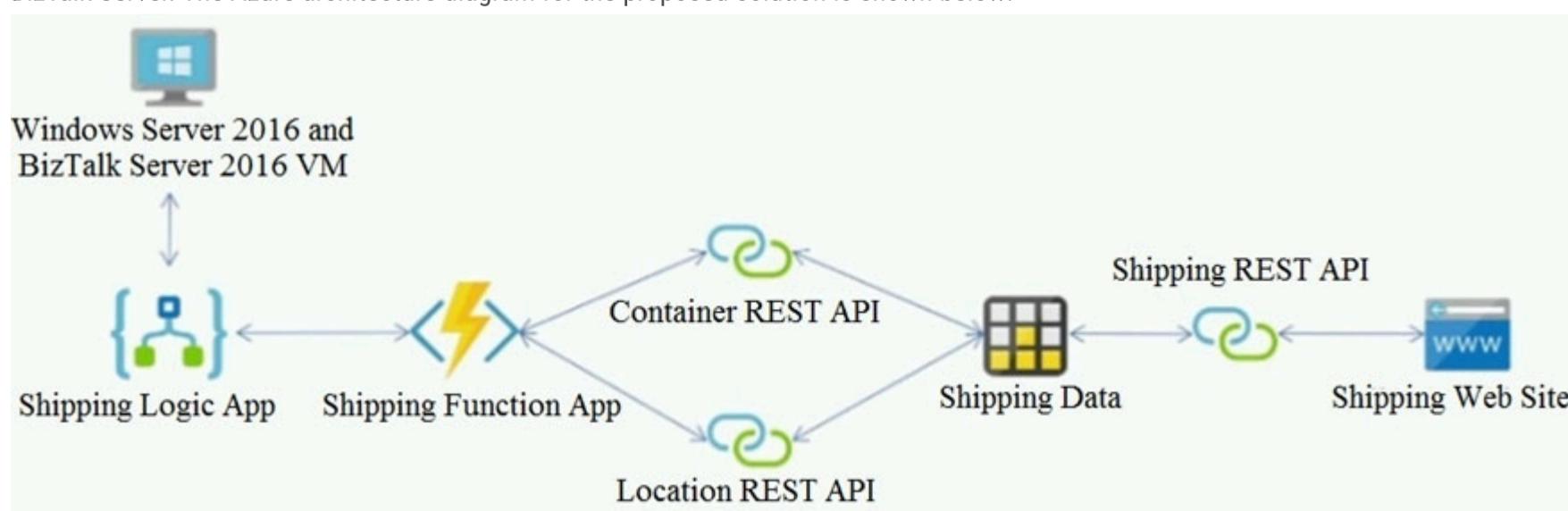
The application uses MongoDB JSON document storage database for all container and transport information.

### 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:

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Support industry-standard protocol X12 message format for various messages including vessel content details and arrival notices.

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Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.

**Shipping Function app -**

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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 -**

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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.

**Question****HOTSPOT -**

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.

Hot Area:

**Answer Area****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 Area

### Issue      Tool

#### Backup and Restore

Correct Answer:

Azure Site Recovery
Azure Backup
Azure Data Box
Azure Migrate

#### Performance

Azure Network Watcher
Azure Traffic Manager
ExpressRoute
Accelerated Networking

Box 1: Azure Backup -

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.

Box 2: Accelerated networking -

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.

Reference:

<https://azure.microsoft.com/en-us/blog/an-easy-way-to-bring-back-your-azure-vm-with-in-place-restore/>

✉  **JOSEEVILLASMIL** Highly Voted 1 year ago

Hoow the f could you memorize all this.

upvoted 31 times

✉  **dddddd111** 4 months, 4 weeks ago

same thoughts.

upvoted 1 times

✉  **coffecold** Highly Voted 1 year, 5 months ago

Accelerated Networking only works in conjunction with a Azure Virtual Network (VNet). That is mentioned in the case and is a clue as well.

upvoted 10 times

✉  **yosri\_c\_sharp** Most Recent 10 months ago

Virtual Machines no longer exists on az 204

upvoted 5 times

✉  **nvtienanh** 1 year, 5 months ago

The given answer is correct.

<https://learn.microsoft.com/en-us/azure/virtual-network/accelerated-networking-overview#benefits>

upvoted 5 times

## Topic 8 - Testlet 10

Question #1

Topic 8

### Introductory Info

Case study -

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Background -

You are a developer for Litware Inc., a SaaS company that provides a solution for managing employee expenses. The solution consists of an ASP.NET Core Web API project that is deployed as an Azure Web App.

Overall architecture -

Employees upload receipts for the system to process. When processing is complete, the employee receives a summary report email that details the processing results. Employees then use a web application to manage their receipts and perform any additional tasks needed for reimbursement.

Receipt processing -

Employees may upload receipts in two ways:

Uploading using an Azure Files mounted folder

Uploading using the web application

Data Storage -

Receipt and employee information is stored in an Azure SQL database.

Documentation -

Employees are provided with a getting started document when they first use the solution. The documentation includes details on supported operating systems for Azure File upload, and instructions on how to configure the mounted folder.

Solution details -

Users table -

Column	Description
UserId	unique identifier for an employee
ExpenseAccount	employees expense account number in the format 1234-123-1234
AllowedAmount	limit of allowed expenses before approval is needed
SupervisorId	unique identifier for employee's supervisor
SecurityPin	value used to validate user identity

Web Application -

You enable MSI for the Web App and configure the Web App to use the security principal name WebAppIdentity.

Processing -

Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored

#### in Azure Blob

Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must remain valid if the email is forwarded to another user.

#### Logging -

Azure Application Insights is used for telemetry and logging in both the processor and the web application. The processor also has TraceWriter logging enabled.

Application Insights must always contain all log messages.

#### Requirements -

##### Receipt processing -

Concurrent processing of a receipt must be prevented.

##### Disaster recovery -

Regional outage must not impact application availability. All DR operations must not be dependent on application running and must ensure that data in the DR region is up to date.

#### Security -

User's SecurityPin must be stored in such a way that access to the database does not allow the viewing of SecurityPins. The web application is the only system that should have access to SecurityPins.

All certificates and secrets used to secure data must be stored in Azure Key Vault.

You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.

All access to Azure Storage and Azure SQL database must use the application's Managed Service Identity (MSI).

Receipt data must always be encrypted at rest.

All data must be protected in transit.

User's expense account number must be visible only to logged in users. All other views of the expense account number should include only the last segment, with the remaining parts obscured.

In the case of a security breach, access to all summary reports must be revoked without impacting other parts of the system.

#### Issues -

##### Upload format issue -

Employees occasionally report an issue with uploading a receipt using the web application. They report that when they upload a receipt using the Azure File

Share, the receipt does not appear in their profile. When this occurs, they delete the file in the file share and use the web application, which returns a 500 Internal

Server error page.

##### Capacity issue -

During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.

##### Log capacity issue -

Developers report that the number of log messages in the trace output for the processor is too high, resulting in lost log messages.

#### Application code -

##### Processing.cs -

```

PC01 public static class Processing
PC02 {
PC03 public static class Function
PC04 {
PC05 [FunctionName("IssueWork")]
PC06 public static async Task Run([TimerTrigger("0 */5 * * * *")] TimerInfo timer, ILogger
log)
PC07 {
PC08 var container = await GetCloudBlobContainer();
PC09 foreach (var fileItem in await ListFiles())
PC10 {
PC11 var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12 var ms = new MemoryStream();
PC13 await file.DownloadToStreamAsync(ms);
PC14 var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15 await blob.UploadFromStreamAsync(ms);
PC16 }
PC17 }
PC18 }
PC19 private static CloudBlockBlob GetDRBlob(CloudBlockBlob sourceBlob)
PC20 {
PC21 ...
PC22 }
PC23 private static async Task<CloudBlobContainer> GetCloudBlobContainer()
PC24 {
PC25 var cloudBlobClient = new CloudBlobClient(new Uri("..."), await GetCredentials());
PC26
PC27 await cloudBlobClient.GetRootContainerReference().CreateIfNotExistsAsync();
PC28 return cloudBlobClient.GetRootContainerReference();
PC29 }
PC30 private static async Task<StorageCredentials> GetCredentials()
PC31 {
PC32 ...
PC33 }
PC34 private static async Task<List<IListFileItem>> ListFiles()
PC35 {
PC36 ...
PC37 }
PC37 private KeyVaultClient _keyVaultClient = new KeyVaultClient("...");
```

PC38 }

PC39 }

Database.cs -

```

DB01 public class Database
DB02 {
DB03 private string ConnectionString =
DB04
DB05 public async Task<object> LoadUserDetails(string userId)
DB06 {
DB07
DB08 return await policy.ExecuteAsync(async () =>
DB09 {
DB10 using (var connection = new SqlConnection(ConnectionString))
DB11 {
DB12 await connection.OpenAsync();
DB13 using (var command = new SqlCommand("...", connection))
DB14 using (var reader = command.ExecuteReader())
DB15 {
DB16 ...
DB17 }
DB18 }
DB19 });
DB20 }
DB21 }
```

ReceiptUploader.cs -

```

RU01 public class ReceiptUploader
RU02 {
RU03 public async Task UploadFile(string file, byte[] binary)
RU04 {
RU05 var httpClient = new HttpClient();
RU06 var response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU07 while (ShouldRetry(response))
RU08 {
RU09 response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU10 }
RU11 }
RU12 private bool ShouldRetry(HttpStatusCode response)
RU13 {
RU14 }
RU15 }
RU16 }
```

ConfigureSSE.ps1 -

```

CS01 $storageAccount = Get-AzureRmStorageAccount -ResourceGroupName "..." -AccountName "..."
CS02 $keyVault = Get-AzureRmKeyVault -VaultName "..."
CS03 $key = Get-AzureKeyVaultKey -VaultName $keyVault.VaultName -Name "..."
CS04 Set-AzureRmKeyVaultAccessPolicy `
CS05 -VaultName $keyVault.VaultName `
CS06 -ObjectId $storageAccount.Identity.PrincipalId `
CS07
CS08
CS09 Set-AzureRmStorageAccount `
CS10 -ResourceGroupName $storageAccount.ResourceGroupName `
CS11 -AccountName $storageAccount.StorageAccountName `
CS12 -EnableEncryptionService File `
CS13 -KeyvaultEncryption `
CS14 -KeyName $key.Name
CS15 -KeyVersion $key.Version `
CS16 -KeyVaultUri $keyVault.VaultUri
```

### Question

DRAG DROP -

You need to add code at line PC32 in Processing.cs to implement the GetCredentials method in the Processing class.

How should you complete the code? To answer, drag the appropriate code segments to the correct locations. Each code 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.

Select and Place:

#### Code segments

```

MSITokenProvider("...", null)
tp.GetAccessTokenAsync("...")
AzureServiceTokenProvider()
StringTokenProvider("storage", "msi")
tp.GetAuthenticationHeaderAsync(CancellationToken.None)
```

#### Answer Area

```

var tp = new _____ code segment
var t = new TokenCredential(await _____ code segment);
return new StorageCredentials(t);
```

## Correct Answer:

## Code segments

```
MSITokenProvider("...", null)
[redacted]
[redacted]
StringTokenProvider("storage", "msi")
tp.GetAuthenticationHeaderAsync(CancellationToken.None)
```

## Answer Area

```
var tp = new AzureServiceTokenProvider()
var t = new TokenCredential(await tp.GetAccessTokenAsync("..."))
return new StorageCredentials(t);
```

Box 1: AzureServiceTokenProvider()

Box 2: tp.GetAccessTokenAsync(..)

Acquiring an access token is then quite easy. Example code:

```
private async Task<string> GetAccessTokenAsync()
```

```
{
```

```
var tokenProvider = new AzureServiceTokenProvider();
return await tokenProvider.GetAccessTokenAsync("https://storage.azure.com/");
```

```
}
```

Reference:

<https://joonasw.net/view/azure-ad-authentication-with-azure-storage-and-managed-service-identity>

✉  **coffecold** Highly Voted 1 year, 5 months ago

To prevent reading the cases multiple times:

Please see the spots below where you can find the questions (page/topic/question/subject)

Litware Inc

47 8 1 code : GetCredentials method

47 8 2 code : disaster recovery requirements

51 14 1 code : set encryption with request to blob storage

51 14 2 ARM set keyVault access policy

53 20 1 prevent blob writing concurrency problems

54 20 2 resolve capacity issue at function processing

54 20 3 resolve capacity issue at extensive logging

upvoted 31 times

✉  **karthikwarrior** 1 year, 1 month ago

did not follow or understand what you meant

upvoted 1 times

✉  **OPT\_001122** 1 year, 4 months ago

Great Help

upvoted 1 times

✉  **sadish003** 11 months, 4 weeks ago

Sorry, couldn't understand what you mean.

You mean this code (47 8 1) should be placed in the URL to access this content?

Could you please elaborate more on this?

upvoted 1 times

✉  **Stann07** 4 months ago

47 8 1 means page 47, topic 8, question 1

upvoted 1 times

✉  **warchoon** 1 year ago

Wide World Importers 7/1 7/2 12/1 12/2 23/1 23/2

Litware Inc. 8/1 8/2 14/1 14/2 20/1 20/2 20/3

Coho Winery produces 9/1 9/2 22/1 22/2 28/1 28/2

VanArdel, Ltd. 10/1 10/2 10/3 10/4 15/1 15/2 21/1 29/1 29/2 30/1

Contoso, Ltd. 11/1 11/2 11/3 11/4 11/5 16/1 16/2 27/1 27/2 31/1 31/2 31/3

City Power & Light 13/1 13/2 13/3 13/4 13/5 13/6 17/1 17/2 18/1 24/1 24/2 32/1

Proseware, Inc. 19/1 19/2 19/3 19/4 25/1 25/2 25/3 26/1

upvoted 19 times

✉  **alejary** 11 months, 3 weeks ago

I know that 7/1 means topic 7, question 1, but where we can find use case description?

upvoted 1 times

✉  **rqb11** Highly Voted 3 years ago

Answer is correct: <https://docs.microsoft.com/en-us/azure/app-service/overview-managed-identity?context=azure%2Factive-directory%2Fmanaged-identities-azure-resources%2Fcontext%2Fmsi-context&tabs=python#asal>

upvoted 28 times

✉ **Faizs** 2 years, 11 months ago

Absolutely

upvoted 3 times

✉ **raymond\_abcd** [Most Recent] 2 months ago

When your application is running on an Azure VM with MSI enabled, you can use MSITokenProvider to obtain tokens without directly handling credentials.

upvoted 1 times

✉ **raymond\_abcd** 2 months ago

AzureServiceTokenProvider is replaced by Azure.Identity. See: <https://learn.microsoft.com/en-us/dotnet/api/overview/azure/app-auth-migration?view=azure-dotnet>

```
var tokenCredential = new DefaultAzureCredential();
var accessToken = await tokenCredential.GetTokenAsync(
 new TokenRequestContext(scopes: new string[] { ResourceId + ".default" }) {});
```

upvoted 4 times

✉ **devex** 7 months, 1 week ago

Answer is correct.

TokenCredential class receives a string in the constructor:

- <https://learn.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.auth.tokencredential?view=azure-dotnet#constructors>

So the answer cannot be MSITokenProvider.GetAuthenticationHeaderAsync which returns an AuthenticationHeaderValue:

- <https://learn.microsoft.com/en-us/dotnet/api/microsoft.azure.management.resourcemanager.fluent.authentication.msitokenprovider.getauthenticationheaderasync>

AzureServiceTokenProvider.GetAccessTokenAsync on the other hand returns a string:

- <https://learn.microsoft.com/en-us/dotnet/api/microsoft.azure.services.appauthentication.azure servicetokenprovider.getaccesstokenasync>  
upvoted 2 times

✉ **adilkhan** 1 year, 2 months ago

<https://learn.microsoft.com/en-us/dotnet/api/overview/azure/service-to-service-authentication?view=azure-dotnet> Answers are correct  
upvoted 2 times

✉ **OPT\_001122** 1 year, 4 months ago

AzureServiceTokenProvider  
GetAccessTokenAsync(...)  
upvoted 2 times

✉ **coffecold** 1 year, 5 months ago

This is Microsoft.Azure.Services.AppAuthentication and is since 2019 legacy.

Instead use the Azure Identity client library for .NET Azure.Identity

using Azure.Identity;

using Azure.Security.KeyVault.Secrets;

```
// Create a secret client using the DefaultAzureCredential
var client = new SecretClient(new Uri("https://myvault.azure.vaults.net/"), new DefaultAzureCredential());
etc.
```

upvoted 6 times

✉ **edmond** 1 year, 3 months ago

Or use ManagedIdentityCredential() if you want to make sure it's using managed identity exclusively

upvoted 3 times

✉ **SivajiTheBoss** 2 years, 1 month ago

Correct Answer:

- AzureServiceTokenProvider
- GetAccessTokenAsync(...)

upvoted 3 times

✉ **UnknowMan** 2 years, 10 months ago

Yep :

- AzureServiceTokenProvider
- GetAccessTokenAsync

upvoted 5 times

✉ **Faizs** 2 years, 11 months ago

Very correct

upvoted 2 times

Question #2

**Introductory Info****Case study -**

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**Overall architecture -**

Employees upload receipts for the system to process. When processing is complete, the employee receives a summary report email that details the processing results. Employees then use a web application to manage their receipts and perform any additional tasks needed for reimbursement.

**Receipt processing -**

Employees may upload receipts in two ways:

Uploading using an Azure Files mounted folder

Uploading using the web application

**Data Storage -**

Receipt and employee information is stored in an Azure SQL database.

**Documentation -**

Employees are provided with a getting started document when they first use the solution. The documentation includes details on supported operating systems for

Azure File upload, and instructions on how to configure the mounted folder.

**Solution details -****Users table -**

Column	Description
UserId	unique identifier for an employee
ExpenseAccount	employees expense account number in the format 1234-123-1234
AllowedAmount	limit of allowed expenses before approval is needed
SupervisorId	unique identifier for employee's supervisor
SecurityPin	value used to validate user identity

**Web Application -**

You enable MSI for the Web App and configure the Web App to use the security principal name WebAppIdentity.

**Processing -**

Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored in Azure Blob

Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must

remain valid if the email is forwarded to another user.

#### Logging -

Azure Application Insights is used for telemetry and logging in both the processor and the web application. The processor also has TraceWriter logging enabled.

Application Insights must always contain all log messages.

#### Requirements -

##### Receipt processing -

Concurrent processing of a receipt must be prevented.

##### Disaster recovery -

Regional outage must not impact application availability. All DR operations must not be dependent on application running and must ensure that data in the DR region is up to date.

#### Security -

User's SecurityPin must be stored in such a way that access to the database does not allow the viewing of SecurityPins. The web application is the only system that should have access to SecurityPins.

All certificates and secrets used to secure data must be stored in Azure Key Vault.

You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.

All access to Azure Storage and Azure SQL database must use the application's Managed Service Identity (MSI).

Receipt data must always be encrypted at rest.

All data must be protected in transit.

User's expense account number must be visible only to logged in users. All other views of the expense account number should include only the last segment, with the remaining parts obscured.

In the case of a security breach, access to all summary reports must be revoked without impacting other parts of the system.

#### Issues -

##### Upload format issue -

Employees occasionally report an issue with uploading a receipt using the web application. They report that when they upload a receipt using the Azure File Share, the receipt does not appear in their profile. When this occurs, they delete the file in the file share and use the web application, which returns a 500 Internal Server error page.

##### Capacity issue -

During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.

##### Log capacity issue -

Developers report that the number of log messages in the trace output for the processor is too high, resulting in lost log messages.

#### Application code -

##### Processing.cs -

```

PC01 public static class Processing
PC02 {
PC03 public static class Function
PC04 {
PC05 [FunctionName("IssueWork")]
PC06 public static async Task Run([TimerTrigger("0 */5 * * * *")] TimerInfo timer, ILogger
log)
PC07 {
PC08 var container = await GetCloudBlobContainer();
PC09 foreach (var fileItem in await ListFiles())
PC10 {
PC11 var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12 var ms = new MemoryStream();
PC13 await file.DownloadToStreamAsync(ms);
PC14 var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15 await blob.UploadFromStreamAsync(ms);
PC16 }
PC17 }
PC18 }
PC19 private static CloudBlockBlob GetDRBlockBlob(CloudBlockBlob sourceBlob)
PC20 {
PC21 ...
PC22 }
PC23 private static async Task<CloudBlobContainer> GetCloudBlobContainer()
PC24 {
PC25 var cloudBlobClient = new CloudBlobClient(new Uri("..."), await GetCredentials());
PC26
PC27 await cloudBlobClient.GetRootContainerReference().CreateIfNotExistsAsync();
PC28 return cloudBlobClient.GetRootContainerReference();
PC29 }
PC30 private static async Task<StorageCredentials> GetCredentials()
PC31 {
PC32 ...
PC33 }
PC34 private static async Task<List<IListFileItem>> ListFiles()
PC35 {
PC36 ...
PC37 }
PC37 private KeyVaultClient _keyVaultClient = new KeyVaultClient("...");
```

PC38 }

PC39 }

Database.cs -

```

DB01 public class Database
DB02 {
DB03 private string ConnectionString =
DB04
DB05 public async Task<object> LoadUserDetails(string userId)
DB06 {
DB07
DB08 return await policy.ExecuteAsync(async () =>
DB09 {
DB10 using (var connection = new SqlConnection(ConnectionString))
DB11 {
DB12 await connection.OpenAsync();
DB13 using (var command = new SqlCommand("...", connection))
DB14 using (var reader = command.ExecuteReader())
DB15 {
DB16 ...
DB17 }
DB18 }
DB19 });
DB20 }
DB21 }
```

ReceiptUploader.cs -

```

RU01 public class ReceiptUploader
RU02 {
RU03 public async Task UploadFile(string file, byte[] binary)
RU04 {
RU05 var httpClient = new HttpClient();
RU06 var response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU07 while (ShouldRetry(response))
RU08 {
RU09 response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU10 }
RU11 }
RU12 private bool ShouldRetry(HttpStatusCode response)
RU13 {
RU14 }
RU15 }
RU16 }
```

ConfigureSSE.ps1 -

```

CS01 $storageAccount = Get-AzureRmStorageAccount -ResourceGroupName "..." -AccountName "..."
CS02 $keyVault = Get-AzureRmKeyVault -VaultName "..."
CS03 $key = Get-AzureKeyVaultKey -VaultName $keyVault.VaultName -Name "..."
CS04 Set-AzureRmKeyVaultAccessPolicy `
CS05 -VaultName $keyVault.VaultName `
CS06 -ObjectId $storageAccount.Identity.PrincipalId `
CS07
CS08
CS09 Set-AzureRmStorageAccount `
CS10 -ResourceGroupName $storageAccount.ResourceGroupName `
CS11 -AccountName $storageAccount.StorageAccountName `
CS12 -EnableEncryptionService File `
CS13 -KeyvaultEncryption `
CS14 -KeyName $key.Name
CS15 -KeyVersion $key.Version `
CS16 -KeyVaultUri $keyVault.VaultUri
```

## Question

DRAG DROP -

You need to ensure disaster recovery requirements are met.

What code should you add at line PC16?

To answer, drag the appropriate code fragments to the correct locations. Each code fragment 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.

Select and Place:

Values
true
SingleTransferContext
ShouldTransferCallbackAsync
false
DirectoryTransferContext
ShouldOverwriteCallbackAsync

## Answer Area

```

var copyOptions = new CopyOptions { };
var context = new Value = (source, destination) => Task.FromResult(true);
context. Value = (source, destination) => Task.FromResult(true);
await TransferManager.CopyAsync(blob, GetDRBlob(blob), isServiceCopy: Value
, context: context, options:copyOptions);
```



👤 **NombreFalso** 1 year, 1 month ago

It's all good buddy  
upvoted 2 times

👤 **anastakasim** 2 years, 12 months ago

The last box is "true"? really?  
upvoted 2 times

👤 **ExamDev** Most Recent 9 months, 3 weeks ago

About isServiceCopy:  
A flag indicating whether the copy is service-side asynchronous copy or not. If this flag is set to true, service-side asynchronous copy will be used; if this flag is set to false, file is downloaded from source first, then uploaded to destination.  
upvoted 1 times

👤 **Kluk\_Kluk** 1 year ago

<https://learn.microsoft.com/en-us/azure/storage/common/storage-use-data-movement-library#track-transfer-progress>  
upvoted 1 times

👤 **Kluk\_Kluk** 1 year ago

"To achieve this scenario, we need to create a TransferContext object. The TransferContext object comes in two forms: SingleTransferContext and DirectoryTransferContext. The former is for transferring a single file and the latter is for transferring a directory of files."  
upvoted 1 times

👤 **Kluk\_Kluk** 1 year ago

the foreach in the lines above PC16 indicates single file transfer  
upvoted 3 times

👤 **OPT\_001122** 1 year, 4 months ago

1.SingleTranferConext  
2.ShouldOverwriteCallbackAsync  
3.true (If this flag is set to true, service-side asynchronous copy will be used)  
upvoted 3 times

👤 **coffecold** 1 year, 5 months ago

Old version 11 code Microsoft.Azure.Storage.DataMovement  
Version 12 : Azure.Storage.Blobs  
You would probably use :  
StartCopyFromUriAsync(Uri, BlobCopyFromUriOptions, CancellationToken)  
upvoted 2 times

👤 **gmishra88** 1 year, 6 months ago

For the non Microsoft stable tied horses, Task.FromResult(true) creates a task that returns true.  
upvoted 4 times

👤 **coffecold** 1 year, 5 months ago

usage : See <https://github.com/Azure/azure-storage-net-data-movement/blob/master/samples/DataMovementSamples/Samples.cs>  
upvoted 1 times

👤 **gmishra88** 1 year, 6 months ago

Also Microsoft, you do not need to know .Net to be able to write AZ-204.  
upvoted 2 times

👤 **SivajiTheBoss** 2 years, 1 month ago

Correct Answer:  
1.SingleTranferConext (because it is inside loop)  
2.ShouldOverwriteCallbackAsync (for singleTransferContext this is only option)  
3.true (If this flag is set to true, service-side asynchronous copy will be used)  
upvoted 5 times

👤 **leonidn** 2 years, 2 months ago

SingleTransferContext because we transfer blob by blob because line PC16 is in the ForEach.  
IsServiceCopy true to allow service side asynchronous processing instead of downloading/uploading blobs.

ShouldOverwriteCallbackAsync because ShouldTransferCallbackAsync is not a property of SingleTransferContext.  
upvoted 4 times

👤 **asdasdasg2** 2 years, 3 months ago

No one is talking about how the line on the first answer box is invalid no matter that answer you put.

I believe it's a copy paste error and the line should be:  
var context = new [ ];

with answer SingleTransferContext  
upvoted 2 times

✉ **asdasdasg2** 2 years, 3 months ago

i realize that is confusing, i meant that the line in the hot area should be :

```
var context = new _____();
```

upvoted 2 times

✉ **BrettusMaximus** 2 years, 11 months ago

isServiceCopy: True

Boolean

A flag indicating whether the copy is service-side asynchronous copy or not. If this flag is set to true, service-side asynchronous copy will be used; if this flag is set to false, file is downloaded from source first, then uploaded to destination

upvoted 2 times

## Topic 9 - Testlet 11

Question #1

Topic 9

### Introductory Info

Case study -

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LabelMaker app -

Coho Winery produces, bottles, and distributes a variety of wines globally. You are a developer implementing highly scalable and resilient applications to support online order processing by using Azure solutions.

Coho Winery has a LabelMaker application that prints labels for wine bottles. The application sends data to several printers. The application consists of five modules that run independently on virtual machines (VMs). Coho Winery plans to move the application to Azure and continue to support label creation.

External partners send data to the LabelMaker application to include artwork and text for custom label designs.

Requirements. Data -

You identify the following requirements for data management and manipulation:

Order data is stored as nonrelational JSON and must be queried using SQL.

Changes to the Order data must reflect immediately across all partitions. All reads to the Order data must fetch the most recent writes.

Requirements. Security -

You have the following security requirements:

Users of Coho Winery applications must be able to provide access to documents, resources, and applications to external partners.

External partners must use their own credentials and authenticate with their organization's identity management solution.

External partner logins must be audited monthly for application use by a user account administrator to maintain company compliance.

Storage of e-commerce application settings must be maintained in Azure Key Vault.

E-commerce application sign-ins must be secured by using Azure App Service authentication and Azure Active Directory (AAD).

Conditional access policies must be applied at the application level to protect company content.

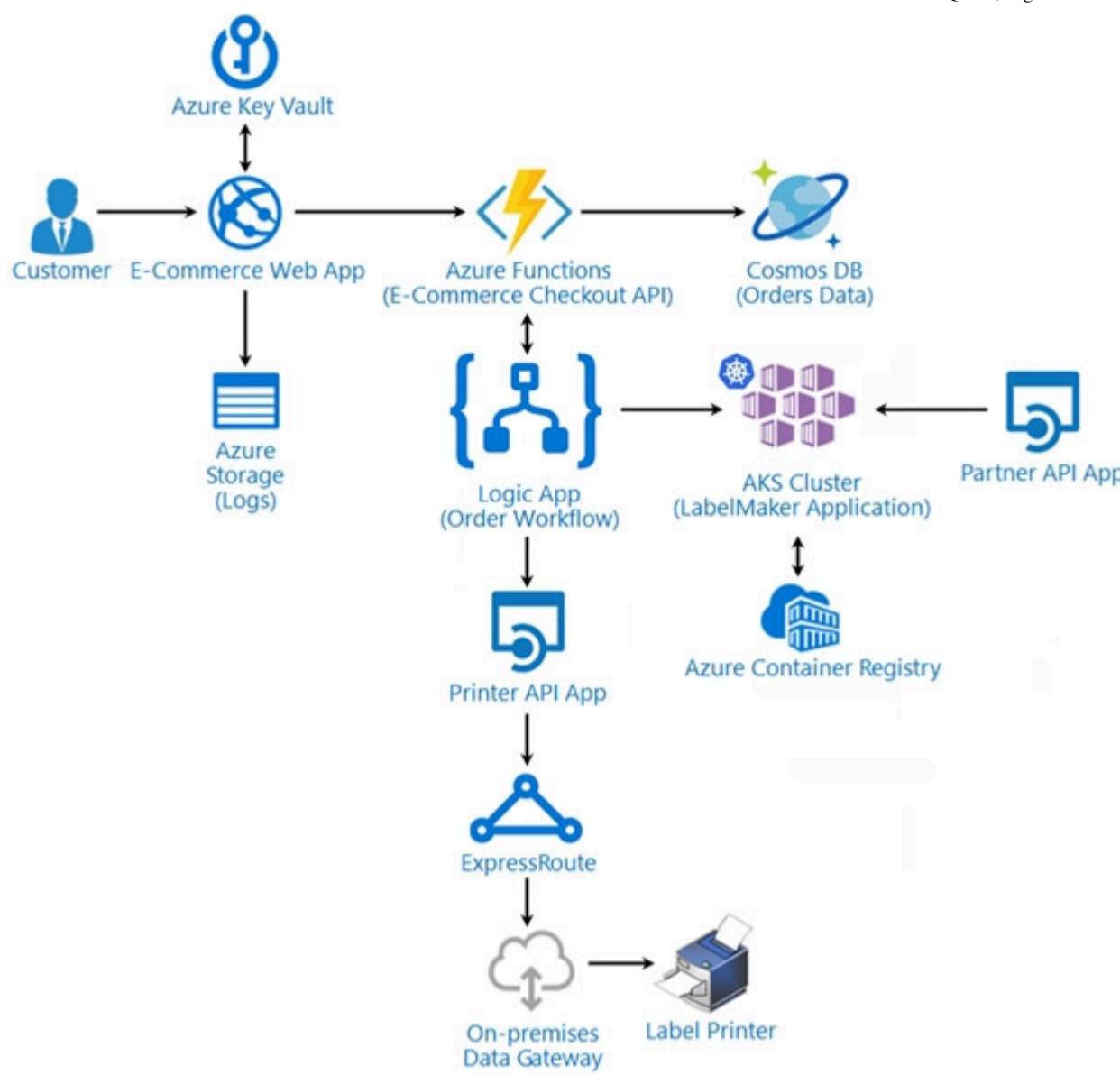
The LabelMaker application must be secured by using an AAD account that has full access to all namespaces of the Azure Kubernetes Service (AKS) cluster.

Requirements. LabelMaker app -

Azure Monitor Container Health must be used to monitor the performance of workloads that are deployed to Kubernetes environments and hosted on Azure Kubernetes Service (AKS).

You must use Azure Container Registry to publish images that support the AKS deployment.

Architecture -



#### Issues -

Calls to the Printer API App fail periodically due to printer communication timeouts.

Printer communication timeouts occur after 10 seconds. The label printer must only receive up to 5 attempts within one minute.

The order workflow fails to run upon initial deployment to Azure.

#### Order.json -

Relevant portions of the app files are shown below. Line numbers are included for reference only.

This JSON file contains a representation of the data for an order that includes a single item.

Order.json -

**Order.json**

```

01 {
02 "id" : 1,
03 "customers" : [
04 {
05 "familyName" : "Doe",
06 "givenName" : "John",
07 "customerid" : 5
08 }
09],
10 "line_items" : [
11 {
12 "fulfillable_quantity" : 1,
13 "id": 6,
14 "price" : "199.99" ,
15 "product_id" : 7513594,
16 "quantity": 1,
17 "requires_shipping" : true ,
18 "sku": "SFC-342-N" ,
19 "title" : "Surface Go" ,
20 "vendor" : "Microsoft" ,
21 "name" : "Surface Go - 8GB" ,
22 "taxable" : true ,
23 "tax_lines" : [
24 {
25 "title" : "State Tax" ,
26 "price" : "3.98" ,
27 "rate" : 0.06
28 }
29],
30 "total_discount" : "5.00" ,
31 "discount_allocations" : [
32 {
33 "amount" : "5.00" ,
34 "discount_application_index" : 2
35 }
36]

```

**Question**

HOTSPOT -

You need to configure Azure Cosmos DB.

Which settings should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

**Answer Area****Setting**      **Value****Consistency Level**

Strong
Bounded-staleness
Session
Eventual

**API**

SQL
MongoDB
Graph
Table

## Answer Area

### Setting      Value

#### Consistency Level

Strong
Bounded-staleness
Session
Eventual

Correct Answer:

#### API

SQL
MongoDB
Graph
Table

Box 1: Strong -

When the consistency level is set to strong, the staleness window is equivalent to zero, and the clients are guaranteed to read the latest committed value of the write operation.

Scenario: Changes to the Order data must reflect immediately across all partitions. All reads to the Order data must fetch the most recent writes.

Note: You can choose from five well-defined models on the consistency spectrum. From strongest to weakest, the models are: Strong, Bounded staleness,

Session, Consistent prefix, Eventual

Box 2: SQL -

Scenario: You identify the following requirements for data management and manipulation:

Order data is stored as nonrelational JSON and must be queried using Structured Query Language (SQL).

 **noip** Highly Voted 2 years, 8 months ago

correct 100%

upvoted 18 times

 **coffecold** Highly Voted 1 year, 5 months ago

To prevent reading the cases multiple times:

Please see the spots below where you can find the questions (page/topic/question/subject)

Coho Winery

47 9 1 configure Azure Cosmos DB

47 9 2 SQL

54 22 1 Review logs/history to troubleshoot workflow

54 22 2 ARM function configuration : retries etc

57 28 1 workflow for Azure Container Registry

57 28 2 access data from the user claim object

upvoted 18 times

 **OPT\_001122** 1 year, 4 months ago

Great Help!!

upvoted 2 times

 **SenseiJC** 1 year, 4 months ago

Thanks so much for this! Big help!

upvoted 3 times

 **SivajiTheBoss** Most Recent 2 years, 1 month ago

correct Answer:

1. Strong consistency

2. Sql Api

upvoted 5 times

 **asdadasdasg2** 2 years, 3 months ago

Answer is correct - Strong consistency matches requirements and MS recommends that if you have no preference or specific reason to use any of the other cosmos APIs, you should use the SQL api

upvoted 6 times

 **Sukon\_Desknut** 2 years, 7 months ago

(/● ワ ●)/\*:・° ◇  
upvoted 8 times

Question #2

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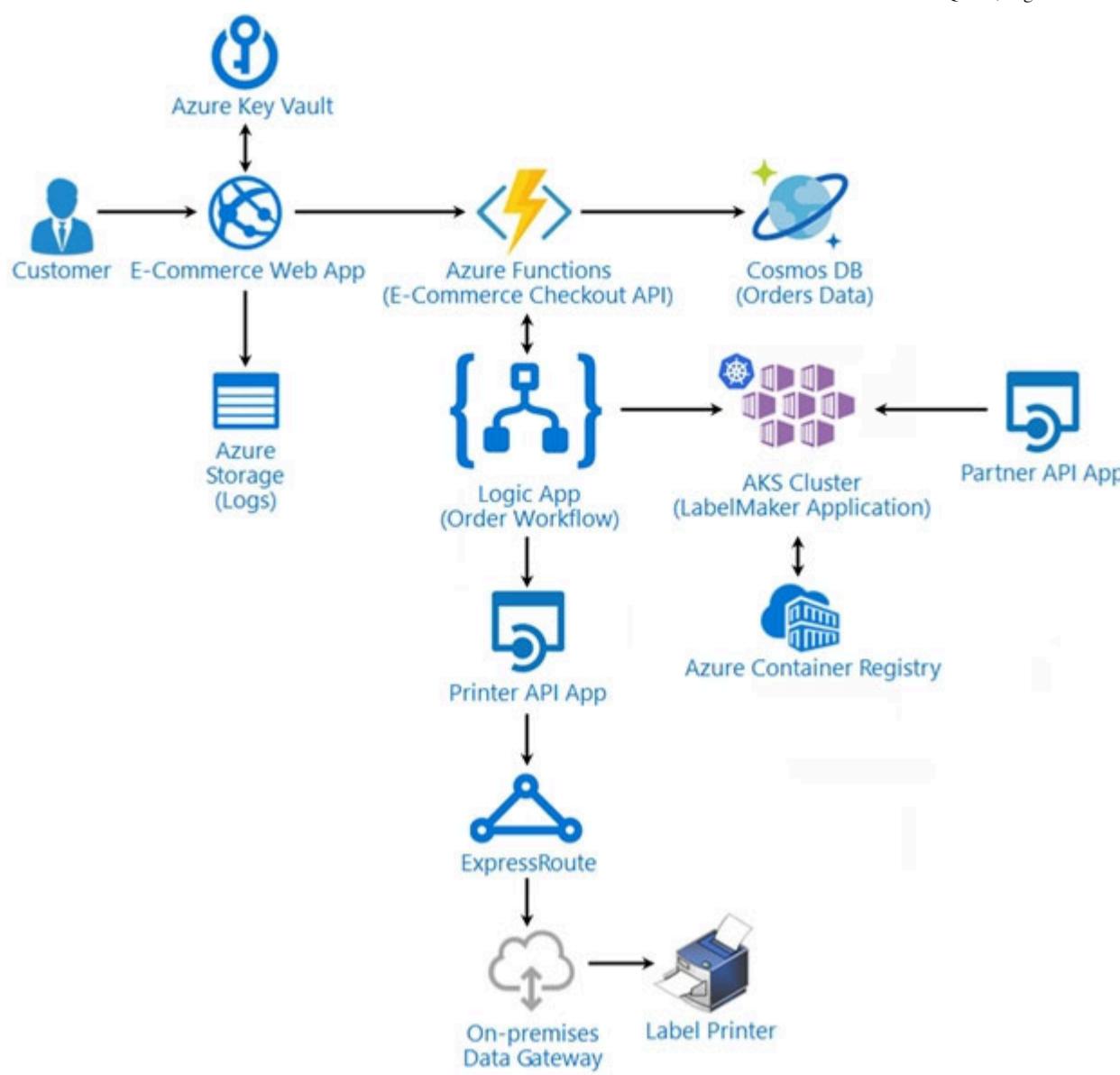
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06 "givenName" : "John",
07 "customerid" : 5
08 }
09],
10 "line_items" : [
11 {
12 "fulfillable_quantity" : 1,
13 "id": 6,
14 "price" : "199.99" ,
15 "product_id" : 7513594,
16 "quantity": 1,
17 "requires_shipping" : true ,
18 "sku": "SFC-342-N" ,
19 "title" : "Surface Go" ,
20 "vendor" : "Microsoft" ,
21 "name" : "Surface Go - 8GB" ,
22 "taxable" : true ,
23 "tax_lines" : [
24 {
25 "title" : "State Tax" ,
26 "price" : "3.98" ,
27 "rate" : 0.06
28 }
29],
30 "total_discount" : "5.00" ,
31 "discount_allocations" : [
32 {
33 "amount" : "5.00" ,
34 "discount_application_index" : 2
35 }
36]
37]
38]
39 }
```

**Question**

HOTSPOT -

You need to retrieve all order line items from Order.json and sort the data alphabetically by the city.

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

**Answer Area**

SELECT li.id AS lineitemid, li.price

FROM

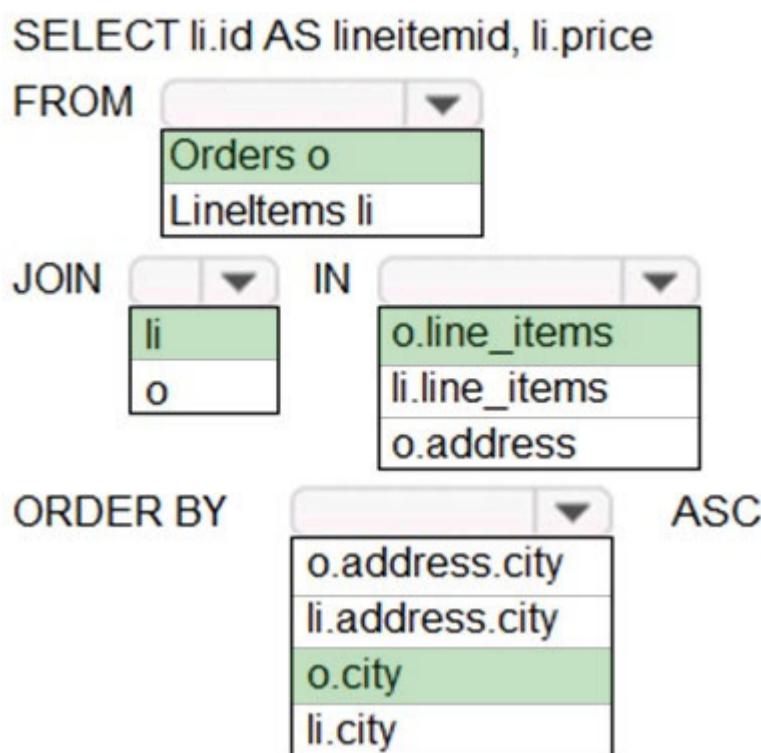
Lineltems li

JOIN

IN

ORDER BY

ASC

**Answer Area**

Box 1: orders o -

Scenario: Order data is stored as nonrelational JSON and must be queried using SQL.

Box 2: li -

Box 3: o.line\_items -

Box 4: o.city -

The city field is in Order, not in the 2s.

⊕  **DropLex**  2 years, 6 months ago

goodluck!

upvoted 73 times

⊕  **cool\_tool**  2 years, 8 months ago

The last one should be o.address.city

upvoted 26 times

⊕  **Alex42** 2 years, 7 months ago

address is not joined, so it has to be o.city

upvoted 3 times

⊕  **mariodarken** 2 years, 2 months ago

In CosmosDB SQL, if the address is not an array, it seems that you can skip the join <https://docs.microsoft.com/es-es/azure/cosmos-db/sql/sql-query-getting-started#query-the-json-items>

upvoted 3 times

⊕  **SaintBahamut** 1 year, 12 months ago

joining is needed because we want to list line items from all orders as separate rows (it will give us order x item line of rows), address is just a simple object from order, that will be included for all line items due join we made

upvoted 2 times

⊕  **d0bermannn** 2 years, 7 months ago

exactly

upvoted 2 times

⊕  **TonyMel** 1 year ago

correct, in 2023Mar24, score: 904/1000.

upvoted 8 times

⊕  **70PineApple**  1 year, 1 month ago

Got this in exam today..20/02/23

upvoted 1 times

⊕  **jjjita** 1 year, 2 months ago

This question is probably part of Case study Coho Winery

upvoted 1 times

✉  **tunaparker** 2 years ago

Now let's review all questions again because there are dozens of them lol  
upvoted 5 times

✉  **SD5713** 2 years, 1 month ago

I passed with only these questions, so don't stress guys. 80% of these questions is exactly the same. Good luck!  
upvoted 19 times

✉  **GunjanLiebwein** 2 years, 1 month ago

I have my exam on 25.02.2022. So let's see.  
upvoted 5 times

✉  **GunjanLiebwein** 2 years, 1 month ago

I Cleared it with 88%. And I got this question too.:-)  
upvoted 11 times

✉  **altafpatel1984** 2 years, 3 months ago

I got this question and json had address node inside main json. So answer would be o. address.city  
upvoted 10 times

✉  **warchoon** 1 year ago

Thank you. I was sure the question is incomplete  
upvoted 2 times

✉  **mkqwerty** 2 years, 4 months ago

HOPE NOT TO SEE YOU AGAIN  
upvoted 21 times

✉  **tunaparker** 2 years ago

Hahahahhh lol :D  
upvoted 1 times

✉  **Younes364** 1 year, 7 months ago

Me too  
upvoted 2 times

✉  **phvogel** 2 years, 5 months ago

I suspect that the JSON document is incomplete. But if the city were going to be anywhere it would be in the Order, not the line. So the last answer is either o.city or o.address.city. For that we have to guess because there's way to tell if the address information is stored inline in the order or in a class called address. It could be either of:

"street": "828 Broadway",  
"city": "New York"

or

"address": {  
"street": "828 Broadway",  
"city": "New York"  
}

upvoted 17 times

✉  **altafpatel1984** 2 years, 3 months ago

I got this question and json had address node inside main json. So answer would be o. address.city  
upvoted 12 times

✉  **ks321** 8 months, 3 weeks ago

Thanks Bro!  
upvoted 1 times

✉  **ning** 2 years, 7 months ago

Where is the city field in json???  
upvoted 4 times

✉  **altafpatel1984** 2 years, 3 months ago

I got this question and json had address node inside main json. So answer would be o. address.city  
upvoted 8 times

✉  **GreenPanda** 2 years, 8 months ago

<https://docs.microsoft.com/ja-jp/azure/cosmos-db/sql-query-getting-started#query-the-json-items>  
upvoted 2 times

✉  **noip** 2 years, 8 months ago

where is the city field in order?  
upvoted 7 times

✉  **vokep77043** 2 years, 7 months ago

Whole orders json is not showed in case study - it seems Orders.json is a single document of another Orders table/json.

upvoted 2 times

✉ **altafpatel1984** 2 years, 3 months ago

I got this question and json had address node inside main json. So answer would be o. address.city

upvoted 3 times

✉ **gesl** 2 years, 2 months ago

Are these questions enough to pass the exam?

upvoted 1 times

✉ **mariodarken** 2 years, 2 months ago

I hope so.. good luck mate

upvoted 2 times

✉ **gesl** 2 years, 1 month ago

Thank you mariodarken. For all wondering ... Feb./2022... Aprox. 40 out of 54 questions are covered with course. Enough to pass the exam. Good luck

upvoted 1 times

## Topic 10 - Testlet 12

Question #1

Topic 10

### Introductory Info

Case study -

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Background -

VanArsdel, Ltd. is a global office supply company. The company is based in Canada and has retail store locations across the world. The company is developing several cloud-based solutions to support their stores, distributors, suppliers, and delivery services.

Current environment -

Corporate website -

The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

Retail Store Locations -

The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

Requirements -

The application components must meet the following requirements:

Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.

The website must have 99.95 percent uptime.

Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

Delivery services -

Store service telemetry data in Azure Cosmos DB by using an Azure Function. Data must include an item id, the delivery vehicle license plate, vehicle package capacity, and current vehicle location coordinates.

Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

#### Security -

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

#### Issues -

##### Retail Store Locations -

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

#### Question

##### HOTSPOT -

You need to implement the Azure Function for delivery driver profile information.

Which configurations should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

### Answer Area

#### Configuration      Value

Code library

- Microsoft Authentication Library (MSAL)
- Microsoft Azure Key Vault SDK
- Azure Identity library

API

- Microsoft Graph
- Azure Active Directory Graph
- Azure Key Vault

### Answer Area

#### Configuration      Value

Code library

- Microsoft Authentication Library (MSAL)
- Microsoft Azure Key Vault SDK
- Azure Identity library

Correct Answer:

API

- Microsoft Graph
- Azure Active Directory Graph
- Azure Key Vault

Box 1: Azure Identity library -

Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

We recommend that you use a managed identity for applications deployed to Azure.

The preceding authentication scenarios are supported by the Azure Identity client library and integrated with Key Vault SDKs.

Note: What is Managed Service Identity?

Azure Key Vault avoids the need to store keys and secrets in application code or source control. However, in order to retrieve keys and secrets

from Azure Key

Vault, you need to authorize a user or application with Azure Key Vault, which in its turn needs another credential. Managed Service Identity avoids the need of storing credentials for Azure Key Vault in application or environment settings by creating a Service Principal for each application or cloud service on which

Managed Service Identity is enabled. This Service Principal enables you to call a local MSI endpoint to get an access token from Azure AD using the credentials of the Service Principal. This token is then used to authenticate to an Azure Service, for example Azure Key Vault.

Box 2: Azure Key Vault -

Azure Key Vault allows you to securely access sensitive information from within your applications:

\* Keys, secrets, and certificates are protected without your having to write the code yourself, and you can easily use them from your applications.

Use Azure Key Vault to store only secrets for your application. Examples of secrets that should be stored in Key Vault include:

Client application secrets -

Connection strings -

Passwords -

Shared access keys -

SSH keys -

Reference:

<https://docs.microsoft.com/en-us/azure/key-vault/general/developers-guide> <https://integration.team/blog/retrieve-azure-key-vault-secrets-using-azure-functions-and-managed-service-identity>

✉  **willchenxa** Highly Voted 1 year, 7 months ago

Store delivery driver profile information in Azure Active Directory (Azure AD), I would use:

Code Library: MSAL

API: Microsoft Graph

<https://docs.microsoft.com/en-us/azure/active-directory/develop/msal-overview>

upvoted 67 times

✉  **Dani\_ac7** 1 year, 7 months ago

i think your answer is correct

upvoted 3 times

✉  **davidkerr7** 10 months ago

correct, profile is stored in AD not keyvault

"Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website."

upvoted 1 times

✉  **coffecold** Highly Voted 1 year, 5 months ago

To prevent reading the cases multiple times:

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VanArsdel, Ltd.

47 10 1 delivery profile information in code

48 10 2 grant access SAS or AD?

48 10 3 JWT +claims

48 10 4 place to store the RSA-HSM key

51 15 1 reduce read latency Cosmos DB

51 15 2 audit transactions in blob

54 21 1 systems for source-receiver-handler

57 29 1 function configuration : binding , trigger, direction

57 29 2 tier of SPA web app

57 30 1 Azure Blob features for point-in-time restore and accidental deletion of data

upvoted 18 times

✉  **OPT\_001122** 1 year, 4 months ago

great help!

upvoted 2 times

✉  **dancing\_donkey** 1 year, 1 month ago

Where are these pages? link pls

upvoted 4 times

✉  **raymond\_abcd** Most Recent 2 months ago

The three-year deprecation period for Azure AD Graph ended on June 30, 2023. Microsoft Graph is the recommended replacement for Azure AD Graph.

upvoted 1 times

 **dddddd111** 4 months, 4 weeks ago

I got this question and chose provided answers. Score 644/1000 - failed. T\_T

upvoted 1 times

 **jaf19f** 8 months ago

I got this question (12-Aug-2023) and I chose highly voted answer - 932 passed

upvoted 5 times

 **juanckar** 9 months, 1 week ago

This was on the exam (July 2023). Went with highly voted. Scored 917

upvoted 5 times

 **JH81** 9 months, 2 weeks ago

Got this question and case study 6/29/2023 and passed with 850. MASL/Graph is correct.

upvoted 1 times

 **OPT\_001122** 1 year, 3 months ago

MSAL

MS Graph

upvoted 7 times

 **coffecold** 1 year, 5 months ago

Why...o...why are so many of the revealed answers incorrect? Without the topic discussions you would have hard times...

upvoted 11 times

 **Ciupaz** 5 months, 3 weeks ago

You're right.

upvoted 1 times

 **Ishan\_63** 1 year, 6 months ago

Microsoft Graph API is used in order to get user provide information from Azure AD. Key valult is used to manage Secrets, Certificates and Keys.

upvoted 2 times

Question #2

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Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

**Security -**

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

**Issues -****Retail Store Locations -**

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

**Question**

You need to grant access to the retail store location data for the inventory service development effort.

What should you use?

- A. Azure AD access token
- B. Azure RBAC role
- C. Shared access signature (SAS) token
- D. Azure AD ID token
- E. Azure AD refresh token

**Correct Answer: C**

A shared access signature (SAS) provides secure delegated access to resources in your storage account. With a SAS, you have granular control over how a client can access your data. For example:

What resources the client may access.

What permissions they have to those resources.

How long the SAS is valid.

Note: Inventory services:

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

Reference:

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

*Community vote distribution*

C (100%)

  **kampatra** Highly Voted 1 year, 6 months ago

Seems Correct as access is required to access for 3 months

upvoted 14 times

  **davidkerr7** 10 months ago

where ar u getting the 3 months from  
its SAS because they only need access to upload data  
'Store locations send data every hour to an Azure Blob storage account'

upvoted 1 times

  **gmishra88** Highly Voted 1 year, 6 months ago

All that reading to check if the person knows SAS exist with an expiry date?

upvoted 8 times

  **NombreFalso** 1 year, 1 month ago

This is why I hate case studies  
upvoted 5 times

  **FeriAZ** Most Recent 2 months ago

**Selected Answer: C**

Shared access signature (SAS) token allows for precise control over what actions can be performed (e.g., read-only access), on which resources (e.g., a specific blob), and for how long the access should be granted (e.g., three months), aligning perfectly with the scenario's needs. SAS tokens provide a way to grant limited access to objects in your storage account to other clients, without exposing your account key. A SAS

token can be limited by time and can grant access to specific blobs, making it an ideal choice for the scenario where a third-party needs read-only access to a specific blob within the retail store storage account for three months.

upvoted 1 times

 **jaf19f** 8 months ago

I got this question (12-Aug-2023) and I chose C as my answer - 932 passed

upvoted 4 times

 **juanckar** 9 months, 1 week ago

This was on the exam (July 2023). Went with highly voted. Scored 917

upvoted 3 times

 **OPT\_001122** 1 year, 4 months ago

<https://www.examtopics.com/exams/microsoft/az-204/view/47/>

Topic 10 - Testlet 12

Question #1

It has all the questions listed for VanArsdel casestudy

upvoted 3 times

 **idolle** 10 months, 1 week ago

Page not found

upvoted 2 times

Question #3

## Introductory Info

Case study -

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Background -

VanArsdel, Ltd. is a global office supply company. The company is based in Canada and has retail store locations across the world. The company is developing several cloud-based solutions to support their stores, distributors, suppliers, and delivery services.

Current environment -

Corporate website -

The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

Retail Store Locations -

The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

Requirements -

The application components must meet the following requirements:

Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.

The website must have 99.95 percent uptime.

Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

Delivery services -

Store service telemetry data in Azure Cosmos DB by using an Azure Function. Data must include an item id, the delivery vehicle license plate, vehicle package capacity, and current vehicle location coordinates.

Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

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The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

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**Issues -****Retail Store Locations -**

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

**Question****HOTSPOT -**

You need to reliably identify the delivery driver profile information.

How should you configure the system? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

**Answer Area**

<b>Configuration</b>	<b>Value</b>
<b>JSON web token (JWT) type</b>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <input type="checkbox"/> ID  <input type="checkbox"/> Refresh  <input type="checkbox"/> Access         </div>
<b>Payload claim value</b>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <input type="checkbox"/> oid  <input type="checkbox"/> aud  <input type="checkbox"/> idp         </div>

**Answer Area**

<b>Configuration</b>	<b>Value</b>
<b>JSON web token (JWT) type</b>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <input checked="" type="checkbox"/> ID  <input type="checkbox"/> Refresh  <input type="checkbox"/> Access         </div>
<b>Payload claim value</b>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <input checked="" type="checkbox"/> oid  <input type="checkbox"/> aud  <input type="checkbox"/> idp         </div>

Box 1: ID -

Scenario: Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate

website.

ID token - A JWT that contains claims that you can use to identify users in your application. This token is securely sent in HTTP requests for communication between two components of the same application or service. You can use the claims in an ID token as you see fit. They're commonly used to display account information or to make access control decisions in an application. ID tokens are signed, but they're not encrypted. When your application or API receives an ID token, it must validate the signature to prove that the token is authentic. Your application or API must also validate a few claims in the token to prove that it's valid.

Depending on the scenario requirements, the claims validated by an application can vary, but your application must perform some common claim validations in every scenario.

Box 2: Oid -

Oid - The immutable identifier for the "principal" of the request - the user or service principal whose identity has been verified. In ID tokens and app+user tokens, this is the object ID of the user. In app-only tokens, this is the object ID of the calling service principal. It can also be used to perform authorization checks safely and as a key in database tables. This ID uniquely identifies the principal across applications - two different applications signing in the same user will receive the same value in the oid claim.

Incorrect:

Aud - Identifies the intended recipient of the token. For Azure AD B2C, the audience is the application ID. Your application should validate this value and reject the token if it doesn't match. Audience is synonymous with resource.

Idp - Records the identity provider that authenticated the subject of the token. This value is identical to the value of the Issuer claim unless the user account not in the same tenant as the issuer - guests, for instance. If the claim isn't present, it means that the value of iss can be used instead. For personal accounts being used in an organizational context (for instance, a personal account invited to an Azure AD tenant), the idp claim may be 'live.com' or an STS URI containing the

Microsoft account tenant.

Reference:

<https://docs.microsoft.com/en-us/azure/active-directory-b2c/tokens-overview> <https://docs.microsoft.com/en-us/azure/active-directory/develop/access-tokens>

✉  **AbdulMannan** Highly Voted 1 year, 6 months ago

Got this question on 30-Sep-2022 exam.

Answer is correct. Passed with 870 score.

upvoted 13 times

✉  **ArturKon** Highly Voted 1 year, 6 months ago

Looks correct.

Ref.: <https://learn.microsoft.com/en-us/azure/active-directory/develop/id-tokens>

upvoted 7 times

✉  **jaf19f** Most Recent 8 months ago

I got this question (12-Aug-2023) and I chose highly voted answer - 932 passed

upvoted 5 times

✉  **BaoNguyen2411** 8 months, 2 weeks ago

got this question on 29/02/2023

upvoted 1 times

✉  **juancar** 9 months, 1 week ago

This was on the exam (July 2023). Went with highly voted. Scored 917

upvoted 3 times

✉  **winterthor4** 1 year ago

Look correct. Got this question on 26-Mar-2023 exam. Go with suggested answer got 890 score.

upvoted 5 times

✉  **adilkhan** 11 months, 3 weeks ago

all questions were from exam topics?

upvoted 2 times

## Introductory Info

### Case study -

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### Background -

VanArsdel, Ltd. is a global office supply company. The company is based in Canada and has retail store locations across the world. The company is developing several cloud-based solutions to support their stores, distributors, suppliers, and delivery services.

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#### Corporate website -

The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

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The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

#### Requirements -

The application components must meet the following requirements:

#### Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

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#### Delivery services -

Store service telemetry data in Azure Cosmos DB by using an Azure Function. Data must include an item id, the delivery vehicle license plate, vehicle package capacity, and current vehicle location coordinates.

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#### Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

**Security -**

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

**Issues -****Retail Store Locations -**

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

**Question**

You need to secure the Azure Functions to meet the security requirements.

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

NOTE: Each correct selection is worth one point.

- A. Store the RSA-HSM key in Azure Key Vault with soft-delete and purge-protection features enabled.
- B. Store the RSA-HSM key in Azure Blob storage with an immutability policy applied to the container.
- C. Create a free tier Azure App Configuration instance with a new Azure AD service principal.
- D. Create a standard tier Azure App Configuration instance with an assigned Azure AD managed identity.
- E. Store the RSA-HSM key in Azure Cosmos DB. Apply the built-in policies for customer-managed keys and allowed locations.

**Correct Answer: AD**

Scenario: All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Microsoft Azure Key Vault is a cloud-hosted management service that allows users to encrypt keys and small secrets by using keys that are protected by hardware security modules (HSMs).

You need to create a managed identity for your application.

Reference:

<https://docs.microsoft.com/en-us/azure/app-service/app-service-key-vault-references>

*Community vote distribution*

AD (100%)

 **gmishra88** Highly Voted 1 year, 6 months ago

There is no need to read all that text to identify the answer.

upvoted 19 times

 **sutozoli** 1 year, 5 months ago

Which sentence helped you to identify the answer?

upvoted 2 times

 **hubekpeter** 1 year, 4 months ago

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

upvoted 7 times

 **AbdulMannan** Highly Voted 1 year, 6 months ago

Got this question on 30-Sep-2022 exam.

Answer is correct. Passed with 870 score.

upvoted 9 times

 **Frazerdon** Most Recent 6 months, 3 weeks ago

Selected Answer: AD

Correct!!!

upvoted 2 times

 **jaf19f** 8 months ago

I got this question (12-Aug-2023) and I chose A and D as my answer - 932 passed

upvoted 3 times

✉ **ReyPirata** 7 months, 3 weeks ago

Correct. This was on the exam (08/20/2023). Scored 925

upvoted 1 times

✉ **BaoNguyen2411** 8 months, 2 weeks ago

got this question on 29/06/2023

upvoted 2 times

✉ **juanckar** 9 months, 1 week ago

This was on the exam (July 2023). Went with highly voted. Scored 917

upvoted 3 times

✉ **beebert69** 1 year, 2 months ago

When we have started answering questions on the Case Study can we go back to the Case Study documents?

upvoted 1 times

✉ **mmdex** 1 year, 1 month ago

All the Case Study information is available to you as you are answering the questions. You can go back and forth between questions and the Case Study information as you like. But after you answer all questions and finish the Case Study, you cannot go back. It's like a mini-exam within the main exam.

upvoted 8 times

✉ **kampatra** 1 year, 6 months ago

Correct!

upvoted 3 times

✉ **sghaha** 1 year, 11 months ago

in Korean

<https://docs.microsoft.com/ko-kr/azure/app-service/app-service-key-vault-references>

upvoted 5 times

## Topic 11 - Testlet 13

Question #1

Topic 11

### Introductory Info

Case study -

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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
```

## ApplicationManifest -

```
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 }
```

## Question

DRAG DROP -

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.

Select and Place:

Json segments	Answer Area
User	"appRoles": [
value	{ "": [
role	"": "
Application	],
allowedMemberTypes	"displayName": "ContentReviewer", "id": "e1c2ade8-98f8-45fd-aa4a-6d24b512c22a", "isEnabled" : true,
allowedAccountTypes	"": "ContentReviewer"

## Correct Answer:

## Json segments

User  
value  
role  
Application  
allowedMemberTypes  
allowedAccountTypes

## Answer Area

```

"appRoles": [
 {
 "allowedMemberTypes": [
 "User"
],
 "displayName": "ContentReviewer",
 "id": "e1c2ade8-98f8-45fd-aa4a-6d24b512c22a",
 "isEnabled": true,
 "value": "ContentReviewer"
 }
],

```

## 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>

✉ ray01 Highly Voted 2 years, 12 months ago

Correct. See MS example here:

<https://docs.microsoft.com/de-de/azure/active-directory/develop/howto-add-app-roles-in-azure-ad-apps#example-user-app-role>

upvoted 34 times

✉ coffecold Highly Voted 1 year, 5 months ago

To prevent reading the cases multiple times:

Please see the spots below where you can find the questions (page/topic/question/subject)

Contoso, Ltd

48 11 1 configure ApplicationManifest

48 11 2 configure ApplicationManifest

49 11 3 type of SSL certificate / proxy used

49 11 4 YAML @Azure Container Instances for mounting

49 11 5 ApplicationManifest optional claims

52 16 1 cli : az monitor metrics alert create

52 16 2 cli : az for http server log output

56 27 1 code : read properties from GRID event

56 27 2 tier of function plan @Vnet

58 31 1 choose best storage solution  
58 31 2 code : bindings for function  
58 31 3 docker file : Private/Public Windows/Linux  
upvoted 15 times

✉ **OPT\_001122** 1 year, 4 months ago

Great Help!!!!  
upvoted 1 times

✉ **CriJim** Most Recent 6 months, 2 weeks ago

Here below find same case studies topics:  
Wide World Importers 7, 12, 23  
Litware Inc. 8, 14, 20  
Coho Wines produces 9, 22, 28  
VanAarsdel, Ltd. 10, 15, 21, 29, 30  
Contoso, Ltd. 11, 16, 27, 31  
City Power & Light 13, 17, 18, 24, 32  
Proseware, Inc. 19, 25, 26  
upvoted 4 times

✉ **applepie** 8 months, 2 weeks ago

got this case study today, went with provided answer - 7/30/2023, score 895/1000  
upvoted 2 times

✉ **BaoNguyen2411** 8 months, 2 weeks ago

got this question on 29/06/2023  
upvoted 1 times

✉ **BaoNguyen2411** 8 months, 2 weeks ago

Got this question on 29/06/2023  
upvoted 2 times

✉ **NightshadeRC** 8 months, 2 weeks ago

Had this question today 2023-07-26  
upvoted 2 times

✉ **CODE\_STS** 1 year, 1 month ago

Got this in the exam today! Feb 28, 2023  
upvoted 3 times

✉ **AlexeyG** 1 year, 1 month ago

Got this in 16/02/2023  
upvoted 1 times

✉ **mabdo** 1 year, 1 month ago

did you get 2 different case studies? I saw you commenting on another one also. Is that possible?  
upvoted 1 times

✉ **Net\_IT** 1 year, 1 month ago

Thank you for mentioning the date, would be nice to know your answer and whether you passed as well :)  
upvoted 1 times

✉ **nvtienanh** 1 year, 4 months ago

On exam December 2, 2022  
upvoted 4 times

✉ **TheExamMaster2020** 1 year, 4 months ago

Did my exam on 15th November 2022. This test case and question was on it.  
upvoted 3 times

✉ **coffecold** 1 year, 5 months ago

Usage see here.  
<https://stackoverflow.com/questions/57400122/aad-approles-allowedmembertypes-for-both-application-and-user>  
upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

So, a Microsoft developer is not allowed to refer to documents and has to just memorize the syntax also of a manifest file ! This is a lovely certification exam. Never one more Microsoft certification  
upvoted 5 times

✉ **petibilly** 2 years, 1 month ago

Got this one 03/2022  
upvoted 4 times

✉ **edengoforit** 2 years, 2 months ago

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.

upvoted 1 times

 **lugospod** 2 years, 2 months ago

Got this one 01/2022. Went with most voted (to avoid writing answers again)

upvoted 5 times

 **mlantonis** 2 years, 10 months ago

Correct. Check here: <https://docs.microsoft.com/de-de/azure/active-directory/develop/howto-add-app-roles-in-azure-ad-apps#example-user-app-role>

upvoted 12 times

## Question #2

**Introductory Info**

## Case study -

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## To start the case study -

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## 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.

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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
```

## ApplicationManifest -

```
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 }
```

## Question

HOTSPOT -

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.

Hot Area:

**Answer Area**

▼  
"allowPublicClient":true  
"oauth2Permissions": ["login"]  
"oauth2AllowUrlPathMatching":true  
"oauth2AllowIdTokenImplicitFlow":true

▼  
"oauth2AllowImplicitFlow": true  
"oauth2RequiredPostResponse":true  
"preAuthorizedApplications": ["SPA"]  
"knownClientApplications": ["ContentAnalysisService"]

## Answer Area

Correct Answer:

```
"allowPublicClient":true
"oauth2Permissions": ["login"]
"oauth2AllowUrlPathMatching":true
"oauth2AllowIdTokenImplicitFlow":true
```

```
"oauth2AllowImplicitFlow": true
"oauth2RequiredPostResponse":true
"preAuthorizedApplications":["SPA"]
"knownClientApplications":["ContentAnalysisService"]
```

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>

✉  **Zidimirite**  3 years ago

<https://www.examtopics.com/discussions/microsoft/view/25371-exam-az-204-topic-8-question-2-discussion/>  
 oauth2AllowImplicitFlow = true,  
 oauth2AllowIdTokenImplicitFlow = true

upvoted 43 times

✉  **mlantonis**  2 years, 10 months ago

Box 1: "oauth2AllowIdTokenImplicitFlow":true  
 This value indicates whether the web app can request ID tokens of the implicit OAuth 2.0 flow. The default setting is "false".

Box 2: "oauth2AllowImplicitFlow":true

This value indicates whether the web app can request OAuth 2.0 implicit flow access tokens. The default setting is "false".

Reference:

<https://docs.microsoft.com/de-de/azure/active-directory/develop/reference-app-manifest>

<https://docs.microsoft.com/de-de/azure/active-directory/develop/reference-app-manifest#oauth2allowidtokenimplicitflow-attribute>

<https://docs.microsoft.com/de-de/azure/active-directory/develop/reference-app-manifest#oauth2allowimplicitflow-attribute>  
 upvoted 36 times

✉  **sekelsenmat**  2 months ago

People, I don't understand how everyone here can be wrong. Implicit flow is not for SPA. Implicit flow is a less secure oauth2 for SPA apps which have no custom server-side! (i.e. they have no server, or only use SaaS like Google APIs)

In the study it is clearly stated that we have our own backend here: The "ContentAnalysisService is deployed with Azure Container Instances" and here "website portion of the ContentAnalysisService"

So why would we want to use the less secure implicit flow??? So I'd go with the only options which are not about implicit flow:

oauth2Permissions  
 knownClientApplications

Anyway, see the docs: <https://learn.microsoft.com/en-us/entra/identity-platform/v2-oauth2-implicit-grant-flow> --> We strongly recommend that all new applications use the authorization code flow that now supports single-page apps in place of the implicit flow

But yeah, I'm open for discussion with anyone who can counter my arguments.

upvoted 1 times

✉  **FeriAZ** 2 months ago

"oauth2AllowIdTokenImplicitFlow": true.  
 This option is crucial for Single Page Applications (SPAs). The OAuth 2.0 implicit flow allows SPAs to directly receive an ID token (which

represents the authenticated user) from the Azure Active Directory (Azure AD) authorization endpoint. This flow is suitable for applications that cannot securely store a client secret due to their nature (running in a web browser), enabling them to perform authentication with Azure AD and receive tokens needed for calling backend services.

`oauth2AllowImplicitFlow": true`.

This option enables the implicit grant flow, which is an OAuth 2.0 flow optimized for clients that run in a browser. It's particularly relevant for SPAs because it allows them to obtain access tokens directly from the Azure AD authorization endpoint without the need for a backend component to perform an authorization code exchange. This flow is essential for apps that need to authenticate users and then call web APIs on behalf of those users without handling client secrets.

upvoted 1 times

✉ **edengoforit** 2 years, 2 months ago

Since it is a browser app (React), Implicit Grant Flow, should be enabled:

`oauth2AllowImplicitFlow = true,`  
`oauth2AllowIdTokenImplicitFlow = true`

"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.

This is a web app so we need `oauth2AllowImplicitFlow`.

We need to have information about the user (reviewer email), so we need to have Id Token thus `oauth2AllowIdTokenImplicitFlow` must be set to true

upvoted 7 times

✉ **RajMasilamani** 2 years, 6 months ago

I think the answer should be

Oauth2permission login for first box as API to be exposed and email credentials to be saved for auditing purpose.

upvoted 1 times

✉ **[Removed]** 2 years, 11 months ago

`"allowPublicClient": true`

> Not required as inferred from `replyUrlsWithType`

`"oauth2Permissions": ["login"]`

> only for resource server exposing an API

`"oauth2AllowUrlPathMatching: true`

> Couldn't find in the docu

`"oauth2AllowIdTokenImplicitFlow": true`

> Correct one to choose!

`"oauth2AllowImplicitFlow": true`

> Correct one to choose!

`"oauth2RequiredPostResponse": true`

> Not relevant

`"preAuthorizedApplications": ["SPA"]`

> Not relevant

`"knownClientApplications": ["ContentAnalysisService"]`

> Not relevant

[https://docs.microsoft.com/en-us/azure/active-directory/develop/reference-app-manifest?WT.mc\\_id=Portal-Microsoft\\_AAD\\_RegisteredApps#manifest-reference](https://docs.microsoft.com/en-us/azure/active-directory/develop/reference-app-manifest?WT.mc_id=Portal-Microsoft_AAD_RegisteredApps#manifest-reference)

upvoted 8 times

✉ **wtkwsk** 2 years, 12 months ago

Zidimirite is correct: `oauth2AllowImplicitFlow` & `oauth2AllowIdTokenImplicitFlow`

See here: <https://docs.microsoft.com/de-de/azure/active-directory/develop/reference-app-manifest>

upvoted 2 times

✉ **clarionprogrammer** 2 years, 12 months ago

`"oauth2AllowIdTokenImplicitFlow":true`

`"oauth2AllowImplicitFlow":true`

upvoted 3 times

✉ **trance13** 3 years ago

I think the first answer should be `allowPublicClient: true` because this is SPA application and by default it is set to false. implicit flow does not make sense with confidential clients, it would be client credentials flow.

upvoted 4 times

## Question #3

**Introductory Info**

## Case study -

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## Background -

## Overview -

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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.

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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 -

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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
```

## ApplicationManifest -

```

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 }

```

## Question

HOTSPOT -

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.

Hot Area:

## Answer Area

Technology	Value
SSL certificate	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 2px;">Valid root certificate</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 2px;">Self-signed certificate</div> </div>
Proxy type	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 2px;">nginx</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 2px;">Azure Application Gateway</div> </div>

## Answer Area

Technology	Value
SSL certificate	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #c0e0c0; margin-bottom: 2px;">Valid root certificate</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 2px;">Self-signed certificate</div> </div>
Proxy type	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #c0e0c0; margin-bottom: 2px;">nginx</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; background-color: #c0e0c0; margin-bottom: 2px;">Azure Application Gateway</div> </div>

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. Web applications 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 load-balancing 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>

✉  **mlantonis** Highly Voted 2 years, 10 months ago

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).

upvoted 50 times

✉  **KingChuang** 1 year, 3 months ago

On my exam 2022-12-26.

Chose:

Valid root certificate

Azure Application Gateway

upvoted 4 times

✉  **ExamDev** 9 months, 3 weeks ago

Yeah!

Box 1: Answer is written inside security tab: "must use SSL from a valid root certificate authority" Must read carefully sometime to get the answer :)

Box 2:

nginx as service is not provided by Microsoft azure

upvoted 4 times

✉  **AlexeyG** Highly Voted 1 year, 1 month ago

Got this in 16/02/2023

upvoted 6 times

✉  **BaoNguyen2411** Most Recent 8 months, 2 weeks ago

got this question on 29/06/2023

upvoted 1 times

✉  **BaoNguyen2411** 8 months, 2 weeks ago

Got this question on 29/06/2023

upvoted 1 times

✉  **NightshadeRC** 8 months, 2 weeks ago

Had this question today: 2023-07-26

upvoted 1 times

✉  **nvtienanh** 1 year, 4 months ago

On exam December 2, 2022

upvoted 3 times

✉  **coffecold** 1 year, 5 months ago

The only thing is : Azure Application Gateway can only be deployed in one region. Don't know if that violates the requirements "All services must run in multiple regions. The failure of any service in a region must not impact overall application availability."

Couldn't find if nginx has the same limitation either.

Would go for Azure Application Gateway

upvoted 1 times

✉  **angrybird2007** 1 year, 8 months ago

May I know what is the different between Azure Application Gateway Vs NGINX. They are similar. Why we choice Azure Application Gateway instead of NGINX?

upvoted 1 times

 **Knightie** 1 year, 7 months ago

public facing, use an official service to tank the public with Azure Application Gateway, internal calls, just casually use any nginx will do.  
upvoted 1 times

 **gmishra88** 1 year, 6 months ago

Because this is Microsoft exam, just select Application gateway. But I get what you say  
upvoted 3 times

 **Eltooth** 1 year, 9 months ago

Valid root cert  
Azure App gateway  
upvoted 3 times

 **SivajiTheBoss** 2 years ago

Correct Answer provided  
upvoted 1 times

 **petitbilly** 2 years, 1 month ago

Got this one 03/2022  
upvoted 3 times

## Question #4

**Introductory Info**

## Case study -

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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
```

## ApplicationManifest -

```

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 }

```

## Question

DRAG DROP -

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.

Select and Place:

## YAML segments

secret  
envVar  
secretValues  
volumes  
volumeMounts  
environmentVariables

## Answer Area

YAML segment :  
- mountPath: /mnt/secrets  
 name: accesskey  
YAML segment :  
- name: accesskey  
YAML segment :  
key: TXkgZmlyc3Qgc2VjcmV0IEZPTwo=

## Correct Answer:

## YAML segments

envVar  
secretValues  
  
environmentVariables

## Answer Area

volumeMounts :  
- mountPath: /mnt/secrets  
 name: accesskey  
volumes :  
- name: accesskey  
secret :  
key: TXkgZmlyc3Qgc2VjcmV0IEZPTwo=

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>

✉  **mlantonis** Highly Voted 2 years, 10 months ago

Box 1: volumeMounts

Box 2: volumes

Box 3: secret

Reference:

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

upvoted 31 times

✉  **KingChuang** 1 year, 3 months ago

On my exam 2022-12-26.

Chose:

volumeMounts

volumes

secret

upvoted 4 times

✉  **rdemontis** Highly Voted 3 years ago

Answers are correct!

upvoted 28 times

✉  **BaoNguyen2411** Most Recent 8 months, 2 weeks ago

got this question on 29/06/2023

upvoted 2 times

✉  **NightshadeRC** 8 months, 2 weeks ago

Had this question today: 2023-07-26

upvoted 1 times

✉  **AlexeyG** 1 year, 1 month ago

Got this in 16/02/2023

upvoted 3 times

✉  **adilkhan** 1 year, 2 months ago

correct! <https://learn.microsoft.com/en-us/azure/container-instances/container-instances-volume-secret#mount-secret-volume---yaml>

upvoted 1 times

✉  **OPT\_001122** 1 year, 3 months ago

1: volumeMounts

2: volumes

3: secret

upvoted 1 times

✉  **meoukg** 2 years ago

Got it on 03/2022, I chose as below:

1: volumeMounts

2: volumes

3: secret

upvoted 2 times

✉  **petitbilly** 2 years, 1 month ago

Got this one 03/2022

upvoted 2 times

✉  **BrettusMaximus** 2 years, 11 months ago

Correct. But a trick question.  
accesskey is the name of the volume  
upvoted 14 times

 **coffecold** 1 year, 5 months ago

Another trick thing:  
-volumeMounts belongs to a particular container (of many containers)  
-volumes contains a volume that can be shared among all containers  
<https://learn.microsoft.com/en-us/azure/container-instances/container-instances-reference-yaml#schema>  
upvoted 2 times

## Question #5

**Introductory Info**

## Case study -

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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 the Next button. 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 the Question button 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
```

## ApplicationManifest -

```
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 }
```

## Question

HOTSPOT -

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.

Hot Area:

**Answer Area**

```
"optionalClaims": [
 "acct",
 "platt",
 "sid",
 "tenant_ctry",
 "upn",
 "email",
 "enfpolids"],
```

## Answer Area

"optionalClaims": [  
 "acct",  
 "platf",  
 "sid",  
 "tenant\_ctry",  
 "sid",  
 "upn",  
 "email",  
 "enfpolids"],

Correct Answer:

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.

✉  **mlantonis**  2 years, 10 months ago

Box 1: sid

Sid: Session ID, used for per-session user sign-out. Personal and Azure AD accounts.

Scenario:

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.

Reference:

<https://docs.microsoft.com/en-us/azure/active-directory/develop/reference-app-manifest>

<https://docs.microsoft.com/en-us/azure/active-directory/develop/active-directory-optional-claims>

upvoted 35 times

✉  **KingChuang** 1 year, 3 months ago

On my exam 2022-12-26.

Chose:

sid

email

upvoted 3 times

✉  **Tom87**  3 years ago

The answer is correct. References:

<https://docs.microsoft.com/en-us/azure/active-directory/develop/reference-app-manifest>

<https://docs.microsoft.com/en-us/azure/active-directory/develop/active-directory-optional-claims>

upvoted 9 times

✉  **MiroDemovic**  2 months ago

Passed the test today, correct answer

upvoted 2 times

✉  **BaoNguyen2411** 8 months, 2 weeks ago

got this question on 29/06/2023

upvoted 1 times

✉  **NightshadeRC** 8 months, 2 weeks ago

Had this question today: 2023-07-26

upvoted 1 times

✉ **surprise0011** 12 months ago

I don't think sid would be necessary but there is no better option here

upvoted 1 times

✉ **AlexeyG** 1 year, 1 month ago

Got this in 16/02/2023

upvoted 2 times

✉ **TheExamMaster2020** 1 year, 4 months ago

Did my exam on 15th November 2022. This test case and question was on it.

upvoted 2 times

✉ **coffecold** 1 year, 5 months ago

Am I missing something here? What can you make up out of a sessionID? Not that the is part of a ContentReviewer role.

I think the users account status in tenant , acct (0= tenant, 1= guest) comes pretty close. If one is user in the tenant he/she could have a ContentReviewer role  
(although that is not said).

upvoted 1 times

✉ **Eltooth** 1 year, 9 months ago

Sid

Email

upvoted 2 times

✉ **petitbilly** 2 years, 1 month ago

Got this one 03/2022

upvoted 2 times

✉ **jose** 2 years, 12 months ago

Why sid?

upvoted 1 times

✉ **joanbdm** 2 years, 10 months ago

"To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials."

sid = Personal and Azure AD accounts Session ID

<https://docs.microsoft.com/en-us/azure/active-directory/develop/active-directory-optional-claims>

upvoted 7 times

**Topic 12 - Testlet 14**

Question #1

Topic 12

**Introductory Info**

Case study -

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Background -

Wide World Importers is moving all their datacenters to Azure. The company has developed several applications and services to support supply chain operations and would like to leverage serverless computing where possible.

Current environment -

Windows Server 2016 virtual machine

This 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 trucking stops.

Shipping REST API `" This API provides shipping information for use and display on the shipping website.

Shipping Data -

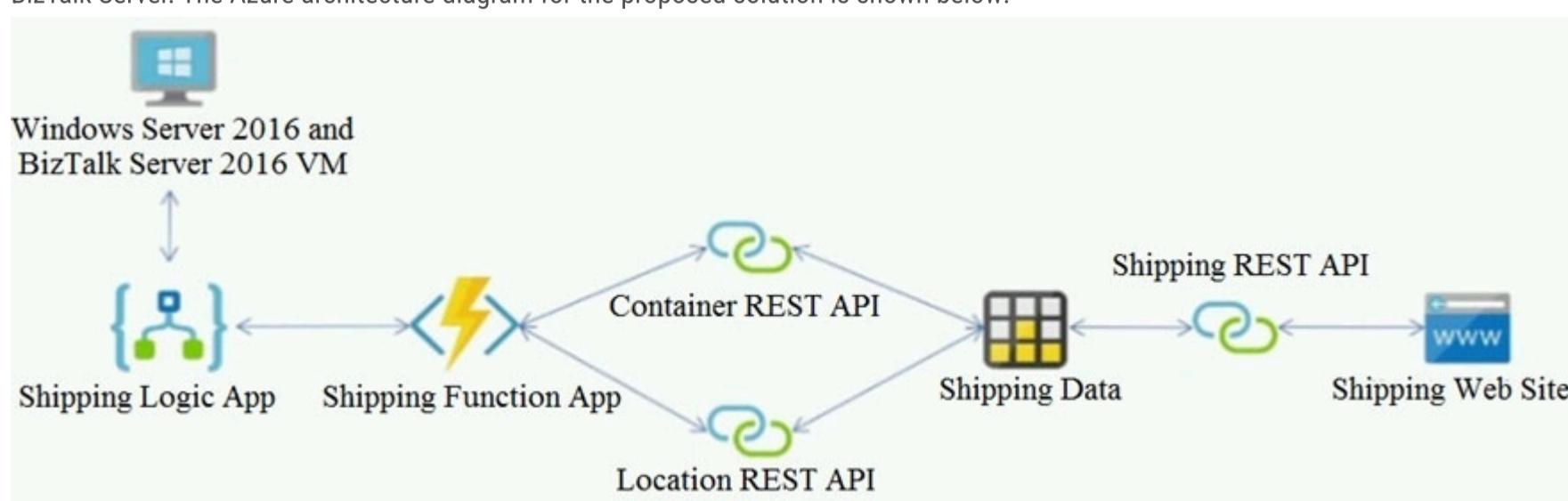
The application uses MongoDB JSON document storage database for all container and transport information.

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.

**Question****HOTSPOT -**

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.

Hot Area:

## Answer Area

Setting	Value
Authorization level	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Function  Anonymous  Admin </div>
User claims	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> JSON Web Token (JWT)  Shared Access Signature (SAS) token  API Key </div>
Trigger type	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> blob  HTTP  queue  timer </div>

## Answer Area

Setting	Value
Authorization level	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Function  Anonymous  Admin </div>
Correct Answer: User claims	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <span style="background-color: #c0e0c0; display: inline-block; width: 15px; height: 15px;"></span> JSON Web Token (JWT)  <span style="background-color: #c0e0c0; display: inline-block; width: 15px; height: 15px;"></span> Shared Access Signature (SAS) token  <span style="background-color: #c0e0c0; display: inline-block; width: 15px; height: 15px;"></span> API Key </div>
Trigger type	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <span style="background-color: #c0e0c0; display: inline-block; width: 15px; height: 15px;"></span> blob  <span style="background-color: #c0e0c0; display: inline-block; width: 15px; height: 15px;"></span> HTTP  <span style="background-color: #c0e0c0; display: inline-block; width: 15px; height: 15px;"></span> queue  <span style="background-color: #c0e0c0; display: inline-block; width: 15px; height: 15px;"></span> timer </div>

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.

Reference:

<https://docs.microsoft.com/en-us/azure/active-directory/develop/authentication-scenarios>

✉  **uffuchsi** Highly Voted 1 year, 1 month ago

The correct answer is:

Anonymous  
JWT  
HTTP

Scenario: Shipping Function app: Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).

1. Authorization Level must be anonymous to use function app level security methods.
2. User claims must be JWT tokens; API Key is not recommended due to security issues.
3. Function App is triggered from Logic App. So it must be http

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-http-webhook-trigger?tabs=csharp#secure-an-http-endpoint-in-production>

upvoted 21 times

✉  **Eltooth** Highly Voted 1 year, 9 months ago

Function  
JWT  
HTTP

upvoted 18 times

✉  **FeriAZ** Most Recent 1 month, 3 weeks ago

Authorization level: Anonymous  
User claims: JSON Web Token (JWT)  
Trigger type: HTTP

upvoted 1 times

✉  **adilkhan** 1 year, 2 months ago

Secure an HTTP endpoint in production

To fully secure your function endpoints in production, you should consider implementing one of the following function app-level security options. When using one of these function app-level security methods, you should set the HTTP-triggered function authorization level to anonymous.

<https://learn.microsoft.com/en-us/azure/azure-functions/functions-bindings-http-webhook-trigger?tabs=in-process%2Cfunctionsv2&pivots=programming-language-csharp#secure-an-http-endpoint-in-production> Anonymous JWT and HTTP

upvoted 2 times

✉  **Ranzzan** 1 year, 2 months ago

I will go with anonymous

<https://learn.microsoft.com/en-us/answers/questions/801055/authenticate-azure-functions>

upvoted 2 times

✉  **Knightie** 1 year, 4 months ago

the answer is correct, shipping function app is the one at the left.. it will need to access the 2 apis from the internal VM, not public accessing. API key is correct instead of anonymous.

upvoted 1 times

✉  **lomster** 1 year, 4 months ago

Based on description it should be anonymous

<https://learn.microsoft.com/en-us/azure/azure-functions/functions-bindings-http-webhook-trigger?tabs=in-process%2Cfunctionsv2&pivots=programming-language-csharp#secure-an-http-endpoint-in-production>

upvoted 4 times

✉  **ajayasa** 1 year, 2 months ago

based on the link posted i see it should be anonymous but not tried on it

upvoted 1 times

✉  **gmishra88** 1 year, 6 months ago

If using AD is used then Function key should not be used and it should be set to anonymous. Could not find the link, but just think about it and try it

upvoted 2 times

✉  **coffecold** 1 year, 5 months ago

here is the link:

Anonymous is the only authorization level that doesn't require a key.

So :

function,  
JWT  
HTTP

is still valid .

<https://learn.microsoft.com/en-us/azure/azure-functions/security-concepts?tabs=v4#function-access-keys>

upvoted 3 times

 **adilkhan** 1 year, 2 months ago

Functions lets you use keys to make it harder to access your HTTP function endpoints during development. Unless the HTTP access level on an HTTP triggered function is set to anonymous, requests must include an API access key in the request.

NO! its anonymous

upvoted 1 times

 **qwerty112233** 1 year, 7 months ago

"Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD)." How can it be Function is AAD requires "Anonymous"?

My vote:

Anonymous

JWT

HTTP

upvoted 4 times

 **sghaha** 1 year, 11 months ago

in Korean

<https://docs.microsoft.com/ko-kr/azure/active-directory/develop/authentication-scenarios>

upvoted 3 times

Question #2

**Introductory Info**

Case study -

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Background -

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Current environment -

Windows Server 2016 virtual machine

This 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 trucking stops.

Shipping REST API `" This API provides shipping information for use and display on the shipping website.

Shipping Data -

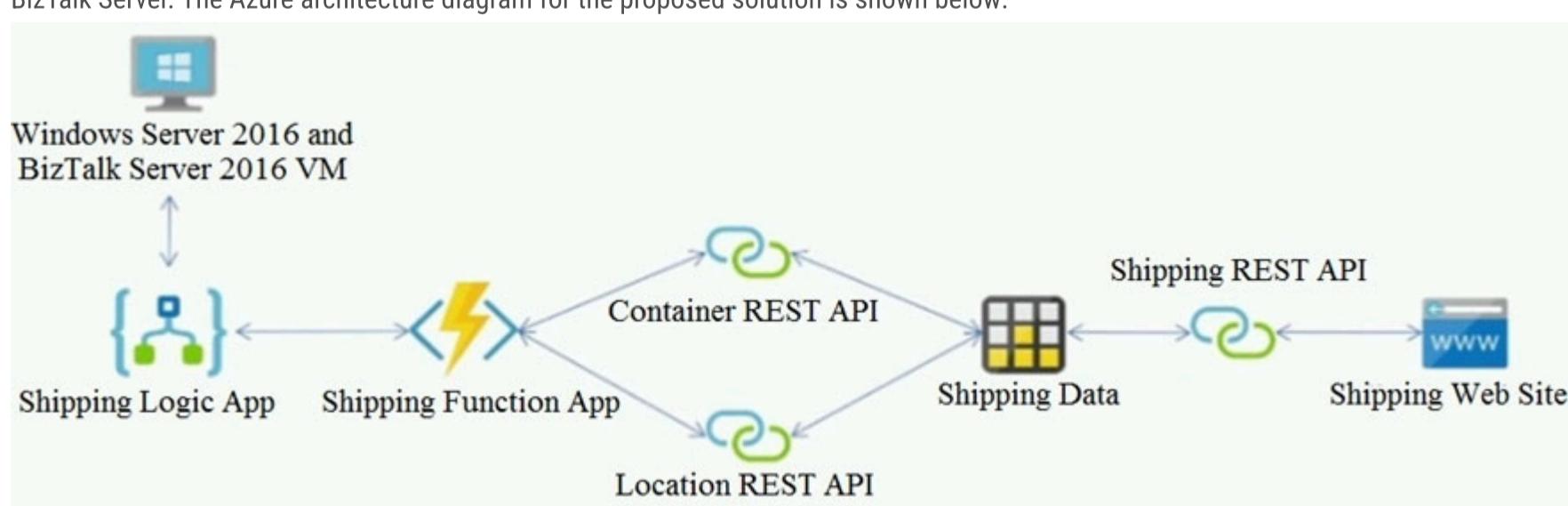
The application uses MongoDB JSON document storage database for all container and transport information.

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.

### Question

You need to secure the Shipping Logic App.

What should you use?

- A. Azure App Service Environment (ASE)
- B. Integration Service Environment (ISE)
- C. VNet service endpoint
- D. Azure AD B2B integration

### Correct Answer: B

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.

Reference:

<https://docs.microsoft.com/en-us/azure/logic-apps/connect-virtual-network-vnet-isolated-environment-overview>

*Community vote distribution*

B (67%)

C (33%)

  **NKnab**  3 years, 8 months ago

B is correct. confirmed

upvoted 36 times

 **mlantonis** Highly Voted 2 years, 10 months ago

Shipping Logic app:

Secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.

For scenarios where your logic apps and integration accounts need access to an Azure virtual network, create an integration service environment (ISE). An ISE is a dedicated environment that uses dedicated storage and other resources that are kept separate from the "global" multi-tenant Logic Apps service. This separation also reduces any impact that other Azure tenants might have on your apps' performance. An ISE also provides you with your own static IP addresses. These IP addresses are separate from the static IP addresses that are shared by the logic apps in the public, multi-tenant service.

Reference:

<https://docs.microsoft.com/en-us/azure/logic-apps/connect-virtual-network-vnet-isolated-environment>

upvoted 7 times

 **mlantonis** 2 years, 10 months ago

B. Integration Service Environment (ISE)

upvoted 6 times

 **oskx2** Most Recent 1 week, 5 days ago

The answer options are obviously outdated. Instead of ISE, it should be Standard logic apps which is the service that replaced ISE but added more features. You can also connect to private vnets. If Standard logic apps is not an option, the most correct one is vnet service endpoint but it doesn't satisfy the fixed pricing model.

<https://learn.microsoft.com/en-us/azure/logic-apps/connect-virtual-network-vnet-isolated-environment-overview>

upvoted 1 times

 **br00net** 9 months, 4 weeks ago

Correct answer is A:

App Service Environments are appropriate for application workloads that require:

High scale.

Isolation and secure network access.

High memory utilization.

High requests per second (RPS). You can create multiple App Service Environments in a single Azure region or across multiple Azure regions. This flexibility makes an App Service Environment ideal for horizontally scaling stateless applications with a high RPS requirement.

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

There is nothing about security, apart from that ISE is "fully isolated": <https://azure.microsoft.com/en-us/updates/integration-service-environments-ise-are-now-generally-available/?cdn=disable>

upvoted 3 times

 **hubekpeter** 1 year, 4 months ago

Selected Answer: C

You can't create ISE starting 1st of November and it'll be retired in 2024, you should create vnet instead. <https://learn.microsoft.com/en-us/azure/logic-apps/connect-virtual-network-vnet-isolated-environment-overview>

upvoted 2 times

 **hubekpeter** 1 year, 4 months ago

Access to Azure virtual networks from Azure Logic Apps using an integration service environment (ISE) <https://learn.microsoft.com/en-us/azure/logic-apps/secure-single-tenant-workflow-virtual-network-private-endpoint>

upvoted 1 times

 **hubekpeter** 1 year, 4 months ago

Sorry this is the correct link name - Secure traffic between Standard logic apps and Azure virtual networks using private endpoints

upvoted 1 times

 **adilkhan** 1 year, 2 months ago

<https://azure.microsoft.com/en-us/updates/integration-services-environment-will-be-retired-on-31-august-2024-transition-to-logic-apps-standard/> logic app is not in the list

upvoted 1 times

 **Eltooth** 1 year, 9 months ago

Selected Answer: B

B is correct answer.

upvoted 4 times

## Topic 13 - Testlet 15

Question #1

Topic 13

### Introductory Info

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 the Next button. 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 the Question button 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.cpndl.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.

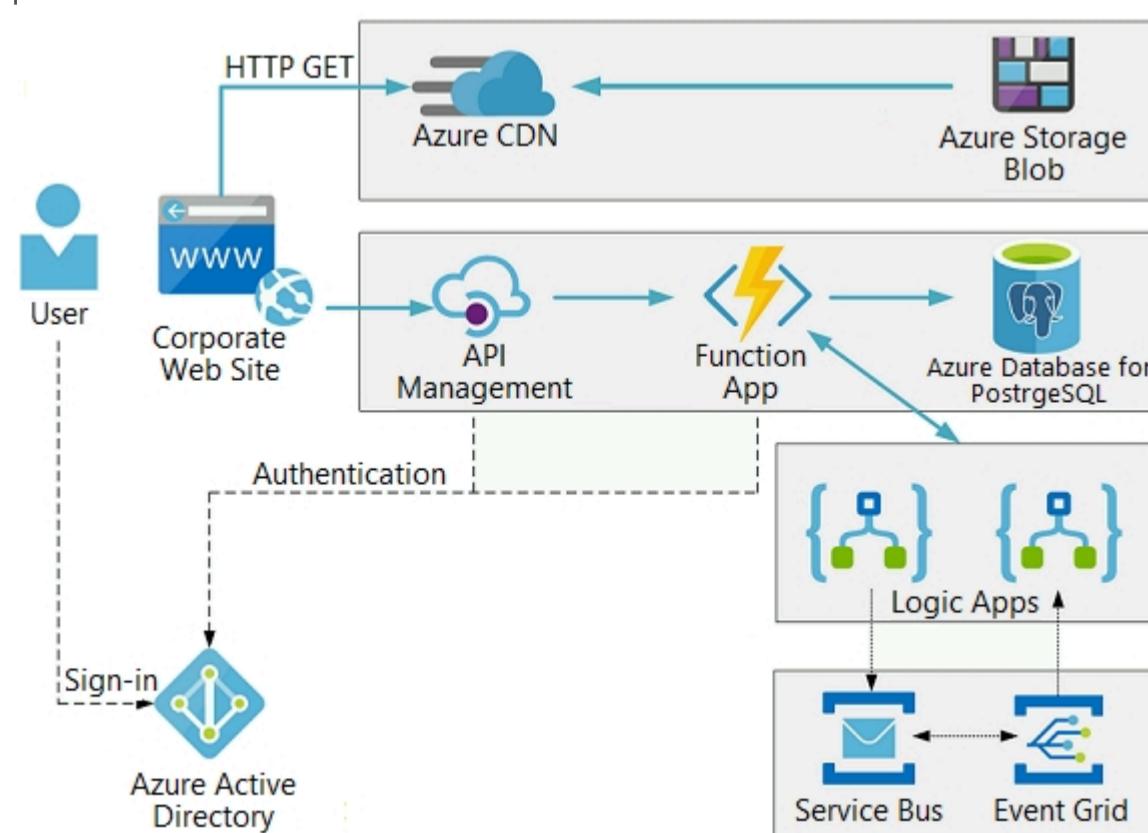
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. 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<IAActionResult> 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(HttpContext req)
RA14 {
RA15 ...
RA16 }
RA17 }
```

### Question

HOTSPOT -

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.

Hot Area:

### Answer Area

REST API Endpoint:

https://

cpandlkeyvault
PostgreSQLConn
80df3e46ffcd4f1cb187f79905e9a1e8

.vault.azure.net/secrets/

cpandlkeyvault
PostgreSQLConn
80df3e46ffcd4f1cb187f79905e9a1e8

Variable type to access Azure Key Vault secret values:

Environment
Session
ViewState
QueryString

Correct Answer:

## Answer Area

REST API Endpoint:

<https://cpandlkeyvault.vault.azure.net/secrets/>

cpandlkeyvault
PostgreSQLConn
80df3e46ffcd4f1cb187f79905e9a1e8

[.vault.azure.net/secrets/](https://cpandlkeyvault.vault.azure.net/secrets/)

cpandlkeyvault
PostgreSQLConn
80df3e46ffcd4f1cb187f79905e9a1e8

Variable type to access Azure Key Vault secret values:

Environment
Session
ViewState
QueryString

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>mlantonis Highly Voted 2 years, 10 months ago

As per requirement:

- Azure Key Vault name: cpandlkeyvault
- Secret name: PostgreSQLConn
- Id: 80df3e46ffcd4f1cb187f79905e9a1e8

<https://myvault.vault.azure.net/secrets/mysecretname/4387e9f3d6e14c459867679a90fd0f79?api-version=7.1>

Box 1: cpandlkeyvault

We specify the key vault, cpandlkeyvault.

Box 2: PostgreSQLConn

We specify the secret, PostgreSQLConn.

Box 3: Environment

If a reference is not resolved properly, the reference value will be used instead. This means that for application settings, an environment variable would be created

upvoted 48 times

cool\_tool 2 years, 8 months ago

Box 3 is QueryString (query string to specify the API version along with the secret version), the other part is fine. (Answer provided is CORRECT)

upvoted 15 times

davidkerr7 10 months ago

correct

<https://learn.microsoft.com/en-us/azure/app-service/app-service-key-vault-references?tabs=azure-cli>

upvoted 1 times

coffecold Highly Voted 1 year, 5 months ago

To prevent reading the cases multiple times:

Please see the spots below where you can find the questions (page/topic/question/subject)

City Power &amp; Light company

50 13 1 API endpoint to Key Vault + variable

50 13 2 create and import certificate in azure web app

50 13 3 configure APIM for authentication with JWT  
50 13 4 authenticate user by JWT  
50 13 5 MI Authentication to Azure Logic app  
51 13 6 Azure Service Bus to Event Grid integration Tier of bus + RBAC role  
52 17 1 Application Insights/Monitor/Log Analytics  
52 17 2 Azure Blob storage settings SAS or MI, file auditing  
52 18 1 solve function timeout  
55 24 1 cli for integration Azure Service Bus and Azure Event Grid  
55 24 2 ingestion for Grid events  
58 32 1 create appropriate storage account + geo settings + cool/hot  
upvoted 23 times

✉️ **OPT\_001122** 1 year, 4 months ago

Great help!! You did a great help for all for all the case studies !!

upvoted 2 times

✉️ **Yogendra\_examtopic** 6 months, 1 week ago

bro you are the real champ..... Thanks a lot Man !!!!

upvoted 3 times

✉️ **oskx2** Most Recent 1 week, 5 days ago

No way it can be query string. It doesn't have query params for the REST operation. And for environment "If a reference is not resolved properly, the reference value will be used instead. This means that for application settings, an environment variable would be created" This text no longer exists or was copied from stackoverflow.

This variable type comes from: <https://learn.microsoft.com/en-us/power-automate/guidance/automation-kit/setup/environment-variables#get-the-url-path-for-your-azure-key-vault-secrets>

"The Azure Key Vault secrets are using the environment variable type. These environment variables need to be in the following format." I think the question is wrong. But either way, select environment. Other options are more incorrect.

upvoted 1 times

✉️ **raymond\_abcd** 2 months ago

The variable type is Environment, See: <https://learn.microsoft.com/en-us/power-apps/maker/data-platform/environmentvariables-azure-key-vault-secrets>

upvoted 1 times

✉️ **CarlosTheBoldest** 4 months ago

I got this question on my exam, 2023Dec, go with what I remember was the most voted answer. Score 902, most of the questions were here, slightly different on wording because the Azure Ad <-> Entra Id change. Case was City Power & Light. Good luck!

Important tip, you have access to microsoft learn during the exam!

upvoted 5 times

✉️ **AbidooKing** 8 months, 4 weeks ago

Got this case on my exam 2023July13. Went with highest vote and scored 917.

upvoted 5 times

✉️ **nekkilodeon** 11 months, 2 weeks ago

Query string makes nonsense.

You'll have to specify a new version every time it updates in the query string. If you use it as environment variable the following will happen.

If a version is not specified in the reference, then the app will use the latest version that exists in the key vault. When newer versions become available, such as with a rotation event, the app will automatically update and begin using the latest version within 24 hours. The delay is because App Service caches the values of the key vault references and refetches it every 24 hours. Any configuration changes to the app that results in a site restart causes an immediate refetch of all referenced secrets.

<https://learn.microsoft.com/en-us/azure/app-service/app-service-key-vault-references?tabs=azure-cli>

upvoted 1 times

✉️ **kociuba** 1 year, 3 months ago

got it on my exam 30-12-2022

score: 818

upvoted 2 times

✉️ **adilkhan** 1 year, 2 months ago

your answer?

upvoted 2 times

✉️ **gmishra88** 1 year, 6 months ago

The most debated is the third, I guess Microsoft probably mean how to give this secret reference to the app. It is using appsettings, that is a type of Environment variable. So, I will go for that and hope for the best

upvoted 2 times

✉️ **gmishra88** 1 year, 6 months ago

Because "The connection information is updated frequently. The application must always use the latest information to connect to the database." It has to be a keyvault reference (or not). These are trick questions to be asked in an interview to start an hour long discussion on various options.

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

"variable type to access azure key vault secret value" < this probably does not mean where the response comes. That comes in "value" property. The question creator probably means how to access keyvault key itself. How to pass that authorization. But considering this is functions I do not think query string is correct.

upvoted 2 times

✉ **Pize** 1 year, 9 months ago

<https://docs.microsoft.com/en-us/rest/api/keyvault/secrets/get-secret/get-secret>

upvoted 1 times

✉ **vavra** 1 year, 10 months ago

I think it's a Function App variable, so it should be Environment

upvoted 2 times

✉ **SivajiTheBoss** 2 years, 1 month ago

Correct Answer:

Box 1: cpndlkeyvault

Name of the key vault.

Box 2: PostgreSQLConn

Name of the secret.

Box 3: QueryString

Variable type to access the secret (100% correct - Not environment)

upvoted 2 times

✉ **lugospod** 2 years, 2 months ago

Got this one 01/2022. Went with most voted (to avoid writing answers again) @mlantonis

upvoted 2 times

✉ **lugospod** 2 years, 3 months ago

nah, i read it wrong, they do not have ID in the URL...it is only in the comments.

upvoted 1 times

✉ **lugospod** 2 years, 3 months ago

I have an issue with the "original question" meaning, they are assuming that we would send ID of the secret version to the HTTP GET. This means that we would ALWAYS retrieve the SAME version of the secret, and would not get the latest version. And they specifically said that the latest version should be used, so based on the information on page

<https://docs.microsoft.com/en-us/rest/api/keyvault/getsecret/getsecret>

we see that the ID is OPTIONAL, and if we do omit it the latest version will be retrieved.

My comment is just to point out the possibility that the proposed solution by Microsoft is invalid.

upvoted 1 times

✉ **lugospod** 2 years, 3 months ago

Ignore this, read it wrong. ID is not used in their question.

upvoted 1 times

✉ **MiraA** 2 years, 6 months ago

I think it could be "Environment".

The question "Variable type to access Azure Key Vault secret values" could mean "what object type instance do I need to call GET request to API endpoint to retrieve the connection string"?

I believe the GET request to retrieve the secret (connection string) must be authorized by the Azure. This means the application had signed in Azure AD already and had retrieved the access token (id\_token) which can be added as a HTTP header to GET requests on endpoint API:

GET [https://cpndlkeyvault.vault.azure.net/secrets/.....](https://cpndlkeyvault.vault.azure.net/secrets/)

Authorization: Bearer <bearer-token>

So this means the access token has to be stored somewhere to allow subsequent repeated calls to get secret connection? Maybe Environment is such place?

upvoted 1 times

Question #2

**Introductory Info**

Case study -

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To start the case study -

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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.cpndl.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.

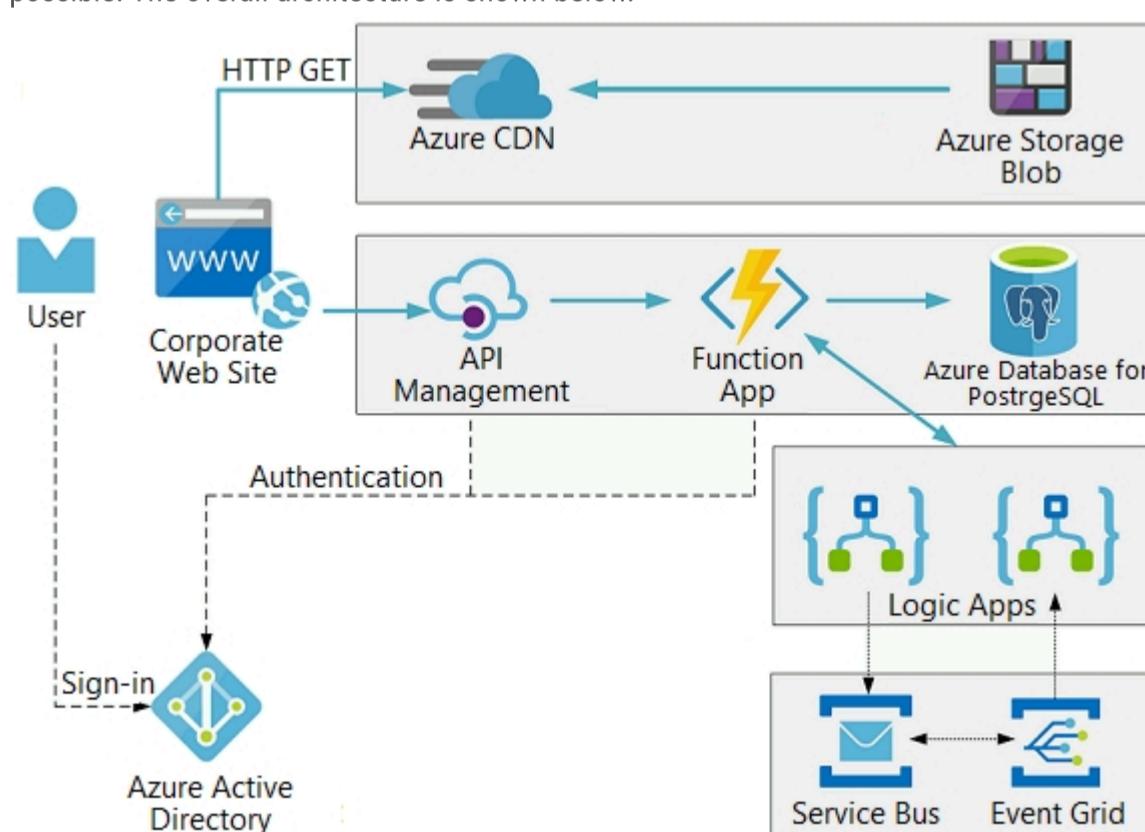
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.

3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. 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 }

```

### Question

DRAG DROP -

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.

Select and Place:

Actions	Answer Area
Upload the certificate to Azure Key Vault.	
Update line SC05 of Security.cs to include error handling and then redeploy the code.	
Update line SC03 of Security.cs to include a using statement and then re-deploy the code.	  
Add the certificate thumbprint to the WEBSITE_LOAD_CERTIFICATES app setting.	
Upload the certificate to source control.	
Import the certificate to Azure App Service.	
Generate a certificate.	

Actions	Answer Area
Upload the certificate to Azure Key Vault.	Generate a certificate.
Update line SC05 of Security.cs to include error handling and then redeploy the code.	Upload the certificate to Azure Key Vault.
Update line SC03 of Security.cs to include a using statement and then re-deploy the code.	Import the certificate to Azure App Service.
Add the certificate thumbprint to the WEBSITE_LOAD_CERTIFICATES app setting.	Update line SC05 of Security.cs to include error handling and then redeploy the code.
Upload the certificate to source control.	
Import the certificate to Azure App Service.	
Generate a certificate.	

**Correct Answer:**

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 SC05 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>

✉  **Frakandel** Highly Voted 2 years, 10 months ago

Answer:

- Generate a certificate
- Upload the certificate to Azure key vault
- Import the certificate to Azure App Service
- Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting

<https://ankitvijay.net/2021/04/14/certificate-azure-app-service-linux/>

upvoted 79 times

✉  **surprise0011** 11 months, 4 weeks ago

received 2023-04-17 went with above answer, score 926

upvoted 7 times

✉  **SnakePlissken** Highly Voted 2 years, 10 months ago

1. Generate a certificate.
2. Upload the certificate to Azure Key Vault.
3. Import the certificate to Azure App Service.
4. Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting.

Prerequisite: Scale up your App Service plan if your app is in a shared infrastructure tier.

<https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate>

<https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate-in-code#load-certificate-in-linuxwindows-containers>

upvoted 25 times

✉  **raymond\_abcd** Most Recent 2 months ago

See: <https://learn.microsoft.com/en-us/azure/app-service/environment/overview-certificates#private-client-certificate>

Last box is: "Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting"

upvoted 1 times

✉  **acjdev514** 6 months, 2 weeks ago

My vote: the answer provided is the correct one.

<https://learn.microsoft.com/en-us/azure/app-service/configure-ssl-certificate-in-code>

upvoted 1 times

✉  **surprise0011** 12 months ago

correct

<https://learn.microsoft.com/en-us/azure/app-service/configure-ssl-certificate-in-code#when-updating-renewing-a-certificate>

upvoted 1 times

✉ **st0rmtrooperx** 1 year, 3 months ago

Got this on Dec 16th, 2022. Scored 921 and went with:

- Generate a certificate
- Upload the certificate to Azure key vault
- Import the certificate to Azure App Service
- Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting

upvoted 7 times

✉ **coffecold** 1 year, 5 months ago

Answer of Frakadel OK.

But otherwise : this is bad practice. Azure Key Vault with managed identity should be used for that purpose.

upvoted 3 times

✉ **gmishra88** 1 year, 6 months ago

This is an essay question, but I will bet my time on :

Generate

Upload to keyvault

Import to App service (from keyvault)

Add to WEBSITE\_LOAD\_CERTIFICATES (Important so that it is available in /var/ssl/... or c:\appsvies\..\secret path. The code seems to be using that)

upvoted 2 times

✉ **Sandeep12093** 1 year, 9 months ago

Agree to brettusmaximus

1. Generate a certificate
2. Upload to key vault (mandatory security requirements)
3. Import the certificate to Azure App Service. For Linux container, it keeps the private certificates at the location /var/ssl/private and public certificates at /var/ssl/certs.
4. Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting.

Refer configure-SSL-CERTIFICATE-IN-CODE

upvoted 1 times

✉ **lugospod** 2 years, 2 months ago

Got this one 01/2022. Went with most voted (to avoid writing answers again)

upvoted 6 times

✉ **asdasdsg2** 2 years, 3 months ago

what a horrible question. Security.cs is not even valid C# and its usage is not even shown in the following snippet that contains the function.

upvoted 5 times

✉ **GreenPanda** 2 years, 8 months ago

Does the ReadAllBytes method need to specify the file path instead of the directory?

upvoted 1 times

✉ **lugospod** 2 years, 3 months ago

yes I agree, but I think this is a typo...the same way the path has ~ in front...

upvoted 1 times

✉ **GreenPanda** 2 years, 8 months ago

<https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate-in-code#load-certificate-in-linuxwindows-containers>

upvoted 1 times

✉ **BrettusMaximus** 2 years, 11 months ago

Ok - How does the cert get to be located at the URL (/var/ssl/private)?

1. Generate a certificate
2. Upload to key vault
3. Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting.
4. Add the certificate to Source Control (/var/ssl/private), So when the app deploys it gets there.

It doesn't matter about nice error messages.

upvoted 1 times

✉ **BrettusMaximus** 2 years, 11 months ago

OK I am slightly wrong here; as in <https://ankitvijay.net/2021/04/14/certificate-azure-app-service-linux/>

1. Generate a certificate
2. Upload to key vault (mandatory security requirements)
3. Import the certificate to Azure App Service. For Linux container, it keeps the private certificates at the location /var/ssl/private and public certificates at /var/ssl/certs.
4. Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting.

It doesn't matter about nice error messages.

upvoted 15 times

✉ **[Removed]** 2 years, 11 months ago

General information

- \* CryptographicException: The system cannot find the file specified
- \* According to the path we are running a linux container (/var/ssl/private)
- \* Question seems to have a typo (line SC03, ~ is not needed)

Answer

1. Generate a certificate
2. Import the certificate to Azure App Service
3. Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting
4. Update line SC05 to include error handling ...

Further reading:

<https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate-in-code#load-certificate-in-linuxwindows-containers>

upvoted 2 times

✉ **lugospod** 2 years, 3 months ago

Adding exception handling won't help you solve the problem...so not needed. You Must use key vault so you are missing that part as a second step.

upvoted 2 times

✉ **anastakasim** 2 years, 12 months ago

So what is the correct answer to this?

upvoted 3 times

✉ **clarionprogrammer** 2 years, 12 months ago

1. Generate a certificate
2. Import the certificate to Azure App Service.
3. Add the certificate thumbprint to the WEBSITE\_LOAD\_CERTIFICATES app setting.
4. Update line SC05 of Security.cs to include error handling and then redeploy the code.

upvoted 4 times

✉ **SwatiN** 2 years, 11 months ago

Certificates should be imported from azure key vault. its one of the requirement. so it would be :

1. Generate Cert
2. Upload to key vault
3. import from key vault.
4. Update config thumbprint value
5. Handle the error in the code gracefully

<https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate>

<https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate-in-code#load-certificate-in-linuxwindows-containers>

upvoted 2 times

✉ **lugospod** 2 years, 3 months ago

The question is to select FOUR steps..you selected FIVE.

upvoted 2 times

✉ **jokergester** 3 years ago

I think it should be

1. Generate Cert
2. Upload to App Service
3. Update config thumbprint value
4. Handle the error in the code gracefully

Uploading to Key Vault would offer a better security but another step(s) would be needed it is to add access policy for the App Service to use the Certificate

upvoted 2 times

✉ **lugospod** 2 years, 3 months ago

There is a requirement that states that key vault MUST be used to store certificates.

upvoted 2 times

Question #3

**Introductory Info**

Case study -

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To start the case study -

To display the first question in this case study, click the Next button. 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 the Question button 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.cpndl.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.

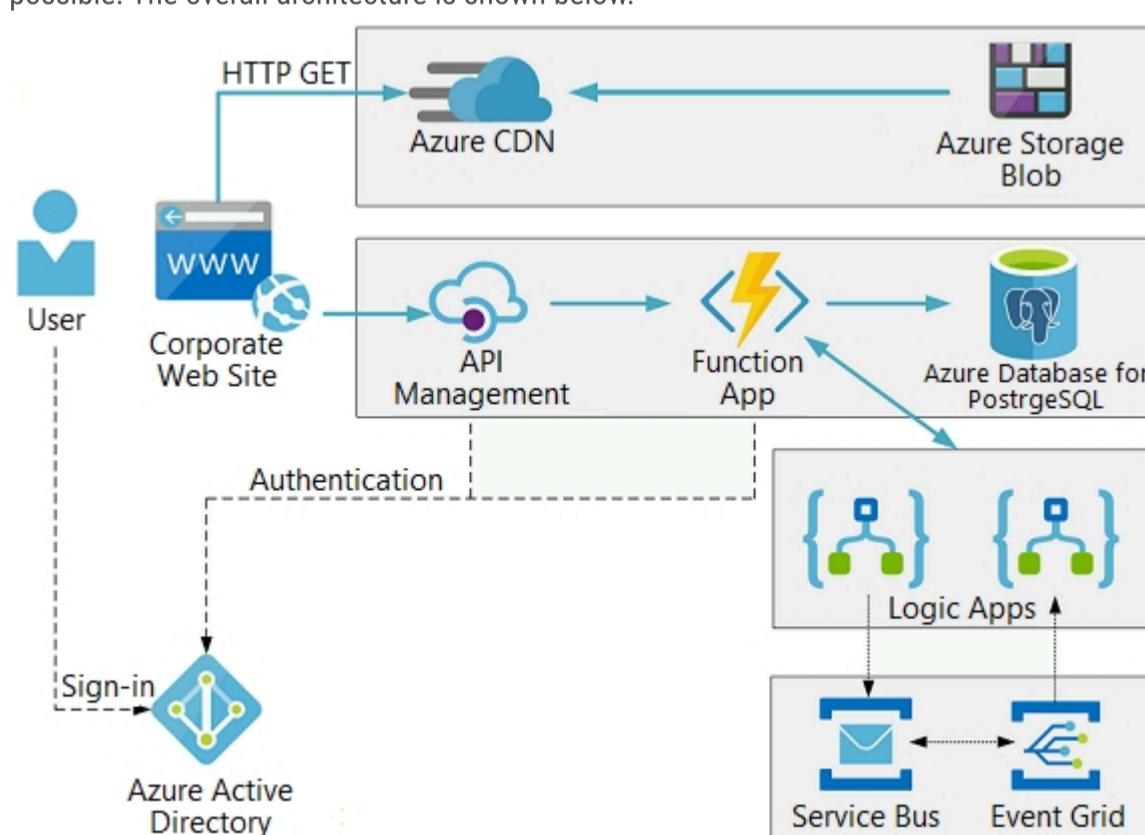
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.

3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. 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 }

```

### Question

HOTSPOT -

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.

Hot Area:

### Answer Area

Setting	Value
Policy	<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> Check HTTP header  Restrict caller IPs  Limit call rate by key  Validate JWT </div>
Policy section	<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> Inbound  Outbound </div>

### Answer Area

Setting	Value
Policy	<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> Check HTTP header  Restrict caller IPs  Limit call rate by key  <span style="background-color: #90EE90; color: black; padding: 2px;">Validate JWT</span> </div>
Policy section	<div style="border: 1px solid #ccc; padding: 5px; display: inline-block;"> <span style="background-color: #90EE90; color: black; padding: 2px;">Inbound</span>  <span style="background-color: #90EE90; color: black; padding: 2px;">Outbound</span> </div>

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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. The back-end API validates the access token.

Incorrect Answers:

- ☞ Limit call rate by key - Prevents API usage spikes by limiting call rate, on a per key basis.
- ☞ Restrict caller IPs - Filters (allows/denies) calls from specific IP addresses and/or address ranges.
- ☞ Check HTTP header - Enforces existence and/or value of a HTTP Header.

Box 2: Outbound -

Reference:

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

✉  **ZiadAZ** Highly Voted  3 years, 1 month ago

The second box should be Inbound instead of Outbound.

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

Quoting:

This policy can be used in the following policy sections and scopes.

Policy sections: inbound

Policy scopes: all scopes

upvoted 110 times

✉  **Dani\_ac7** 1 year, 9 months ago

Correct, you can't pass request to controllers if certificate doesn't exists...

upvoted 1 times

✉  **sam365** 3 years ago

you are correct. it should be INBOUND for Validate JWT

<https://docs.microsoft.com/en-us/azure/api-management/api-management-access-restriction-policies#ValidateJWT>

upvoted 11 times

✉  **warchoon** 1 year ago

<https://learn.microsoft.com/en-us/azure/api-management/validate-jwt-policy#:~:text=Policy%20sections%3A%20inbound>

upvoted 2 times

✉  **surprise0011** 11 months, 4 weeks ago

received 2023-04-17 went with above answer, score 926

upvoted 5 times

✉  **mlantonis** Highly Voted  2 years, 10 months ago

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.

Box 2: Inbound

Authentication should be done on Incoming Request and that should be done in Inbound section of the policy of course.

This policy can be used in the following policy sections and scopes.

Policy sections: inbound

Policy scopes: all scopes

Reference:

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

<https://docs.microsoft.com/en-us/azure/api-management/api-management-access-restriction-policies#ValidateJWT>

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

upvoted 27 times

✉  **Ciupaz** Most Recent  5 months, 3 weeks ago

JWT=Json Web Token (for who does not know).

upvoted 3 times

✉  **OlivierPaudex** 1 year, 8 months ago

Agreed with inbound. Only inbound direction can be choose when using a JWT token.

upvoted 3 times

✉  **Eltooth** 1 year, 9 months ago

JWT  
Inbound  
upvoted 2 times

✉ **SivajiTheBoss** 2 years, 1 month ago

Correct answer:  
1. JWT  
2. Inbound  
upvoted 5 times

✉ **leonidn** 2 years, 2 months ago

Validate JWT  
Inbound  
upvoted 5 times

✉ **fr369** 2 years, 3 months ago

Scenario, section 'Authentication':  
5. 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.  
6. The back-end API validates the access token.

So, shouldn't the first box be "Check HTTP header"?

upvoted 3 times

✉ **lugospod** 2 years, 3 months ago

Yeah, it could be done that way also... there is a small performance hit when using JWT validation. There is no need to have the validation on both places except in the case one has a "great" number of invalid JWT tokens and you want to remove the burden from the backend server.

So I think that deciding between checking the existence of the header vs validation JWT in this exams boils down to "lucky guess".

upvoted 2 times

✉ **MrXBasit** 2 years, 8 months ago

Policy Section should be Inbound  
upvoted 3 times

✉ **MrXBasit** 2 years, 8 months ago

Use the Validate JWT policy to pre-authorize requests in API Management, by validating the access tokens of each incoming request. If a request does not have a valid token, API Management blocks it. Validate JWT policy is part of <inbound> policy section of the the API. It checks the audience claim in an access token, and returns an error message if the token is not valid.

<https://docs.microsoft.com/en-us/azure/api-management/api-management-access-restriction-policies#ValidateJWT>

upvoted 4 times

✉ **anandhprakash** 2 years, 10 months ago

The correct answer is:  
Validate JWT  
Inbound  
upvoted 3 times

✉ **pavan555manjunath** 2 years, 10 months ago

wht is the correct answer  
restrict caller ip & inbound  
upvoted 1 times

✉ **faizalzain** 2 years, 11 months ago

the answer should be restrict caller ip & inbound  
upvoted 1 times

✉ **SnakePlissken** 2 years, 11 months ago

IP restriction is only asked for file access, not API calls.  
upvoted 1 times

✉ **kwaazaar** 3 years ago

Shouldn't it also restrict by up? Or was that not intended, since the question is about authentication instead of authorization?  
upvoted 2 times

✉ **gmishra88** 1 year, 6 months ago

A very good point, but I hope Microsoft guys do not understand the difference between Authentication and Authorization and go with the most-voted answer. Majority wins (does it?). All of these questions are substandard  
upvoted 1 times

✉ **SubhoG** 3 years ago

It should be Inbound. Authentication should be done on Incoming Request and that should be done in Inbound section of the policy ofcourse.  
upvoted 4 times

## Question #4

**Introductory Info**

## Case study -

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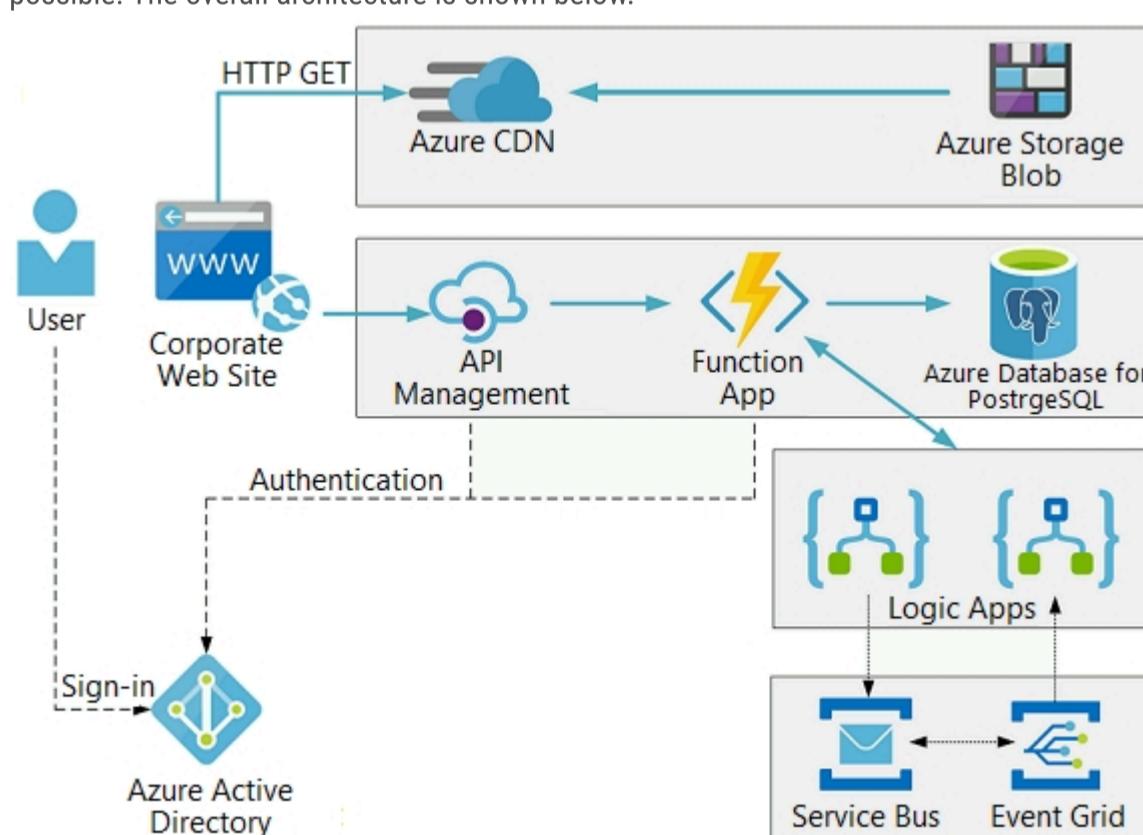
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The following steps detail the user authentication process:

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While testing the site, the following error message displays:

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

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Code -

Corporate website -

Security.cs:

```

SC01 public class Security
SC02 {
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SC04 var cert = new System.Security.Cryptography.X509Certificate2(bytes);
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SC06 }

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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(HttpContext req)
RA14 {
RA15 ...
RA16 }
RA17 }

```

### Question

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

#### Correct Answer: AD

A: 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.

E: 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. The back-end API validates the access token.

Reference:

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

#### Community vote distribution

AD (68%)

DE (21%)

11%

✉  **trance13**  3 years ago

You need ID Token Claims for authorisation.  
 You need to validate ID Token signature as a part of authentication.  
 So the correct answer is A.  
 Having both D & E does not make sense, URI has tenant ID in it, so answer D.  
 upvoted 36 times

✉  **surprise0011** 11 months, 4 weeks ago

received 2023-04-17 went with given answer, score 926  
 upvoted 4 times

✉  **surprise0011** 12 months ago

couldn't agree more.  
 ID Token signature should be validated to Authenticate User  
 To get token you need to make a request to Microsoft Identity Platform Endpoint which also contains tenant.  
 So most appropriate are A and D  
 upvoted 2 times

✉  **faizalzain**  2 years, 11 months ago

it should be D & E  
 upvoted 21 times

✉  **oskx2**  1 week, 5 days ago

I think the correct answer is A and B based on the following: <https://learn.microsoft.com/en-us/entra/identity-platform/v2-protocols-oidc#validate-the-id-token>

"Receiving an ID token in your app might not always be sufficient to fully authenticate the user. You might also need to validate the ID token's signature and verify its claims per your app's requirements."

Since the app Id is mentioned in the requirements, I assume that you need to validate the signature and the aud claim  
 upvoted 1 times

✉  **AlwaysInvade** 4 months, 3 weeks ago

**Selected Answer: AD**  
 D contains E  
 upvoted 1 times

✉  **Vmwarevirtual** 10 months, 2 weeks ago

Appeared in exam I took at 27-5-2023  
 I chose A and D  
 upvoted 4 times

✉  **sriazure213** 1 year, 2 months ago

This question came on jan9,2023. Choose d,e. Score 834  
 upvoted 2 times

✉  **hubekpeter** 1 year, 4 months ago

**Selected Answer: AE**  
 Guys this is a standard Sign-in flow. I think the correct answer is AE. First you need to know the tenant it so you'll be able to send a sign in request GET <https://login.microsoftonline.com/{tenant}/oauth2/v2.0/authorize>? and in reply you'll get a id\_token (JWT), which in turn can be used to get an access token to UserInfo endpoint. I'm not 100% sure, but this way, it makes sense to me.  
 upvoted 2 times

✉  **warchoon** 1 year ago

If only the solution is multitenant. Which is not.  
 upvoted 1 times

✉  **OPT\_001122** 1 year, 4 months ago

**Selected Answer: AD**  
 correct ans  
 upvoted 3 times

✉  **coffecold** 1 year, 5 months ago

Answer A+ B  
 "Each correct answer presents part of the solution"  
 From a JWT the header and signature are used to verify the authenticity of the token. The signature is raw information to verify so A is correct.  
 The claims in the header you need to validate this signature of the token , especially the 'kid' claim. So you need header claims (these are token claims, answer B) as well.

<https://learn.microsoft.com/en-us/azure/active-directory/develop/id-tokens>  
<https://learn.microsoft.com/en-us/azure/active-directory/develop/access-tokens>  
 upvoted 1 times

✉  **hubekpeter** 1 year, 4 months ago

You're getting a claims from the auth endpoint in turn.

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

"Which two values should you use?" Where, Microsoft, where? While forwarding the request to an authorize endpoint to retrieve an ID token? Or while validating the id-token-signature? The question creator had something in his mind when he suddenly stopped thinking. We have to guess where he stopped. This is a psychology question

upvoted 3 times

✉ **gmishra88** 1 year, 6 months ago

I want to go for ID token signature and the token-claims as the answer.

To check authentication, one need to validate first the signature to be sure it is correct. Check the audience is the the application and then of course check the service principal (combination of oid and sub claims). But all these are in the ID token (claims and the signature). So I just need the ID token.

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

So, it is either AB or DE at least. Just the signature is not enough for authentication, you need also the claims.

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

wait a minute, I'm overthinking. I do not think this certification department from Microsoft understands difference between Authentication and Authorization. So, right answer at the level of Microsoft intelligence is DE. Look at the "steps to authenticate" they mention access token there. That clearly shows they do not understand the authentications steps. Because it uses an access\_token it cannot be A and B.

upvoted 1 times

✉ **damianadalid** 10 months, 3 weeks ago

Can't we have claims in access tokens? <https://learn.microsoft.com/en-us/azure/active-directory/develop/access-tokens#claims-in-access-tokens>

upvoted 1 times

✉ **damianadalid** 10 months, 3 weeks ago

..But the possible answers mention ID token signature/claims... Nevermind

upvoted 1 times

✉ **OlivierPaudex** 1 year, 8 months ago

1. The user have to authenticate clicking on a link in the web app. It means that the "tenant ID" of the AD is used here, not the URI.

2. You have to use the aud claim to ensure that the user intended to call the application. If the identifier of the resource isn't in the aud claim, reject it.

<https://docs.microsoft.com/en-us/azure/active-directory/develop/access-tokens#validating-tokens>

In my opinion, the right answers are:

B: ID token claims

E: Azure AD tenant ID

Not sure at all, but there was the right options choose by others exam website.

upvoted 2 times

✉ **ChrisEvans** 1 year, 12 months ago

**Selected Answer: AD**

Claims are for authorization. The signature is used for authentication, and the endpoint url includes the tenant id, so A&D are correct by process of elimination.

upvoted 5 times

✉ **ReniRechner** 2 years, 1 month ago

**Selected Answer: AD**

Authentication is not sign in!

So for example API Management needs to check whether the user is as stated.

So it needs

\* D to find the correct authentication "service".

\* And to check if the user is as stated "A" is needed, since this is the only option that contains information about the user.

B is not viable since the claims alone are not trustworthy.

I don't know why E would help and it can surely not replace A or D.

C is surely not needed since it contains neither information about the user nor the AD.

upvoted 4 times

✉ **warchoon** 1 year ago

<https://learn.microsoft.com/en-us/azure/app-service/overview-authentication-authorization#authentication-flow-~:text=Client%20code%20posts%20token%20from%20provider%20to%20/.auth/login/%3Cprovider%3E%20for%20validation>.

upvoted 1 times

✉ **chingdm** 2 years, 1 month ago

To authenticate, you need to know the url of auth service api and the tenant id i.e.

[https://login.microsoftonline.com/{tenant}/oauth2/v2.0/authorize?](https://login.microsoftonline.com/{tenant}/oauth2/v2.0/authorize?client_id=6731de76-14a6-49ae-97bc-6eba6914391e)

```
&response_type=code
&redirect_uri=http%3A%2Flocalhost%2Fmyapp%2F
&response_mode=query
```

after visiting that url, it will be presented the AD consent and login, then auth code is appended to the redirect url, which can be used to get the access token.

so answer is D and E.

upvoted 2 times

 **leonidn** 2 years, 2 months ago

**Selected Answer: DE**

We are asked about what we need to get authenticated. A and B make sense when a user is authenticated. Hence, both options are invalid. I do not know why we need Response Code. Consequently, options D and E.

upvoted 3 times

 **lugospod** 2 years, 2 months ago

Got this one 01/2022. Went with DE since they are asking about AUTHENTICATION and not AUTHORIZATION

upvoted 10 times

 **Loai** 2 years, 2 months ago

**Selected Answer: DE**

this is the correct answer

upvoted 1 times

## Question #5

**Introductory Info**

## Case study -

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## To start the case study -

To display the first question in this case study, click the Next button. 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 the Question button 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.cpndl.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.

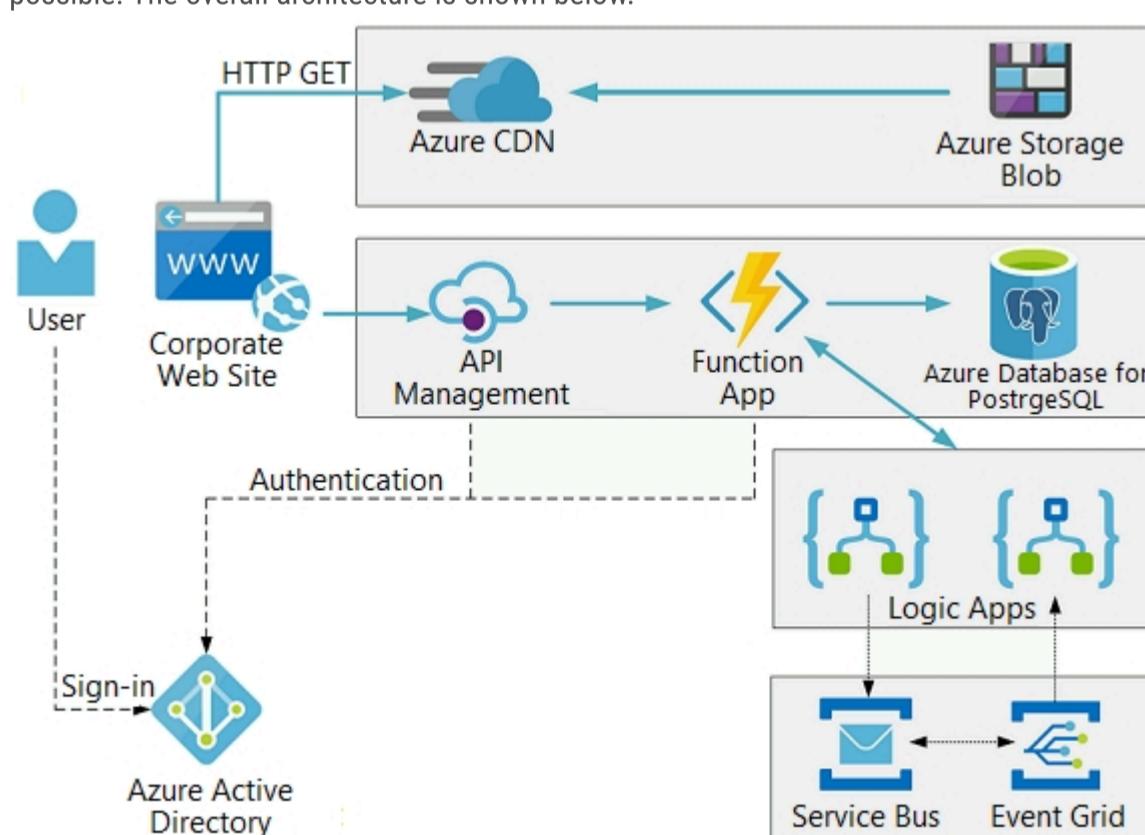
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.

3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. 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 }

```

### Question

HOTSPOT -

You need to correct the Azure Logic app error message.

Which configuration values should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

### Answer Area

Setting	Value
authentication level	<div style="border: 1px solid #ccc; padding: 5px; width: 150px;"> <div style="border-bottom: 1px solid #ccc; padding-bottom: 2px; margin-bottom: 2px;">anonymous</div> <div>function</div> <div>admin</div> </div>
managed identity	<div style="border: 1px solid #ccc; padding: 5px; width: 150px;"> <div style="border-bottom: 1px solid #ccc; padding-bottom: 2px; margin-bottom: 2px;">system-assigned</div> <div>user-assigned</div> </div>

### Answer Area

Setting	Value
authentication level	<div style="border: 1px solid #ccc; padding: 5px; width: 150px;"> <div style="border-bottom: 1px solid #ccc; padding-bottom: 2px; margin-bottom: 2px; background-color: #e0f2e0;">anonymous</div> <div style="background-color: #e0f2e0;">function</div> <div>admin</div> </div>
managed identity	<div style="border: 1px solid #ccc; padding: 5px; width: 150px;"> <div style="border-bottom: 1px solid #ccc; padding-bottom: 2px; margin-bottom: 2px; background-color: #e0f2e0;">system-assigned</div> <div style="background-color: #e0f2e0;">user-assigned</div> </div>

Scenario: 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.

Note: If the inbound call's request body doesn't match your schema, the trigger returns an HTTP 400 Bad Request error.

## Box 1: function -

If you have an Azure function where you want to use the system-assigned identity, first enable authentication for Azure functions.

## Box 2: system-assigned -

Your logic app or individual connections can use either the system-assigned identity or a single user-assigned identity, which you can share across a group of logic apps, but not both.

## Reference:

<https://docs.microsoft.com/en-us/azure/logic-apps/create-managed-service-identity>

✉  **mlantonis** Highly Voted 2 years, 10 months ago

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.

Box 1: anonymous

To use your logic app's managed identity in your function, you must set your function's authentication level to anonymous. Otherwise, your logic app throws a "BadRequest" error.

Box 2: system-assigned

Your logic app or individual connections can use either the system-assigned identity or a single user-assigned identity, which you can share across a group of logic apps, but not both. On your logic app menu, under Settings, select Identity > System assigned

upvoted 47 times

✉  **Hike1216** 3 months, 3 weeks ago

Explanation for using anonymous <https://learn.microsoft.com/en-us/azure/logic-apps/logic-apps-azure-functions?tabs=consumption#set-up-your-function-for-anonymous-authentication-consumption-workflows-only>

upvoted 1 times

✉  **mlantonis** 2 years, 10 months ago

Reference:

<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-azure-functions#set-up-anonymous-authentication-in-your-function>

upvoted 7 times

✉  **bp\_a\_user** 3 months, 2 weeks ago

Why System assigned?

upvoted 1 times

✉  **rqb11** Highly Voted 3 years ago

According to this article Function authz should be set to anonymous as we're using AAD auth. <https://adatum.no/azure/azure-ad-authentication-in-azure-functions>

upvoted 34 times

✉  **anastakasim** 2 years, 12 months ago

Not function?

upvoted 1 times

✉  **ZodiaC** 2 years, 8 months ago

NOPE READ LINK !

upvoted 5 times

✉  **lmass** 2 years, 11 months ago

Agree, see also this: <https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-azure-functions#enable-authentication-for-functions>

upvoted 4 times

✉  **RaviNikkam** 1 year, 10 months ago

Look at line RA05 which clearly mentions, authorization level as function.

upvoted 2 times

✉  **xRiot007** 1 year, 9 months ago

That is for the function in the function app, not the logic app.

upvoted 2 times

✉  **gmishra88** 1 year, 6 months ago

That's why it is giving the error and that need to be solved

upvoted 2 times

✉  **micro9000** 1 year, 4 months ago

agree on this based on the docs,

For your function to use your logic app's managed identity, you must set your function's authentication level to anonymous. Otherwise, your logic app workflow throws a BadRequest error.

upvoted 1 times

✉ **gmishra88** Most Recent 1 year, 6 months ago

For some weird reason Microsoft decided that logic apps cannot use the user-assigned identity when it is given to multiple. Totally random restriction that shows the inter-departmental issues in this organization. And they think that fault-line is a good question to ask.

upvoted 7 times

✉ **ChrisEvans** 1 year, 12 months ago

We are fixing the logic app, not the function app. If you look at the function app code, you can see it's using function level authentication, so it can't be anonymous. I think it's function + system assigned.

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

I do agree the question is not clear. But if you think deep enough you will see that it is the function app that you need to change for the authorization (Box 1) and in the logic app to use the user-assigned-identity

upvoted 2 times

✉ **SivajiTheBoss** 2 years ago

Correct Answer:

Anonymous

System assigned identity

upvoted 4 times

✉ **chingdm** 2 years, 1 month ago

Can use combination of auth level=Function + managed identity=user-assigned, this works if you set the Function, Logic App and API Management to use this same user-assigned identity.

otherwise, the simpler approach but less secure is to have auth level=Anonymous set to Function and the Logic App to have the system-assigned managed identity.

<https://docs.microsoft.com/en-us/azure/active-directory/managed-identities-azure-resources/overview>

upvoted 1 times

✉ **edengoforit** 2 years, 2 months ago

Why system-assigned?

upvoted 1 times

✉ **Jonas\_86** 2 years, 6 months ago

Anonymous ans system-assigned

check : <https://docs.microsoft.com/fr-fr/azure/spring-cloud/tutorial-managed-identities-functions>

upvoted 1 times

✉ **ning** 2 years, 7 months ago

Either system or user identity works in this scenario ...

Without further requirements, it is hard to say ...

upvoted 1 times

✉ **ning** 2 years, 7 months ago

Only thing I can see "All user accounts and processes must receive only those privileges which are essential to perform their intended function." maybe system identity then ...

upvoted 4 times

✉ **jkes80** 2 years, 9 months ago

I think I would answer

Box1: anonymous

Box2: user-assigned -> there are 2 Logic Apps in the picture, so it makes sense to me to create a user-assigned identity that is being used for both Logic Apps?

upvoted 2 times

✉ **ZodiaC** 2 years, 8 months ago

Nope, that's make it difficult... So stay with system!

upvoted 1 times

✉ **anandhprakash** 2 years, 10 months ago

Anonymous

System assigned identity

will be correct answer? I am guessing

upvoted 5 times

✉ **SnakePlissken** 2 years, 11 months ago

Logic App is removed from the study guide on March 26, 2021.

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

upvoted 3 times

✉ **if54uran** 2 years, 9 months ago

It seems to still in the o\_O --> page 6 lower left side "Develop an App Service Logic App"

Am I missing something here?

upvoted 1 times

✉ **hstml** 2 years, 6 months ago

The left side of the table states the things that are retired from the exam. "Previous Study Guide" :)  
So SnakePlissken is correct.

upvoted 3 times

✉ **gmishra88** 1 year, 6 months ago

Logic app is removed, but function app is not and this question is about the function app. So, unfortunately this question is still in scope  
upvoted 1 times

✉ **oadigun** 2 years, 11 months ago

Answer is Anonymous....To use your logic app's managed identity in your function, you must set your function's authentication level to anonymous. Otherwise, your logic app throws a "BadRequest" error.  
<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-azure-functions#set-up-anonymous-authentication-in-your-function>  
upvoted 7 times

Question #6

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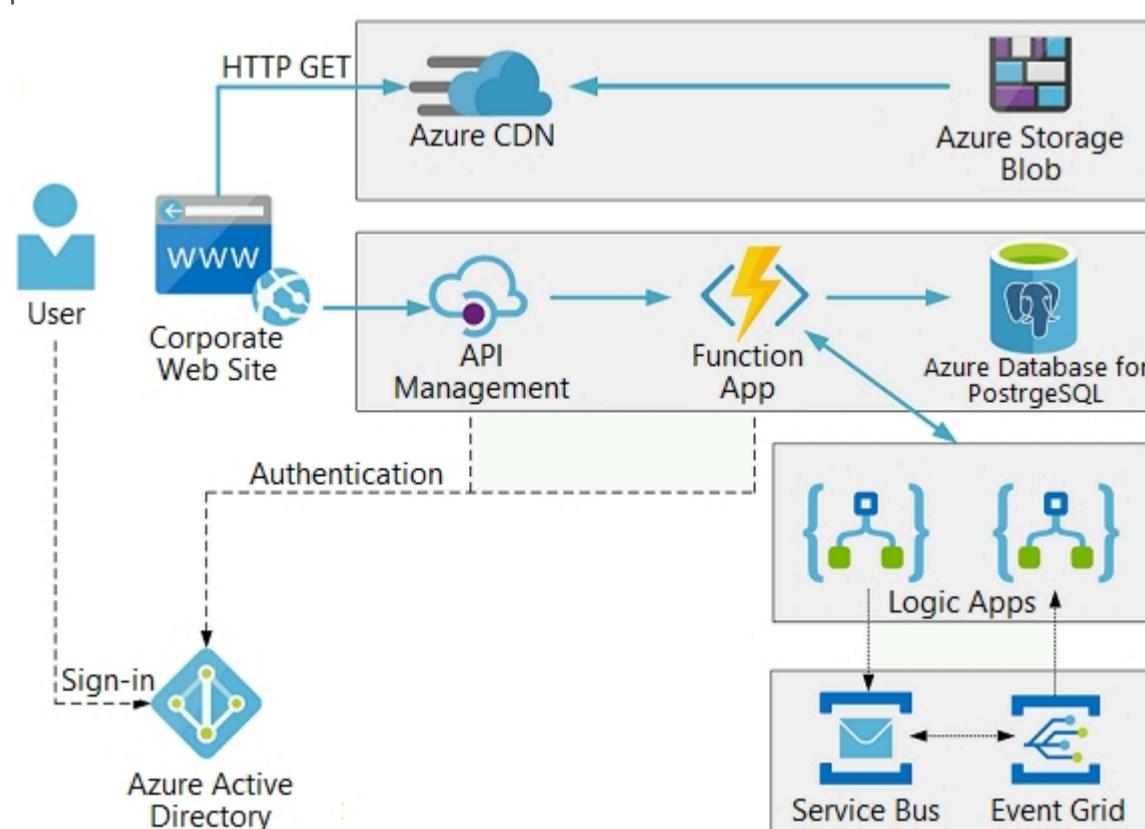
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Function app -

RequestUserApproval.cs:

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RA01 public static class RequestUserApproval
RA02 {
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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 }

```

### Question

HOTSPOT -

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.

Hot Area:

### Answer Area

Setting	Value
Tier	<div style="border: 1px solid #ccc; padding: 5px; width: 150px;"> Basic Standard Premium </div>
RBAC role	<div style="border: 1px solid #ccc; padding: 5px; width: 150px;"> Owner Contributor Azure Service Bus Data Owner Azure Service Bus Data Receiver </div>

### Answer Area

Setting	Value
Tier	<div style="border: 1px solid #ccc; padding: 5px; width: 150px;"> Basic Standard Premium </div>
Correct Answer:	<div style="border: 1px solid #ccc; padding: 5px; width: 150px; background-color: #c8e6c9;"> Basic Standard Premium </div>
RBAC role	<div style="border: 1px solid #ccc; padding: 5px; width: 150px;"> Owner Contributor Azure Service Bus Data Owner Azure Service Bus Data Receiver </div>

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>

✉  **mlantonis** Highly Voted 2 years, 10 months ago

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 1: Premium

Box 2: Contributor

Reference:

<https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-to-event-grid-integration-concept>

upvoted 32 times

✉  **Marusyk** Highly Voted 3 years ago

The answer is correct

upvoted 27 times

✉  **surprise0011** 11 months, 4 weeks ago

received 2023-04-17 went with given answer, score 926

upvoted 2 times

✉  **TonyMel** 1 year ago

correct, in 2023Mar24, score: 904/1000.

upvoted 1 times

✉  **Weam** Most Recent 4 months, 1 week ago

Azure service bus + azure grid = Premium

upvoted 3 times

✉  **BaoNguyen2411** 8 months, 2 weeks ago

got this question on 29/06/2023

upvoted 2 times

✉  **gmishra88** 1 year, 6 months ago

RBAC role for what the service-bus, event-grid of "you"? I hope Microsoft does not ask such vague questions directly taken from their documentations

upvoted 2 times

✉  **gmishra88** 1 year, 6 months ago

"You should have contributor access to setup this". And also service bus should be premium. But what to setup is the issue. The problem with microsoft question is they do not tell what is the functionality that needs to be setup. Just that Azure service bus to Event grid integration. It could be for load-leveelling, it could be for "Service Bus can emit events to Event Grid when there are messages in a queue or a subscription when no receivers are present". For the first use, you do not need to do this. It's a guessing game

upvoted 3 times

✉  **gmishra88** 1 year, 6 months ago

All these requirements are for integration, but then I guess they are asking for the third case when guessing the options available:

"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."

upvoted 1 times

✉  **gmishra88** 1 year, 6 months ago

"You need to configure Azure Service Bus to Event Grid integration" < for what? there could be many integration possibilities but what exactly is the requirement. Or is Microsoft looking for the page with a similar title as that. Requirements should be functional. Integrate it for what purpose.

upvoted 1 times

✉  **lugospod** 2 years, 2 months ago

Got this one 01/2022. Went with most voted (to avoid writing answers again)

upvoted 5 times

 **MrXBasit** 2 years, 8 months ago

Correct

upvoted 2 times

 **syedaquib77** 2 years, 12 months ago

Azure Service Bus to Event Grid integration overview

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. Navigate to your Service Bus namespace in the Azure portal, and then select Access control (IAM), and select Role assignments tab. Verify that you have the contributor access to the namespace.

<https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-to-event-grid-integration-concept?tabs=event-grid-event-schema>

upvoted 7 times

 **ferut** 2 years, 10 months ago

Tier = Premium, because the requirement says "Data must be replicated to a secondary region and three availability zones". Standard and basic don't support Geo Disaster Recover and Availability Zones.

upvoted 15 times

 **rqb11** 3 years ago

Premium tier includes Geo-Disaster Recovery (Geo-DR): <https://azure.microsoft.com/en-us/pricing/details/service-bus/>

upvoted 4 times

 **atomicicebreaker** 2 years, 12 months ago

Microsoft for sure likes your mindset ;) You are correct, but the issue in this question is Service Bus <-> Event Grid communication, not availability or data recovery.

upvoted 4 times

## Topic 14 - Testlet 16

Question #1

Topic 14

### Introductory Info

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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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 the Next button. 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 the Question button to return to the question.

Background -

You are a developer for Litware Inc., a SaaS company that provides a solution for managing employee expenses. The solution consists of an ASP.NET Core Web API project that is deployed as an Azure Web App.

Overall architecture -

Employees upload receipts for the system to process. When processing is complete, the employee receives a summary report email that details the processing results. Employees then use a web application to manage their receipts and perform any additional tasks needed for reimbursement.

Receipt processing -

Employees may upload receipts in two ways:

Uploading using an Azure Files mounted folder

Uploading using the web application

Data Storage -

Receipt and employee information is stored in an Azure SQL database.

Documentation -

Employees are provided with a getting started document when they first use the solution. The documentation includes details on supported operating systems for Azure File upload, and instructions on how to configure the mounted folder.

Solution details -

Users table -

Column	Description
UserId	unique identifier for an employee
ExpenseAccount	employees expense account number in the format 1234-123-1234
AllowedAmount	limit of allowed expenses before approval is needed
SupervisorId	unique identifier for employee's supervisor
SecurityPin	value used to validate user identity

Web Application -

You enable MSI for the Web App and configure the Web App to use the security principal name WebAppIdentity.

Processing -

Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored

#### in Azure Blob

Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must remain valid if the email is forwarded to another user.

#### Logging -

Azure Application Insights is used for telemetry and logging in both the processor and the web application. The processor also has TraceWriter logging enabled.

Application Insights must always contain all log messages.

#### Requirements -

##### Receipt processing -

Concurrent processing of a receipt must be prevented.

##### Disaster recovery -

Regional outage must not impact application availability. All DR operations must not be dependent on application running and must ensure that data in the DR region is up to date.

#### Security -

User's SecurityPin must be stored in such a way that access to the database does not allow the viewing of SecurityPins. The web application is the only system that should have access to SecurityPins.

All certificates and secrets used to secure data must be stored in Azure Key Vault.

You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.

All access to Azure Storage and Azure SQL database must use the application's Managed Service Identity (MSI).

Receipt data must always be encrypted at rest.

All data must be protected in transit.

User's expense account number must be visible only to logged in users. All other views of the expense account number should include only the last segment, with the remaining parts obscured.

In the case of a security breach, access to all summary reports must be revoked without impacting other parts of the system.

#### Issues -

##### Upload format issue -

Employees occasionally report an issue with uploading a receipt using the web application. They report that when they upload a receipt using the Azure File

Share, the receipt does not appear in their profile. When this occurs, they delete the file in the file share and use the web application, which returns a 500 Internal

Server error page.

##### Capacity issue -

During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.

##### Log capacity issue -

Developers report that the number of log messages in the trace output for the processor is too high, resulting in lost log messages.

#### Application code -

##### Processing.cs -

```

PC01 public static class Processing
PC02 {
PC03 public static class Function
PC04 {
PC05 [FunctionName("IssueWork")]
PC06 public static async Task Run([TimerTrigger("0 */5 * * * *")] TimerInfo timer, ILogger
log)
PC07 {
PC08 var container = await GetCloudBlobContainer();
PC09 foreach (var fileItem in await ListFiles())
PC10 {
PC11 var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12 var ms = new MemoryStream();
PC13 await file.DownloadToStreamAsync(ms);
PC14 var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15 await blob.UploadFromStreamAsync(ms);
PC16
PC17 }
PC18 }
PC19 private static CloudBlockBlob GetDRBlock(CloudBlockBlob sourceBlob)
PC20 {
PC21 ...
PC22 }
PC23 private static async Task<CloudBlobContainer> GetCloudBlobContainer()
PC24 {
PC25 var cloudBlobClient = new CloudBlobClient(new Uri("..."), await GetCredentials());
PC26
PC27 await cloudBlobClient.GetRootContainerReference().CreateIfNotExistsAsync();
PC28 return cloudBlobClient.GetRootContainerReference();
PC29 }
PC30 private static async Task<StorageCredentials> GetCredentials()
PC31 {
PC32 ...
PC33 }
PC34 private static async Task<List<IListFileItem>> ListFiles()
PC35 {
PC36 ...
PC37 }
PC38 private KeyVaultClient _keyVaultClient = new KeyVaultClient("...");
```

PC39 }

Database.cs -

```

DB01 public class Database
DB02 {
DB03 private string ConnectionString =
DB04
DB05 public async Task<object> LoadUserDetails(string userId)
DB06 {
DB07
DB08 return await policy.ExecuteAsync(async () =>
DB09 {
DB10 using (var connection = new SqlConnection(ConnectionString))
DB11 {
DB12 await connection.OpenAsync();
DB13 using (var command = new SqlCommand("...", connection))
DB14 using (var reader = command.ExecuteReader())
DB15 {
DB16 ...
DB17 }
DB18 }
DB19 });
DB20 }
DB21 }
```

ReceiptUploader.cs -

```

RU01 public class ReceiptUploader
RU02 {
RU03 public async Task UploadFile(string file, byte[] binary)
RU04 {
RU05 var httpClient = new HttpClient();
RU06 var response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU07 while (ShouldRetry(response))
RU08 {
RU09 response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU10 }
RU11 }
RU12 private bool ShouldRetry(HttpStatusCode response)
RU13 {
RU14 }
RU15 }
RU16 }

```

ConfigureSSE.ps1 -

```

CS01 $storageAccount = Get-AzureRmStorageAccount -ResourceGroupName "..." -AccountName "..."
CS02 $keyVault = Get-AzureRmKeyVault -VaultName "..."
CS03 $key = Get-AzureKeyVaultKey -VaultName $keyVault.VaultName -Name "..."
CS04 Set-AzureRmKeyVaultAccessPolicy `
CS05 -VaultName $keyVault.VaultName `
CS06 -ObjectId $storageAccount.Identity.PrincipalId `
CS07
CS08
CS09 Set-AzureRmStorageAccount `
CS10 -ResourceGroupName $storageAccount.ResourceGroupName `
CS11 -AccountName $storageAccount.StorageAccountName `
CS12 -EnableEncryptionService File `
CS13 -KeyvaultEncryption `
CS14 -KeyName $key.Name
CS15 -KeyVersion $key.Version `
CS16 -KeyVaultUri $keyVault.VaultUri

```

## Question

HOTSPOT -

You need to add code at line PC26 of Processing.cs to ensure that security policies are met.

How should you complete the code that you will add at line PC26? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

## Answer Area

```
var resolver = new KeyVaultKeyResolver(_keyVaultClient);
var keyBundle = await _keyVaultClient.GetKeyAsync("...", "...");
```

```
var key = keyBundle.Key;
var key = keyBundle.KeyIdentifier.Identifier;
var key = await resolver.ResolveKeyAsync("encrypt", null);
var key = await resolver.ResolveKeyAsync(keyBundle.KeyIdentifier.Identifier, CancellationToken.None);
```

```
var x = keyBundle.Managed;
var x = AuthenticationScheme.SharedKey;
var x = new BlobEncryptionPolicy(key, resolver);
var x = new DeleteRetentionPolicy {Enabled = key.Kid != null};
```

```
cloudBlobClient.AuthenticationScheme = x;
cloudBlobClient.DefaultRequestOptions.RequireEncryption = x;
cloudBlobClient.DefaultRequestOptions.EncryptionPolicy = x;
cloudBlobClient.SetServiceProperties(new ServiceProperties(deleteRetentionPolicy:x));
```

Correct Answer:

**Answer Area**

```
var resolver = new KeyVaultKeyResolver(_keyVaultClient);
var keyBundle = await _keyVaultClient.GetKeyAsync("...", "...");
```

```
var key = keyBundle.Key;
var key = keyBundle.KeyIdentifier.Identifier;
var key = await resolver.ResolveKeyAsync("encrypt", null);
var key = await resolver.ResolveKeyAsync(keyBundle.KeyIdentifier.Identifier, CancellationToken.None);
```

```
var x = keyBundle.Managed;
var x = AuthenticationScheme.SharedKey;
var x = new BlobEncryptionPolicy(key, resolver);
var x = new DeleteRetentionPolicy {Enabled = key.Kid != null};
```

```
cloudBlobClient.AuthenticationScheme = x;
cloudBlobClient.DefaultRequestOptions.RequireEncryption = x;
cloudBlobClient.DefaultRequestOptions.EncryptionPolicy = x;
cloudBlobClient.SetServiceProperties(new ServiceProperties(deleteRetentionPolicy:x));
```

Box 1: var key = await Resolver.ResolveKeyAsyn(keyBundle, KeyIdentifier.CancellationToken.None);

Box 2: var x = new BlobEncryptionPolicy(key, resolver);

Example:

// We begin with cloudKey1, and a resolver capable of resolving and caching Key Vault secrets.

BlobEncryptionPolicy encryptionPolicy = new BlobEncryptionPolicy(cloudKey1, cachingResolver);

client.DefaultRequestOptions.EncryptionPolicy = encryptionPolicy;

Box 3: cloudblobClient.DefaultRequestOptions.EncryptionPolicy = x;

Reference:

<https://github.com/Azure/azure-storage-net/blob/master/Samples/GettingStarted/EncryptionSamples/KeyRotation/Program.cs>

✉  **wumingshi** Highly Voted  3 years ago

The answer is correct

upvoted 32 times

✉  **gmishra88** Highly Voted  1 year, 6 months ago

Also Microsoft says : you need not know .Net for this certification and proceed to ask questions deep in the dark corners of .Net libraries

upvoted 13 times

✉  **gmishra88** 1 year, 6 months ago

The requirement says "Receipt data must always be encrypted at rest." That might make a person think do not use client side encryption. But then proceeds to make the person guess from the answer choices that it is client side encryption. Why does this organization think this is a good way to ask questions?

upvoted 1 times

✉  **gmishra88** 1 year, 6 months ago

"Consider using service-side encryption features instead of client-side encryption. For more information about service-side encryption features, see Azure Storage encryption for data at rest."

upvoted 1 times

✉  **macobuzi** 7 months, 1 week ago

To be honest, if you are an experienced programmer you can guess the right answer to this question by pure logic, no .Net code or even Azure knowledge is needed.

upvoted 5 times

✉  **bp\_a\_user** 3 months, 2 weeks ago

but guessing should not be the goal

upvoted 2 times

✉  **AndySmith** 5 months, 3 weeks ago

Exactly! Did it from 1st try, but originally was very confused with plenty of options, LOL.

So, 2nd and 3rd steps are easy to connect. And in 2nd step you should use "key" from Step1, but it only occurs in options 3 and 4. Since, 4 is about deletion policy, which doesn't make sense - then go with 3 which is Encryption Policy.

And Encryption Policy is 1:1 mapping to last step 3 :)

upvoted 2 times

✉  **SaintBahamut** Most Recent 1 year, 10 months ago

Answer is correct, checked that in code,  
If we take second box as correct then only 4rd option from 1st box fits  
upvoted 2 times

✉  **Yazhu** 2 years, 3 months ago

Given Answer is correct.  
Refer the below URL.  
<https://csharp.hotexamples.com/examples/Microsoft.WindowsAzure.Storage.Blob/BlobEncryptionPolicy/-/php-blobencryptionpolicy-class-examples.html>  
upvoted 2 times

✉  **UnknowMan** 2 years, 10 months ago

BlobEncryptionPolicy accept "Ikey" on constructor

=> [https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.blob.blobencryptionpolicy.-ctor?view=azure-dotnet-legacy#Microsoft\\_Azure\\_Storage\\_Blob\\_BlobEncryptionPolicy\\_\\_ctor\\_Microsoft\\_Azure\\_KeyVault\\_Core\\_IKey\\_Microsoft\\_Azure\\_KeyVault\\_Core\\_IKey\\_Resolver\\_](https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.blob.blobencryptionpolicy.-ctor?view=azure-dotnet-legacy#Microsoft_Azure_Storage_Blob_BlobEncryptionPolicy__ctor_Microsoft_Azure_KeyVault_Core_IKey_Microsoft_Azure_KeyVault_Core_IKey_Resolver_)

(keyBundle.Key return a Microsoft.Azure.KeyVault.WebKey.JsonWebKey).

The answer is correct !

upvoted 9 times

✉  **UnknowMan** 2 years, 10 months ago

BlobEncryptionPolicy accept "Ikey" on constructor

=> [https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.blob.blobencryptionpolicy.-ctor?view=azure-dotnet-legacy#Microsoft\\_Azure\\_Storage\\_Blob\\_BlobEncryptionPolicy\\_\\_ctor\\_Microsoft\\_Azure\\_KeyVault\\_Core\\_IKey\\_Microsoft\\_Azure\\_KeyVault\\_Core\\_IKey\\_Resolver\\_](https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.blob.blobencryptionpolicy.-ctor?view=azure-dotnet-legacy#Microsoft_Azure_Storage_Blob_BlobEncryptionPolicy__ctor_Microsoft_Azure_KeyVault_Core_IKey_Microsoft_Azure_KeyVault_Core_IKey_Resolver_)

(keyBundle.Key return a Microsoft.Azure.KeyVault.WebKey.JsonWebKey).

The answer is correct !

upvoted 1 times

✉  **SnakePlissken** 2 years, 11 months ago

1. var key = keyBundle.Key;  
2. var x = new BlobEncryptionPolicy(key, resolver);  
3. cloudBlobClient.DefaultRequestOptions.EncryptionPolicy = x;

But I'm afraid I've wasted my time. As you can see in the links, it's all legacy code.

<https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.keyvault.keyvaultclientextensions.getkeyasync?view=azure-dotnet-legacy&viewFallbackFrom=azure-dotnet>

[https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.blob.blobencryptionpolicy.-ctor?view=azure-dotnet-legacy#Microsoft\\_Azure\\_Storage\\_Blob\\_BlobEncryptionPolicy\\_\\_ctor\\_Microsoft\\_Azure\\_KeyVault\\_Core\\_IKey\\_Microsoft\\_Azure\\_KeyVault\\_Core\\_IKey\\_Resolver\\_](https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.blob.blobencryptionpolicy.-ctor?view=azure-dotnet-legacy#Microsoft_Azure_Storage_Blob_BlobEncryptionPolicy__ctor_Microsoft_Azure_KeyVault_Core_IKey_Microsoft_Azure_KeyVault_Core_IKey_Resolver_)

[https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.blob.blobrequestoptions.encryptionpolicy?view=azure-dotnet-legacy#Microsoft\\_Azure\\_Storage\\_Blob\\_BlobRequestOptions\\_EncryptionPolicy](https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.storage.blob.blobrequestoptions.encryptionpolicy?view=azure-dotnet-legacy#Microsoft_Azure_Storage_Blob_BlobRequestOptions_EncryptionPolicy)

upvoted 6 times

✉  **ning** 2 years, 7 months ago

This is NOT correct, keyBundle.Key() is correct, it is a method, not a property, so no correct

upvoted 1 times

✉  **vokep77043** 2 years, 7 months ago

No, it's a property. Read documentation. [https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.keyvault.models.keybundle.key?view=azure-dotnet-legacy#Microsoft\\_Azure\\_KeyVault\\_Models\\_KeyBundle\\_Key](https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.keyvault.models.keybundle.key?view=azure-dotnet-legacy#Microsoft_Azure_KeyVault_Models_KeyBundle_Key)

upvoted 3 times

✉  **coffecold** 1 year, 5 months ago

yes legacy code..

for version 12 use KeyClient, ClientSideEncryptionOptions ...

see

<https://stackoverflow.com/questions/64644174/encryption-with-azure-blob-storage-v12-sdk-for-net>

upvoted 1 times

✉  **jvyas** 2 years, 11 months ago

According to Udemy instructor Alan Rodriguez answer for first box is  
var key = keyBundle.key

upvoted 5 times

✉  **jokergester** 3 years ago

<https://docs.microsoft.com/en-us/azure/storage/blobs/storage-encrypt-decrypt-blobs-key-vault?tabs=dotnet11#encrypt-blob-and-upload>

upvoted 4 times

Question #2

**Introductory Info****Case study -**

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**Background -**

You are a developer for Litware Inc., a SaaS company that provides a solution for managing employee expenses. The solution consists of an ASP.NET Core Web

API project that is deployed as an Azure Web App.

**Overall architecture -**

Employees upload receipts for the system to process. When processing is complete, the employee receives a summary report email that details the processing results. Employees then use a web application to manage their receipts and perform any additional tasks needed for reimbursement.

**Receipt processing -**

Employees may upload receipts in two ways:

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Uploading using the web application

**Data Storage -**

Receipt and employee information is stored in an Azure SQL database.

**Documentation -**

Employees are provided with a getting started document when they first use the solution. The documentation includes details on supported operating systems for

Azure File upload, and instructions on how to configure the mounted folder.

**Solution details -****Users table -**

Column	Description
UserId	unique identifier for an employee
ExpenseAccount	employees expense account number in the format 1234-123-1234
AllowedAmount	limit of allowed expenses before approval is needed
SupervisorId	unique identifier for employee's supervisor
SecurityPin	value used to validate user identity

**Web Application -**

You enable MSI for the Web App and configure the Web App to use the security principal name WebAppIdentity.

**Processing -**

Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored in Azure Blob

Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must

remain valid if the email is forwarded to another user.

#### Logging -

Azure Application Insights is used for telemetry and logging in both the processor and the web application. The processor also has TraceWriter logging enabled.

Application Insights must always contain all log messages.

#### Requirements -

##### Receipt processing -

Concurrent processing of a receipt must be prevented.

##### Disaster recovery -

Regional outage must not impact application availability. All DR operations must not be dependent on application running and must ensure that data in the DR region is up to date.

#### Security -

User's SecurityPin must be stored in such a way that access to the database does not allow the viewing of SecurityPins. The web application is the only system that should have access to SecurityPins.

All certificates and secrets used to secure data must be stored in Azure Key Vault.

You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.

All access to Azure Storage and Azure SQL database must use the application's Managed Service Identity (MSI).

Receipt data must always be encrypted at rest.

All data must be protected in transit.

User's expense account number must be visible only to logged in users. All other views of the expense account number should include only the last segment, with the remaining parts obscured.

In the case of a security breach, access to all summary reports must be revoked without impacting other parts of the system.

#### Issues -

##### Upload format issue -

Employees occasionally report an issue with uploading a receipt using the web application. They report that when they upload a receipt using the Azure File

Share, the receipt does not appear in their profile. When this occurs, they delete the file in the file share and use the web application, which returns a 500 Internal

Server error page.

##### Capacity issue -

During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.

##### Log capacity issue -

Developers report that the number of log messages in the trace output for the processor is too high, resulting in lost log messages.

#### Application code -

##### Processing.cs -

```

PC01 public static class Processing
PC02 {
PC03 public static class Function
PC04 {
PC05 [FunctionName("IssueWork")]
PC06 public static async Task Run([TimerTrigger("0 */5 * * * *")] TimerInfo timer, ILogger
log)
PC07 {
PC08 var container = await GetCloudBlobContainer();
PC09 foreach (var fileItem in await ListFiles())
PC10 {
PC11 var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12 var ms = new MemoryStream();
PC13 await file.DownloadToStreamAsync(ms);
PC14 var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15 await blob.UploadFromStreamAsync(ms);
PC16
PC17 }
PC18 }
PC19 private static CloudBlockBlob GetDRBlock(CloudBlockBlob sourceBlob)
PC20 {
PC21 ...
PC22 }
PC23 private static async Task<CloudBlobContainer> GetCloudBlobContainer()
PC24 {
PC25 var cloudBlobClient = new CloudBlobClient(new Uri("..."), await GetCredentials());
PC26
PC27 await cloudBlobClient.GetRootContainerReference().CreateIfNotExistsAsync();
PC28 return cloudBlobClient.GetRootContainerReference();
PC29 }
PC30 private static Task<StorageCredentials> GetCredentials()
PC31 {
PC32 ...
PC33 }
PC34 private static async Task<List<IListFileItem>> ListFiles()
PC35 {
PC36 ...
PC37 }
PC38 private KeyVaultClient _keyVaultClient = new KeyVaultClient("...");
```

PC39 }

Database.cs -

```

DB01 public class Database
DB02 {
DB03 private string ConnectionString =
DB04
DB05 public async Task<object> LoadUserDetails(string userId)
DB06 {
DB07
DB08 return await policy.ExecuteAsync(async () =>
DB09 {
DB10 using (var connection = new SqlConnection(ConnectionString))
DB11 {
DB12 await connection.OpenAsync();
DB13 using (var command = new SqlCommand("...", connection))
DB14 using (var reader = command.ExecuteReader())
DB15 {
DB16 ...
DB17 }
DB18 }
DB19 });
DB20 }
DB21 }
```

ReceiptUploader.cs -

```

RU01 public class ReceiptUploader
RU02 {
RU03 public async Task UploadFile(string file, byte[] binary)
RU04 {
RU05 var httpClient = new HttpClient();
RU06 var response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU07 while (ShouldRetry(response))
RU08 {
RU09 response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU10 }
RU11 }
RU12 private bool ShouldRetry(HttpStatusCode response)
RU13 {
RU14 }
RU15 }
RU16 }

```

ConfigureSSE.ps1 -

```

CS01 $storageAccount = Get-AzureRmStorageAccount -ResourceGroupName "..." -AccountName "..."
CS02 $keyVault = Get-AzureRmKeyVault -VaultName "..."
CS03 $key = Get-AzureKeyVaultKey -VaultName $keyVault.VaultName -Name "..."
CS04 Set-AzureRmKeyVaultAccessPolicy `
CS05 -VaultName $keyVault.VaultName `
CS06 -ObjectId $storageAccount.Identity.PrincipalId `
CS07
CS08
CS09 Set-AzureRmStorageAccount `
CS10 -ResourceGroupName $storageAccount.ResourceGroupName `
CS11 -AccountName $storageAccount.StorageAccountName `
CS12 -EnableEncryptionService File `
CS13 -KeyVaultEncryption `
CS14 -KeyName $key.Name
CS15 -KeyVersion $key.Version `
CS16 -KeyVaultUri $keyVault.VaultUri

```

### Question

You need to ensure the security policies are met.

What code do you add at line CS07 of ConfigureSSE.ps1?

- A. "PermissionsToKeys create, encrypt, decrypt
- B. "PermissionsToCertificates create, encrypt, decrypt
- C. "PermissionsToCertificates wrapkey, unwrapkey, get
- D. "PermissionsToKeys wrapkey, unwrapkey, get

### Correct Answer: B

Scenario: All certificates and secrets used to secure data must be stored in Azure Key Vault.

You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.

The Set-AzureRmKeyVaultAccessPolicy parameter -PermissionsToKeys specifies an array of key operation permissions to grant to a user or service principal.

The acceptable values for this parameter: decrypt, encrypt, unwrapKey, wrapKey, verify, sign, get, list, update, create, import, delete, backup, restore, recover, purge

Incorrect Answers:

A, C: The Set-AzureRmKeyVaultAccessPolicy parameter -PermissionsToCertificates specifies an array of certificate permissions to grant to a user or service principal. The acceptable values for this parameter: get, list, delete, create, import, update, managecontacts, getissuers, listissuers, setissuers, deleteissuers, manageissuers, recover, purge, backup, restore

Reference:

<https://docs.microsoft.com/en-us/powershell/module/azurerm.keyvault/set-azurermkeyvaultaccesspolicy>

*Community vote distribution*

D (100%)

✉  **Zsolt72**  3 years ago

My opinion is that the answer is D.

The policy should belong to a key. In the case study the code retrieve the key so the GET access policy is mandatory. The wrap/unwrap is used for symmetric encryption and in this case study the task is to encrypt the blobs.

upvoted 55 times

✉  **azurelearner666** 2 years, 9 months ago

Yes! it's D

PermissionsToKeys wrapkey, unwrapkey, get

<https://docs.microsoft.com/en-us/powershell/module/az.storage/set-azstorageaccount?view=azps-5.8.0#example-5--set-encryption-keysource-to-keyvault>

code example at line 7

upvoted 11 times

✉  **mlantonis**  2 years, 10 months ago

Correct Answer: D

PS C:\>Set-AzKeyVaultAccessPolicy -VaultName "MyKeyVault" -ObjectId \$account.Identity.PrincipalId -PermissionsToKeys wrapkey,unwrapkey, get

Reference:

<https://docs.microsoft.com/en-us/powershell/module/az.storage/set-azstorageaccount?view=azps-5.8.0#example-5--set-encryption-keysource-to-keyvault>

upvoted 12 times

✉  **james2033**  4 weeks ago

**Selected Answer: D**

PermissionsToKeys wrapkey, unwrapkey, get

upvoted 1 times

✉  **alejary** 11 months, 3 weeks ago

What is € ?

upvoted 2 times

✉  **adilkhan** 11 months, 3 weeks ago

are these questions enough to pass the exam?

upvoted 2 times

✉  **dddddd111** 5 months, 3 weeks ago

Some questions here appeared to the actual exam. But the problem is the answer here are not accurate. Same in some highly voted answers. I failed on my first attempt (646/1000) even though I have contributor access.

upvoted 2 times

✉  **uffuchi** 1 year, 1 month ago

**Selected Answer: D**

100% D - All certificates and secrets used to secure data must be stored in Azure Key Vault.

You need to retrieve the keys so get permission is required. The wrapkey and unwrapkey will be used for symmetric encryption to encrypt the blobs.

Below link contains an example of same scenario.

<https://docs.microsoft.com/en-us/powershell/module/az.storage/set-azstorageaccount?view=azps-8.0.0#example-5-set-encryption-keysource-to-keyvault>

<https://docs.microsoft.com/en-us/azure/key-vault/keys/about-keys-details#key-access-control>

upvoted 3 times

✉  **AlexeyG** 1 year, 1 month ago

Got this in 16/02/2023

upvoted 1 times

✉  **mabdo** 1 year, 1 month ago

same case study?

upvoted 1 times

✉  **OPT\_001122** 1 year, 4 months ago

**Selected Answer: D**

PermissionsToKeys wrapkey, unwrapkey, get

upvoted 1 times

✉  **gmishra88** 1 year, 6 months ago

This page shows the example: <https://learn.microsoft.com/en-us/powershell/module/azurerm.storage/set-azurermstorageaccount?view=azurermps-6.13.0#example-5-set-encryption-keysource-to-keyvault>

upvoted 1 times

✉ **aruni\_mishra** 1 year, 9 months ago

**Selected Answer: D**

<https://docs.microsoft.com/en-us/powershell/module/az.storage/set-azstorageaccount?view=azps-8.0.0&viewFallbackFrom=azps-5.8.0#example-5--set-encryption-keysource-to-keyvault>

upvoted 1 times

✉ **pandrer** 1 year, 11 months ago

B and C wrong parameters

upvoted 1 times

✉ **Bogdan75** 2 years, 1 month ago

**Selected Answer: D**

<https://docs.microsoft.com/en-us/azure/key-vault/keys/about-keys-details#key-access-control>

upvoted 1 times

✉ **leonidn** 2 years, 2 months ago

**Selected Answer: D**

PermissionsToKeys wrapkey, unwrapkey, get

upvoted 4 times

✉ **edengoforit** 2 years, 2 months ago

The Set-AzureRmKeyVaultAccessPolicy parameter -PermissionsToKeys specifies an array of key operation permissions to grant to a user or service principal.

According to the reference, the answer is D

<https://docs.microsoft.com/es-es/powershell/module/azurerm.storage/set-azurermstorageaccount?view=azurermmps-6.13.0>

upvoted 1 times

✉ **RajMasilamani** 2 years, 6 months ago

Answer is D.

Wrap,Unwrap,encrypt,decrypt available only for -PermissionsToKeys

<https://docs.microsoft.com/en-us/powershell/module/az.keyvault/set-azkeyvaultaccesspolicy?view=azps-6.4.0#parameters>

upvoted 3 times

✉ **ReniRechner** 2 years, 1 month ago

This site also clearly states that PermissionsToCertificates only has these options:

all, get, list, delete, create, import, update, managecontacts, getissuers, listissuers, setissuers, deleteissuers, manageissuers, recover, purge, backup, restore

So B and C are not even valid

upvoted 1 times

✉ **ning** 2 years, 7 months ago

D is correct from <https://docs.microsoft.com/es-es/powershell/module/azurerm.storage/set-azurermstorageaccount?view=azurermmps-6.13.0>

upvoted 2 times

✉ **anandhprakash** 2 years, 10 months ago

Refer

<https://docs.microsoft.com/en-us/powershell/module/az.storage/set-azstorageaccount?view=azps-5.8.0#example-5--set-encryption-keysource-to-keyvault>

Example 5: Set Encryption KeySource to Keyvault

Answer should be D: wrapkey,unwrapkey,get

PS C:\>Set-AzKeyVaultAccessPolicy -VaultName "MyKeyVault" -ObjectId \$account.Identity.PrincipalId -PermissionsToKeys wrapkey,unwrapkey,get

upvoted 3 times

## Topic 15 - Testlet 17

Question #1

Topic 15

### Introductory Info

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 the Next button. 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 the Question button to return to the question.

Background -

VanArsdel, Ltd. is a global office supply company. The company is based in Canada and has retail store locations across the world. The company is developing several cloud-based solutions to support their stores, distributors, suppliers, and delivery services.

Current environment -

Corporate website -

The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

Retail Store Locations -

The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

Requirements -

The application components must meet the following requirements:

Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.

The website must have 99.95 percent uptime.

Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

Delivery services -

Store service telemetry data in Azure Cosmos DB by using an Azure Function. Data must include an item id, the delivery vehicle license plate, vehicle package capacity, and current vehicle location coordinates.

Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

#### Security -

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

#### Issues -

##### Retail Store Locations -

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

#### Question

You need to reduce read latency for the retail store solution.

What are two possible ways to achieve the goal? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- A. Create a new composite index for the store location data queries in Azure Cosmos DB. Modify the queries to support parameterized SQL and update the Azure Function app to call the new queries.
- B. Provision an Azure Cosmos DB dedicated gateway. Update the Azure Function app connection string to use the new dedicated gateway endpoint.
- C. Configure Azure Cosmos DB consistency to session consistency. Cache session tokens in a new Azure Redis cache instance after every write. Update reads to use the session token stored in Azure Redis.
- D. Provision an Azure Cosmos DB dedicated gateway. Update blob storage to use the new dedicated gateway endpoint.
- E. Configure Azure Cosmos DB consistency to strong consistency. Increase the RUs for the container supporting store location data.

#### Correct Answer: BC

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

B: A dedicated gateway is server-side compute that is a front-end to your Azure Cosmos DB account. When you connect to the dedicated gateway, it both routes requests and caches data.

You can provision a dedicated gateway to improve performance at scale.

You must connect to Azure Cosmos DB using the dedicated gateway in order to use the integrated cache. The dedicated gateway has a different endpoint from the standard one provided with your Azure Cosmos DB account. When you connect to your dedicated gateway endpoint, your application sends a request to the dedicated gateway, which then routes the request to different backend nodes. If possible, the integrated cache will serve the result.

C: Azure Cache for Redis perfectly complements Azure database services such as Cosmos DB. It provides a cost-effective solution to scale read and write throughput of your data tier. Store and share database query results, session states, static contents, and more using a common cache-aside pattern.

Reference:

<https://docs.microsoft.com/en-us/azure/architecture/solution-ideas/articles/data-cache-with-redis-cache> <https://docs.microsoft.com/en-us/azure/cosmos-db/dedicated-gateway>

#### Community vote distribution

AC (44%)

AB (44%)

11%

✉  **AbdulMannan**  1 year, 6 months ago

Got this question on 30-Sep-2022 exam.

Correct answer is A and B. Passed with 870 score.

upvoted 16 times

✉  **ReyPirata** 7 months, 3 weeks ago

Correct answer is A and B.

This was on the exam (08/20/2023). Scored 925

upvoted 2 times

✉  **surprise0011** 12 months ago

I think is correct. If your wondering about B: <https://learn.microsoft.com/en-us/azure/cosmos-db/dedicated-gateway>

And some info from ChatGpt:

A dedicated gateway provides a dedicated endpoint for client applications to communicate with Azure Cosmos DB. By using a dedicated gateway, client applications such as the Azure Function app can reduce network latency and improve overall performance when communicating with Azure Cosmos DB.

When a dedicated gateway is provisioned, it creates a Virtual Network (VNet) peering between the gateway and the Azure Cosmos DB account. This ensures that all traffic between the client application and Azure Cosmos DB remains within the same network, reducing the network latency.

upvoted 2 times

✉  **finnishr**  1 year, 7 months ago

C makes no sense... so A and B

upvoted 9 times

✉  **cecho123** 1 year, 6 months ago

"Cache session tokens in a new Azure Redis cache instance after every write" in C. Does not sound right to me either.

upvoted 2 times

✉  **FeriAZ**  1 month, 3 weeks ago

A) Creating a composite index tailored to the queries used by the application can significantly improve query performance and reduce RU consumption. Modifying the queries to support parameterized SQL can also help optimize query execution.

B) A dedicated gateway in Azure Cosmos DB provides a consistent low-latency connection and can offload some of the query processing workloads from the client. This can help reduce read latency, especially for complex queries and under scaling conditions.

upvoted 1 times

✉  **EliteAllen** 8 months, 1 week ago

**Selected Answer: AB**

A & B

A. Create a new composite index for the store location data queries in Azure Cosmos DB. Modify the queries to support parameterized SQL and update the Azure Function app to call the new queries:

By creating a composite index tailored to the specific queries used, you can potentially reduce the query cost and improve performance. Parameterized queries can further improve efficiency.

B. Provision an Azure Cosmos DB dedicated gateway. Update the Azure Function app connection string to use the new dedicated gateway endpoint:

A dedicated gateway in Azure Cosmos DB provides improved performance for query execution and can reduce latency. Connecting the Azure Function app to this dedicated gateway can leverage these performance improvements.

upvoted 2 times

✉  **phucngueyn** 10 months, 2 weeks ago

AB is correct

upvoted 1 times

✉  **winterthor4** 1 year ago

Got this vanarsdelltd case study on 26-Mar-2023 exam. Go with A and C. Score 890.

upvoted 1 times

✉  **adilkhan** 1 year ago

A and C. ChatGPT

upvoted 1 times

✉  **comoon** 1 year, 2 months ago

**Selected Answer: AC**

A and C

upvoted 1 times

✉  **rotimislaw** 1 year, 3 months ago

**Selected Answer: AC**

A and C

B & D are off due to Azure Cosmos DB dedicated gateway not supporting SQL queries. See limitations on:

<https://learn.microsoft.com/en-us/azure/cosmos-db/dedicated-gateway#dedicated-gateway-in-multi-region-accounts>

E. Makes no sense as increasing consistency to Strong only makes the reads slower

Thus A & C which makes sense: Composite Index in Cosmos DB and Redis Cache for reads

upvoted 3 times

✉  **NK203** 1 year, 1 month ago

<https://learn.microsoft.com/en-us/azure/cosmos-db/nosql/query/getting-started>

In Azure Cosmos DB for NoSQL accounts, there are two ways to read data: Point reads& SQL queries

<https://learn.microsoft.com/en-us/azure/cosmos-db/dedicated-gateway#dedicated-gateway-in-multi-region-accounts>

Dedicated gateways are only supported on API for NoSQL accounts

So dedicated gateway is support NoSQL account.How do you found that Azure Cosmos DB dedicated gateway not supporting SQL queries?

upvoted 3 times

✉️ **toysky731** 1 year, 3 months ago

**Selected Answer: AB**

composite index improves the sql performance

upvoted 2 times

✉️ **OPT\_001122** 1 year, 4 months ago

**Selected Answer: BC**

As per the description B and C look correct

upvoted 1 times

✉️ **gmishra88** 1 year, 6 months ago

Redis is clearly a correct option if using Session consistency. From the following document it is clear that the session-id can be used in a cookie for multiple client-instances to share the same session. That is a clear case for redis-cache. So, if Session consistency is correct then redis cache is also correct. <https://docs.microsoft.com/en-us/azure/architecture/solution-ideas/articles/data-cache-with-redis-cache>

upvoted 2 times

✉️ **gmishra88** 1 year, 6 months ago

"Parameterized SQL provides robust handling and escaping of user input, and prevents accidental exposure of data through SQL injection" So, it does not give performance improvements. Maybe a trick to confuse the traditional sql guys (at least the Java ones, who use that for performance). A trick to punish the Java guys (non-microsoft, I guess. Don't be evil, Microsoft).

Dedicated gateway is a fine option with integrated cache. But otherwise increases latency with an extra hop if using a gateway (either standard or dedicated).

So, another Microsoft gem to create total confusion. An ill conceived question that is half baked

upvoted 1 times

✉️ **warchoon** 1 year ago

Of course parametrization gives performance when it uses cached query plans.

upvoted 1 times

✉️ **gmishra88** 1 year, 6 months ago

"Connecting to Azure Cosmos DB with the dedicated gateway provides lower and more predictable latency than connecting to Azure Cosmos DB with the standard gateway." But worse than a direct connection unless the cache is used. Probably that is the guessing game we have to do with a lot of assumption thinking that the location data can be cached.

upvoted 1 times

✉️ **gmishra88** 1 year, 6 months ago

I will bet on B (dedicated gateway) and E (Strong consistency with increased RUs). Strong consistency because that will make the writes do synchronous and so reads can be with lesser consistency level.

This is very innovative answer, but then I can only hope. It cannot be session consistency. It cannot be parameterized sql (unless the Microsoft guys does not understand that it does not increase performance)

upvoted 2 times

✉️ **gmishra88** 1 year, 6 months ago

B and C are correct.

Not using Strong consistency (or bounded staleness is good for read latency), I

Redis cache can be used to store session information. But that is about web sessions. But I guess this also can be stored in Redis.

upvoted 3 times

✉️ **gmishra88** 1 year, 6 months ago

Strong consistency as default will make sure the writes are synchronized. But this is about the read latency. While reading any consistency less than Bounded staleness will be better for read latency (read on read quorums).

upvoted 1 times

✉️ **le129** 1 year, 7 months ago

why not A composite index

upvoted 4 times

✉️ **adilkhan** 1 year, 2 months ago

A = <https://learn.microsoft.com/en-us/azure/cosmos-db/index-policy> is correct

upvoted 1 times

Question #2

## Introductory Info

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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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 the Next button. 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 the Question button to return to the question.

Background -

VanArsdel, Ltd. is a global office supply company. The company is based in Canada and has retail store locations across the world. The company is developing several cloud-based solutions to support their stores, distributors, suppliers, and delivery services.

Current environment -

Corporate website -

The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

Retail Store Locations -

The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

Requirements -

The application components must meet the following requirements:

Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.

The website must have 99.95 percent uptime.

Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

Delivery services -

Store service telemetry data in Azure Cosmos DB by using an Azure Function. Data must include an item id, the delivery vehicle license plate, vehicle package capacity, and current vehicle location coordinates.

Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

**Security -**

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

**Issues -****Retail Store Locations -**

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

**Question**

You need to audit the retail store sales transactions.

What are two possible ways to achieve the goal? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- A. Update the retail store location data upload process to include blob index tags. Create an Azure Function to process the blob index tags and filter by store location.
- B. Process the change feed logs of the Azure Blob storage account by using an Azure Function. Specify a time range for the change feed data.
- C. Enable blob versioning for the storage account. Use an Azure Function to process a list of the blob versions per day.
- D. Process an Azure Storage blob inventory report by using an Azure Function. Create rule filters on the blob inventory report.
- E. Subscribe to blob storage events by using an Azure Function and Azure Event Grid. Filter the events by store location.

**Correct Answer: BE**

Scenario: Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

"Process the change feed logs of the Azure Blob storage account by using an Azure Function. Specify a time range for the change feed data":

Change feed support is well-suited for scenarios that process data based on objects that have changed. For example, applications can:

Store, audit, and analyze changes to your objects, over any period of time, for security, compliance or intelligence for enterprise data management.

"Subscribe to blob storage events by using an Azure Function and Azure Event Grid. Filter the events by store location": Azure Storage events allow applications to react to events, such as the creation and deletion of blobs. It does so without the need for complicated code or expensive and inefficient polling services. The best part is you only pay for what you use.

Blob storage events are pushed using Azure Event Grid to subscribers such as Azure Functions, Azure Logic Apps, or even to your own http listener. Event Grid provides reliable event delivery to your applications through rich retry policies and dead-lettering.

Incorrect Answers:

"Enable blob versioning for the storage account. Use an Azure Function to process a list of the blob versions per day": You can enable Blob storage versioning to automatically maintain previous versions of an object. When blob versioning is enabled, you can access earlier versions of a blob to recover your data if it is modified or deleted.

Reference:

<https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed> <https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-event-overview>

*Community vote distribution*

BE (100%)

 **OPT\_001122**  1 year, 4 months ago

**Selected Answer: BE**

B and E

upvoted 7 times

 **ReyPirata** 7 months, 3 weeks ago

Correct B and E.

This was on the exam (08/20/2023). Scored 925

upvoted 2 times

 **motekim**  1 year ago

B. Process the change feed logs of the Azure Blob storage account by using an Azure Function. Specify a time range for the change feed data. The change feed provides a way to log changes to blobs in a storage account. By using an Azure Function to process the change feed logs, it is possible to track and audit sales transaction information. The time range for the change feed data can be specified to capture the transactions within a specific time period.

E. Subscribe to blob storage events by using an Azure Function and Azure Event Grid. Filter the events by store location.

Azure Event Grid allows subscribing to events raised by Azure services or third-party services. By using an Azure Function and Event Grid, it is possible to filter the events for a specific store location and track sales transactions. This approach can help to monitor sales transactions in real-time and provide an audit trail for reconciliation.

upvoted 5 times

 **nardk** Most Recent 7 months ago

**Selected Answer: BE**

Must be B and E

upvoted 1 times

 **juanckar** 9 months, 1 week ago

This was on the exam (July 2023). Went with highly voted. Scored 917

upvoted 2 times

 **gmishra88** 1 year, 6 months ago

Also note that it is possible to react to change in storage blob the following way:

- \* Blob storage trigger (Functions), They call this sometimes Blob storage trigger standard. This uses polling and latency is high
- \* Blob storage trigger event based (function). Uses event grid but not the same as event-grid-trigger
- \* Event grid trigger (function or others) Also called Storage Events: Not same as above. This uses an event grid subscription directly (for functions) and others as storage events that can be subscribed to
- \* Change feed : Avro and event grid format (see articles for details, I never used). Latency higher than events. Transactional log, ordered
- \* Azure storage blob inventory : Records of all read, write, list, and delete operations with successful and failed requests across all operations. Analytics logs are best-effort and no ordering is guaranteed. Not transactional log

upvoted 3 times

 **Mousavi** 1 year, 6 months ago

why not D? can someone explain that?

upvoted 1 times

 **gmishra88** 1 year, 6 months ago

Unfortunately that cannot be explained because it is not clear what is being audited. Microsoft keeps that vague so that you can guess what the person who wrote this question is thinking. But if the audit is about content other two choices are fine.

upvoted 1 times

 **gmishra88** 1 year, 6 months ago

Sorry, I did not read the question fully or forgot. It says clearly it needs to audit the transactions. The option to use Azure storage blob inventory does not give the transactions, but the properties for the blob containers. So, it is clearly not the option to audit the transactions.

Hope it is clear

upvoted 4 times

 **sghaha** 1 year, 11 months ago

in Korean

<https://docs.microsoft.com/ko-kr/azure/storage/blobs/storage-blob-change-feed?tabs=azure-portal>

upvoted 3 times

 **Younes364** 1 year, 7 months ago

Sceen shots in English :D

upvoted 2 times

 **Billabongs** 1 year, 5 months ago

in English

<https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed?tabs=azure-portal>

upvoted 4 times

 **mkahmann** 7 months ago

In Spanish

<https://learn.microsoft.com/es-es/azure/storage/blobs/storage-blob-change-feed?tabs=azure-portal>

Greetz, Señor developer :P

upvoted 1 times

## Topic 16 - Testlet 18

Question #1

Topic 16

### Introductory Info

Case study -

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To start the case study -

To display the first question in this case study, click the Next button. 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 the Question button 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
```

## ApplicationManifest -

```

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 }

```

## Question

You need to monitor ContentUploadService according 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"

## Correct Answer: B

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>

*Community vote distribution*

C (96%)	4%
---------	----

✉  **anirbanzeus** Highly Voted  2 years, 10 months ago

C is the correct answer. We are dealing with containers here not VM so "CPU usage" is a valid condition. Had it been VM then it should have been "Percentage CPU usage". 800 is also correct since for containers its measured in millicores.

Ref : <https://docs.microsoft.com/en-us/azure/azure-monitor/platform/metrics-supported#microsoftcontainerinstancecontainergroups>  
upvoted 47 times

✉  **Illumielle** 2 years, 6 months ago

Where does it say contentuploadservice uses containers? The main problem with B is that 800 is not a percentage.

upvoted 2 times

✉  **Illumielle** 2 years, 6 months ago

It's in the code. There is still the problem with 800 not being a percentage

upvoted 1 times

✉  **MiraA** 2 years, 6 months ago

See ContentUploadService, line CS02.

upvoted 3 times

✉  **RaviNikkam** 1 year, 10 months ago

Correct. 800 percent does not make sense. CPU usage of 800 seems to be correct. C is the answer.

upvoted 2 times

✉  **beonsoft** 2 years, 5 months ago

It is "avg" and not "usage". Reason: it is generalized as multicores could be there.

=>Answer C

upvoted 5 times

✉  **beonsoft** 2 years, 5 months ago

...B...

upvoted 4 times

✉ **robjanssen** Highly Voted 3 years ago

Shouldn't it be > 80 (instead of 800)?

upvoted 22 times

✉ **Pozz4ever** 3 years ago

agree with you

upvoted 2 times

✉ **SaNagh** 2 years, 8 months ago

The CPU usage measurement is in milicores. 80% of a core would be 800 milicores.

upvoted 11 times

✉ **insanewriters** 2 years, 9 months ago

The CPU Usage measurement is in milicores (1/1000 of a core). So, 80% of a core would be 800 milicores.

upvoted 24 times

✉ **uffuchs1** Most Recent 1 year, 1 month ago

B - Scenario: An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU-cores

Azure Monitor provides the following metrics for Azure Container Instances. These metrics are available for a container group and individual containers. By default, the metrics are aggregated as averages.

CPU Usage - measured in milicores. One millicore is 1/1000th of a CPU core, so 500 milicores represents usage of 0.5 CPU core.

Memory Usage - in bytes.

Network Bytes Received Per Second and Network Bytes Transmitted Per Second.

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

upvoted 1 times

✉ **warchoon** 1 year ago

Usage measured in milicores, percentage does not

<https://learn.microsoft.com/en-us/cli/azure/monitor/metrics/alert?view=azure-cli-latest#:~:text=%2D%2Dcondition%20%22-,avg%20Percentage%20CPU%20%3E%2090,-%22%20%2D%2Dwindow%2Dsize>

upvoted 1 times

✉ **OPT\_001122** 1 year, 4 months ago

Selected Answer: C

C is the correct answer.

upvoted 2 times

✉ **TheExamMaster2020** 1 year, 4 months ago

Did my exam on 15th November 2022. This test case was on it, but not this specific question.

upvoted 2 times

✉ **Knightie** 1 year, 7 months ago

All wrong.

1. It needs to be avg CPU, it doesn't make sense for sudden spike of any individual computation, but if Average is over, it needs the alert.
2. I don't see the syntax "CPU Usage" and the words do not match the percentage.
3. Percentage > 80, not 8 nor 800, see from the official example.

`az monitor metrics alert create -n alert1 -g {ResourceGroup} --scopes {VirtualMachineID1} {VirtualMachineID2} {VirtualMachineID3} --condition "avg Percentage CPU > 90" --description "High CPU" --region westus`

upvoted 1 times

✉ **Eltooth** 1 year, 9 months ago

Selected Answer: C

C is correct answer.

upvoted 4 times

✉ **xRiot007** 1 year, 9 months ago

We want an alert for an exceeded limit.

A,B are invalid from the start, we do not care about averages.

D has a wrong number in the evaluation expression

C is the correct answer - that "800" is units per thousand. 800/1000 is 80%

upvoted 3 times

✉ **Sandeep12093** 1 year, 9 months ago

ContentUploadService is in ACI.

when reading Microsoft document found that CPU Usage is used for ACI and Avg percentage is used for VM

Also we don't want average just 80% of available CPU

SO ANSWER IS C

upvoted 2 times

Elsheimy 1 year, 10 months ago

According to  
<https://docs.azure.cn/zh-cn/cli/monitor/metrics/alert?view=azure-cli-latest>

The answer is B. However, B states 800, I don't know if it's a typo

upvoted 1 times

pandrer 1 year, 11 months ago

**Selected Answer: B**

similar alerts on <https://docs.microsoft.com/en-us/cli/azure/monitor/metrics/alert?view=azure-cli-latest#az-monitor-metrics-alert-create>

upvoted 1 times

ReniRechner 2 years, 1 month ago

**Selected Answer: C**

Unit avg CPU: per hundred (%)

Unit CPU: per thousand

A:8%

B:800%

C:80%

D:0.8%

upvoted 8 times

Netspud 2 years, 1 month ago

**Selected Answer: C**

It is a ACI not a VM so "CPU usage" is correct

upvoted 4 times

heisenberg33 2 years, 1 month ago

**Selected Answer: C**

I believe its C based on this Ref: <https://docs.microsoft.com/en-us/azure/container-instances/container-instances-monitor>

upvoted 4 times

asdadasg2 2 years, 3 months ago

It's not A or B because we don't care about average usage, we want an alert when the usage goes above 80%. Therefore it must be C, because as others have stated, CPU usage measurement is in millicores, so 800 would be 80%.

Correct answer: C

upvoted 3 times

gfiorini 2 years, 4 months ago

"The ContentAnalysisService is deployed with Azure Container Instances"

"The solution will use eight CPU cores."

CPU usage is measured in millicore (<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-monitor>) so correct answer should be 'C' (80% = 800millicore)

upvoted 2 times

mlantonis 2 years, 10 months ago

Monitoring:

An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU cores.

The metric "CPU Usage" does not exist, avg Percentage CPU is valid.

Note: It should be "avg Percentage CPU > 80"

Reference:

[https://docs.microsoft.com/en-us/cli/azure/monitor/metrics/alert?view=azure-cli-latest#az\\_monitor\\_metrics\\_alert\\_create](https://docs.microsoft.com/en-us/cli/azure/monitor/metrics/alert?view=azure-cli-latest#az_monitor_metrics_alert_create)

upvoted 9 times

Renwa 2 years, 10 months ago

As per Udemy, C is the correct answer - <https://docs.microsoft.com/en-us/azure/container-instances/container-instances-monitor>

upvoted 3 times

Netspud 2 years, 1 month ago

Because it is an ACI "CPU Usage" is valid. If it were a VM then it would not be. In fact "avg Percentage CPU" is not valid for an ACI. Check the various links in the comments, all the ones I checked point to this.

upvoted 1 times

## Question #2

**Introductory Info**

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## Overview -

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You are developing a solution to monitor uploaded data for inappropriate content. The following process occurs when users upload content by using the SPA:

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- \* 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.

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You must minimize costs for all Azure services.

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To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using

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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
```

## ApplicationManifest -

```

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 }

```

## Question

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

## Correct Answer: C

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:

1. Observe and monitor application behavior
2. Collect data
3. Mitigate the issue

Reference:

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

*Community vote distribution*

D (89%) 11%

✉  **Whirly**  3 years ago

Answer is az container attach

Ref: <https://docs.microsoft.com/en-us/azure/container-instances/container-instances-get-logs>

upvoted 56 times

✉  **maukaba** 2 years, 4 months ago

C it's correct see link <https://docs.microsoft.com/en-us/azure/app-service/troubleshoot-http-502-http-503>

upvoted 2 times

✉  **Zidimirite** 3 years ago

It's not deployed to a container. This is a regular webapp so A, az webapp log is the correct answer.

upvoted 3 times

✉  **clarionprogrammer** 2 years, 12 months ago

It is. Note the type in the ContentUploadService log.

upvoted 1 times

✉  **ning** 2 years, 7 months ago

az container attach only gives STDOUT and STDERR, not web server log ...  
web server log can have option to see STDOUT / STDERR as well as all other possible log files  
upvoted 1 times

✉ **somenkr** 2 years, 9 months ago

It is , Read the question again.  
upvoted 2 times

✉ **KingChuang** 1 year, 3 months ago

On my exam 2022-12-26.  
Chose: D  
upvoted 3 times

✉ **ray01** 2 years, 11 months ago

Correct. If one will take a look at "CS09" line, it's clear that "ContentUploadService" is a container, so the first step should be "az container attach"  
upvoted 12 times

✉ **maukaba** 2 years, 4 months ago

A web app can be deployed both as source code and as a docker container.  
C it's correct see link <https://docs.microsoft.com/en-us/azure/app-service/troubleshoot-http-502-http-503>  
upvoted 1 times

✉ **clarionprogrammer** Highly Voted 2 years, 12 months ago

It is not A. "az webapp log" by itself is not a command. It would need to be "az webapp log tail" or "az webapp log download".  
<https://docs.microsoft.com/en-us/cli/azure/webapp/log?view=azure-cli-latest>  
upvoted 14 times

✉ **james2033** Most Recent 4 weeks ago

az container attach --resource-group myResourceGroup --name mycontainer

<https://learn.microsoft.com/en-us/azure/container-instances/container-instances-quickstart#attach-output-streams>  
upvoted 1 times

✉ **BaoNguyen2411** 8 months, 2 weeks ago

got this question on 29/06/2023  
upvoted 1 times

✉ **NightshadeRC** 8 months, 2 weeks ago

Had this question today: 2023-07-26  
upvoted 1 times

✉ **JH81** 9 months, 3 weeks ago

Selected Answer: C

Another wonderfully obtuse question. I'm not going to disagree that ContentUploadService is hosted in a container but I think MS wants answer C.  
upvoted 2 times

✉ **adilkhan** 1 year ago

A is the right answer. ContentUploadService has nothing to do with the CONTAINER!  
upvoted 1 times

✉ **uffuchs1** 1 year, 1 month ago

D - Scenario: The ContentAnalysisService is deployed with Azure Container Instances from a private Azure Container Registry named AmylImages. The solution will use eight CPU cores.

When you have a misbehaving container in Azure Container Instances, start by viewing its logs with az container logs, and stream its standard out and standard error with az container attach.

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

upvoted 3 times

✉ **AlexeyG** 1 year, 1 month ago

Got this in 16/02/2023  
upvoted 1 times

✉ **hubekpeter** 1 year, 4 months ago

Selected Answer: D

<https://learn.microsoft.com/en-us/azure/container-instances/container-instances-get-logs>  
upvoted 3 times

✉ **OPT\_001122** 1 year, 4 months ago

Selected Answer: D

az container attach  
upvoted 2 times

 **TheExamMaster2020** 1 year, 4 months ago

Did my exam on 15th November 2022. This test case and question was on it.

upvoted 1 times

 **gmishra88** 1 year, 6 months ago

Without knowing what Microsoft thinks it is difficult to answer this question.

\* az monitor activity-log alert create can be used to create an alert. If you follow the page then that is the first step. Monitor the service health and for that create alerts. This tool can be used for that. <https://learn.microsoft.com/en-us/azure/app-service/troubleshoot-http-502-http-503>

\* az container attach : To get the current log output, but that is not a good option to debug this issue.

I will bet on az monitor activity-log. And I'm changing my original answer from the first iteration of looking at the options

upvoted 2 times

 **gmishra88** 1 year, 6 months ago

```
az monitor activity-log alert create -n {AlertName} -g {ResourceGroup} \
--condition category=ServiceHealth and level=Error
```

upvoted 1 times

 **gmishra88** 1 year, 6 months ago

az container attach can be used in the second step of collect data (observe and monitor, collect data and mitigate) to get the log stream.

upvoted 1 times

 **gmishra88** 1 year, 6 months ago

But it asks which you will use first then I guess Microsoft wants me to follow that step exactly like a machine and reading their manuals as soon as I face an issue. So it is definitely alerts in the first step; Observe and monitor. This is a horrible question to ask what I will do first. I will go get a coffee first, microsoft

upvoted 1 times

 **Eltooth** 1 year, 9 months ago

**Selected Answer: D**

D is correct answer.

az container attach

upvoted 5 times

 **heisenberg33** 2 years, 1 month ago

**Selected Answer: D**

ContentUploadService is a container, see line CS06-CS09. Ref: <https://docs.microsoft.com/en-us/azure/container-instances/container-instances-get-logs#attach-output-streams>

upvoted 3 times

 **leonidn** 2 years, 2 months ago

**Selected Answer: D**

ContentContainerService is hosted in container services. Hence, the correct answer is az container attach.

<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-get-logs#attach-output-streams>

upvoted 4 times

 **lugospod** 2 years, 2 months ago

My two cents...

Based on info on 502 and 503 on page <https://docs.microsoft.com/en-us/azure/app-service/troubleshoot-http-502-http-503>

It is possible that the root cause is "our" app or unavailability of Azure service

For Azure services: Microsoft Azure publicizes each time there is a service interruption or performance degradation. Which leads to answer C

For your own applications: A or D. A has no info which command it is using. If using DOWNLOAD it will give us some history info. If using TAIL it will give us real time info similar to D.

So if this happens occasionally, there is a small chance that it will happen right when we are watching so I would rather go and check the history info - A.

Now between A and C - both are correct because the problem could be caused by Azure also since it is occasionally occurring.

So we need more info to decide if the problem is A or C.

upvoted 1 times

**Topic 17 - Testlet 19**

Question #1

Topic 17

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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.cpndl.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.

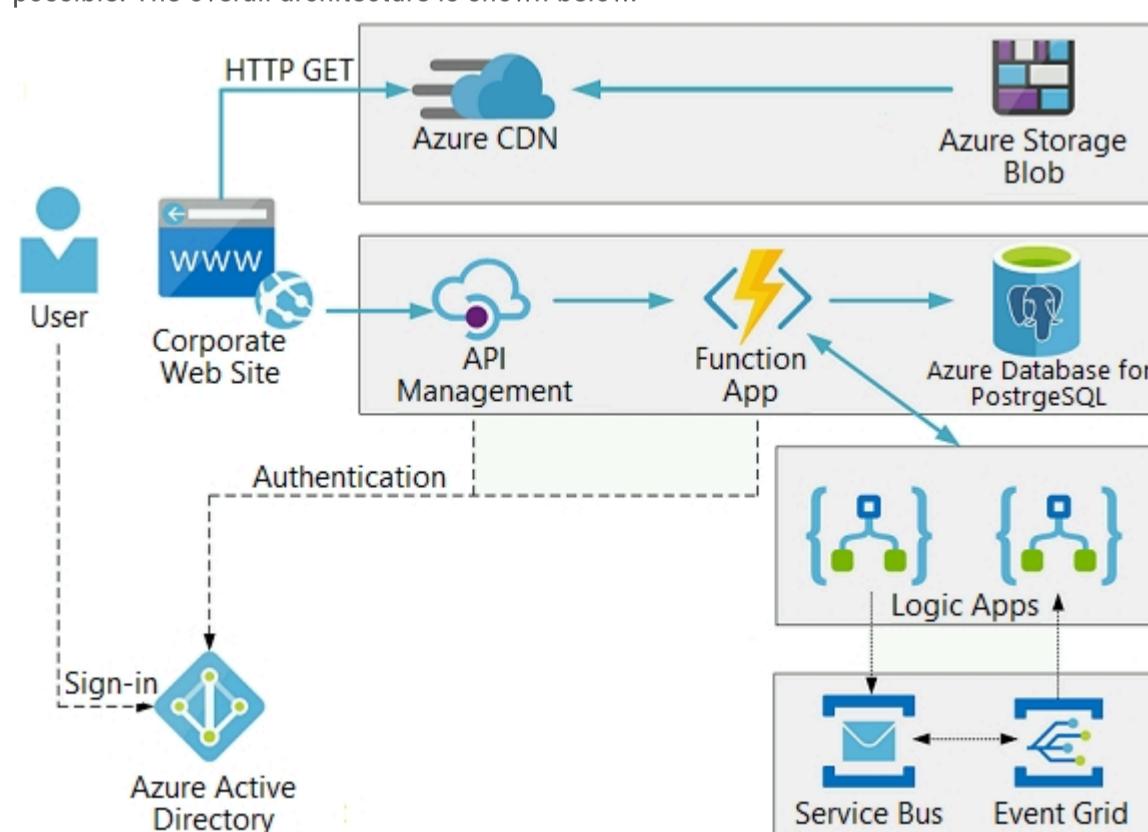
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. 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.

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Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

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Issues -

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While testing the site, the following error message displays:

CryptographicException: The system cannot find the file specified.

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You perform local testing for the RequestUserApproval function. The following error message displays:

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| where FunctionName == "RequestUserApproval"

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

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

Code -

Corporate website -

Security.cs:

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SC01 public class Security
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SC04 var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05 var certName = cert.FriendlyName;
SC06 }
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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,
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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(HttpContext req)
RA14 {
RA15 ...
RA16 }
RA17 }
```

### Question

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.

#### Correct Answer: A

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>

*Community vote distribution*

A (100%)

 **Deep007**  3 years, 2 months ago

Given answer is correct.

Live Metrics Stream:

when your function app is connected to Application Insights, you can view log data and other metrics in near real time in the Azure portal using Live Metrics Stream. Open below link for this statement.

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-monitoring>

upvoted 32 times

✉ **satyadharma** 2 years, 5 months ago

not a good option :- "If you enable Applications Insights during development, you might hit this limit during testing. Azure provides portal and email notifications when you're approaching your daily limit. If you miss those alerts and hit the limit, new logs won't appear in Application Insights queries. Be aware of the limit to avoid unnecessary troubleshooting time"

upvoted 3 times

✉ **27close** Highly Voted 3 years, 4 months ago

Live Metrics Stream: when your function app is connected to Application Insights, you can view log data and other metrics in near real time in the Azure portal using Live Metrics Stream. Use this method when monitoring functions running on multiple-instances or on Linux in a Consumption plan. This method uses sampled data.. Answer is A  
<https://docs.microsoft.com/en-us/azure/azure-functions/functions-monitoring>

upvoted 14 times

✉ **surprise0011** Most Recent 12 months ago

I believe D is might be an option now also  
<https://learn.microsoft.com/en-us/azure/azure-functions/functions-monitor-log-analytics?tabs=csharp>

upvoted 1 times

✉ **OPT\_001122** 1 year, 4 months ago

**Selected Answer: A**

Connect Live Metrics Stream from Application Insights to the Azure Function app and filter the metrics.

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

If it is a timeout I might not go check the metrics but of course it depends on what I expect. I might want to see the application logs. But I wonder how can one question be so confusing and totally dependent on the person checking the issue and his knowledge on the application. It totally depends, Microsoft

upvoted 2 times

✉ **gmishra88** 1 year, 6 months ago

It has to be about Metrics because that is mentioned as one of the first steps in one of the obscure microsoft pages

upvoted 2 times

✉ **ning** 2 years, 7 months ago

Should not B happen before A happen? I would think correct answer is B then A ...

If there is no log analytics, nor application insights connected, how can live stream happens?

upvoted 4 times

✉ **DefaultName2** 2 years, 5 months ago

Current environment:

"The solution uses Application Insights, Azure Monitor, and Azure Key Vault."

A is correct

upvoted 1 times

✉ **Zidimirite** 3 years ago

I thought: Why not B? But then realised it is in a development environment and those generally don't log to AppInsights. So A is indeed correct.

upvoted 3 times

✉ **ning** 2 years, 7 months ago

"when your function app is connected to Application Insights, you can view log data and other metrics in near real time in the Azure portal using Live Metrics Stream. " If there are no application insights, there cannot be any Live Streaming for A

upvoted 1 times

✉ **hstml** 2 years, 6 months ago

Why do they not log to AppInsights in a development environment? <https://docs.microsoft.com/en-us/azure/azure-functions/functions-monitoring>

upvoted 3 times

✉ **idrisfl** 3 years ago

The question specifically says "in a development environment". Live Metrics Stream is recommended for production applications. I would go for D.

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/live-stream>

upvoted 6 times

✉ **rajwit** 3 years, 3 months ago

shouldn't be D as mentioned in Issues section it's 400 error

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-diagnostics>

upvoted 5 times

✉ **[Removed]** 3 years, 3 months ago

I think the answer should be (D) - Add new diagnostics settings.

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-monitor-log-analytics?tabs=csharp>

"From the Monitoring section of your function app in the Azure portal, select Diagnostic settings, and then select Add diagnostic setting."

Live Metrics is used for monitoring a live system and should not be necessary in a development environment, because there are not that many events to use the "big canon".

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/live-stream>

upvoted 12 times

 **Deep007** 3 years, 2 months ago

Streaming Logs

While developing an application, you often want to see what's being written to the logs in near real time when running in Azure.

There are two ways to view a stream of the log data being generated by your function executions.

Built-in log streaming: the App Service platform lets you view a stream of your application log files. This stream is equivalent to the output seen when you debug your functions during local development and when you use the Test tab in the portal. All log-based information is displayed. For more information, see Stream logs. This streaming method supports only a single instance, and can't be used with an app running on Linux in a Consumption plan.

Live Metrics Stream: when your function app is connected to Application Insights, you can view log data and other metrics in near real time in the Azure portal using Live Metrics Stream. Use this method when monitoring functions running on multiple-instances or on Linux in a Consumption plan. This method uses sampled data.

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-monitoring>

upvoted 4 times

 **JVTM** 3 years, 4 months ago

I do not understand the explanation: CONNECT Live Metrics Stream from Application Insights TO THE AZURE FUNCTION app and filter the metrics... Functions have InSights integrated by default. I presume, I should check collected data somehow. But not connect anything... ?

upvoted 5 times

Question #2

**Introductory Info**

Case study -

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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.cpndl.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.

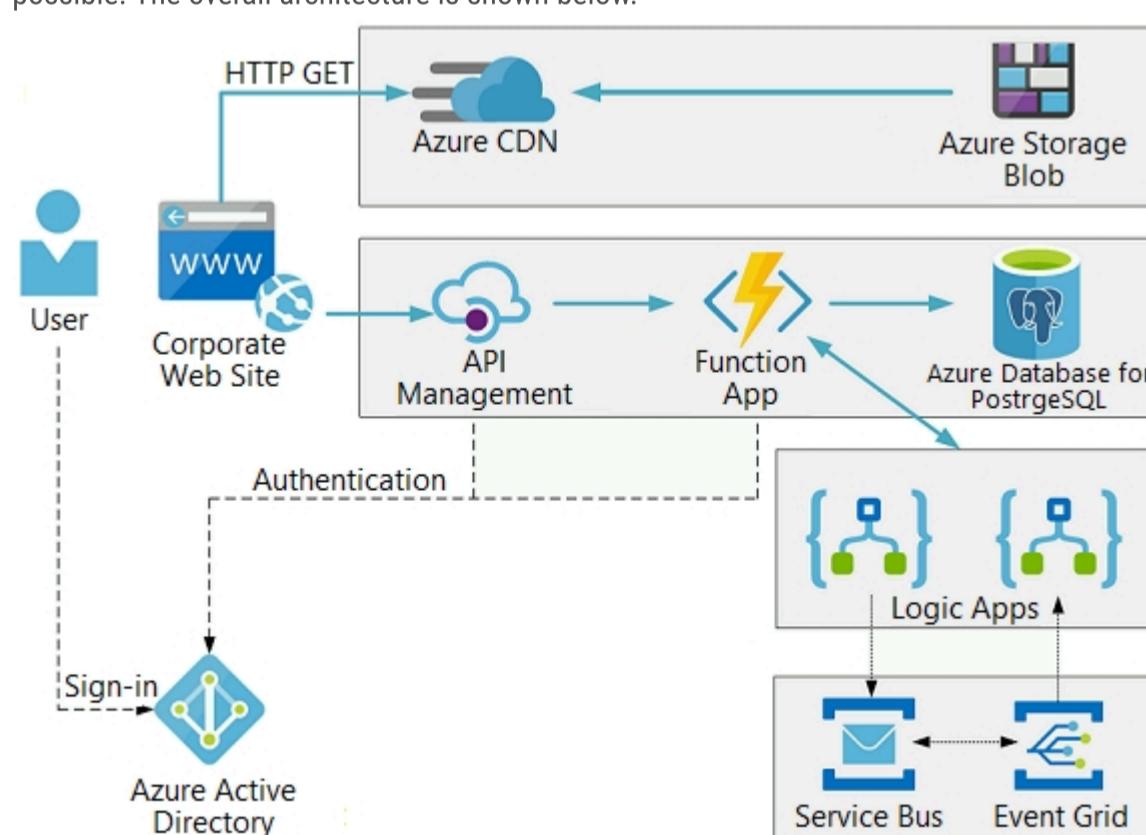
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and

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The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

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RA13 private static bool ProcessRequest(HttpRequest req)
RA14 {
RA15 ...
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RA17 }

```

### Question

HOTSPOT -

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.

Hot Area:

### Answer Area

Action	Setting
Restrict file access	<input type="checkbox"/> role-based access control (RBAC) <input type="checkbox"/> managed identity <input type="checkbox"/> shared access signature (SAS) token <input type="checkbox"/> connection string
Enable file auditing	<input type="checkbox"/> access tier <input type="checkbox"/> change feed <input type="checkbox"/> blob indexer <input type="checkbox"/> storage account type

## Answer Area

Action	Setting
Restrict file access	role-based access control (RBAC) managed identity shared access signature (SAS) token connection string
Enable file auditing	access tier change feed blob indexer storage account type

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: storage account type -

Scenario: The website uses files stored in Azure Storage

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR).

Creating a diagnostic setting:

1. Sign in to the Azure portal.
2. Navigate to your storage account.
3. In the Monitoring section, click Diagnostic settings (preview).

NAME	RESOURCE TYPE	RESOURCE GROUP	DIAGNOSTICS STATUS
mystorageaccount	Storage account	my-resource-group	Disabled
blob	Storage account	my-resource-group	Disabled
queue	Storage account	my-resource-group	Disabled
table	Storage account	my-resource-group	Disabled
file	Storage account	my-resource-group	Disabled

4. Choose file as the type of storage that you want to enable logs for.

5. Click Add diagnostic setting.

Reference:

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

✉ **clarionprogrammer** Highly Voted 2 years, 11 months ago

shared access signature (SAS) token  
change feed  
upvoted 98 times

✉ **surprise0011** 11 months, 4 weeks ago

received 2023-04-17 went with above, score 926  
upvoted 7 times

mlantonis Highly Voted 2 years, 10 months ago

Box 1: shared access signature (SAS) token

According to the diagram, blob storage is accessed from Azure CDN. Azure CDN doesn't support authentication with managed identity. If you want to grant limited access to private storage containers, you can use the Shared Access Signature (SAS) feature of your Azure storage account. Also, using a managed identity you can't restrict access by IP as requested.

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>

upvoted 59 times

huhezculgynvhzaljgs 2 years, 5 months ago

Professor is back :)))

upvoted 9 times

edengoforit 2 years, 2 months ago

File access must restrict access by IP, protocol, and Azure AD rights.

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.

upvoted 1 times

applepie Most Recent 9 months ago

An example of Access storage blobs using an Azure CDN custom domain

It's using SAS.

<https://learn.microsoft.com/en-us/azure/cdn/cdn-storage-custom-domain-https>

upvoted 2 times

Vmwarevirtual 10 months, 2 weeks ago

Appeared the exam I took at 27-5-2023

I chose SAS and change feed

<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>

upvoted 1 times

aragones 11 months ago

Got this 2023-05-12.

Make sure to prepare VanArsdel Inc Canada study case

upvoted 2 times

st0rmtrooperx 1 year, 3 months ago

Got this on Dec 16th, 2022. Scored 921 and answered SAS token and change feed.

upvoted 6 times

OPT\_001122 1 year, 4 months ago

SAS

change feed

upvoted 3 times

coffecold 1 year, 5 months ago

RBAC and change feed.

why RBAC? Triggering keywords for me are "Azure AD" and "restrict File Access". It seems that some kind of authorization is set for groups.

upvoted 2 times

Eltooth 1 year, 9 months ago

SAS token

change feed

upvoted 3 times

AzureDJ 2 years, 1 month ago

shared access signature (SAS) token

change feed

upvoted 1 times

kozchris 2 years, 1 month ago

Answer: SAS/Change Feed

From problem description:

"Security -  
File access must restrict access by IP, protocol, and Azure AD rights."

The keyword here is IP.

From <https://docs.microsoft.com/en-us/azure/cdn/cdn-sas-storage-support>

"With a SAS, you can define various parameters of access to a blob, such as start and expiry times, permissions (read/write), and IP ranges. "

SAS is from AD so you get the AD rights.

For Change Feed see: <https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed?tabs=azure-portal>

upvoted 2 times

 **leonidn** 2 years, 2 months ago

Agree on RBAC.

Change feed

The change feed provides ordered, guaranteed, durable, immutable, read-only log of these changes. <https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed?tabs=azure-portal>

upvoted 2 times

 **cool\_tool** 2 years, 8 months ago

RBAC

change feed

upvoted 7 times

 **ning** 2 years, 7 months ago

Correct, file access is AD User based rights. IP and Protocol, can be configured separately

upvoted 1 times

 **Kuna\_Lambo** 3 years ago

managed identity

change feed

upvoted 4 times

 **inputoutput** 3 years ago

According to the diagram, blob storage is accessed from Azure CDN. Azure CDN doesn't support authentication with managed identity. I think the correct answer is Shared Access Token. <https://docs.microsoft.com/en-us/azure/cdn/cdn-sas-storage-support>

upvoted 10 times

 **Kuna\_Lambo** 3 years ago

Thanks, I think you are right.

upvoted 1 times

 **jay158** 2 years, 8 months ago

See the arrow -- Flow is from Storage to CDN.

Diagram does not show, how Storage is populated.

No one will populate storage via CDN

upvoted 2 times

 **rdemontis** 3 years ago

Exactly, and using a managed identity you can't restrict access by IP as requested. User delegation SAS is the right choice in this case (you need AAD integration) and change feed is the service designed for file audits.

<https://docs.microsoft.com/en-us/rest/api/storageservices/create-user-delegation-sas>

<https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed?tabs=azure-portal>

upvoted 16 times

 **kwaazaar** 3 years ago

But RBAC is supported on file shares too. It needs Azure AD Domain Services, I think.

upvoted 1 times

## Topic 18 - Testlet 2

Question #1

Topic 18

### Introductory Info

Case study -

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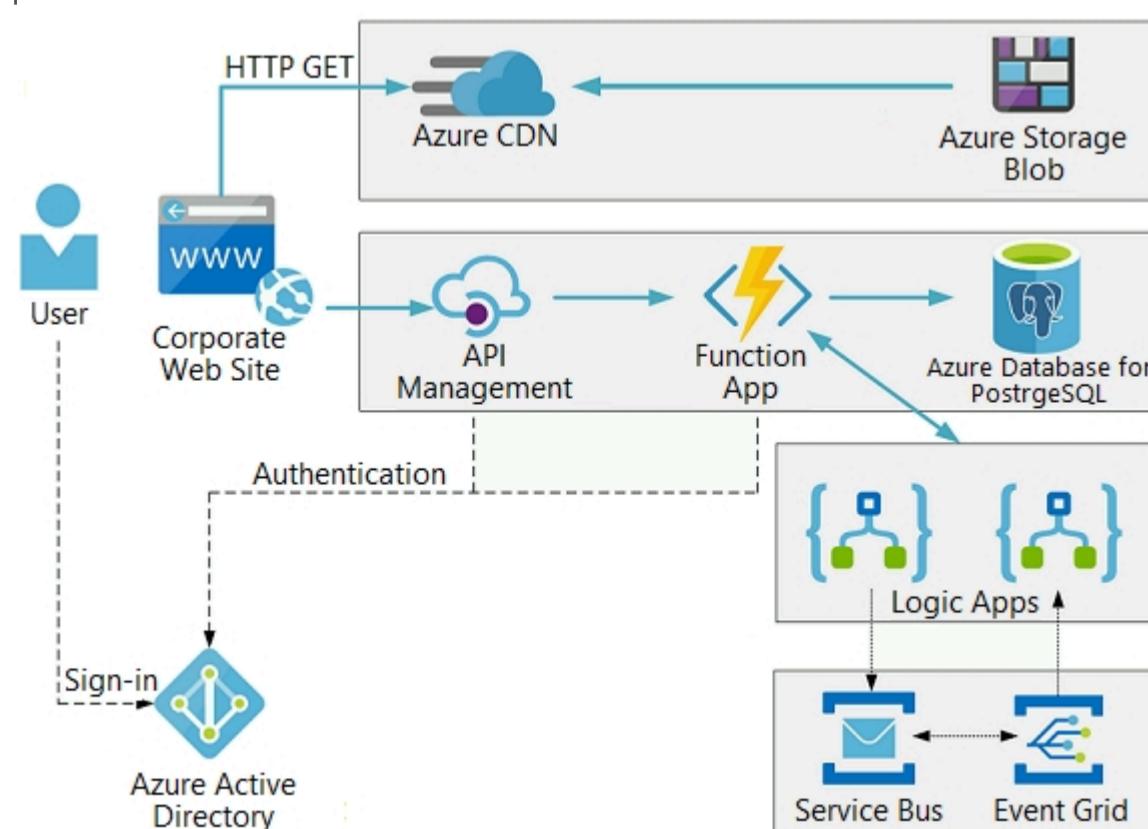
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RA12 }
RA13 private static bool ProcessRequest(HttpRequest req)
RA14 {
RA15 ...
RA16 }
RA17 }
```

### Question

You need to correct the RequestUserApproval Function app error.

What should you do?

- A. Update line RA13 to use the `async` keyword and return an `HttpRequest` object value.
- B. Configure the Function app to use an App Service hosting plan. Enable the Always On setting of the hosting plan.
- C. Update the function to be stateful by using Durable Functions to process the request payload.
- D. Update the `functionTimeout` property of the `host.json` project file to 15 minutes.

#### Correct Answer: C

Async operation tracking -

The HTTP response mentioned previously is designed to help implement long-running HTTP async APIs with Durable Functions. This pattern is sometimes referred to as the polling consumer pattern.

Both the client and server implementations of this pattern are built into the Durable Functions HTTP APIs.

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"

Reference:

<https://docs.microsoft.com/en-us/azure/azure-functions/durable/durable-functions-http-features>

*Community vote distribution*

C (100%)

 **rdemontis**  3 years ago

Answer is correct. In addition you can see this pattern in microsoft documentation and it's known as Human Interaction.

<https://docs.microsoft.com/en-us/azure/azure-functions/durable/durable-functions-overview?tabs=csharp#human>

upvoted 35 times

- ✉ **surprise0011** 11 months, 4 weeks ago  
received 2023-04-17 went with given answer, score 926  
upvoted 3 times
- ✉ **nflappo89** Highly Voted 2 years, 10 months ago  
http trigger timeout is maxed to 230 seconds, so the only available option is to change to a durable one  
upvoted 10 times
- ✉ **maukaba** 2 years, 4 months ago  
"Regardless of the function app timeout setting, 230 seconds is the maximum amount of time that an HTTP triggered function can take to respond to a request. This is because of the default idle timeout of Azure Load Balancer. For longer processing times, consider using the Durable Functions async pattern or defer the actual work and return an immediate response." REF: <https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale>  
upvoted 2 times
- ✉ **oskx2** Most Recent 1 week ago  
How did it get this error message: 'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'? If the max timeout for HTTP trigger is 230 seconds...  
upvoted 1 times
- ✉ **OPT\_001122** 1 year, 4 months ago  
Selected Answer: C  
Durable Function.  
upvoted 2 times
- ✉ **Eltooth** 1 year, 9 months ago  
Selected Answer: C  
C is correct answer.  
Durable Function.  
upvoted 4 times
- ✉ **MrXBasit** 2 years, 8 months ago  
Answer is 100% correct  
upvoted 3 times
- ✉ **farich** 2 years, 10 months ago  
I think here the answer is just to increase the functionTimeout.  
  
Durable Functions are used when you want to introduce a state, it is not just "if you have a long running function switch to Durable Functions".  
  
Another argument against Durable Functions is that architectural change seem to be out of scope for this case study.  
  
Another argument is that function can run for up to 30 mins.  
upvoted 3 times
- ✉ **maukaba** 2 years, 4 months ago  
Maximum timeout you can set is 10 min in consumption plan. Unless you go to premium which is unlimited:  
<https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale>  
upvoted 1 times
- ✉ **xRiot007** 1 year, 9 months ago  
"if you have a long running function switch to Durable Functions" - actually, that is one of the features of DF. Modifying the function app timeout will do nothing. There is a hard limit of 230 seconds of timeout. Anything larger than that, use DF, state or no state.  
upvoted 1 times

## Topic 19 - Testlet 20

Question #1

Topic 19

### Introductory Info

Case study -

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Background -

You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.

Requirements -

Policy service -

You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.

The application must include the Event Grid Event ID field in all Application Insights telemetry.

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

Policies -

Log policy -

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.

Authentication events -

Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

PolicyLib -

You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:

Exclude non-user actions from Application Insights telemetry.

Provide methods that allow a web service to scale itself.

Ensure that scaling actions do not disrupt application usage.

Other -

Anomaly detection service -

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Health monitoring -

All web applications and services have health monitoring at the /health service endpoint.

Issues -

Policy loss -

When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.

Performance issue -

When under heavy load, the anomaly detection service undergoes slowdowns and rejects connections.

Notification latency -

Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

App code -

EventGridController.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```

EventGridController.cs
EG01 public class EventGridController : Controller
EG02 {
EG03 public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04 public IActionResult Process([FromBody] string eventsJson)
EG05 {
EG06 var events = JArray.Parse(eventsJson);
EG07
EG08 foreach (var @event in events)
EG09 {
EG10 EventId.Value = @event["id"].ToString();
EG11 if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12 {
EG13 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14 }
EG15
EG16 {
EG17 EnsureLogging(@event["subject"].ToString());
EG18 }
EG19 }
EG20 return null;
EG21 }
EG22 private void EnsureLogging(string resource)
EG23 {
EG24 . . .
EG25 }
EG26 private async Task SendToAnomalyDetectionService(string uri)
EG27 {
EG28 var content = GetLogData(uri);
EG29 var scoreRequest = new
EG30 {
EG31 Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
EG32 {
EG33 {
EG34 "input1",
EG35 new List<Dictionary<string, string>>()
EG36 {
EG37 new Dictionary<string, string>()
EG38 {
EG39 {
EG40 "logcontent", content
EG41 }
EG42 }
EG43 }
EG44 },
EG45 },
EG46 GlobalParameters = new Dictionary<string, string>() { }
EG47 };
EG48 var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49 var rawModelResult = await result.Content.ReadAsStringAsync();
EG50 var modelResult = JObject.Parse(rawModelResult);
EG51 if (modelResult["notify"].HasValues)
EG52 {
EG53 . . .
EG54 }
EG55 }
EG56 private (string name, string resourceGroup) ParseResourceId(string resourceId)
EG57 {
EG58 . . .
EG59 }
EG60 private string GetLogData(string uri)
EG61 {
EG62 . . .
EG63 }
EG64 static string BlobStoreAccountSAS(string containerName)
EG65 {
EG66 . . .
EG67 }
EG68 }

```

LoginEvent.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
>LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04 public string subject { get; set; }
LE05 public DateTime eventTime { get; set; }
LE06 public Dictionary<string, string> data { get; set; }
LE07 public string Serialize()
LE08 {
LE09 return JsonConvert.SerializeObject(this);
LE10 }
LE11 }
```

### Question

DRAG DROP -

You need to implement the Log policy.

How should you complete the Azure Event Grid subscription? 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 to view content.

NOTE: Each correct selection is worth one point.

Select and Place:

Code segment	Answer Area
All	{
WebHook	"name": "newlogs",
EventHub	"properties": {
subjectEndsWith	"topic": "/subscriptions/.../providers/Microsoft.EventGrid/topics/...",
Mictosoft.Storage	"destination": {
subjectBeginsWith	"endpointType" : "code segment",
Microsoft.Storage.BlobCreated	"filter": {
	"code segment": "/blobServices/default/containers/logdrop/",
	"includedEventTypes": [ "code segment" ] },
	},
	"labels": [],
	"eventDeliverySchema": "EventGridSchema"

Correct Answer:

Code segment	Answer Area
All	{
WebHook	"name": "newlogs",
EventHub	"properties": {
subjectEndsWith	"topic": "/subscriptions/.../providers/Microsoft.EventGrid/topics/...",
Mictosoft.Storage	"destination": {
subjectBeginsWith	"endpointType" : "WebHook",
Microsoft.Storage.BlobCreated	"filter": {
	"subjectBeginsWith": "/blobServices/default/containers/logdrop/",
	"includedEventTypes": [ "Microsoft.Storage.BlobCreated" ] },
	},
	"labels": [],
	"eventDeliverySchema": "EventGridSchema"

Box 1:WebHook -

Scenario: If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook. endpointType: The type of endpoint for the subscription (webhook/HTTP, Event Hub, or queue).

Box 2: SubjectBeginsWith -

Box 3: Microsoft.Storage.BlobCreated

Scenario: Log Policy -

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.

Example subscription schema -

```
{
 "properties": {
 "destination": {
 "endpointType": "webhook",
```

```

"properties": {
 "endpointUrl": "https://example.azurewebsites.net/api/HttpTriggerCSharp1?
 code=VXbGWce53I48Mt8wuotr0GPmyJ/nDT4hgdFj9DpBiRt38qqnnm50Fg=="
},
},
"filter": {
 "includedEventTypes": ["Microsoft.Storage.BlobCreated", "Microsoft.Storage.BlobDeleted"],
 "subjectBeginsWith": "blobServices/default/containers/mycontainer/log",
 [1]
 "isSubjectCaseSensitive": "true"
}
}
}

Reference:
https://docs.microsoft.com/en-us/azure/event-grid/subscription-creation-schema

```

✉  **clarionprogrammer** Highly Voted 2 years, 12 months ago

Looks correct based on the provided reference.

<https://docs.microsoft.com/en-us/azure/event-grid/subscription-creation-schema>

upvoted 27 times

✉  **gmishra88** 1 year, 6 months ago

You mean to say that documentation link has eventType as "Webhook" as an example. But isn't that an example? Where is the reference to say it is a webhook? The question itself is not clear

upvoted 3 times

✉  **coffecold** Highly Voted 1 year, 5 months ago

To prevent reading the cases multiple times:

Please see the spots below where you can find the questions (page/topic/question/subject)

Proseware, Inc.

53 19 1 ARM for Azure Event Grid subscription, enable + filter logging

53 19 2 use Application Insights for scaling

53 19 3 code : telemetry filter/ telemetry processor

53 19 4 code : telemetry initializer

55 25 1 code : if-then condition on properties of incomming event from GRID

56 25 2 code : class for login event, properties needed

56 25 3 code : programatically update application settings for blob

56 26 1 azure function delay : always on and tier

upvoted 19 times

✉  **OPT\_001122** 1 year, 4 months ago

Thanks again for this great help!!

upvoted 2 times

✉  **ks321** 8 months, 3 weeks ago

Dude, you are awesome, Seems like you have provided this for all case study questions. Thanks a ton!

upvoted 3 times

✉  **bluetopp** Most Recent 4 months, 3 weeks ago

By googling the case study i found more text that fits more appropriately:

Policies

Log policy

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.

upvoted 1 times

✉  **bp\_a\_user** 3 months, 1 week ago

this text is already in...

upvoted 2 times

✉  **gmishra88** 1 year, 6 months ago

It looks correct purely based on options and there is no need to read the big scenario. But I wonder why it is reacting on logdrop container events. That's where the service itself is writing log files to. Won't it create an endless loop?

upvoted 3 times

✉  **coffecold** 1 year, 5 months ago

"All Azure App Service Web Apps must write logs to Azure Blob storage"

-There are n (production) Web apps that write logs to a blob storage.

-On that blob storage an event grid is put to trigger the event when blobs are written.

-From that event a function is triggered, doing great thing with policies.

upvoted 2 times

✉ **gmishra88** 1 year, 6 months ago

marvelous microsoftness, probably this is for the subscription for the anomaly detection service and not the policy service where they explicitly mentioned event grid to confuse you. Once you pass this exam, the certification can be used when applying for a job at CSI new york. For finding clues where they do not exist.

upvoted 10 times

✉ **acjdev514** 6 months, 2 weeks ago

hahaha gmishra88

upvoted 1 times

✉ **edengoforit** 2 years, 2 months ago

What is a webhook and how do you use it?

Webhooks are automated messages sent from apps when something happens. They have a message—or payload—and are sent to a unique URL—essentially the app's phone number or address. Webhooks are almost always faster than polling, and require less work on your end. They're much like SMS notifications.

upvoted 3 times

✉ **gfiorini** 2 years, 4 months ago

The question is really worded poorly. The subscription is for events that are inserted into the container and a webhook is invoked when a log file is created in the storage container. I assume that the webhook point to a function (?) that analyze the log with a machine learning model and THEN if there is an anomaly call an azure function to notify administrator via mail. Am I missing something ?

upvoted 5 times

✉ **coffecold** 1 year, 5 months ago

It's in the text:

"You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events"

The controller of "Policy service" is given in the code EventGridController.cs.

So the subscription in Grid triggers a webhook to the Policy service and executes the 'Process' controller function there .

upvoted 1 times

✉ **mc0re** 2 years, 7 months ago

> an Azure Function that emails administrators is called by using an HTTP WebHook

The question is about the EventGrid subscription, not how another Function is called. How do they fit together?

upvoted 3 times

✉ **MiraA** 2 years, 6 months ago

I am missing "properties" section within "destination" key to define either "endpointUrl" or "resourceId".

<https://docs.microsoft.com/en-us/azure/event-grid/subscription-creation-schema#example-subscription-schema>  
<https://docs.microsoft.com/en-us/azure/event-grid/handler-event-hubs#event-hub>

upvoted 1 times

✉ **MiraA** 2 years, 6 months ago

Endpoint properties based on the "destination" type:

<https://docs.microsoft.com/en-us/azure/templates/microsoft.eventgrid/eventsubscriptions?tabs=json#endpointproperties-object>

upvoted 1 times

✉ **UnknowMan** 2 years, 10 months ago

Correct !

upvoted 2 times

✉ **UnknowMan** 2 years, 10 months ago

Correct !

upvoted 2 times

✉ **jokergester** 3 years ago

<https://docs.microsoft.com/en-us/azure/templates/microsoft.eventgrid/eventsubscriptions?tabs=json#template-format>

upvoted 1 times

Question #2

## Introductory Info

Case study -

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Other -

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You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

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All web applications and services have health monitoring at the /health service endpoint.

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EG11 if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12 {
EG13 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14 }
EG15
EG16 {
EG17 EnsureLogging(@event["subject"].ToString());
EG18 }
EG19 }
EG20 return null;
EG21 }
EG22 private void EnsureLogging(string resource)
EG23 {
EG24 . . .
EG25 }
EG26 private async Task SendToAnomalyDetectionService(string uri)
EG27 {
EG28 var content = GetLogData(uri);
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EG33 {
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EG36 {
EG37 new Dictionary<string, string>()
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EG39 {
EG40 "logcontent", content
EG41 }
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EG43 }
EG44 },
EG45 },
EG46 GlobalParameters = new Dictionary<string, string>() { }
EG47 };
EG48 var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49 var rawModelResult = await result.Content.ReadAsStringAsync();
EG50 var modelResult = JObject.Parse(rawModelResult);
EG51 if (modelResult["notify"].HasValues)
EG52 {
EG53 . . .
EG54 }
EG55 }
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EG57 {
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EG59 }
EG60 private string GetLogData(string uri)
EG61 {
EG62 . . .
EG63 }
EG64 static string BlobStoreAccountSAS(string containerName)
EG65 {
EG66 . . .
EG67 }
EG68 }

```

LoginEvent.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

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LE04 public string subject { get; set; }
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LE06 public Dictionary<string, string> data { get; set; }
LE07 public string Serialize()
LE08 {
LE09 return JsonConvert.SerializeObject(this);
LE10 }
LE11 }
```

### Question

You need to ensure that the solution can meet the scaling requirements for Policy Service.

Which Azure Application Insights data model should you use?

- A. an Application Insights dependency
- B. an Application Insights event
- C. an Application Insights trace
- D. an Application Insights metric

#### Correct Answer: D

Application Insights provides three additional data types for custom telemetry:

Trace - used either directly, or through an adapter to implement diagnostics logging using an instrumentation framework that is familiar to you, such as Log4Net or System.Diagnostics.

Event - typically used to capture user interaction with your service, to analyze usage patterns.

Metric - used to report periodic scalar measurements.

Scenario:

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

Reference:

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/data-model>

*Community vote distribution*

D (100%)

 **Kitkit** Highly Voted 3 years, 2 months ago

Answer is correct. User can use metric telemetry to get different application metrics like: requestsPerSecond, requestsInQueue, and use these values to know when to scale

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/data-model-metric-telemetry>

upvoted 24 times

 **mlantonis** Highly Voted 2 years, 10 months ago

Application Insights provides three additional data types for custom telemetry:

- Trace: used either directly, or through an adapter to implement diagnostics logging using an instrumentation framework that is familiar to you, such as Log4Net or System.Diagnostics.
- Event: typically used to capture user interaction with your service, to analyze usage patterns.
- Metric: used to report periodic scalar measurements.

Scenario:

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

So, it is D.

upvoted 18 times

 **mlantonis** 2 years, 10 months ago

Reference:

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/data-model>

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/data-model-metric-telemetry>

upvoted 5 times

 **NombreFalso** Most Recent 1 year, 1 month ago

**Selected Answer: D**

Always metric

upvoted 4 times

OPT\_001122 1 year, 4 months ago

**Selected Answer: D**

Answer is correct

upvoted 2 times

coffecold 1 year, 5 months ago

"Policy service" is a web app that needs to scale automatically depending on the usage

I agree metrics will provide you the information (so answer D is best), but that is only part of the solution. What about the rest ? How is it scaled and how is it scaled automatically?

I'm missing the words "Monitor-respond-autoscale-rules"

upvoted 1 times

macobuzi 7 months, 1 week ago

Agree, this is confusing as hell!

upvoted 1 times

SivajiTheBoss 2 years ago

correct answer provided: Application Insights metric

upvoted 1 times

UnknowMan 2 years, 10 months ago

Correct and useful for Scaling requirements

upvoted 2 times

Question #3

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Other -

Anomaly detection service -

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Health monitoring -

All web applications and services have health monitoring at the /health service endpoint.

Issues -

**Policy loss -**

When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.

**Performance issue -**

When under heavy load, the anomaly detection service undergoes slowdowns and rejects connections.

**Notification latency -**

Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

**App code -****EventGridController.cs -**

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
EventGridController.cs
EG01 public class EventGridController : Controller
EG02 {
EG03 public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04 public IActionResult Process([FromBody] string eventsJson)
EG05 {
EG06 var events = JArray.Parse(eventsJson);
EG07
EG08 foreach (var @event in events)
EG09 {
EG10 EventId.Value = @event["id"].ToString();
EG11 if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12 {
EG13 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14 }
EG15
EG16 {
EG17 EnsureLogging(@event["subject"].ToString());
EG18 }
EG19 }
EG20 return null;
EG21 }
EG22 private void EnsureLogging(string resource)
EG23 {
EG24 . . .
EG25 }
EG26 private async Task SendToAnomalyDetectionService(string uri)
EG27 {
EG28 var content = GetLogData(uri);
EG29 var scoreRequest = new
EG30 {
EG31 Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
EG32 {
EG33 {
EG34 "input1",
EG35 new List<Dictionary<string, string>>()
EG36 {
EG37 new Dictionary<string, string>()
EG38 {
EG39 {
EG40 "logcontent", content
EG41 }
EG42 }
EG43 }
EG44 },
EG45 },
EG46 GlobalParameters = new Dictionary<string, string>() { }
EG47 };
EG48 var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49 var rawModelResult = await result.Content.ReadAsStringAsync();
EG50 var modelResult = JObject.Parse(rawModelResult);
EG51 if (modelResult["notify"].HasValues)
EG52 {
EG53 . . .
EG54 }
EG55 }
EG56 private (string name, string resourceGroup) ParseResourceId(string resourceId)
EG57 {
EG58 . . .
EG59 }
EG60 private string GetLogData(string uri)
EG61 {
EG62 . . .
EG63 }
EG64 static string BlobStoreAccountSAS(string containerName)
EG65 {
EG66 . . .
EG67 }
EG68 }
```

LoginEvent.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
>LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04 public string subject { get; set; }
LE05 public DateTime eventTime { get; set; }
LE06 public Dictionary<string, string> data { get; set; }
LE07 public string Serialize()
LE08 {
LE09 return JsonConvert.SerializeObject(this);
LE10 }
LE11 }
```

### Question

DRAG DROP -

You need to implement telemetry for non-user actions.

How should you complete the Filter class? To answer, drag the appropriate code segments to the correct locations. Each code 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.

Select and Place:

### Code segments

```
/health
/status
RequestTelemetry
PageViewTelemetry
ITelemetryProcessor
ITelemetryInitializer
```

### Answer Area

```
public class Filter : code segment
{
 private readonly code segment _next;
 public (Filter code segment next)
 {
 _next = next;
 }
 public void Process(ITelemetry item)
 {
 var x = item as code segment;
 if (x?.Url.AbsolutePath == "code segment")
 {
 return;
 }
 _next.Process(item);
 }
}
```

Correct Answer:

**Code segments**

/health  
 /status  
 RequestTelemetry  
 PageViewTelemetry  
 ITelemetryProcessor  
 ITelemetryInitializer

**Answer Area**

```
public class Filter : ITelemetryProcessor
{
 private readonly ITelemetryProcessor _next;
 public (Filter ITelemetryProcessor next)
 {
 _next = next;
 }
 public void Process(ITelemetry item)
 {
 var x = item as RequestTelemetry;
 if (x?.Url.AbsolutePath == "/health")
 {
 return;
 }
 _next.Process(item);
 }
}
```

Scenario: Exclude non-user actions from Application Insights telemetry.

Box 1: ITelemetryProcessor -

To create a filter, implement ITelemetryProcessor. This technique gives you more direct control over what is included or excluded from the telemetry stream.

Box 2: ITelemetryProcessor -

Box 3: ITelemetryProcessor -

Box 4: RequestTelemetry -

Box 5: /health -

To filter out an item, just terminate the chain.

Reference:

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/api-filtering-sampling>

✉  **Sukon\_Desknot**  2 years, 7 months ago

(∩^o^)⊃━☆

upvoted 26 times

✉  **surmistry**  2 years, 11 months ago

"ITelemetryProcessor" typo, no "n"

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/api-filtering-sampling#create-a-telemetry-processor-c>

upvoted 15 times

✉  **fr369** 2 years, 3 months ago

Also the constructor is incorrect. Should be "public Filter()" instead of "public (Filter".

upvoted 10 times

✉  **Mev4953** 2 years, 2 months ago

Yes, you are right. It should be;

public Filter (ITelemetryProcessor next)

upvoted 5 times

✉  **james2033**  3 weeks, 6 days ago

1. public class Filter : ITelemetryProcessor
2. private readonly ITelemetryProcessor \_next;
3. public (Filter ITelemetryProcessor next)
4. var x = item as RequestTelemetry
5. if(x?.Url.AbsolutePath == "/health")

- <https://learn.microsoft.com/en-us/azure/azure-monitor/app/api-filtering-sampling?tabs=javascriptwebsdkloaderscript#>

- <https://learn.microsoft.com/en-us/azure/azure-monitor/app/api-filtering-sampling?tabs=javascriptwebsdkloaderscript#create-a-telemetry-processor-c>

upvoted 1 times

✉ **raymond\_abcd** 2 months ago

The question is not inline with the requirement in the case study text. It should be "Exclude non-user actions from Application Insights telemetry." According to the requirement all health check requests, which is a RequestTelemetry type, for the api should be filtered out by setting the path to "/health".

upvoted 1 times

✉ **coffecold** 1 year, 5 months ago

The question is so wrong

"You need to implement telemetry for non-user actions"

that MUST be:

"You need to implement telemetry to exclude non-user actions" (according to the requirements).

In that case you have to exclude RequestTelemetry in combination with /health

upvoted 3 times

✉ **gmishra88** 1 year, 6 months ago

This is chaining of ITelemetryProcessors where the Filter (the one created here) is the first one. The ITelemetryProcessor instance passed in the constructor is the next in the chain. The code checks if the url is /health and it does not do anything otherwise it forwards to the next (which is the one passed in the Constructor).

Look at the line: "item as RequestTelemetry" : What kind of people work in Microsoft that will do the casting without checking the instance of the item? No wonder Microsoft things are so buggy

upvoted 2 times

✉ **coffecold** 1 year, 5 months ago

"The as operator is used to perform conversion between compatible reference types or Nullable types. This operator returns the object when they are compatible with the given type and return null if the conversion is not possible instead of raising an exception"

So the code is correct

upvoted 2 times

✉ **xRiot007** 1 year, 9 months ago

In code, public Filter() not public (Filter ...)

upvoted 3 times

✉ **SivajiTheBoss** 2 years, 1 month ago

Answer: ITelemetryProcessor, ITelemetryProcessor, ITelemetryProcessor, RequestTelemetry, /health

Reference: <https://docs.microsoft.com/en-us/azure/azure-monitor/app/api-filtering-sampling>

```
public class SuccessfulDependencyFilter : ITelemetryProcessor
{
 private ITelemetryProcessor Next { get; set; }
```

```
// next will point to the next TelemetryProcessor in the chain.
public SuccessfulDependencyFilter(ITelemetryProcessor next)
{
 this.Next = next;
}
```

var requestTelemetry = telemetry as RequestTelemetry;

upvoted 11 times

✉ **Mev4953** 2 years, 2 months ago

Yes, you are right. It should be;

public Filter (ITelemetryProcessor next)

upvoted 1 times

✉ **Mev4953** 2 years, 2 months ago

ITelemetryInitializer:

Use telemetry initializers to define global properties that are sent with all telemetry; and to override selected behavior of the standard telemetry modules.

For example, the Application Insights for Web package collects telemetry about HTTP requests. By default, it flags as failed any request with a response code  $\geq 400$ . But if you want to treat 400 as a success, you can provide a telemetry initializer that sets the Success property.

ITelemetryProcessor:

This technique gives you more direct control over what is included or excluded from the telemetry stream. You can use it in conjunction with Sampling, or separately. To filter telemetry, you write a telemetry processor and register it with the SDK

<https://github.com/uglide/azure-content/blob/master/articles/application-insights/app-insights-api-filtering-sampling.md>

upvoted 3 times

 **Saterial** 3 years ago

Looks Good

upvoted 8 times

Question #4

## Introductory Info

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 the Next button. 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 the Question button to return to the question.

Background -

You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.

Requirements -

Policy service -

You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.

The application must include the Event Grid Event ID field in all Application Insights telemetry.

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

Policies -

Log policy -

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.

Authentication events -

Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

PolicyLib -

You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:

Exclude non-user actions from Application Insights telemetry.

Provide methods that allow a web service to scale itself.

Ensure that scaling actions do not disrupt application usage.

Other -

Anomaly detection service -

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Health monitoring -

All web applications and services have health monitoring at the /health service endpoint.

Issues -

**Policy loss -**

When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.

**Performance issue -**

When under heavy load, the anomaly detection service undergoes slowdowns and rejects connections.

**Notification latency -**

Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

**App code -****EventGridController.cs -**

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```

EventGridController.cs
EG01 public class EventGridController : Controller
EG02 {
EG03 public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04 public IActionResult Process([FromBody] string eventsJson)
EG05 {
EG06 var events = JArray.Parse(eventsJson);
EG07
EG08 foreach (var @event in events)
EG09 {
EG10 EventId.Value = @event["id"].ToString();
EG11 if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12 {
EG13 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14 }
EG15
EG16 {
EG17 EnsureLogging(@event["subject"].ToString());
EG18 }
EG19 }
EG20 return null;
EG21 }
EG22 private void EnsureLogging(string resource)
EG23 {
EG24 . . .
EG25 }
EG26 private async Task SendToAnomalyDetectionService(string uri)
EG27 {
EG28 var content = GetLogData(uri);
EG29 var scoreRequest = new
EG30 {
EG31 Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
EG32 {
EG33 {
EG34 "input1",
EG35 new List<Dictionary<string, string>>()
EG36 {
EG37 new Dictionary<string, string>()
EG38 {
EG39 {
EG40 "logcontent", content
EG41 }
EG42 }
EG43 }
EG44 },
EG45 },
EG46 GlobalParameters = new Dictionary<string, string>() { }
EG47 };
EG48 var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49 var rawModelResult = await result.Content.ReadAsStringAsync();
EG50 var modelResult = JObject.Parse(rawModelResult);
EG51 if (modelResult["notify"].HasValues)
EG52 {
EG53 . . .
EG54 }
EG55 }
EG56 private (string name, string resourceGroup) ParseResourceId(string resourceId)
EG57 {
EG58 . . .
EG59 }
EG60 private string GetLogData(string uri)
EG61 {
EG62 . . .
EG63 }
EG64 static string BlobStoreAccountSAS(string containerName)
EG65 {
EG66 . . .
EG67 }
EG68 }

```

LoginEvent.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
>LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04 public string subject { get; set; }
LE05 public DateTime eventTime { get; set; }
LE06 public Dictionary<string, string> data { get; set; }
LE07 public string Serialize()
LE08 {
LE09 return JsonConvert.SerializeObject(this);
LE10 }
LE11 }
```

### Question

DRAG DROP -

You need to ensure that PolicyLib requirements are met.

How should you complete the code segment? To answer, drag the appropriate code segments to the correct locations. Each code 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.

Select and Place:

Code segments	Answer Area
Process	public class IncludeEventId : <span style="border: 1px dashed #ccc; padding: 2px;">code segment</span>
Initialize	public void <span style="border: 1px dashed #ccc; padding: 2px;">code segment</span> (ITelemetry telemetry)
telemetry.Sequence	<span style="border: 1px dashed #ccc; padding: 2px;">code segment</span> .Properties["EventId"] =
ITelemetryProcessor	<span style="border: 1px dashed #ccc; padding: 2px;">code segment</span> ;
ITelemetryInitializer	
telemetry.Context	
EventGridController.EventId.Value	
((EventTelemetry)telemetry).Properties["EventId"]	

### Correct Answer:

Code segments	Answer Area
Process	public class IncludeEventId : ITelemetryInitializer
Initialize	public void Initialize (ITelemetry telemetry)
telemetry.Sequence	telemetry.Context .Properties["EventId"] =
ITelemetryProcessor	((EventTelemetry)telemetry).Properties["EventId"] ;
ITelemetryInitializer	
telemetry.Context	
EventGridController.EventId.Value	
((EventTelemetry)telemetry).Properties["EventId"]	

Scenario: You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications.

The PolicyLib library must:

- ☞ Exclude non-user actions from Application Insights telemetry.
- ☞ Provide methods that allow a web service to scale itself.
- ☞ Ensure that scaling actions do not disrupt application usage.

Box 1: ITelemetryInitializer -

Use telemetry initializers to define global properties that are sent with all telemetry; and to override selected behavior of the standard telemetry modules.

Box 2: Initialize -

Box 3: Telemetry.Context -

Box 4: ((EventTelemetry)telemetry).Properties["EventID"]

Reference:

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/api-filtering-sampling>

 **[Removed]**  2 years, 11 months ago

- \* EventId is held by class EventGridController
- \* You can add properties to telemetry by implementing ITelemetryInitializer which defines the Initialize method.
- \* ITelemetry.Context.Properties is correct, but shouldnt be used any more as obsolete

```
public class IncludeEventId : ITelemetryInitializer
{
 public void Initialize (ITelemetry telemetry)
 {
 telemetry.Context.Properties["EventId"] = EventgridController.EventId.Value;
 }
}
```

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/api-custom-events-metrics#sampling-filtering-and-processing-telemetry>  
[https://docs.microsoft.com/en-us/dotnet/api/microsoft.applicationinsights.datacontracts.telemetrycontext.properties?view=azure-dotnet#Microsoft\\_ApplicationInsights\\_DataContracts\\_TelemetryContext\\_Properties](https://docs.microsoft.com/en-us/dotnet/api/microsoft.applicationinsights.datacontracts.telemetrycontext.properties?view=azure-dotnet#Microsoft_ApplicationInsights_DataContracts_TelemetryContext_Properties)

upvoted 45 times

✉ **Knightie** 1 year, 4 months ago

the default answer's last line doesn't make sense... it use the property value to put inside it's context.property value within itself...

a meaningful piece of code is to set the propertie value with another Global Object value (that the only sense making value calling inside a local method of a class)... so setting the Eventgrid's value to the pass-by-reference argument is the only sensible piece of code.

upvoted 1 times

✉ **Rakeshpro** 1 year, 8 months ago

good job buddy!

upvoted 2 times

✉ **uffuchsi** Highly Voted 1 year, 1 month ago

Box 1: ITelemetryInitializer

Box 2: Initialize

Box 3: Telemetry.Context

Box 4: EventGridController.EventId.Value

Scenario: The application reacts to events from Azure Event Grid and performs policy actions based on those events. The application must include the Event Grid Event ID field in all Application Insights telemetry.

↳ You can add properties to telemetry by implementing ITelemetryInitializer which defines the Initialize method.

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/api-custom-events-metrics#sampling-filtering-and-processing-telemetry>

upvoted 6 times

✉ **warchoon** 12 months ago

"Telemetry initializers are called before calling telemetry processors". So EventId.Value is not initialized by Process method yet.

upvoted 1 times

✉ **james2033** Most Recent 3 weeks, 6 days ago

1. public class IncludeEventId: ITelemetryInitializer
2. public void Initialize (ITelemetry telemetry)
3. telemetry.Context.Properties["EventId"]
4. EventGridController.EventId.Value

upvoted 1 times

✉ **OPT\_001122** 1 year, 4 months ago

Box 1: ITelemetryInitializer

Box 2: Initialize

Box 3: Telemetry.Context

Box 4: ((EventTelemetry)telemetry).Properties["EventID"]

upvoted 3 times

✉ **OPT\_001122** 1 year, 4 months ago

anyone got this case study in exam?

upvoted 1 times

✉ **AzureDJ** 2 years, 1 month ago

The given answer is correct. Box 4 is inside a function which takes in a parameter called: telemetry. The telemetry parameter, serves a purpose: to be used in the function in: ((EventTelemetry)telemetry).Properties["EventID"].

upvoted 2 times

✉ **AzureDJ** 2 years, 1 month ago

The given answer is correct, except Box 4 should be: EventGridController.EventId.Value

upvoted 2 times

✉ **Ciupaz** 4 months, 3 weeks ago

Correct

upvoted 1 times

✉ **UnknowMan** 2 years, 10 months ago

Not correct.

=> Use the EventId static prop of EventgridController

upvoted 4 times

Frakandel 2 years, 11 months ago

How static is the content of Event Grid Event ID... I agree with atomicicebreaker, bt doubt between "IProcess, Process, Context & EventHub" and "IInitialise, Initialise, Context & EventHub"

upvoted 1 times

Kuna\_Lambo 3 years ago

Box #4 is ok?

upvoted 4 times

rdemontis 3 years ago

No, in my opinion it has no sense assign event id to telemetry object from the same object itself. you should take in from other objects, and in this case the only option possible seems to be EventGridController class.

upvoted 17 times

MrZoom 3 years ago

Agreed. It states that "The application must include the Event Grid Event ID field in all Application Insights telemetry".

upvoted 3 times

atomicicebreaker 2 years, 12 months ago

Yup, and the property is indeed set in a controller

upvoted 3 times

MiraA 2 years, 6 months ago

Yes, it is set here.

Controller accepts JSON with the set of the events. The events are processed using foreach() and this is the place where EventGridController.EventId is set.

The trick is the EventId is defined as:

public static AsyncLocal<string> EventId = ...

and AsyncLocal "represents ambient data that is local to a given asynchronous control flow, such as an asynchronous method".

<https://docs.microsoft.com/en-us/dotnet/api/system.threading.asynclocal-1?view=net-5.0>

upvoted 1 times

## Topic 20 - Testlet 21

Question #1

Topic 20

### Introductory Info

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 the Next button. 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. If the case study has an All Information tab, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the Question button to return to the question.

Background -

You are a developer for Litware Inc., a SaaS company that provides a solution for managing employee expenses. The solution consists of an ASP.NET Core Web

API project that is deployed as an Azure Web App.

Overall architecture -

Employees upload receipts for the system to process. When processing is complete, the employee receives a summary report email that details the processing results. Employees then use a web application to manage their receipts and perform any additional tasks needed for reimbursement.

Receipt processing -

Employees may upload receipts in two ways:

Uploading using an Azure Files mounted folder

Uploading using the web application

Data Storage -

Receipt and employee information is stored in an Azure SQL database.

Documentation -

Employees are provided with a getting started document when they first use the solution. The documentation includes details on supported operating systems for

Azure File upload, and instructions on how to configure the mounted folder.

Solution details -

Users table -

Column	Description
UserId	unique identifier for an employee
ExpenseAccount	employees expense account number in the format 1234-123-1234
AllowedAmount	limit of allowed expenses before approval is needed
SupervisorId	unique identifier for employee's supervisor
SecurityPin	value used to validate user identity

Web Application -

You enable MSI for the Web App and configure the Web App to use the security principal name WebAppIdentity.

Processing -

Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored in Azure Blob

Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must remain valid if the email is forwarded to another user.

#### Logging -

Azure Application Insights is used for telemetry and logging in both the processor and the web application. The processor also has TraceWriter logging enabled.

Application Insights must always contain all log messages.

#### Requirements -

##### Receipt processing -

Concurrent processing of a receipt must be prevented.

##### Disaster recovery -

Regional outage must not impact application availability. All DR operations must not be dependent on application running and must ensure that data in the DR region is up to date.

#### Security -

User's SecurityPin must be stored in such a way that access to the database does not allow the viewing of SecurityPins. The web application is the only system that should have access to SecurityPins.

All certificates and secrets used to secure data must be stored in Azure Key Vault.

You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.

All access to Azure Storage and Azure SQL database must use the application's Managed Service Identity (MSI).

Receipt data must always be encrypted at rest.

All data must be protected in transit.

User's expense account number must be visible only to logged in users. All other views of the expense account number should include only the last segment, with the remaining parts obscured.

In the case of a security breach, access to all summary reports must be revoked without impacting other parts of the system.

#### Issues -

##### Upload format issue -

Employees occasionally report an issue with uploading a receipt using the web application. They report that when they upload a receipt using the Azure File

Share, the receipt does not appear in their profile. When this occurs, they delete the file in the file share and use the web application, which returns a 500 Internal Server error page.

##### Capacity issue -

During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.

##### Log capacity issue -

Developers report that the number of log messages in the trace output for the processor is too high, resulting in lost log messages.

#### Application code -

##### Processing.cs -

```

PC01 public static class Processing
PC02 {
PC03 public static class Function
PC04 {
PC05 [FunctionName("IssueWork")]
PC06 public static async Task Run([TimerTrigger("0 */5 * * * *")] TimerInfo timer, ILogger
log)
PC07 {
PC08 var container = await GetCloudBlobContainer();
PC09 foreach (var fileItem in await ListFiles())
PC10 {
PC11 var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12 var ms = new MemoryStream();
PC13 await file.DownloadToStreamAsync(ms);
PC14 var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15 await blob.UploadFromStreamAsync(ms);
PC16
PC17 }
PC18 }
PC19 private static CloudBlockBlob GetDRBlob(CloudBlockBlob sourceBlob)
PC20 {
PC21 . . .
PC22 }
PC23 private static async Task<CloudBlobContainer> GetCloudBlobContainer()
PC24 {
PC25 var cloudBlobClient = new CloudBlobClient(new Uri(" . . ."), await GetCredentials());
PC26
PC27 await cloudBlobClient.GetRootContainerReference().CreateIfNotExistsAsync();
PC28 return cloudBlobClient.GetRootContainerReference();
PC29 }
PC30 private static async Task<StorageCredentials> GetCredentials()
PC31 {
PC32 . . .
PC33 }
PC34 private static async Task<List<IListFileItem>> ListFiles()
PC35 {
PC36 . . .
PC37 }
PC38 private KeyVaultClient _keyVaultClient = new KeyVaultClient(" . . .");
PC39 }

```

Database.cs -

```

DB01 public class Database
DB02 {
DB03 private string ConnectionString =
DB04
DB05 public async Task<object> LoadUserDetails(string userId)
DB06 {
DB07
DB08 return await policy.ExecuteAsync(async () =>
DB09 {
DB10 using (var connection = new SqlConnection(ConnectionString))
DB11 {
DB12 await connection.OpenAsync();
DB13 using (var command = new SqlCommand(" . . .", connection))
DB14 using (var reader = command.ExecuteReader())
DB15 {
DB16 . . .
DB17 }
DB18 }
DB19 });
DB20 }
DB21 }

```

## ReceiptUploader.cs -

```

RU01 public class ReceiptUploader
RU02 {
RU03 public async Task UploadFile(string file, byte[] binary)
RU04 {
RU05 var httpClient = new HttpClient();
RU06 var response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU07 while (ShouldRetry(response))
RU08 {
RU09 response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU10 }
RU11 }
RU12 private bool ShouldRetry(HttpStatusCode response)
RU13 {
RU14 }
RU15 }
RU16 }
```

## ConfigureSSE.ps1 -

```

CS01 $storageAccount = Get-AzureRmStorageAccount -ResourceGroupName "..." -AccountName "..."
CS02 $keyVault = Get-AzureRmKeyVault -VaultName "..."
CS03 $key = Get-AzureKeyVaultKey -VaultName $keyVault.VaultName -Name "..."
CS04 Set-AzureRmKeyVaultAccessPolicy `
CS05 -VaultName $keyVault.VaultName `
CS06 -ObjectId $storageAccount.Identity.PrincipalId `
CS07
CS08
CS09 Set-AzureRmStorageAccount `
CS10 -ResourceGroupName $storageAccount.ResourceGroupName `
CS11 -AccountName $storageAccount.StorageAccountName `
CS12 -EnableEncryptionService File `
CS13 -KeyvaultEncryption `
CS14 -KeyName $key.Name
CS15 -KeyVersion $key.Version `
CS16 -KeyVaultUri $keyVault.VaultUri
```

## Question

You need to ensure receipt processing occurs correctly.

What should you do?

- A. Use blob properties to prevent concurrency problems
- B. Use blob SnapshotTime to prevent concurrency problems
- C. Use blob metadata to prevent concurrency problems
- D. Use blob leases to prevent concurrency problems

**Correct Answer: B**

You can create a snapshot of a blob. A snapshot is a read-only version of a blob that's taken at a point in time. Once a snapshot has been created, it can be read, copied, or deleted, but not modified. Snapshots provide a way to back up a blob as it appears at a moment in time. Scenario: Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored in

Azure Blob Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must remain valid if the email is forwarded to another user.

Reference:

<https://docs.microsoft.com/en-us/rest/api/storageservices/creating-a-snapshot-of-a-blob>

*Community vote distribution*

D (92%)

8%

✉  **Arul1705**  3 years ago

Answer is D: Use blob leases to prevent concurrency problems

upvoted 58 times

✉  **Shion2009** 3 years ago

I guess this could be a problem with the "Processing" scenario:

"Then, an email summary is sent to the user with a link to the processing report. The link to the report must remain valid if the email is forwarded to another user."

It seems a lease will only be kept alive for 60 seconds, so it shouldn't be an option.

upvoted 3 times

✉  **rdemontis** 3 years ago

Why should you avoid to use blob lease to guarantee access the blob file from the report link? Generally to give access to a blob from http you use SAS. In the SAS you can specify an expiration datetime according to your need. Blob lease is instead a way just to prevent concurrent access and puts a lock on blob only for write and delete operations. Any other can still view the content but can't modify or delete it. So in my opinion the correct answer is Blob lease. In addition I have found the same question on a udemy course test and the answer is just "Blob Lease".

<https://docs.microsoft.com/en-us/rest/api/storageservices/lease-blob>

upvoted 3 times

✉  **MrZoom** 3 years ago

Agreed. The question is about the receipt processing. The case states "Concurrent processing of a receipt must be prevented", which can't be done with snapshots and leases are made for this specifically. So answer should be D.

upvoted 5 times

✉  **Bengkel** 3 years ago

A lease does not lock a file for read operations, just for write and delete operations. The lock duration can be 15 to 60 seconds, or can be infinite. So I guess the effect is the same?

<https://docs.microsoft.com/en-us/rest/api/storageservices/lease-blob>

upvoted 3 times

✉  **Javierzgz**  3 years ago

I think it is lease (see this link)

<https://docs.microsoft.com/en-us/azure/storage/blobs/concurrency-manage?tabs=dotnet>

upvoted 11 times

✉  **kabbas**  9 months, 1 week ago

**Selected Answer: D**

must be lease because if you use snapshot to do the processing another thread could write or update the original which could mean you are actually processing out of date data

upvoted 1 times

✉  **adilkhan** 1 year ago

D. Use blob leases to prevent concurrency problems.

To prevent concurrent processing of a receipt, we need to ensure that only one instance of the processor can access the receipt file at a given time. Blob leases can be used to implement this mechanism. A blob lease allows an application to acquire a lease on a blob for a specified period, during which no other application can modify the blob. When the lease expires or is released, another application can acquire the lease and modify the blob.

upvoted 3 times

✉  **AymanAkk** 1 year, 3 months ago

**Selected Answer: D**

The Lease Blob operation creates and manages a lock on a blob for write and delete operations. The lock duration can be 15 to 60 seconds, or can be infinite. In versions prior to 2012-02-12, the lock duration is 60 seconds

<https://learn.microsoft.com/en-us/rest/api/storageservices/lease-blob>

upvoted 1 times

✉  **AymanAkk** 1 year, 3 months ago

also this

Pessimistic concurrency for blobs

To lock a blob for exclusive use, you can acquire a lease on it. When you acquire the lease, you specify the duration of the lease. A finite lease may be valid from between 15 to 60 seconds. A lease can also be infinite, which amounts to an exclusive lock.

<https://learn.microsoft.com/en-us/azure/storage/blobs/concurrency-manage?tabs=dotnet>

upvoted 1 times

✉  **Knightie** 1 year, 4 months ago

**Selected Answer: B**

B is correct, the issue is that one staff sent out the receipt but another staff deleted it. When the customer open, the receipt is gone. Extending the lease only give a limited time to access but it does not retain a snapshot of a copy for the customer to retrieve. So Snapshot is right.

upvoted 1 times

✉  **Knightie** 1 year, 4 months ago

my bad, lease is right, it's a lock.

<https://learn.microsoft.com/en-us/rest/api/storageservices/lease-blob>

upvoted 2 times

✉ **OPT\_001122** 1 year, 4 months ago

**Selected Answer: D**

D. Use blob leases to prevent concurrency problem

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

Sure, BlobLease is an option but that does not require me to read a huge scenario. I wonder what the scenario mean for this question. And I wonder why not A as well because Etag is a "property" !!

upvoted 1 times

✉ **OlivierPaudex** 1 year, 7 months ago

I think this one will close the discussion

<https://docs.microsoft.com/en-us/azure/storage/blobs/concurrency-manage?tabs=dotnet>

To lock a blob for exclusive use, you can acquire a lease on it.

Answer is D

upvoted 1 times

✉ **Shotare** 1 year, 9 months ago

**Selected Answer: D**

D is correct, although I have managed to solve such problem in real life using blobs metadata so I am not sure whether C could be correct aswell. But D is safer bet

upvoted 1 times

✉ **SivajiTheBoss** 2 years, 1 month ago

Answer: D. Use blob leases to prevent concurrency problems

Reason: To lock a blob for exclusive use, you can acquire a lease on it. When you acquire the lease, you specify the duration of the lease. A finite lease may be valid from between 15 to 60 seconds.

Reference: <https://docs.microsoft.com/en-us/azure/storage/blobs/concurrency-manage?tabs=dotnet#pessimistic-concurrency-for-blobs>

upvoted 2 times

✉ **massnonn** 2 years, 1 month ago

**Selected Answer: D**

Answer is D

upvoted 3 times

✉ **vilainchien** 2 years, 1 month ago

**Selected Answer: D**

Use blob leases to prevent concurrency problems

upvoted 2 times

✉ **leonidn** 2 years, 2 months ago

**Selected Answer: D**

For processing purposes "lease" is the simplest option.

upvoted 2 times

✉ **PhilLI** 2 years, 2 months ago

It's quite vague. Receipts are uploaded to Azure Files. Some people place a file, wait for a while, then delete it, and upload it via the webinterface. Should we cater for this situation as well where duplicates may be introduced?

File will be copied to blob by the code, but it is not clear how long it will stay there, and how to prevent rereading the same file. I would either use blob storage events, or timestamps to filter the files to be processed. If there is a risk to read the same file twice (shortly after upload when filtering on timestamp) then a lease seems ok: if you can't acquire the lease then another instance of your code is already working on it.

upvoted 1 times

✉ **PhilLI** 2 years, 2 months ago

I guess the concurrency is caused by the CRON job every 5 minutes. If processing of the available files takes longer than 5 minutes, concurrency issues may be caused.

upvoted 1 times

✉ **RajMasilamani** 2 years, 6 months ago

<https://docs.microsoft.com/en-us/rest/api/storageservices/lease-blob>

The answer would be Blob lease.

Release, to free the lease if it is no longer needed so that another client may immediately acquire a lease against the blob.

upvoted 1 times

✉ **RajMasilamani** 2 years, 6 months ago

Answer is D

upvoted 1 times

 **rhr** 3 years ago

Given answer is correct

upvoted 2 times

 **azurelearner666** 2 years, 9 months ago

No, it's not. It's D, use blob leases.

upvoted 2 times

Question #2

**Introductory Info****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 the Next button. 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. If the case study has an All Information tab, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the Question button to return to the question.

**Background -**

You are a developer for Litware Inc., a SaaS company that provides a solution for managing employee expenses. The solution consists of an ASP.NET Core Web API project that is deployed as an Azure Web App.

**Overall architecture -**

Employees upload receipts for the system to process. When processing is complete, the employee receives a summary report email that details the processing results. Employees then use a web application to manage their receipts and perform any additional tasks needed for reimbursement.

**Receipt processing -**

Employees may upload receipts in two ways:

Uploading using an Azure Files mounted folder

Uploading using the web application

**Data Storage -**

Receipt and employee information is stored in an Azure SQL database.

**Documentation -**

Employees are provided with a getting started document when they first use the solution. The documentation includes details on supported operating systems for

Azure File upload, and instructions on how to configure the mounted folder.

**Solution details -****Users table -**

Column	Description
UserId	unique identifier for an employee
ExpenseAccount	employees expense account number in the format 1234-123-1234
AllowedAmount	limit of allowed expenses before approval is needed
SupervisorId	unique identifier for employee's supervisor
SecurityPin	value used to validate user identity

**Web Application -**

You enable MSI for the Web App and configure the Web App to use the security principal name WebAppIdentity.

**Processing -**

Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored in Azure Blob

Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must remain valid if the email is forwarded to another user.

#### Logging -

Azure Application Insights is used for telemetry and logging in both the processor and the web application. The processor also has TraceWriter logging enabled.

Application Insights must always contain all log messages.

#### Requirements -

##### Receipt processing -

Concurrent processing of a receipt must be prevented.

##### Disaster recovery -

Regional outage must not impact application availability. All DR operations must not be dependent on application running and must ensure that data in the DR region is up to date.

#### Security -

User's SecurityPin must be stored in such a way that access to the database does not allow the viewing of SecurityPins. The web application is the only system that should have access to SecurityPins.

All certificates and secrets used to secure data must be stored in Azure Key Vault.

You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.

All access to Azure Storage and Azure SQL database must use the application's Managed Service Identity (MSI).

Receipt data must always be encrypted at rest.

All data must be protected in transit.

User's expense account number must be visible only to logged in users. All other views of the expense account number should include only the last segment, with the remaining parts obscured.

In the case of a security breach, access to all summary reports must be revoked without impacting other parts of the system.

#### Issues -

##### Upload format issue -

Employees occasionally report an issue with uploading a receipt using the web application. They report that when they upload a receipt using the Azure File

Share, the receipt does not appear in their profile. When this occurs, they delete the file in the file share and use the web application, which returns a 500 Internal

Server error page.

##### Capacity issue -

During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.

##### Log capacity issue -

Developers report that the number of log messages in the trace output for the processor is too high, resulting in lost log messages.

#### Application code -

##### Processing.cs -

```

PC01 public static class Processing
PC02 {
PC03 public static class Function
PC04 {
PC05 [FunctionName("IssueWork")]
PC06 public static async Task Run([TimerTrigger("0 */5 * * * *")] TimerInfo timer, ILogger
log)
PC07 {
PC08 var container = await GetCloudBlobContainer();
PC09 foreach (var fileItem in await ListFiles())
PC10 {
PC11 var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12 var ms = new MemoryStream();
PC13 await file.DownloadToStreamAsync(ms);
PC14 var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15 await blob.UploadFromStreamAsync(ms);
PC16
PC17 }
PC18 }
PC19 private static CloudBlockBlob GetDRBlob(CloudBlockBlob sourceBlob)
PC20 {
PC21 . . .
PC22 }
PC23 private static async Task<CloudBlobContainer> GetCloudBlobContainer()
PC24 {
PC25 var cloudBlobClient = new CloudBlobClient(new Uri(" . . ."), await GetCredentials());
PC26
PC27 await cloudBlobClient.GetRootContainerReference().CreateIfNotExistsAsync();
PC28 return cloudBlobClient.GetRootContainerReference();
PC29 }
PC30 private static async Task<StorageCredentials> GetCredentials()
PC31 {
PC32 . . .
PC33 }
PC34 private static async Task<List<IListFileItem>> ListFiles()
PC35 {
PC36 . . .
PC37 }
PC38 private KeyVaultClient _keyVaultClient = new KeyVaultClient(" . . .");
PC39 }

```

Database.cs -

```

DB01 public class Database
DB02 {
DB03 private string ConnectionString =
DB04
DB05 public async Task<object> LoadUserDetails(string userId)
DB06 {
DB07
DB08 return await policy.ExecuteAsync(async () =>
DB09 {
DB10 using (var connection = new SqlConnection(ConnectionString))
DB11 {
DB12 await connection.OpenAsync();
DB13 using (var command = new SqlCommand(" . . .", connection))
DB14 using (var reader = command.ExecuteReader())
DB15 {
DB16 . . .
DB17 }
DB18 }
DB19 });
DB20 }
DB21 }

```

ReceiptUploader.cs -

```

RU01 public class ReceiptUploader
RU02 {
RU03 public async Task UploadFile(string file, byte[] binary)
RU04 {
RU05 var httpClient = new HttpClient();
RU06 var response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU07 while (ShouldRetry(response))
RU08 {
RU09 response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU10 }
RU11 }
RU12 private bool ShouldRetry(HttpStatusCode response)
RU13 {
RU14 }
RU15 }
RU16 }
```

ConfigureSSE.ps1 -

```

CS01 $storageAccount = Get-AzureRmStorageAccount -ResourceGroupName "..." -AccountName "..."
CS02 $keyVault = Get-AzureRmKeyVault -VaultName "..."
CS03 $key = Get-AzureKeyVaultKey -VaultName $keyVault.VaultName -Name "..."
CS04 Set-AzureRmKeyVaultAccessPolicy `
CS05 -VaultName $keyVault.VaultName `
CS06 -ObjectId $storageAccount.Identity.PrincipalId `
CS07
CS08
CS09 Set-AzureRmStorageAccount `
CS10 -ResourceGroupName $storageAccount.ResourceGroupName `
CS11 -AccountName $storageAccount.StorageAccountName `
CS12 -EnableEncryptionService File `
CS13 -KeyVaultEncryption `
CS14 -KeyName $key.Name
CS15 -KeyVersion $key.Version `
CS16 -KeyVaultUri $keyVault.VaultUri
```

### Question

You need to resolve the capacity issue.

What should you do?

- A. Convert the trigger on the Azure Function to an Azure Blob storage trigger
- B. Ensure that the consumption plan is configured correctly to allow scaling
- C. Move the Azure Function to a dedicated App Service Plan
- D. Update the loop starting on line PC09 to process items in parallel

**Correct Answer: D**

If you want to read the files in parallel, you cannot use forEach. Each of the async callback function calls does return a promise. You can await the array of promises that you'll get with Promise.all.

Scenario: Capacity issue: During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.

```

PC08 var container = await GetCloudBlobContainer();
PC09 foreach (var fileItem in await ListFiles())
PC10 {
PC11 var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12 var ms = new MemoryStream();
PC13 await file.DownloadToStreamAsync(ms);
PC14 var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15 await blob.UploadFromStreamAsync(ms);
PC16
PC17 }

```

Reference:

<https://stackoverflow.com/questions/37576685/using-async-await-with-a-foreach-loop>

*Community vote distribution*

D (100%)

✉ **trance13** Highly Voted 3 years ago

Receipts are uploaded to the File Storage (not Blob Storage) which does not support triggers. Concurrent processing of a (SINGLE!) receipt must be prevented - so parallel processing is OK. So answer D.

upvoted 30 times

✉ **ZodiaC** 2 years, 8 months ago

1000% D !!!!!!! CORRECT!

upvoted 3 times

✉ **PaulMD** Highly Voted 2 years, 11 months ago

Cleared AZ-204 today, the question appeared, the option "D" was not there, but a "replace the solution with durable functions". I went for that.

upvoted 20 times

✉ **ferut** 2 years, 10 months ago

Durable functions will let the consumer get an immediate (async) response, but the processing remains. The duration till the file appears on the website doesn't change.

Doing the processing in parallel will make a change.

upvoted 3 times

✉ **ning** 2 years, 7 months ago

Correct, if one instance of time trigger function is running, then there will not be a second instance starts, even when 5 minutes pass ... For a durable function, it can make sure immediate returns to allow second instance to start ...

upvoted 3 times

✉ **leonidn** 2 years, 2 months ago

That makes sense. Running parallel tasks is not good practice for functions. Here we cannot predict the degree of parallelism. But using durable function is the best choice.

upvoted 2 times

✉ **edengoforit** 2 years, 2 months ago

If that is the case, the answer should be C?

upvoted 1 times

✉ **AndySmith** Most Recent 5 months, 3 weeks ago

I believe it's "B" - since issue happens in busy period when CPU is over-utilized. Then only reasonable action will be to scale. And for that we should properly configure Consumption Plan.

"D" - could be an answer if Q was about slow speed of processing in normal situation, when CPU resources are enough. In this case, I/O operations are the bottleneck. But, if we try to spawn more threads when CPU is already super-busy, it would even worsen user experience. And it's not "C" since Dedicated Plan is used in very specific situation. Excerpt:

"Consider a dedicated App Service plan in the following situations:

- You have existing, underutilized VMs that are already running other App Service instances.
- You want to provide a custom image on which to run your functions."

upvoted 4 times

✉ **OPT\_001122** 1 year, 4 months ago

**Selected Answer: D**

D. Update the loop starting on line PC09 to process items in parallel

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

"Concurrent processing of a receipt must be prevented."

Microsoft has added this line as a red-herring to make the question taker not think parallelism as an option? What does "processing" mean here? What is "a receipt"? That in combination with the listFiles() method. Does "a receipt" contain multiple files? Does "processing of a receipt" in Microsoft dictionary mean uploading (processing, microsoft?) of the multiple files in "a receipt"

If the answer has durable functions then go for it without thinking deep. The requirements look like a requirement for asynchronous processing because employees get an email (asynchronous) later. But any other answer is just not right and the question could send an intelligent developer (Microsoft excluded) into a loop of thoughts.

upvoted 2 times

✉ **gmishra88** 1 year, 6 months ago

Appreciate all the Microsoft-Technology-developers finding innovative reasons for the answers. But what is not clear is what that listFiles() method do. Which files are returned. That's a lot of assumptions to say you can do upload in parallel without knowing what files and their sizes. No wonder Microsoft-technologies are so buggy

upvoted 1 times

✉ **ReniRechner** 2 years, 1 month ago

**Selected Answer: D**

- A. Convert the trigger on the Azure Function to an Azure Blob storage trigger  
=> won't help because we have Azure Fileshare
- B. Ensure that the consumption plan is configured correctly to allow scaling  
=> Trigger is time based. Multiple instances scanning the same folder => bad idea; also clearly stated in the requirements that parallel processing is not allowed
- C. Move the Azure Function to a dedicated App Service Plan  
=> the Trigger every 5 seconds should keep the function "alive". The function work is also not CPU bound so I cannot see a real benefit for ASP in this scenario
- D. Update the loop starting on line PC09 to process items in parallel  
=> might help.  
D2 (alternative to D as by PaulMD) replace the solution with durable functions  
=> looks even better than D

If D2 is an option I'd go for that.

Maybe they realized that the current "D" is not a really good solution and D2 is also way more "azure"  
Otherwise D.

upvoted 11 times

✉ **kozchris** 2 years, 1 month ago

The answer is C since this is a cold start problem.

"When using Azure Functions in the dedicated plan, the Functions host is always running, which means that cold start isn't really an issue."  
<https://azure.microsoft.com/en-us/blog/understanding-serverless-cold-start/>

upvoted 1 times

✉ **coffecold** 1 year, 5 months ago

No, trigger is timed [Timertrigger...], so function execution never sleeps..

upvoted 1 times

✉ **eMax** 2 years, 2 months ago

The answer reference is about JavaScript, not C# :))))))

upvoted 1 times

✉ **asdasdasg2** 2 years, 3 months ago

D is not correct - while this would speed up performance, the prompt states that users report high delay during BUSY PERIODS. Clearly, the fact that it does not upload files in parallel would not solve that.

The problem must be that the consumption plan is not scaling the function app correctly to handle the load. C could theoretically help, but B is better.

Correct answer: B

upvoted 1 times

✉ **ning** 2 years, 7 months ago

Only thing possible is D ...

File mount, is not blob storage, so cannot be trigger ...

This is a time trigger, so scale up will not help, only one instance will run ...

Only leave us with D

upvoted 4 times

✉ **Onuoa92** 2 years, 10 months ago

Nobody is given us a correct answer

upvoted 2 times

✉ **ZodiaC** 2 years, 8 months ago

D is 1000% correct

upvoted 1 times

✉ **Molte** 2 years, 2 months ago

your 1000% comments under every single question does not help at all!

upvoted 16 times

✉ **[Removed]** 2 years, 11 months ago

I vote for B. Reasoning:

A. Convert the trigger on the Azure Function to an Azure Blob storage trigger  
> We are not dealing with a defect, but a performance degradation, so this would not help.

B. Ensure that the consumption plan is configured correctly to allow scaling

> It seems that "Maximum Scale Out Limit" is set to a value not appropriate for the usage pattern

C. Move the Azure Function to a dedicated App Service Plan

> Won't help.

D. Update the loop starting on line PC09 to process items in parallel

> I don't think it is a good idea to call an async method from within a foreach loop, also not from within Parallel.ForEach.

<https://stackoverflow.com/questions/23137393/parallel-foreach-and-async-await>

upvoted 5 times

✉ **anirbanzeus** 2 years, 10 months ago

Well the function is started by a timer, meaning that the "event" that should trigger the scaling won't increase. Hence I do not think B is the correct choice (Ref: <https://docs.microsoft.com/en-us/azure/azure-functions/event-driven-scaling>).

Considering that we are uploading receipts to a Azure file storage A is also incorrect.

In the given scenario D is the one that makes the most sense.

upvoted 2 times

✉ **warchoon** 1 year ago

Don't use parallel extensions in Azure. There are special Azure constructions for it.

upvoted 1 times

✉ **VR** 2 years, 11 months ago

So what is the answer?

upvoted 4 times

✉ **kwaazaar** 3 years ago

D is the right answer, since the loop picks up all files in the container and scaling would make the files being processed more than once, potentially.

Change feed is not supported for file shares, so D is the only remaining option (though ugly as hell).

upvoted 2 times

✉ **jokergester** 3 years ago

A and C - converting to blob trigger with dedicated plan not consumption to avoid cold start and high availability of the function

D - is not enough since the trigger is scheduled to every 5 mins - so users will still need to wait even if it is already have been processed.

upvoted 1 times

✉ **nicolaus** 2 years, 10 months ago

Answer is C. A is not possible as reports can also be uploaded using Azure Files. Consumption plan has a cold start (up to 10 minutes), so moving to dedicated plan will help

upvoted 6 times

✉ **PhILLI** 2 years, 2 months ago

2 questions about C:

Will a cold start be an issue at all when it is triggered by a time trigger?

Could it be a dedicated App Service plan has stronger CPU allowing to process the files faster?

Besides that: if parallel processing is an option, I would go for that specially with the autoscaling options of a consumption plan (but where time trigger doesn't help?)

upvoted 2 times

✉ **kabbas** 9 months, 1 week ago

I agree, parallel processing is not going to help much here since the listfile() is already doing that. A dedicated plan will provide more resources

upvoted 1 times

✉ **aperez1979** 3 years ago

I think is better option change the trigger. A

upvoted 4 times

✉ **Beitran** 3 years ago

Indeed: "Concurrent processing of a receipt must be prevented."

upvoted 3 times

✉ **trance13** 3 years ago

No one wants to process a single receipt concurrently, each distinct file will be processed in parallel.

upvoted 6 times

✉ **kwaazaar** 3 years ago

Only blobs support change feed, not fileshare, which is used here.

<https://docs.microsoft.com/nl-nl/azure/storage/blobs/storage-blob-change-feed?tabs=azure-portal>

upvoted 3 times

Question #3

**Introductory Info****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 the Next button. 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. If the case study has an All Information tab, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the Question button to return to the question.

**Background -**

You are a developer for Litware Inc., a SaaS company that provides a solution for managing employee expenses. The solution consists of an ASP.NET Core Web API project that is deployed as an Azure Web App.

**Overall architecture -**

Employees upload receipts for the system to process. When processing is complete, the employee receives a summary report email that details the processing results. Employees then use a web application to manage their receipts and perform any additional tasks needed for reimbursement.

**Receipt processing -**

Employees may upload receipts in two ways:

Uploading using an Azure Files mounted folder

Uploading using the web application

**Data Storage -**

Receipt and employee information is stored in an Azure SQL database.

**Documentation -**

Employees are provided with a getting started document when they first use the solution. The documentation includes details on supported operating systems for

Azure File upload, and instructions on how to configure the mounted folder.

**Solution details -****Users table -**

Column	Description
UserId	unique identifier for an employee
ExpenseAccount	employees expense account number in the format 1234-123-1234
AllowedAmount	limit of allowed expenses before approval is needed
SupervisorId	unique identifier for employee's supervisor
SecurityPin	value used to validate user identity

**Web Application -**

You enable MSI for the Web App and configure the Web App to use the security principal name WebAppIdentity.

**Processing -**

Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored in Azure Blob

Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must remain valid if the email is forwarded to another user.

#### Logging -

Azure Application Insights is used for telemetry and logging in both the processor and the web application. The processor also has TraceWriter logging enabled.

Application Insights must always contain all log messages.

#### Requirements -

##### Receipt processing -

Concurrent processing of a receipt must be prevented.

##### Disaster recovery -

Regional outage must not impact application availability. All DR operations must not be dependent on application running and must ensure that data in the DR region is up to date.

#### Security -

User's SecurityPin must be stored in such a way that access to the database does not allow the viewing of SecurityPins. The web application is the only system that should have access to SecurityPins.

All certificates and secrets used to secure data must be stored in Azure Key Vault.

You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.

All access to Azure Storage and Azure SQL database must use the application's Managed Service Identity (MSI).

Receipt data must always be encrypted at rest.

All data must be protected in transit.

User's expense account number must be visible only to logged in users. All other views of the expense account number should include only the last segment, with the remaining parts obscured.

In the case of a security breach, access to all summary reports must be revoked without impacting other parts of the system.

#### Issues -

##### Upload format issue -

Employees occasionally report an issue with uploading a receipt using the web application. They report that when they upload a receipt using the Azure File

Share, the receipt does not appear in their profile. When this occurs, they delete the file in the file share and use the web application, which returns a 500 Internal

Server error page.

##### Capacity issue -

During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.

##### Log capacity issue -

Developers report that the number of log messages in the trace output for the processor is too high, resulting in lost log messages.

#### Application code -

##### Processing.cs -

```

PC01 public static class Processing
PC02 {
PC03 public static class Function
PC04 {
PC05 [FunctionName("IssueWork")]
PC06 public static async Task Run([TimerTrigger("0 */5 * * * *")] TimerInfo timer, ILogger
log)
PC07 {
PC08 var container = await GetCloudBlobContainer();
PC09 foreach (var fileItem in await ListFiles())
PC10 {
PC11 var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12 var ms = new MemoryStream();
PC13 await file.DownloadToStreamAsync(ms);
PC14 var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15 await blob.UploadFromStreamAsync(ms);
PC16
PC17 }
PC18 }
PC19 private static CloudBlockBlob GetDRBlob(CloudBlockBlob sourceBlob)
PC20 {
PC21 . . .
PC22 }
PC23 private static async Task<CloudBlobContainer> GetCloudBlobContainer()
PC24 {
PC25 var cloudBlobClient = new CloudBlobClient(new Uri(" . . ."), await GetCredentials());
PC26
PC27 await cloudBlobClient.GetRootContainerReference().CreateIfNotExistsAsync();
PC28 return cloudBlobClient.GetRootContainerReference();
PC29 }
PC30 private static async Task<StorageCredentials> GetCredentials()
PC31 {
PC32 . . .
PC33 }
PC34 private static async Task<List<IListFileItem>> ListFiles()
PC35 {
PC36 . . .
PC37 }
PC38 private KeyVaultClient _keyVaultClient = new KeyVaultClient(" . . .");
PC39 }

```

Database.cs -

```

DB01 public class Database
DB02 {
DB03 private string ConnectionString =
DB04
DB05 public async Task<object> LoadUserDetails(string userId)
DB06 {
DB07
DB08 return await policy.ExecuteAsync(async () =>
DB09 {
DB10 using (var connection = new SqlConnection(ConnectionString))
DB11 {
DB12 await connection.OpenAsync();
DB13 using (var command = new SqlCommand(" . . .", connection))
DB14 using (var reader = command.ExecuteReader())
DB15 {
DB16 . . .
DB17 }
DB18 }
DB19 });
DB20 }
DB21 }

```

ReceiptUploader.cs -

```

RU01 public class ReceiptUploader
RU02 {
RU03 public async Task UploadFile(string file, byte[] binary)
RU04 {
RU05 var httpClient = new HttpClient();
RU06 var response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU07 while (ShouldRetry(response))
RU08 {
RU09 response = await httpClient.PutAsync("...", new ByteArrayContent(binary));
RU10 }
RU11 }
RU12 private bool ShouldRetry(HttpStatusCode response)
RU13 {
RU14 }
RU15 }
RU16 }
```

ConfigureSSE.ps1 -

```

CS01 $storageAccount = Get-AzureRmStorageAccount -ResourceGroupName "..." -AccountName "..."
CS02 $keyVault = Get-AzureRmKeyVault -VaultName "..."
CS03 $key = Get-AzureKeyVaultKey -VaultName $keyVault.VaultName -Name "..."
CS04 Set-AzureRmKeyVaultAccessPolicy `
CS05 -VaultName $keyVault.VaultName `
CS06 -ObjectId $storageAccount.Identity.PrincipalId `
CS07
CS08
CS09 Set-AzureRmStorageAccount `
CS10 -ResourceGroupName $storageAccount.ResourceGroupName `
CS11 -AccountName $storageAccount.StorageAccountName `
CS12 -EnableEncryptionService File `
CS13 -KeyVaultEncryption `
CS14 -KeyName $key.Name
CS15 -KeyVersion $key.Version `
CS16 -KeyVaultUri $keyVault.VaultUri
```

### Question

You need to resolve the log capacity issue.

What should you do?

- A. Create an Application Insights Telemetry Filter
- B. Change the minimum log level in the host.json file for the function
- C. Implement Application Insights Sampling
- D. Set a LogCategoryFilter during startup

### Correct Answer: C

Scenario, the log capacity issue: Developers report that the number of log message in the trace output for the processor is too high, resulting in lost log messages.

Sampling is a feature in Azure Application Insights. It is the recommended way to reduce telemetry traffic and storage, while preserving a statistically correct analysis of application data. The filter selects items that are related, so that you can navigate between items when you are doing diagnostic investigations. When metric counts are presented to you in the portal, they are renormalized to take account of the sampling, to minimize any effect on the statistics.

Sampling reduces traffic and data costs, and helps you avoid throttling.

Reference:

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/sampling>

*Community vote distribution*

C (80%)

B (20%)

✉  **MikiStieger**  2 years, 10 months ago

I had the exam last Friday and I notice that they change one sentence in case study from:

Application Insights must always contain all log messages.

to:

Application Insights currently contain all log messages.

So I chosen C. Implement Application Insights Sampling.

upvoted 31 times

✉  **gmishra88** 1 year, 6 months ago

If that is the case then all three options are back on the table:

1. Sampling
2. Filtering
3. Adjusting the log level
4. Whatever the 4th mean

It totally depend on the situation. Practically you try the option and find the best solution. But I think Microsoft wants us to say Sampling.

upvoted 2 times

✉  **coffecold** 1 year, 5 months ago

I don't agree. Sampling does not meet "Application Insights must always contain ALL log messages" since it drops items.

<https://learn.microsoft.com/en-us/azure/azure-monitor/app/sampling#how-sampling-works>

I think it would be simply adjusting the log level in the app.

upvoted 3 times

✉  **coffecold** 1 year, 5 months ago

The fourth means : filtering on log level (in webjobs SDK 2.0).

<https://learn.microsoft.com/en-us/azure/app-service/webjobs-sdk-how-to>

upvoted 1 times

✉  **OPT\_001122** 1 year, 4 months ago

so you mean

IF Application Insights must always contain all log messages. then A. Create an Application Insights Telemetry Filter

If Application Insights currently contain all log messages then C. Implement Application Insights Sampling.

upvoted 2 times

✉  **kozchris**  2 years, 1 month ago

The answer is "B".

From the problem description:

"Developers report that the number of log messages in the trace output for the processor is too high"

The keywords are "too high".

The answer is to change the minimum logging level.

upvoted 6 times

✉  **chingdm** 2 years, 1 month ago

agreed, it also said "trace output for the processor is too high, resulting in lost log messages" so it seems that sampling is already enabled and the logs are too many so resulting in lost messages since sampling only takes only portion of all the logs, so it helps if changing the minimum log level to reduce the logs or disable sampling but this is not in the answer selection.

upvoted 2 times

✉  **chingdm** 2 years, 1 month ago

also this requirement "Application Insights must always contain all log messages." will eliminate enable sampling answer because app insights will filter some logs during sampling

upvoted 2 times

✉  **gmishra88** 1 year, 6 months ago

That's right, sherlock. But I don't think that is what Microsoft is looking for here. Those are red-herring options given to doom developers who never tried their flashy, state-of-the-art sampling feature. Yes, but these options depends on the developer and what exactly is shown in the logs and the level of logs.

upvoted 1 times

✉  **InversaRadice** 1 month, 3 weeks ago

The purpose of Sampling is reducing the process of ingest log data...

upvoted 1 times

✉  **dom271219**  3 months, 3 weeks ago

**Selected Answer: B**

B : TraceWriter and Application are distincts

upvoted 1 times

✉  **kabbas** 9 months, 1 week ago

**Selected Answer: C**

Using sampling also allows you to preserve all your logs but reduces throttling

upvoted 1 times

✉ **JH81** 9 months, 3 weeks ago

**Selected Answer: C**

"Application Insights must always contain all log messages." is a stupid requirement. What does that even mean? It would help if it indicated to what level. If some jr programmer set the logging level to Verbose then that's the problem and the answer should be B change the minimum logging level. A and C would indicate you are not meeting the requirement to log all messages. D is not a real answer. But I guess C sampling is what MS is looking for since ""Sampling also helps you avoid Application Insights throttling your telemetry." which is the issue.  
<https://learn.microsoft.com/en-us/azure/azure-monitor/app/sampling>

upvoted 2 times

✉ **halfway** 1 year ago

**Selected Answer: C**

According to the reference below: "Sampling is a feature in Application Insights. It's the recommended way to reduce telemetry traffic, data costs, and storage costs, while preserving a statistically correct analysis of application data. Sampling also helps you avoid Application Insights throttling your telemetry."

Ref: <https://learn.microsoft.com/en-us/azure/azure-monitor/app/sampling?tabs=net-core-new>

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

Filtering or Sampling cannot be the answers considering, as far as I can guess from Microsoft documentation, that it is about NOT sending the telemetry (log entries?) to Application Insights. So, how can the argument that the requirement says "must contain all log message" (whatever that means in the real world). Sampling/Filtering and Chaning-log-levels have all the same effect. From the Microsoft documentation I could not really be clear of what exactly "sampling" is but it looks like it is not about "trace" but about metrics.

upvoted 3 times

✉ **coffecold** 1 year, 5 months ago

Agree, exactly because of that:

Filtering and Sampling drop messages. So if you must not drop messages between app and app Insights, the only thing that is left is to reduce logged messages (C)

upvoted 1 times

✉ **coffecold** 1 year, 5 months ago

I mean option B.

upvoted 1 times

✉ **mandusya** 2 years, 3 months ago

We had similar a few weeks ago  
sampling worked fine

upvoted 1 times

✉ **phvogel** 2 years, 5 months ago

From <https://docs.microsoft.com/en-us/azure/azure-monitor/app/api-filtering-sampling>

"Sampling reduces the volume of telemetry without affecting your statistics."

"Filtering with telemetry processors lets you filter out telemetry in the SDK before it's sent to the server" (and the other options would also eliminate the log traces)

So only sampling will meet the requirement of containing all log messages.

upvoted 2 times

✉ **ning** 2 years, 7 months ago

I am thinking of A to exclude TraceWrite logging ...

Since all log messages are required, so you cannot sampling or change log levels, those are leading to lose log entries ...

LogCategoryFilter I cannot find anything with that from documentation ...

upvoted 3 times

✉ **[Removed]** 2 years, 11 months ago

A. Create an Application Insights Telemetry Filter

> A filter can be created by either implementing ITelemetryProcessor or by implementing ITelemetryInitializer. However MS recommends to use sampling

<https://docs.microsoft.com/en-us/azure/azure-monitor/app/api-filtering-sampling#filtering>

B. Change the minimum log level in the host.json file for the function

> Can be ruled out because req. says app insights must always contain all log messages

C. Implement Application Insights Sampling

> Is the recommended way to reduce telemetry traffic, data costs and storage costs

> <https://docs.microsoft.com/en-us/azure/azure-monitor/app/sampling>

> <https://blog.ramondeklein.nl/2017/05/05/filtering-application-insights/>

D. Set a LogCategoryFilter during startup

> No idea what that is, but feels like pointint in the same direction as the B does

upvoted 5 times

✉ **gmishra88** 1 year, 6 months ago

Bingo. It does say "Application Insights must always contain all log messages." I did miss that sentence. This is an eyesight test than a developer exam.

upvoted 3 times

✉ **BrettusMaximus** 2 years, 11 months ago

It can't be C. - AI Sampling.

Rule 1: Application Insights must always contain all log messages

If you read the Sampling doco carefully. It does filter logs and does not record all the transaction records (but yes it keeps a count for statistics only (See adaptive and fixed sampling)) <https://docs.microsoft.com/en-us/azure/azure-monitor/app/sampling>

Fact 2: The processor also has TraceWriter logging enabled.

TraceWriter logs are generally used for debugging and are not "Official" transactional logs. <https://stackify.com/logging-azure-functions/>  
Options A, B or D are candidates to filter these logs.

Option B and D would stop the actual logs being generated but may also remove some transactional logs. It would also not let the developers do their debugging (the purpose of TraceWriter in the first place).

Thus this leaves the only option A.

A. Create an Application Insights Telemetry Filter (to filter the trace writer logging)

upvoted 3 times

✉ **aperez1979** 3 years ago

I think it could be the b

upvoted 1 times

✉ **MrZoom** 3 years ago

The case states "The processor also has TraceWriter logging enabled.

Application Insights must always contain all log messages."

For this reason B isn't an option, and neither is A or D. These would all change what log messages are sent to AI, which isn't according to reqs. So this leaves C. Sampling just groups messages together with a count, causing less traffic to AI but the same results.

upvoted 9 times

✉ **clarionprogrammer** 2 years, 12 months ago

B is correct.

Because it says "Application Insights must always contain all log messages.", sampling is not a valid answer. In fact, sampling could be the very reason that log messages are lost.

See: <https://docs.microsoft.com/en-us/azure/azure-monitor/app/asp-net-trace-logs>

"I don't see some log entries that I expected".

upvoted 2 times

✉ **gmishra88** 1 year, 6 months ago

That's an excellent point. Kudos. I will need three days to prepare a legal answer for this question. How much did you say the exam allows? 180 minutes?

So, according to you the filter is also not an option? Nice, but I do not know how can I not see the vague requirement that says "must contain all log messages". Hope I do not read that line in the certification exam and so, I can say B is the right answer like a good developer's natural instinct.

upvoted 2 times

✉ **oceane0316** 1 year, 3 months ago

Thank you gmishra88 for the funny comments you left along the way throughout this painful study session.

upvoted 3 times

✉ **naivecoder786** 1 year, 1 month ago

Haha so true ! I think he is the same guy who was from start but is now showin as "Removed User" xD

upvoted 2 times

✉ **kwaazaar** 3 years ago

Sampling is enabled by default and can be turned off (althoiugh AI ingress may still drop entries when overloaded). For metrics sampling does exactly as MrZoom describes.

As I see it, irrelevant logs must be prevented. My first step would be to adjust the minimum loglevel,if possible. A telemetry processor to filter telemetry/logs technically could work to, but is intended for filtering specific entries.

upvoted 2 times

## Topic 21 - Testlet 22

Question #1

Topic 21

### Introductory Info

Case study -

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Background -

VanArsdel, Ltd. is a global office supply company. The company is based in Canada and has retail store locations across the world. The company is developing several cloud-based solutions to support their stores, distributors, suppliers, and delivery services.

Current environment -

Corporate website -

The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

Retail Store Locations -

The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

Requirements -

The application components must meet the following requirements:

Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.

The website must have 99.95 percent uptime.

Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

Delivery services -

Store service telemetry data in Azure Cosmos DB by using an Azure Function. Data must include an item id, the delivery vehicle license plate, vehicle package capacity, and current vehicle location coordinates.

Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

#### Security -

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

#### Issues -

##### Retail Store Locations -

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

#### Question

##### HOTSPOT -

You need to implement event routing for retail store location data.

Which configurations should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

### Answer Area

Event data	Configuration
Source	<div style="border: 1px solid #ccc; padding: 5px; width: 150px; height: 150px; display: flex; align-items: center; justify-content: center;">▼<ul style="list-style-type: none"><li>Azure Blob Storage</li><li>Azure Event Grid</li><li>Azure Service Bus</li><li>Azure Event Hub</li></ul></div>
Receiver	<div style="border: 1px solid #ccc; padding: 5px; width: 150px; height: 150px; display: flex; align-items: center; justify-content: center;">▼<ul style="list-style-type: none"><li>Azure Event Grid</li><li>Azure Event Hub</li><li>Azure Service Bus</li><li>Azure Blob Storage</li></ul></div>
Handler	<div style="border: 1px solid #ccc; padding: 5px; width: 150px; height: 150px; display: flex; align-items: center; justify-content: center;">▼<ul style="list-style-type: none"><li>Azure Function App</li><li>Azure Logic App</li><li>Azure Event Grid</li><li>Azure Blob Storage</li></ul></div>

## Answer Area

### Event data

Source

- Azure Blob Storage
- Azure Event Grid
- Azure Service Bus
- Azure Event Hub

### Receiver

Correct Answer:

- Azure Event Grid
- Azure Event Hub
- Azure Service Bus
- Azure Blob Storage

### Handler

- Azure Function App
- Azure Logic App
- Azure Event Grid
- Azure Blob Storage

Box 1: Azure Blob Storage -

Azure event publishers and event handlers are at the core of the Event Grid routing-service. Event Grid listens to Azure event publishers, such as Blob Storage, then reacts by routing specific events to Azure event handlers, such as WebHooks. You can easily control this entire process at a granular level through event subscriptions and event filters.

Box 2: Azure Event Grid -

Azure Event Grid is a highly scalable event-routing service that listens for specific system events, then reacts to them according to your precise specifications. In the past, event handling has relied largely on polling – a high latency, low-efficiency approach that can prove prohibitively expensive at scale.

Box 3: Azure Logic App -

Event Grid's supported event handlers currently include Event Hubs, WebHooks, Logic Apps, Azure Functions, Azure Automation and Microsoft Flow.

Reference:

<https://www.appliedi.net/blog/using-azure-event-grid-for-highly-scalable-event-routing>

✉  **le129** Highly Voted 1 year, 7 months ago

Shouldn't it be Azure Function App for the handler?

upvoted 34 times

✉  **willchenxa** 1 year, 7 months ago

Agree, there is no logic app in the solution.

upvoted 6 times

✉  **Dani\_ac7** 1 year, 7 months ago

Yes, logic app is not mentioned

upvoted 5 times

✉  **juanckar** Highly Voted 9 months, 1 week ago

This was on the exam (July 2023). Went with blob/grid/function. Scored 917

upvoted 7 times

✉  **james2033** Most Recent 3 weeks, 6 days ago

Event data --> Configuration

Source = Azure Blob Storage

Receiver = Azure Event Grid

Handler = Azure Logic App

upvoted 1 times

✉  **egaws** 1 month, 4 weeks ago

locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. This data might be more than event grid max message size of 512k, so servicebus should be here

upvoted 1 times

 **tawanda\_belkis** 1 year ago

Is this microsoft question or Azure Function app

upvoted 1 times

 **warchoon** 1 year ago

"process sales financials" needs messages not events, "immediately" => Box 2: Azure Service Bus  
"Azure Functions must" => Box 3: Azure Function App

upvoted 2 times

 **warchoon** 1 year ago

ok, this is wrong. Because 21/1 has no Service Bus option and "financial" is probably for the audit trigger only.  
So Box:2 must be Event Grid

upvoted 2 times

 **warchoon** 1 year ago

... I mean 29/1 has no Service Bus

upvoted 2 times

 **surprise0011** 12 months ago

exactly. Event should not carry much information, so Azure Service Bus should be utilized

upvoted 2 times

 **OPT\_001122** 1 year, 4 months ago

Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

Logic app is not mentioned anywhere in the case study.

So #3 should be Function app?

upvoted 7 times

## Topic 22 - Testlet 23

Question #1

Topic 22

### Introductory Info

Case study -

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LabelMaker app -

Coho Winery produces, bottles, and distributes a variety of wines globally. You are a developer implementing highly scalable and resilient applications to support online order processing by using Azure solutions.

Coho Winery has a LabelMaker application that prints labels for wine bottles. The application sends data to several printers. The application consists of five modules that run independently on virtual machines (VMs). Coho Winery plans to move the application to Azure and continue to support label creation.

External partners send data to the LabelMaker application to include artwork and text for custom label designs.

Requirements. Data -

You identify the following requirements for data management and manipulation:

Order data is stored as nonrelational JSON and must be queried using SQL.

Changes to the Order data must reflect immediately across all partitions. All reads to the Order data must fetch the most recent writes.

Requirements. Security -

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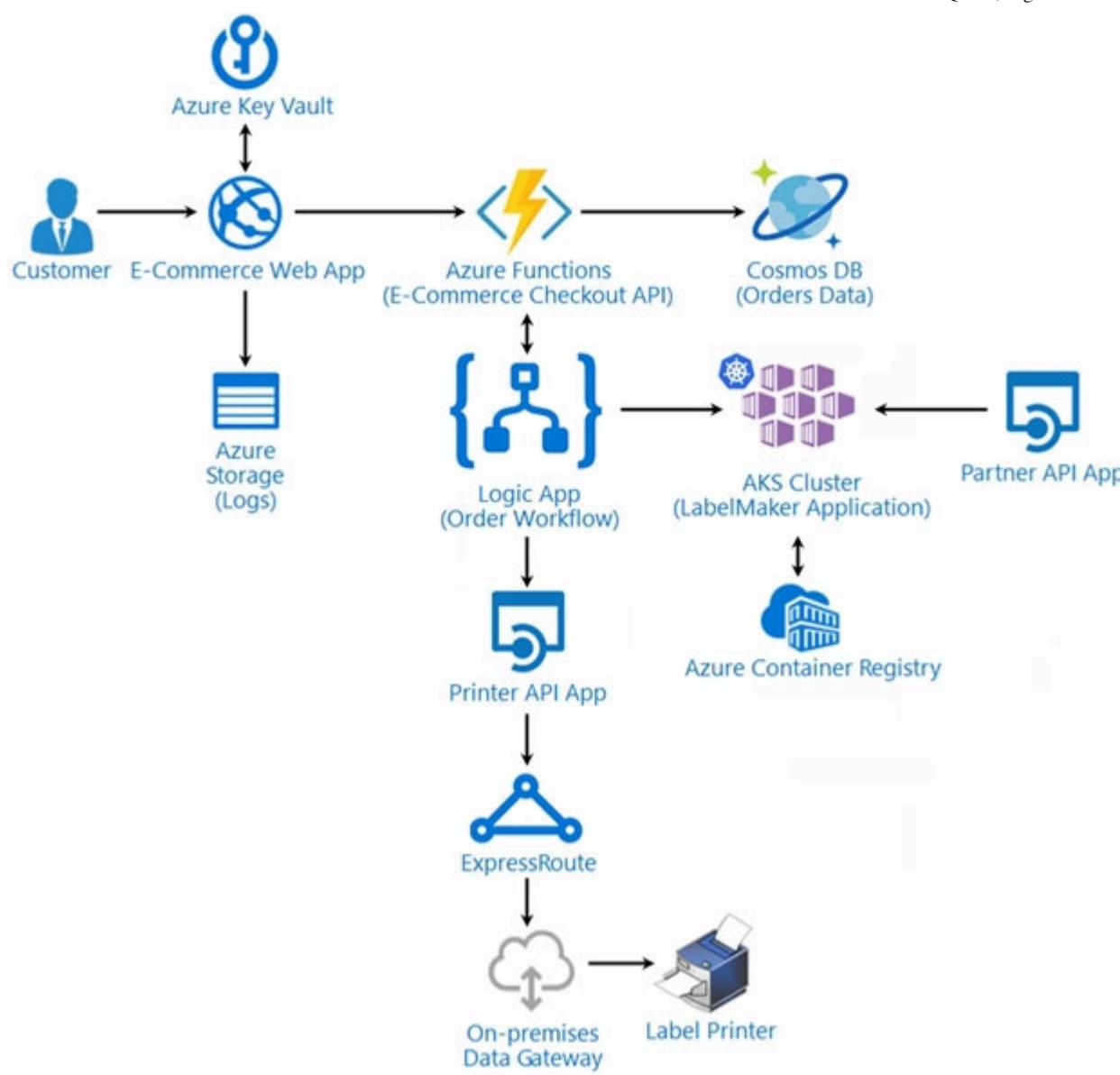
The LabelMaker application must be secured by using an AAD account that has full access to all namespaces of the Azure Kubernetes Service (AKS) cluster.

Requirements. LabelMaker app -

Azure Monitor Container Health must be used to monitor the performance of workloads that are deployed to Kubernetes environments and hosted on Azure Kubernetes Service (AKS).

You must use Azure Container Registry to publish images that support the AKS deployment.

Architecture -



#### Issues -

Calls to the Printer API App fail periodically due to printer communication timeouts.

Printer communication timeouts occur after 10 seconds. The label printer must only receive up to 5 attempts within one minute.

The order workflow fails to run upon initial deployment to Azure.

Order.json -

Relevant portions of the app files are shown below. Line numbers are included for reference only.

This JSON file contains a representation of the data for an order that includes a single item.

### Order.json

```

01 {
02 "id" : 1,
03 "customers" : [
04 {
05 "familyName" : "Doe",
06 "givenName" : "John",
07 "customerid" : 5
08 }
09],
10 "line_items" : [
11 {
12 "fulfillable_quantity" : 1,
13 "id": 6,
14 "price" : "199.99" ,
15 "product_id" : 7513594,
16 "quantity": 1,
17 "requires_shipping" : true ,
18 "sku": "SFC-342-N" ,
19 "title" : "Surface Go" ,
20 "vendor" : "Microsoft" ,
21 "name" : "Surface Go - 8GB" ,
22 "taxable" : true ,
23 "tax_lines" : [
24 {
25 "title" : "State Tax" ,
26 "price" : "3.98" ,
27 "rate" : 0.06
28 }
29],
30 }
31],
32 }
```

#### Question

You need to troubleshoot the order workflow.

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

NOTE: Each correct selection is worth one point.

- A. Review the API connections.
- B. Review the activity log.
- C. Review the run history.
- D. Review the trigger history.

#### Correct Answer: CD

Scenario: The order workflow fails to run upon initial deployment to Azure.

Check runs history: Each time that the trigger fires for an item or event, the Logic Apps engine creates and runs a separate workflow instance for each item or event. If a run fails, follow these steps to review what happened during that run, including the status for each step in the workflow plus the inputs and outputs for each step.

Check the workflow's run status by checking the runs history. To view more information about a failed run, including all the steps in that run in their status, select the failed run.

Example:

**Runs history**  
DataOperationsLogicApp

Refresh

All Start time earlier than

Pick a date Pick a time

Search to filter items by identifier

Status	Start time	Identifi...	Duration	Static Results
Failed	9/23/2019, 7:08 PM	085863...	640 Milliseconds	
Failed	9/23/2019, 7:08 PM	085863...	1.55 Seconds	

Check the trigger's status by checking the trigger history

To view more information about the trigger attempt, select that trigger event, for example:

**Recurrence**  
DataOperationsLogicApp

All Pick a date Pick a time

Recurrence

Status	Start time	Fired
Skipped	11/4/2019, 9:07 AM	
Failed	11/4/2019, 9:00 AM	
Succeeded	11/3/2019, 6:23 PM	Fired
Succeeded	11/3/2019, 6:23 PM	Fired

Reference:

<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-diagnosing-failures>

Community vote distribution

CD (80%)

BD (20%)

7ack **Highly Voted** 2 years, 9 months ago

Answer seems correct

upvoted 8 times

mkqwert **2 years, 4 months ago**

very convenience answer

upvoted 3 times

Net\_IT **Most Recent** 5 months, 1 week ago

**Selected Answer: CD**

C and D are the correct answers.

<https://learn.microsoft.com/en-us/azure/logic-apps/logic-apps-diagnosing-failures?tabs=consumption>

upvoted 1 times

macobuzi 7 months, 1 week ago

**Selected Answer: BD**

Correct answer should be B and D. As for why not C, the specific issue is that the "order workflow fails to run upon initial deployment to Azure", so the initial deployment itself might not have generated any run history if the workflow didn't run successfully. Run history typically records instances of workflow executions.

upvoted 1 times

macobuzi 7 months, 1 week ago

Please ignore my answer, the default answer was right because we have the Logic App in the architecture!

upvoted 3 times

VarunDashora26 7 months, 3 weeks ago

Correct answer in my opinion should be B and D.

"The order workflow fails to run upon initial deployment to Azure."

This means you will not get any info in C. Run History. And A. Checking the API connection will be helpful only when the workflow is up and running and API calls are made.

upvoted 1 times

macobuzi 7 months, 1 week ago

I agree, even chatGPT chooses B and D.

upvoted 1 times

 **macobuzi** 7 months ago

Sorry, C and D is correct because the app uses Logic App. It can still check the Run History: "Each time that the trigger fires for an item or event, the Logic Apps engine creates and runs a separate workflow instance for each item or event. If a run fails, follow these steps to review what happened during that run, including the status for each step in the workflow plus the inputs and outputs for each step"

upvoted 1 times

 **OPT\_001122** 1 year, 4 months ago

**Selected Answer: CD**

C. Review the run history.

D. Review the trigger history.

upvoted 3 times

 **adilkhan** 1 year, 2 months ago

why the answer is C and D?

upvoted 1 times

 **deborahQ** 1 year, 5 months ago

It says: The order workflow fails to run upon initial deployment to Azure.

It seems to me, it never runs.

upvoted 3 times

 **le129** 1 year, 7 months ago

what is the difference between run history and trigger history

upvoted 2 times

Question #2

## Introductory Info

Case study -

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LabelMaker app -

Coho Winery produces, bottles, and distributes a variety of wines globally. You are a developer implementing highly scalable and resilient applications to support online order processing by using Azure solutions.

Coho Winery has a LabelMaker application that prints labels for wine bottles. The application sends data to several printers. The application consists of five modules that run independently on virtual machines (VMs). Coho Winery plans to move the application to Azure and continue to support label creation.

External partners send data to the LabelMaker application to include artwork and text for custom label designs.

Requirements. Data -

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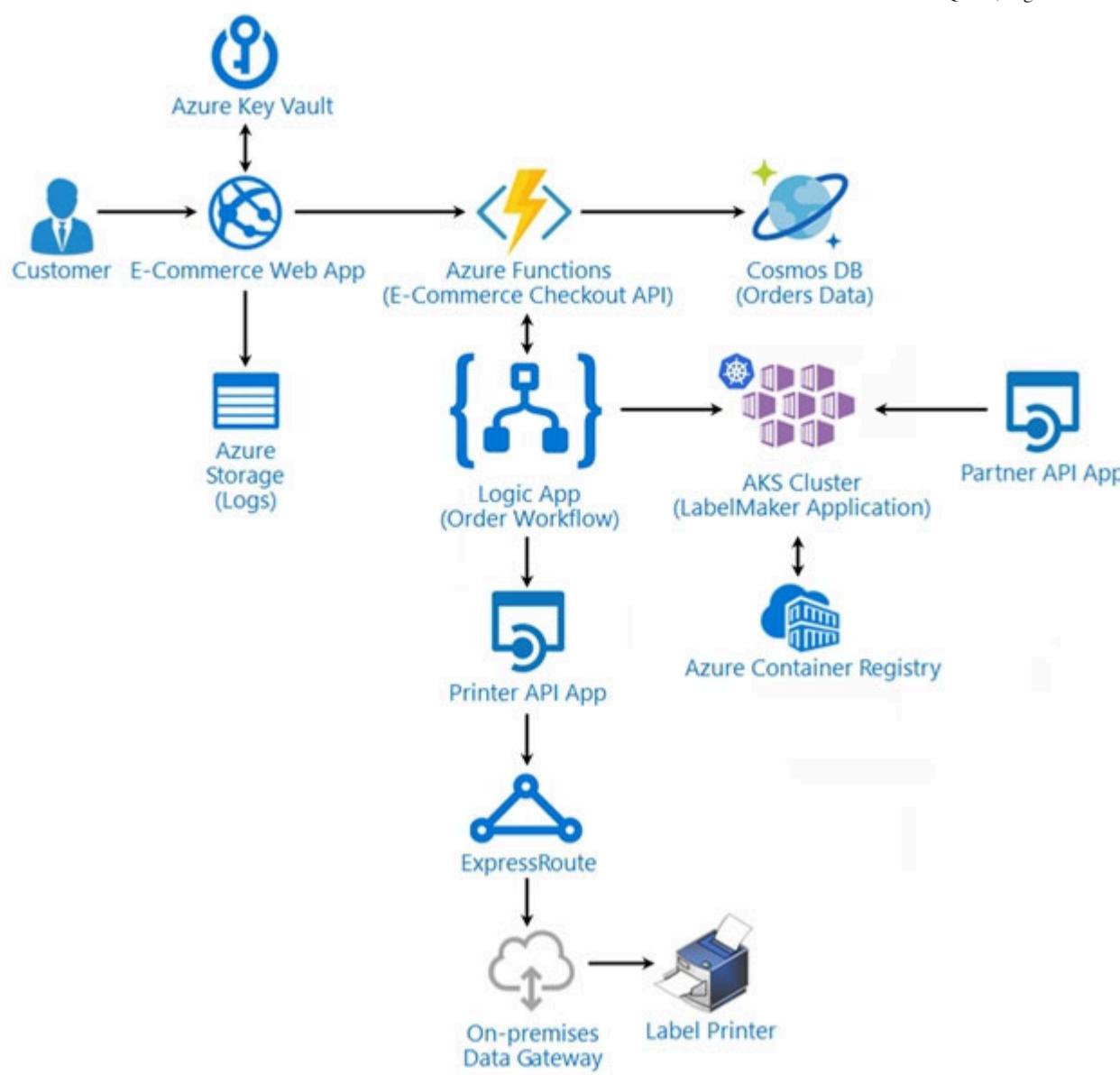
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Architecture -



#### Issues -

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Order.json -

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This JSON file contains a representation of the data for an order that includes a single item.

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06 "givenName" : "John",
07 "customerid" : 5
08 }
09],
10 "line_items" : [
11 {
12 "fulfillable_quantity" : 1,
13 "id": 6,
14 "price" : "199.99" ,
15 "product_id" : 7513594,
16 "quantity": 1,
17 "requires_shipping" : true ,
18 "sku": "SFC-342-N" ,
19 "title" : "Surface Go" ,
20 "vendor" : "Microsoft" ,
21 "name" : "Surface Go - 8GB" ,
22 "taxable" : true ,
23 "tax_lines" : [
24 {
25 "title" : "State Tax" ,
26 "price" : "3.98" ,
27 "rate" : 0.06
28 }
29 1.
```

#### Question

HOTSPOT -

You need to update the order workflow to address the issue when calling the Printer API App.

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

## Answer Area

```
"print_label": {
 "type": "Http",
 "inputs": {
 "method": "POST",
 "uri": "https://www.cohowinery.com/printer/printlabel",
 "retryPolicy": {
 "type": "fixed",
 "interval": "PT10S",
 "count": 5
 }
 }
}
```

The JSON configuration for the "print\_label" action is as follows:

- type:** Http
- inputs:**
  - method:** POST
  - uri:** https://www.cohowinery.com/printer/printlabel
  - retryPolicy:**
    - type:** fixed
    - interval:** PT10S
    - count:** 5

Correct Answer:

**Answer Area**

```

"print_label": {
 "type": "Http",
 "inputs": {
 "method": "POST",
 "uri": "https://www.cohowinery.com/printer/printlabel",
 "retryPolicy": {
 "type": "fixed",
 "interval": "PT60S",
 "count": 5
 }
 }
}

```

The image shows three dropdown menus with their options highlighted:

- retryPolicy.type:** The options are "default", "none", "fixed" (highlighted in green), and "exponential".
- retryPolicy.interval:** The options are "PT10S", "PT30S", "PT60S" (highlighted in green), and "PT1D".
- retryPolicy.count:** The options are "5" (highlighted in green), "10", and "60".

Box 1: fixed -

The 'Default' policy does 4 exponential retries and from my experience the interval times are often too short in situations.

Box 2: PT60S -

We could set a fixed interval, e.g. 5 retries every 60 seconds (PT60S).

PT60S is 60 seconds.

Scenario: Calls to the Printer API App fail periodically due to printer communication timeouts.

Printer communication timeouts occur after 10 seconds. The label printer must only receive up to 5 attempts within one minute.

Box 3: 5 -

Reference:

<https://michalsacewicz.com/error-handling-in-power-automate/>

✉  **jay158**  2 years, 9 months ago

1. Fixed
  2. PT10S
  3. 5
- PT10 means retry after 10sec ,  
<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-exception-handling>

upvoted 55 times

✉  **Branners** 2 years, 8 months ago

Agreed. PT10S means a 10 second delay between each try defined as the retry value.

upvoted 5 times

✉  **vilainchien** 2 years, 1 month ago

Hi, I don't understand why PT10S is the correct answer. The function could fail immediately and the printer only accept 5 requests in 1 minute. If you set 5 retries with an interval of 10 seconds, you will have 6 requests in 1 minute?

upvoted 1 times

✉  **chingdm** 2 years, 1 month ago

you have to also consider the time of executing the printer request, say printer timed-out in 0 seconds and first attempt issued, say the printer timed-out in 10 seconds, then request would wait 10 seconds before trying again, so the second retry attempt would be in the 20th seconds, so it will be less than 5 attempts in 1 minute.

upvoted 1 times

✉ **Knightie** 1 year, 4 months ago

it will only retry 5 times and then fail and not going to retry anymore. So no 6 times in a min.

upvoted 1 times

✉ **ensa** 2 years, 5 months ago

Currently it is 10, because fail after 10 min. we should increase the time interval and I am not sure to choose PT30 or PT60

upvoted 2 times

✉ **ensa** 2 years, 5 months ago

Sorry, Jay158 is right. There is requirement in the question

upvoted 2 times

✉ **Gwak** Highly Voted 2 years, 9 months ago

I think Given ans is right "PT60 and count 5" menas try 5 times in 60sec.

upvoted 8 times

✉ **j888** 2 years, 7 months ago

If you read the following:

<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-exception-handling#fixed-interval>

pt60s = 60s delay between each attempt.

PT10s will be the better answer, 5 attempts with each 10 seconds delay satisfy the requirement "The label printer must only receive up to 5 attempts within one minute".

upvoted 8 times

✉ **raymond\_abcd** Most Recent 2 months ago

Don't understand this, when PT10S => 5 times (10 sec timeout + retry after 10 sec) = total 100 seconds ? So not 60 seconds which is the requirement

upvoted 1 times

✉ **raymond\_abcd** 2 months ago

Correction it is 5 times after the first attempt. So actually 6 times 20 seconds is total 120 seconds. So it will never exceed the 5 times retry in one minute. It will do 3 retries in 1 minute which is allowed according to the requirement

upvoted 1 times

✉ **yosri\_c\_sharp** 10 months ago

Logical App no more included in az-204

upvoted 4 times

✉ **adilkhan** 1 year, 2 months ago

Ans is correct <https://learn.microsoft.com/en-us/azure/logic-apps/logic-apps-exception-handling?tabs=consumption%20Fixed,%20PT60S,%205>

upvoted 1 times

✉ **SivajiTheBoss** 2 years ago

Correct Answer:

1. Fixed
2. PT10S
3. 5

<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-exception-handling>

upvoted 2 times

✉ **leonidn** 2 years, 2 months ago

Fixed + PT10S, 5.

None and default do not require "interval" parameter. Exponential requires additional parameters. "Fixed" is the only option that fits the schema. PT10S means that after the timeout occurs, the logic app waits 10 more seconds and tries again. It means that there will be up to 3 attempts in a minute. That fits the requirement. Extended interval does not make sense here from the user experience perspective. It is more desirable to reduce the time interval. As well as setting more than 5 attempts does not make sense. If printer cannot recover after 5 attempts it's not make sense to continue trying.

upvoted 4 times

✉ **RajMasilamani** 2 years, 6 months ago

Answer to address or fix the issue. So the time interval increased to 60 seconds and for 5 attempts. As problem stated for the given fixed values its giving an error. To overcome this we need to increase the retry time .

upvoted 1 times

✉ **koreshulya** 2 years, 9 months ago

I guess interval should be PT10S.

"The label printer must only receive up to 5 attempts within one minute".

upvoted 8 times

✉ **vokep77043** 2 years, 7 months ago

One minute is 60 seconds - so it won't be 5 attempts... lol

upvoted 1 times

 **lexowe9241** 2 years, 6 months ago

<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-exception-handling#fixed-interval> "This retry policy attempts to get the latest news two more times after the first failed request with a 30-second delay between each attempt:"

```
"retryPolicy": {
 "type": "fixed",
 "interval": "PT30S",
 "count": 2
}
```

Back to our case: PT10S and 5 attempts means : 1st attempt plus 5 more. That is 60seconds in total.

upvoted 7 times

**Topic 23 - Testlet 24**

Question #1

Topic 23

**Introductory Info**

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Background -

Wide World Importers is moving all their datacenters to Azure. The company has developed several applications and services to support supply chain operations and would like to leverage serverless computing where possible.

Current environment -

Windows Server 2016 virtual machine

This 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 trucking stops.

Shipping REST API `" This API provides shipping information for use and display on the shipping website.

Shipping Data -

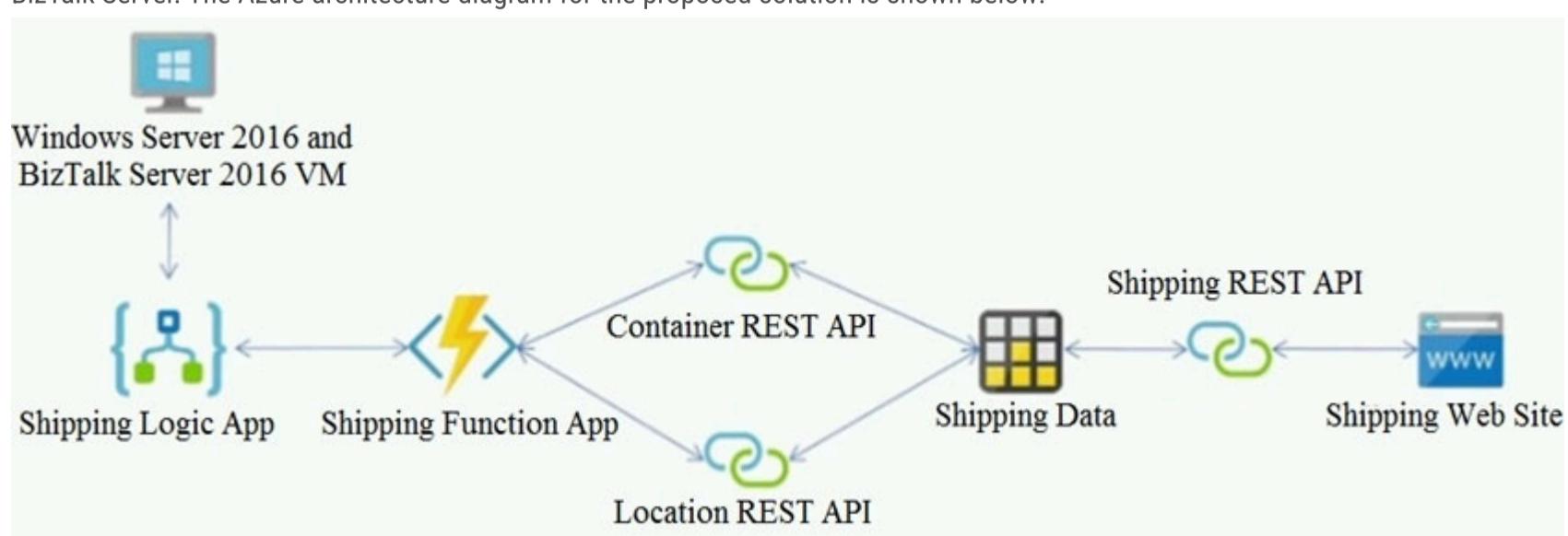
The application uses MongoDB JSON document storage database for all container and transport information.

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.

### Question

#### DRAG DROP -

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.

Select and Place:

#### Actions

#### Answer Area

Link the Logic App to the integration account.



Add partners, schemas, certificates, maps, and agreements.



Update the Logic App to use the partners, schemas, certificates, maps, and agreements.

Create a custom connector for the Logic App.

Link the custom connector to the Logic App.

Create an integration account in the Azure portal.

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

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.

Reference:  
<https://docs.microsoft.com/bs-latn-ba/azure/logic-apps/logic-apps-enterprise-integration-metadata>

✉  **coffecold**  1 year, 5 months ago

This is about logic app, which is not part anymore of the exam

However :

- 1.Create integration account
- 2.Link Logic app
- 3.Add partners...
- 4.Update logic app

<https://learn.microsoft.com/en-us/azure/logic-apps/add-artifacts-integration-service-environment-ise#create-integration-accounts>

Why not custom connector? X12 is Managed connector, as it is opposed to a custom connector

<https://learn.microsoft.com/en-us/azure/logic-apps/add-artifacts-integration-service-environment-ise#add-ise-connectors>

upvoted 16 times

✉  **adilkhan**  1 year, 2 months ago

1. create integration accountWhen you're done, select Create.

Link your logic app to your integration account in the usual way.

Continue by adding resources to your integration account, such as trading partners and agreements.

<https://learn.microsoft.com/en-us/azure/logic-apps/add-artifacts-integration-service-environment-ise#create-integration-accounts>. Answers are correct!

To manage integration accounts in your ISE, see Manage your integration service environment.

upvoted 3 times

✉  **tester2023** 1 year, 1 month ago

The reference article above supports the order of events.

1. Create logic app (this is assumed to be done in our case study)
2. Create Integration account
3. Link logic app
4. Add partners, schemas, certificates...
5. Create (add) a custom connector

upvoted 2 times

✉  **OPT\_001122** 1 year, 3 months ago

1. add parameters
2. create integration accounts
3. link logic app to integration accounts
4. update param in logic app

upvoted 1 times

✉️ **OPT\_001122** 1 year, 3 months ago  
disregard above ans

- 1.Create integration account
  - 2.Link Logic app
  - 3.Add partners...
  - 4.Update logic app
- upvoted 4 times

✉️ **willchenxa** 1 year, 7 months ago  
it should be:  
1. add parameters  
2. create integration accounts  
3. link logic app to integration accounts  
4. update param in logic app

upvoted 4 times

✉️ **ArturKon** 1 year, 6 months ago  
Source?  
upvoted 6 times

✉️ **sghaha** 1 year, 11 months ago  
Korean page  
<https://docs.microsoft.com/ko-kr/azure/logic-apps/logic-apps-overview>  
upvoted 1 times

Question #2

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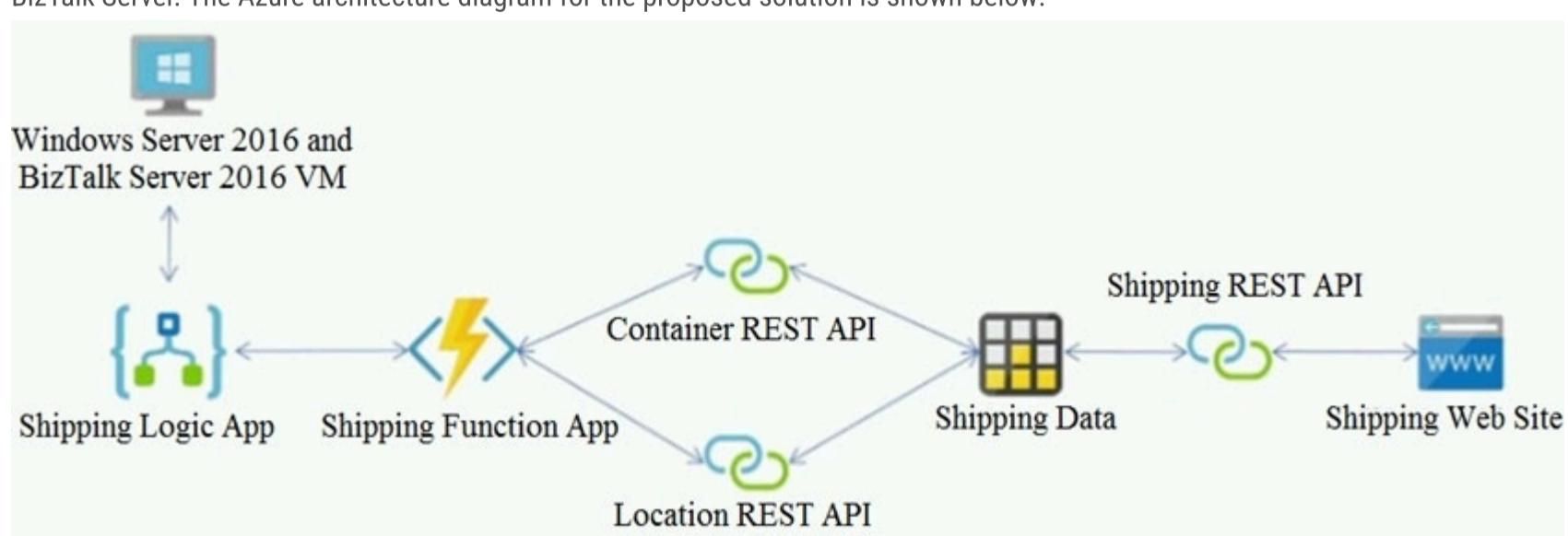
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Shipping Web Site -

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.

### Question

You need to support the requirements for the Shipping Logic App.

What should you use?

- A. Azure Active Directory Application Proxy
- B. Site-to-Site (S2S) VPN connection
- C. On-premises Data Gateway
- D. Point-to-Site (P2S) VPN connection

### Correct Answer: C

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>

## Community vote distribution

C (100%)

 **programmingbot** Highly Voted 3 years, 8 months ago

Agreed: On-premises Data Gateway

upvoted 35 times

 **kakajos** Most Recent 6 months, 2 weeks ago

I was about to settle on S2S VPN connection until I read this: The On-premises data gateway acts as a bridge to provide quick and secure data transfer between on-premises data (data that isn't in the cloud) and several Microsoft cloud services. These cloud services include Power BI, PowerApps, Power Automate, Azure Analysis Services, and Azure Logic Apps

upvoted 2 times

 **OPT\_001122** 1 year, 4 months ago

**Selected Answer: C**

On-premises data Gateway

upvoted 2 times

 **BrettusMaximus** 2 years, 11 months ago

B. Site to Site s2s VPN

Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.

I read this as legacy apps need to connect to the BizTalk server in Azure. This is how the work flow starts.

upvoted 1 times

 **Sylph** 3 years, 1 month ago

The provided answer is probably correct because you can connect to REST/SOAP services over the Data Gateway using a custom connector.

Snip from documentation:

"You can also create custom connectors that connect to data sources over HTTP or HTTPS by using REST or SOAP. Although the gateway itself doesn't incur extra costs, the Logic Apps pricing model applies to these connectors and other operations in Azure Logic Apps."

<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-gateway-connection#supported-data-sources>

upvoted 1 times

 **paru123456789** 3 years, 1 month ago

Answer: On premises data gateway

upvoted 1 times

 **fadikh** 3 years, 1 month ago

Hasn't the VM been already migrated to Azure?

upvoted 3 times

 **coffecold** 1 year, 5 months ago

Exactly my first thoughts.. that VM is already in 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"

upvoted 1 times

 **coffecold** 1 year, 5 months ago

But as none of the answers suit then, C is the best option. Let's pretend that the VM is on premises.

upvoted 1 times

 **khoant** 3 years, 3 months ago

Answer is correct. The on-premises shipping application must be moved to Azure.

upvoted 1 times

 **amanp** 3 years, 4 months ago

S2S uses a connection to connect the Vnet to on-premises private network. This does not help in logic app creation. Hence, the given answer is correct

upvoted 1 times

 **Brak** 3 years, 2 months ago

The question does NOT ask if S2S VPN would "help in logic app creation."

The question does ask for on-prem connectivity for legacy apps. Data Gateway provides access to on-prem data sources for tools like PowerBI or Analysis Services (which are not needed by the workflow), not legacy apps or support final BizTalk migration. These need general on-prem to VNet connectivity.

The answer is S2S VPN.

upvoted 8 times

 **pac1311** 3 years, 2 months ago

Your answer is incorrect, the question does ask for on-prem connection to legacy app, see the following text from the question in the shipping logic app part.

- Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.

upvoted 2 times

✉ **Brak** 3 years, 2 months ago

Exactly. Data Gateway does not provide "connectivity to support legacy apps." So it's not the answer. That leaves S2S.

upvoted 2 times

✉ **pieronegri** 3 years, 1 month ago

you are right Brak, that would be used in conjunction with Integration Service Environment for Logic apps so to secure them with the on premise VNet

upvoted 2 times

✉ **dineshkm06tnj** 3 years, 5 months ago

Agreed: On-premises Data Gateway

upvoted 2 times

✉ **sebainones** 3 years, 5 months ago

Agreed with "On-premises data Gateway".

But what piece of information should I use/consider to discard "S2S VPN" as valid answer?

upvoted 4 times

✉ **MrZoom** 3 years ago

You shouldn't discard it. See comments from Brak and pieronegri, above. For info on ISE, see <https://docs.microsoft.com/en-us/azure/logic-apps/connect-virtual-network-vnet-isolated-environment>

upvoted 2 times

**Topic 24 - Testlet 25**

Question #1

Topic 24

**Introductory Info**

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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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 the Next button. 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 the Question button 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.cpndl.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.

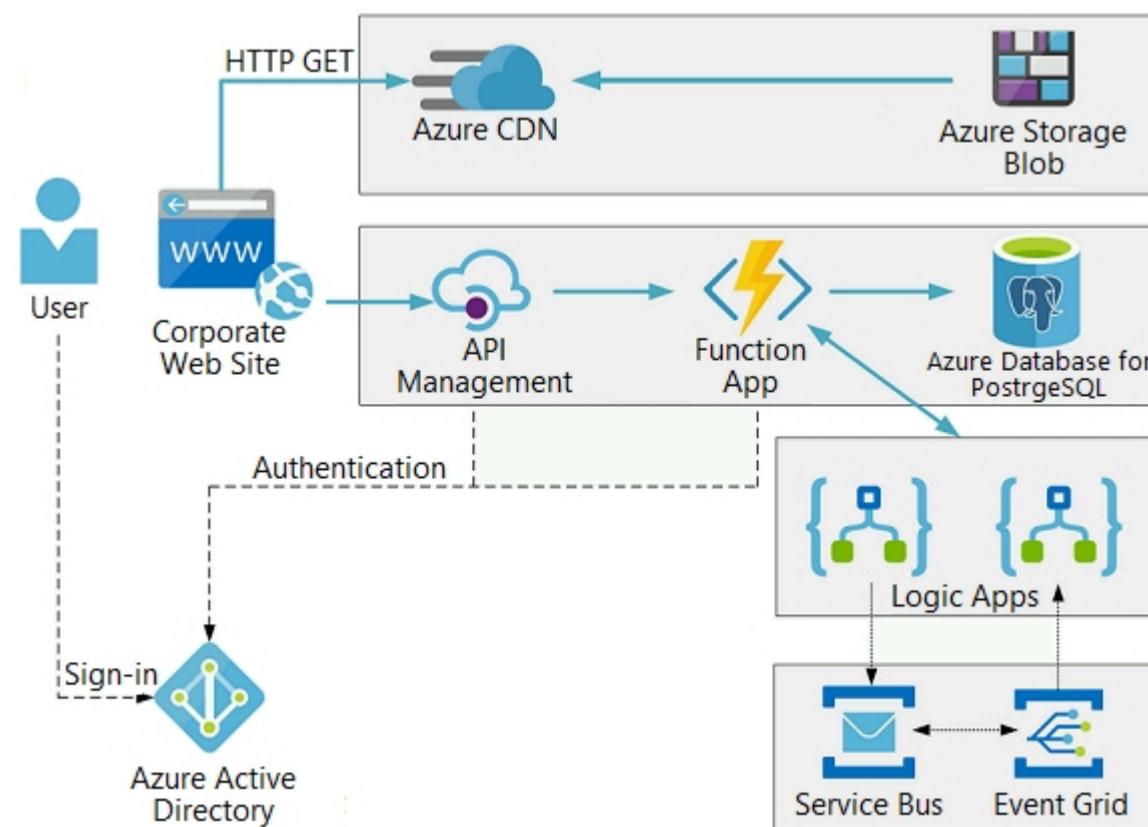
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. 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,
RA06 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 }
```

### Question

HOTSPOT -

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.

Hot Area:

### Answer Area

az	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="eventgrid"/>	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="event-subscription"/>	create --source-resource-id \$topicid --name \$name --
	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="servicebus"/>	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="topic"/>	
	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="queue"/>		
endpoint-type	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="webhook"/>	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="eventhub"/>	--endpoint \$endpoint
	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="servicebusqueue"/>		

### Correct Answer:

### Answer Area

az	<input style="width: 150px; height: 20px; border: none; background-color: #d9e1f2; border-bottom: 1px solid black;" type="button" value="eventgrid"/>	<input style="width: 150px; height: 20px; border: none; background-color: #d9e1f2; border-bottom: 1px solid black;" type="button" value="event-subscription"/>	create --source-resource-id \$topicid --name \$name --
	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="servicebus"/>	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="topic"/>	
	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="queue"/>		
endpoint-type	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="webhook"/>	<input style="width: 150px; height: 20px; border: none; background-color: #f0f0f0; border-bottom: 1px solid black;" type="button" value="eventhub"/>	--endpoint \$endpoint
	<input style="width: 150px; height: 20px; border: none; background-color: #d9e1f2; border-bottom: 1px solid black;" type="button" value="servicebusqueue"/>		

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\\_event\\_subscription\\_create](https://docs.microsoft.com/en-us/cli/azure/eventgrid/event-subscription?view=azure-cli-latest#az_eventgrid_event_subscription_create)

✉  **malay1232489** Highly Voted 3 years ago

correcto...

<https://docs.microsoft.com/en-us/azure/event-grid/handler-service-bus>

upvoted 41 times

✉  **surprise0011** 11 months, 4 weeks ago

received 2023-04-17 went with given answer, score 926

upvoted 3 times

✉  **MrZoom** 3 years ago

Agreed. Note that the casus also denotes the opposite integration: "Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing". But none of the given options seem to do just this, so the given answer is correct.

upvoted 7 times

✉  **coffecold** 1 year, 5 months ago

Exact, this is only one piece of the integration. That for grid to service bus.

upvoted 1 times

✉  **lugospod** Highly Voted 2 years, 2 months ago

Got this one 01/2022. Went with most voted (to avoid writing answers again)

upvoted 8 times

✉  **james2033** Most Recent 3 weeks, 4 days ago

```
az eventgrid event-subscription create --name <my-event-subscription> --source-resource-id
/subscriptions/{SubID}/resourceGroups/{RG}/providers/Microsoft.EventGrid/topics/topic1 --endpoint-type servicebusqueue --endpoint
/subscriptions/{SubID}/resourceGroups/TestRG/providers/Microsoft.ServiceBus/namespaces/ns1/queues/queue1
```

- 1) eventgrid
- 2) event-subscription
- 3) servicebusqueue

<https://learn.microsoft.com/en-us/azure/event-grid/handler-service-bus#use-azure-cli>

upvoted 1 times

✉  **Vmwarevirtual** 10 months, 2 weeks ago

Appeared in exam I took on 27 May 2023

- 1 eventgrid
- 2 event-subscription
- 3 servicebusqueue

Following is the example from Azcli command of az eventgrid

Create a new event subscription for an Azure subscription, using default filters, and an Azure ServiceBusQueue as a destination.

```
az eventgrid event-subscription create --name es2 \
--source-resource-id /subscriptions/{SubID} \
--endpoint-type servicebusqueue \
--endpoint /subscriptions/{SubID}/resourceGroups/TestRG/providers/Microsoft.ServiceBus/n
amespaces/ns1/queues/queue1
```

upvoted 2 times

✉  **OPT\_001122** 1 year, 4 months ago

correct

upvoted 1 times

✉  **BishopeL** 2 years, 7 months ago

Absolutely correct

upvoted 3 times

✉  **rustycables** 2 years, 7 months ago

Given is valid... but DYOR.

[https://docs.microsoft.com/en-us/cli/azure/eventgrid/event-subscription?view=azure-cli-latest#az\\_eventgrid\\_event\\_subscription\\_create](https://docs.microsoft.com/en-us/cli/azure/eventgrid/event-subscription?view=azure-cli-latest#az_eventgrid_event_subscription_create)

upvoted 2 times

 **MrXBasit** 2 years, 8 months ago

Correcto

upvoted 2 times

Question #2

**Introductory Info**

Case study -

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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.cpndl.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.

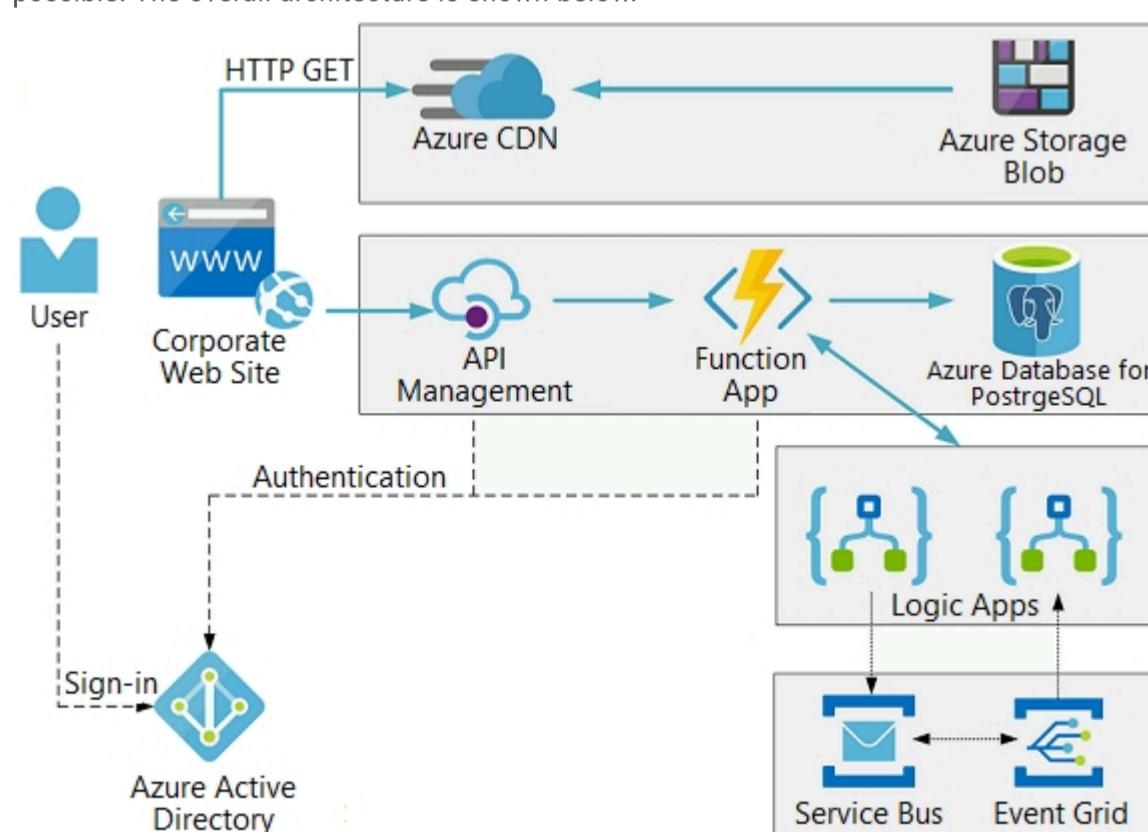
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.

3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. 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

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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.

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Security -

All SSL certificates and credentials must be stored in Azure Key Vault.

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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:

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Function app -

You perform local testing for the RequestUserApproval function. The following error message displays:

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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,
RA06 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 }

```

### Question

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

#### Correct Answer: C

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-compared-contrasted>

*Community vote distribution*

C (100%)

✉  **BrettusMaximus**  2 years, 11 months ago

Answer is Correct C. Service Bus

Only C. ServiceBus Queue and B. Service Bus Topic give a guarantee of delivery.

Since Topics can only receive messages from a Queue that leaves only C.

upvoted 25 times

✉  **surprise0011** 11 months, 4 weeks ago

received 2023-04-17 went with given answer, score 926

upvoted 3 times

✉  **agcertif**  3 years, 1 month ago

Azure Event Grid must use Azure Service Bus for queue-based load leveling.

upvoted 12 times

✉  **ZodiaC** 2 years, 8 months ago

YEP CORRECT IS C ! 100% >

I HATE THIS QUESTION,, Who create this one LOL

upvoted 7 times

✉ **Vmwarevirtual** Most Recent 10 months, 2 weeks ago

Appear in exam I took at 27-May-2023

I chose C - Azure Service Bus queue

<https://learn.microsoft.com/en-us/azure/service-bus-messaging/service-bus-to-event-grid-integration-concept?source=recommendations&tabs=event-grid-event-schema#how-many-events-are-emitted-and-how-often>

upvoted 1 times

✉ **szumik** 1 year, 1 month ago

had it on 22/02/2023. Went with SB queue and topic, score 846

upvoted 2 times

✉ **OPT\_001122** 1 year, 4 months ago

**Selected Answer: C**

C. Azure Service Bus queue

upvoted 2 times

✉ **Eltooth** 1 year, 9 months ago

**Selected Answer: C**

C is correct answer.

Service Bus Queue.

upvoted 2 times

✉ **Bogdan75** 2 years, 1 month ago

I agree the provided answer works – but why not consider Azure Service Bus topics (+subscriptions) instead?

upvoted 2 times

✉ **kozchris** 2 years, 1 month ago

Easy, C - Service Bus Queue.

From the problem description:

"Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering."

upvoted 4 times

✉ **lugospod** 2 years, 2 months ago

Got this one 01/2022. Went with service bus queue since it was requested.

upvoted 4 times

✉ **phvogel** 2 years, 5 months ago

I think Service Bus is the right answer but not because of the guarantee of delivery (Event Grid already promises "at least once" delivery). I'd pick it because of the dead letter queue that ensures that every message could be processed (or, at least, looked at).

In fact, without the dead letter queue, I'd pick Storage Queue because of its larger capacity and longer hold times (you could image the Logic App -- already using the Service Bus for load leveling -- falling so far behind that the number of messages hits the capacity limit on the Service Bus).

It's just a terrible, terrible question.

upvoted 3 times

✉ **yoloswag** 2 years, 9 months ago

Horrible question, just why Microsoft, why...

upvoted 7 times

✉ **shoguns6** 2 years, 10 months ago

Bit confusing, as per arch diagram, from azure event grid, arrows end at LogicApp, meaning, logic app is subscriber to event grid... will it not be 'logic app connector'?

upvoted 2 times

✉ **Spooky7** 2 years, 10 months ago

Question doesn't make sense. Event Grid events are the consequence of Service Bus messages (when new message appears in Service Bus than Event Grid emits an event to subscribers). So how Service Bus can be an answer which ensures that all EventGrid events are processed?

upvoted 1 times

✉ **pac1311** 3 years, 2 months ago

Weird question, not sure about the answer probably service bus queue or storage queue

upvoted 1 times

✉ **danielcr** 3 years, 1 month ago

Check the Case Study: "Azure Event Grid must use Azure Service Bus for queue-based load leveling." so.... C, Azure Service Bus queue (IMHO)

upvoted 5 times

✉ **cbn** 3 years, 2 months ago

Question is bit confusing. Not sure on the answer.

upvoted 2 times

 **cbn** 3 years, 1 month ago

Looking more into the question, the given answer looks correct.

Event grid sends all events to the service bus queue, and it is the best place to check if all events received by event grid are processed correctly.

upvoted 7 times

## Topic 25 - Testlet 26

Question #1

Topic 25

### Introductory Info

Case study -

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You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.

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Policy service -

You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.

The application must include the Event Grid Event ID field in all Application Insights telemetry.

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

Policies -

Log policy -

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.

Authentication events -

Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

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You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:

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Provide methods that allow a web service to scale itself.

Ensure that scaling actions do not disrupt application usage.

Other -

Anomaly detection service -

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Health monitoring -

All web applications and services have health monitoring at the /health service endpoint.

Issues -

Policy loss -

When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.

Performance issue -

When under heavy load, the anomaly detection service undergoes slowdowns and rejects connections.

Notification latency -

Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

App code -

EventGridController.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

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EventGridController.cs
EG01 public class EventGridController : Controller
EG02 {
EG03 public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04 public IActionResult Process([FromBody] string eventsJson)
EG05 {
EG06 var events = JArray.Parse(eventsJson);
EG07
EG08 foreach (var @event in events)
EG09 {
EG10 EventId.Value = @event["id"].ToString();
EG11 if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12 {
EG13 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14 }
EG15
EG16 {
EG17 EnsureLogging(@event["subject"].ToString());
EG18 }
EG19 }
EG20 return null;
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EG22 private void EnsureLogging(string resource)
EG23 {
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EG26 private async Task SendToAnomalyDetectionService(string uri)
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EG32 {
EG33 {
EG34 "input1",
EG35 new List<Dictionary<string, string>>()
EG36 {
EG37 new Dictionary<string, string>()
EG38 {
EG39 {
EG40 "logcontent", content
EG41 }
EG42 }
EG43 }
EG44 },
EG45 },
EG46 GlobalParameters = new Dictionary<string, string>() { }
EG47 };
EG48 var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49 var rawModelResult = await result.Content.ReadAsStringAsync();
EG50 var modelResult = JObject.Parse(rawModelResult);
EG51 if (modelResult["notify"].HasValues)
EG52 {
EG53 . . .
EG54 }
EG55 }
EG56 private (string name, string resourceGroup) ParseResourceId(string resourceId)
EG57 {
EG58 . . .
EG59 }
EG60 private string GetLogData(string uri)
EG61 {
EG62 . . .
EG63 }
EG64 static string BlobStoreAccountSAS(string containerName)
EG65 {
EG66 . . .
EG67 }
EG68 }
```

LoginEvent.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

#### LoginEvent.cs

```
LE01 public class LoginEvent
LE02 {
LE03
LE04 public string subject { get; set; }
LE05 public DateTime eventTime { get; set; }
LE06 public Dictionary<string, string> data { get; set; }
LE07 public string Serialize()
LE08 {
LE09 return JsonConvert.SerializeObject(this);
LE10 }
LE11 }
```

#### Question

DRAG DROP -

You need to add code at line EG15 in EventGridController.cs to ensure that the Log policy applies to all services.

How should you complete the code? To answer, drag the appropriate code segments to the correct locations. Each code 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.

Select and Place:

#### Code segments

topic  
status  
eventType  
Succeeded  
operationName  
resourceProvider

#### Answer Area

```
if {
 @event["data"][" code segment "].ToString() == " code segment "
 &&
 @event["data"][" code segment "].ToString() == "Microsoft.Web/sites/write"
}
```

#### Correct Answer:

#### Code segments

topic  
status  
eventType  
Succeeded  
operationName  
resourceProvider

#### Answer Area

```
if {
 @event["data"][" status "].ToString() == " Succeeded "
 &&
 @event["data"][" operationName "].ToString() == "Microsoft.Web/sites/write"
}
```

Scenario, Log policy: All Azure App Service Web Apps must write logs to Azure Blob storage.

Box 1: Status -

Box 2: Succeeded -

Box 3: operationName -

Microsoft.Web/sites/write is resource provider operation. It creates a new Web App or updates an existing one.

Reference:

<https://docs.microsoft.com/en-us/azure/role-based-access-control/resource-provider-operations>

 **MrZoom** Highly Voted 3 years ago

Answer seems to be correct.

Once a new web app is created, an event is triggered from the resource group...

<https://docs.microsoft.com/en-us/azure/event-grid/event-schema-resource-groups?tabs=event-grid-event-schema>

That event contains the status, which must be Succeeded in order for it to make sense to apply the policy. The above site also mentions that the event["data"] contains an operationName property for resource group events, which in this case is an "Microsoft.web/sites/write" operation.

upvoted 27 times

 **MiraA** 2 years, 6 months ago

operationName ... Name of the operation.

status ... String describing the status of the operation. Some common values are: Started, In Progress, Succeeded, Failed, Active, Resolved.  
<https://docs.microsoft.com/en-us/azure/azure-monitor/essentials/activity-log-schema#administrative-category>

Microsoft.Web/sites/Write ... Create a new Web App or update an existing one

<https://docs.microsoft.com/en-us/azure/role-based-access-control/resource-provider-operations>

But why do we need to call EnsureLogging() upon creating/updating the Web App?

I cannot find such requirement in the assignment. Or am I wrong?

upvoted 4 times

 **OPT\_001122** Most Recent  1 year, 4 months ago

1: Status

2: Succeeded

3: operationName

upvoted 2 times

 **ning** 2 years, 7 months ago

The given answer seems logical, but the wording is so confusing ...

This operation is for when a new web site is created or updated, or a web log is generated ...

upvoted 1 times

 **MiraA** 2 years, 6 months ago

Confusing is the opening brace - it should be "(" instead of "{" as it is a logical expression for the "if" statement. ;-)

upvoted 3 times

 **Faizs** 2 years, 11 months ago

Correct

upvoted 1 times

## Question #2

### Introductory Info

#### Case study -

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The application must include the Event Grid Event ID field in all Application Insights telemetry.

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

#### Policies -

##### Log policy -

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.

##### Authentication events -

Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

##### PolicyLib -

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#### Other -

##### Anomaly detection service -

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

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All web applications and services have health monitoring at the /health service endpoint.

#### Issues -

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When under heavy load, the anomaly detection service undergoes slowdowns and rejects connections.

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EG16 {
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EG20 return null;
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EG22 private void EnsureLogging(string resource)
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EG26 private async Task SendToAnomalyDetectionService(string uri)
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EG31 Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
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EG37 new Dictionary<string, string>()
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LE01 public class LoginEvent
LE02 {
LE03
LE04 public string subject { get; set; }
LE05 public DateTime eventTime { get; set; }
LE06 public Dictionary<string, string> data { get; set; }
LE07 public string Serialize()
LE08 {
LE09 return JsonConvert.SerializeObject(this);
LE10 }
LE11 }
```

#### Question

HOTSPOT -

You need to insert code at line LE03 of LoginEvent.cs to ensure that all authentication events are processed correctly.

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

#### Answer Area

public string	( get; set; )
id	
eventType	
dataVersion	
metadataVersion	

public string	( get; set; )
id	
eventType	
dataVersion	
metadataVersion	

public string	( get; set; )
id	
eventType	
dataVersion	
metadataVersion	

#### Answer Area

public string	( get; set; )
id	
eventType	
dataVersion	
metadataVersion	

public string	( get; set; )
id	
eventType	
dataVersion	
metadataVersion	

public string	( get; set; )
id	
eventType	
dataVersion	
metadataVersion	

Correct Answer:

Box 1: id -

id is a unique identifier for the event.

## Box 2: eventType -

eventType is one of the registered event types for this event source.

## Box 3: dataVersion -

dataVersion is the schema version of the data object. The publisher defines the schema version.

Scenario: Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

The following example shows the properties that are used by all event publishers:

```
[
 {
 "topic": string,
 "subject": string,
 "id": string,
 "eventType": string,
 "eventTime": string,
 "data": {
 object-unique-to-each-publisher
 },
 "dataVersion": string,
 "metadataVersion": string
 }
]
```

Reference:

<https://docs.microsoft.com/en-us/azure/event-grid/event-schema>

✉️  **somenkr** Highly Voted 2 years, 9 months ago

Answer is correct : metadataVersion string Not required, but if included, must match the Event Grid Schema

upvoted 14 times

✉️  **JH81** Most Recent 9 months, 3 weeks ago

Wow MS, id and eventType I get but we then have to decide between dataVersion and metadataVersion and somehow know that metadataVersion only has a getter??? Another wonderful question.

upvoted 4 times

✉️  **plusJoyed** 11 months, 1 week ago

Why does the order matter for the 3 values? Isn't this just a class model/interface?

upvoted 4 times

✉️  **devex** 7 months ago

Order does not matter and as long as you do not select duplicates, you get at least 2/3 points. Strange question.

upvoted 2 times

✉️  **UnknowMan** 2 years, 10 months ago

Correct (Metadataversion have not a Setter so is Dataversion), Id and eventType is required in Event Grid Schema

upvoted 4 times

✉️  **faizalzain** 2 years, 11 months ago

the last one i think should be metadataversion

upvoted 2 times

✉️  **jay158** 2 years, 8 months ago

NO , the only allowed value at present for metadataversion is 1

<https://docs.microsoft.com/en-us/azure/event-grid/event-schema>

upvoted 2 times

✉️  **ning** 2 years, 7 months ago

No, metadataversion is determined by event grid, not sender

upvoted 2 times

✉️  **Mike\_St** 3 years ago

As shown in the example in the explanation of the answer, all 4 values are needed BUT from programmer stand point... ID should not be public and have getter and setter... it should be a private immutable value... so in my opinion it should be eventType dataVersion and metadataVersion (i am not 100% certain of that answer)

upvoted 4 times

✉️  **rdemontis** 3 years ago

I think answer is correct because id is a required field in EventGrid Schema and if you look at the EventGridEvent class from Microsoft libraries the property has both getter and setter methods defined.

[https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.eventgrid.models.eventgridevent.id?view=azure-dotnet#Microsoft\\_Azure\\_EventGrid\\_Models\\_EventGridEvent\\_Id](https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.eventgrid.models.eventgridevent.id?view=azure-dotnet#Microsoft_Azure_EventGrid_Models_EventGridEvent_Id)

upvoted 9 times

✉ **aperez1979** 3 years ago

I agree, metadataversion only get <https://docs.microsoft.com/en-us/dotnet/api/microsoft.azure.eventgrid.models.eventgridevent.metadataversion?view=azure-dotnet>

upvoted 10 times

✉ **clarionprogrammer** 2 years, 12 months ago

Good point. I can't believe their question choice is so nit-picky.

upvoted 2 times

✉ **clarionprogrammer** 2 years, 11 months ago

This question proves how ridiculous this test is.

upvoted 23 times

Question #3

## Introductory Info

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LE07 public string Serialize()
LE08 {
LE09 return JsonConvert.SerializeObject(this);
LE10 }
LE11 }
```

#### Question

HOTSPOT -

You need to implement the Log policy.

How should you complete the EnsureLogging method in EventGridController.cs? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

#### Answer Area

```
var client = new WebSiteManagementClient(. . .);
var id = ParseResourceID(resource);
var appSettings = new StringDictionary(name: "properties",
 properties: new Dictionary<string, string> {
 {"DIAGNOSTICS_AZUREBLOBCONTAINERSASURL", BlobStoreAccountSAS(" ")),
 {"DIAGNOSTICS_AZUREBLOBRETENTIONINDAYS", " "}
 });
 ()
 ()
 id.resourceGroup,
 id.name, appSettings);
```

logs
logdrop

15
30

Correct Answer:

#### Answer Area

```
var client = new WebSiteManagementClient(. . .);
var id = ParseResourceID(resource);
var appSettings = new StringDictionary(name: "properties",
 properties: new Dictionary<string, string> {
 {"DIAGNOSTICS_AZUREBLOBCONTAINERSASURL", BlobStoreAccountSAS(" ")),
 {"DIAGNOSTICS_AZUREBLOBRETENTIONINDAYS", " "}
 });
 ()
 ()
 id.resourceGroup,
 id.name, appSettings);
```

logs
logdrop

15
30

Box 1: logdrop -

All log files should be saved to a container named logdrop.

Box 2: 15 -

Logs must remain in the container for 15 days.

Box 3: UpdateApplicationSettings

All Azure App Service Web Apps must write logs to Azure Blob storage.

Reference:

<https://blog.hompus.nl/2017/05/29/adding-application-logging-blob-to-a-azure-web-app-service-using-powershell/>

✉  **rdemontis** Highly Voted 3 years ago

answer is correct

upvoted 24 times

✉  **JH81** Most Recent 9 months, 3 weeks ago

First 2 are simple and straight from the requirements but why do you have to know a property name for a .NET class for the 3rd??

upvoted 3 times

✉  **OPT\_001122** 1 year, 4 months ago

Correct

upvoted 2 times

✉  **gmishra88** 1 year, 6 months ago

What is BlobStoreAccountSAS? I cannot find anything with that reference. Microsoft just randomly expects me to remember these class names. Google, sorry Bing, doesn't Bing it for them

upvoted 2 times

✉  **coffecold** 1 year, 5 months ago

BlobStoreAccountSAS() is just a method listed in the case on line EG64

upvoted 3 times

✉  **SivajiTheBoss** 2 years ago

Correct Answer provided

upvoted 2 times

✉  **AzureDJ** 2 years ago

Given answer is correct

upvoted 1 times

✉  **mc0re** 2 years, 7 months ago

This is too simple. One doesn't need to know anything except for the requirements...

upvoted 3 times

✉  **xRiot007** 1 year, 9 months ago

Right, maybe MS needs even more complicated tests, so we can memorize even more info that we can find using Google in 10 minutes or less.

upvoted 9 times

✉  **BroGood** 2 years, 9 months ago

given answer is correct

upvoted 2 times

✉  **UnknowMan** 2 years, 10 months ago

Correct ;)

upvoted 2 times

## Topic 26 - Testlet 3

Question #1

Topic 26

### Introductory Info

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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Background -

You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.

Requirements -

Policy service -

You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.

The application must include the Event Grid Event ID field in all Application Insights telemetry.

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

Policies -

Log policy -

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.

Authentication events -

Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

PolicyLib -

You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:

Exclude non-user actions from Application Insights telemetry.

Provide methods that allow a web service to scale itself.

Ensure that scaling actions do not disrupt application usage.

Other -

Anomaly detection service -

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Health monitoring -

All web applications and services have health monitoring at the /health service endpoint.

Issues -

Policy loss -

When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.

Performance issue -

When under heavy load, the anomaly detection service undergoes slowdowns and rejects connections.

Notification latency -

Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

App code -

EventGridController.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
EventGridController.cs
EG01 public class EventGridController : Controller
EG02 {
EG03 public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04 public IActionResult Process([FromBody] string eventsJson)
EG05 {
EG06 var events = JArray.Parse(eventsJson);
EG07
EG08 foreach (var @event in events)
EG09 {
EG10 EventId.Value = @event["id"].ToString();
EG11 if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12 {
EG13 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14 }
EG15 {
EG16 EnsureLogging(@event["subject"].ToString());
EG17 }
EG18 }
EG19 }
EG20 return null;
EG21 }
EG22 private void EnsureLogging(string resource)
EG23 {
EG24 . . .
EG25 }
EG26 private async Task SendToAnomalyDetectionService(string uri)
EG27 {
EG28 var content = GetLogData(uri);
EG29 var scoreRequest = new
EG30 {
EG31 Inputs = new Dictionary<string, List<Dictionary<string, string>>()
EG32 {
EG33 {
EG34 "input1",
EG35 new List<Dictionary<string, string>>()
EG36 {
EG37 new Dictionary<string, string>()
EG38 {
EG39 {
EG40 "logcontent", content
EG41 }
EG42 }
EG43 }
EG44 },
EG45 },
EG46 GlobalParameters = new Dictionary<string, string>() { }
EG47 };
EG48 var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49 var rawModelResult = await result.Content.ReadAsStringAsync();
EG50 var modelResult = JObject.Parse(rawModelResult);
EG51 if (modelResult["notify"].HasValues)
EG52 {
EG53 . . .
EG54 }
EG55 }
EG56 private (string name, string resourceGroup) ParseResourceId(string resourceId)
EG57 {
EG58 . . .
EG59 }
EG60 private string GetLogData(string uri)
EG61 {
EG62 . . .
EG63 }
EG64 static string BlobStoreAccountSAS(string containerName)
EG65 {
EG66 . . .
EG67 }
EG68 }
```

LoginEvent.cs -

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
>LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04 public string subject { get; set; }
LE05 public DateTime eventTime { get; set; }
LE06 public Dictionary<string, string> data { get; set; }
LE07 public string Serialize()
LE08 {
LE09 return JsonConvert.SerializeObject(this);
LE10 }
LE11 }
```

### Question

You need to resolve a notification latency issue.

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

NOTE: Each correct selection is worth one point.

- A. Set Always On to true.
- B. Ensure that the Azure Function is using an App Service plan.
- C. Set Always On to false.
- D. Ensure that the Azure Function is set to use a consumption plan.

#### Correct Answer: AB

Azure Functions can run on either a Consumption Plan or a dedicated App Service Plan. If you run in a dedicated mode, you need to turn on the Always On setting for your Function App to run properly. The Function runtime will go idle after a few minutes of inactivity, so only HTTP triggers will actually "wake up" your functions. This is similar to how WebJobs must have Always On enabled.

Scenario: Notification latency: Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

Anomaly detection service: You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service.

If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Reference:

<https://github.com/Azure/Azure-Functions/wiki/Enable-Always-On-when-running-on-dedicated-App-Service-Plan>

*Community vote distribution*

AB (100%)

 **andsol** Highly Voted 3 years, 1 month ago

Correct

upvoted 29 times

 **mlantonis** Highly Voted 2 years, 10 months ago

Correct Answer: A and B

Always On enables waking up on HTTP trigger, but does not prevent the exceeding the max time out time of 230 seconds.

If your function app is on the Consumption plan, there can be up to a 10-minute delay in processing new blobs if a function app has gone idle. To avoid this latency, you can switch to an App Service plan with Always On enabled. You can also use an Event Grid trigger with your Blob storage account.

Reference:

<https://docs.microsoft.com/en-us/azure/azure-functions/dedicated-plan#always-on>

<https://github.com/Azure/Azure-Functions/wiki/Enable-Always-On-when-running-on-dedicated-App-Service-Plan>

<https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-event-overview>

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-trigger?tabs=csharp#event-grid-trigger>

upvoted 19 times

 **uffuchsi** Most Recent 1 year, 1 month ago

**Selected Answer: AB**

Always On is required and you need App Service Plan for that feature

upvoted 2 times

OPT\_001122 1 year, 4 months ago

**Selected Answer: AB**

Correct

upvoted 1 times

DP\_Bhatt 1 year, 5 months ago

**Selected Answer: AB**

Correct Answer: A and B

upvoted 1 times

SivajiTheBoss 2 years ago

A and B is correct

upvoted 1 times

Naval708 2 years, 10 months ago

A and B is correct

upvoted 2 times

UnknowMan 2 years, 10 months ago

Correct ;)

upvoted 3 times

## Topic 27 - Testlet 4

Question #1

Topic 27

### Introductory Info

Case study -

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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
```

## ApplicationManifest -

```
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 }
```

## Question

## HOTSPOT -

You need to ensure that validation testing is triggered per the requirements.

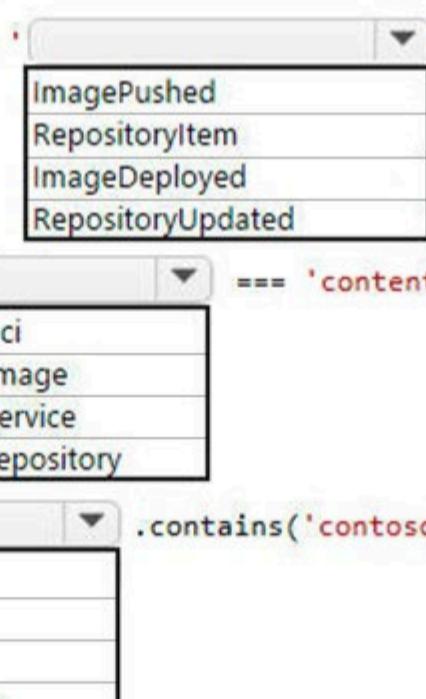
How should you complete the code segment? To answer, select the appropriate values in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

## Answer Area

```
var event = getEvent();
if (event.eventType === 'ImagePushed'
 && event.data.target === 'contentanalysiservice'
 && event.data.topic.contains('contosoimages'))
{
 startValidationTesting();
}
```



**Answer Area**

```

var event = getEvent();
if (event.eventType === 'ImagePushed' && event.data.target === 'contentanalysisservice' && event.data.contains('contosoimages')) {
 startValidationTesting();
}

```

Correct Answer:

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>

✉ **halmosi** Highly Voted 3 years, 1 month ago

Incorrect...

1. ImagePushed
2. repository
3. topic

<https://docs.microsoft.com/hu-hu/azure/event-grid/event-schema-container-registry?tabs=event-grid-event-schema>  
upvoted 110 times

✉ **clarionprogrammer** 2 years, 12 months ago

In English...

<https://docs.microsoft.com/en-us/azure/event-grid/event-schema-container-registry?tabs=event-grid-event-schema>  
upvoted 2 times

✉ **rdemontis** 3 years ago

thanks for the tip! The answer indicated by the test seems to be completely "off topic" ;-)

upvoted 6 times

✉ **KingChuang** 1 year, 3 months ago

On my exam 2022-12-26.

Chose:

1. ImagePushed
2. repository
3. topic

upvoted 2 times

✉ **gbtest** 2 years, 9 months ago

Yes, imho the answer should be ImagePushed, repository and topic. As the Example Event shows a Event Grid event schema, with explained the schema of the Azure Container Registry EventGrid events doesn't contain fields like imagecollection, service, etc. Note that for eventType only ImagePushed, ImageDeleted, ChartPushed and ChartDeleted (last two raised from Helm charts) are valid. So 1 should be ImagePushed, send the json notes a data.target.repository

upvoted 2 times

✉ **coffecold** Highly Voted 1 year, 5 months ago

Ok, I need to start memorizing all schemes of possible event system topics:  
Azure API Management

Azure App Configuration  
Azure App Service  
Azure Blob Storage  
Azure Cache for Redis  
Azure Communication Services  
Azure Container Registry  
Azure Event Hubs  
Azure FarmBeats  
Azure Health Data Services  
Azure IoT Hub  
Azure Key Vault  
Azure Kubernetes Service  
Azure Machine Learning  
Azure Maps  
Azure Media Services  
Azure Policy  
Azure resource groups  
Azure Service Bus  
Azure SignalR  
Azure subscriptions....

upvoted 14 times

 **ENGs** Most Recent ⓘ 6 months, 1 week ago

On my exam 2023-10 before the Update of the Exam

upvoted 1 times

 **katrang** 6 months, 3 weeks ago

I would go for

1. ImagePushed
2. Repository
3. Topic

Based on the grid event schema example everyone has linked to

```
[
 {
 "topic": "/subscriptions/<subscription-id>/resourceGroups/<resource-group-name>/providers/Microsoft.ContainerRegistry/registries/<name>",
 "eventType": "Microsoft.ContainerRegistry.ImagePushed",
 "data": {
 "target": {
 "repository": "<name>",
 ...
 },
 ...
 }
 }]
```

upvoted 1 times

 **NightshadeRC** 8 months, 2 weeks ago

Had this question today: 2023-07-26

upvoted 2 times

 **macobuzi** 7 months, 1 week ago

What did you choose then?

upvoted 1 times

 **KGi** 1 year, 1 month ago

The number of questions with incorrect responses is overwhelming. ExamTopics should mark the correct answers properly to make life easier for us. :(

upvoted 7 times

 **AlexeyG** 1 year, 1 month ago

Got this in 16/02/2023

upvoted 4 times

 **OPT\_001122** 1 year, 4 months ago

ImagePushed

Repository

Topic

upvoted 2 times

 **gmishra88** 1 year, 6 months ago

How does a new image being pushed mean a new deployment. And they expect me to remember the whole schema for all the services that can send events to EventGrid? And I could even imagine a blob storage being there. This requirement itself is at the edge of darkness and using a repository event to fulfill that requirement can only be thought of really junior hello world programmers of Microsoft.

upvoted 1 times

 **gmishra88** 1 year, 6 months ago

EUREKA. Did you guys notice "All Internal services must only be accessible from internal Virtual Networks (VNets)." It NEVER said it should be connected to a vnet. It just said it should be ACCESSED from INTERNAL vnet (not Azure vnet). A nice red-herring planted by Microsoft guys (Do not be evil)

## THE ANSWER SHOULD BE CONSUMPTION PLAN

upvoted 1 times

 **TMakki** 1 year, 8 months ago

This question is also in Udemy.

1. ImagePushed
2. repository
3. topic

upvoted 2 times

 **Ciupaz** 5 months, 3 weeks ago

Which course?

upvoted 1 times

 **Sandeep12093** 1 year, 9 months ago

1. Imagepushed - acr has only 4 event types imagepushed, imagedeleted, chartpushed n chart deleted
2. Service ?
3. Repository - this is correct as per MS documentation

upvoted 1 times

 **Sandeep12093** 1 year, 9 months ago

I just checked ACR event schema

3. Topic - since it has id,eventtype,topic,subject,data,dataversion.... there is no repository

upvoted 1 times

 **Sandeep12093** 1 year, 9 months ago

2. REPOSITORY

<https://docs.microsoft.com/en-us/azure/container-registry/container-registry-event-grid-quickstart>

Check image it has schema written.

upvoted 1 times

 **SivajiTheBoss** 2 years ago

100 % correct answer: Cross referenced in Udemy

ImagePushed

Repository

Topic

upvoted 3 times

 **petibilly** 2 years, 1 month ago

Got this one 03/2022

upvoted 1 times

 **leonidn** 2 years, 2 months ago

ImagePushed

Repository

Topic

<https://docs.microsoft.com/en-us/azure/event-grid/event-schema-container-registry?tabs=event-grid-event-schema>

upvoted 2 times

 **mc0re** 2 years, 7 months ago

"Image pushed into a repository" is not the same as "image deployed, container is running". One cannot start testing on a pushed image, only after it has been deployed.

upvoted 3 times

 **MiraA** 2 years, 6 months ago

Hmm, maybe some multi-step task will be used so "ImagePushed" event means the image will be run as a container in a moment? Or is there some functionality in that private ACR which will run/deploy the updated image automatically?

<https://docs.microsoft.com/en-us/azure/container-registry/container-registry-tasks-multi-step>

upvoted 1 times

 **Harichakradhar** 2 years, 8 months ago

100 % correct

ImagePushed

Repository

Topic

upvoted 4 times

 **sien** 2 years, 11 months ago

Indeed,

ImagePushed

Repository and

Topic

upvoted 7 times



## Introductory Info

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The solution will use eight CPU cores.

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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.

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- 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.

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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
```

## ApplicationManifest -

```

AM01 {
AM02 "id" : "2b079f03-9b06-2d44-98bb-e9182901fc6",
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 }

```

## Question

You need to deploy the CheckUserContent Azure Function. The solution must meet the security and cost requirements.

Which hosting model should you use?

- A. Premium plan
- B. App Service plan
- C. Consumption plan

**Correct Answer: B**

Scenario:

You must minimize costs for all Azure services.

All Internal services must only be accessible from internal Virtual Networks (VNets).

Best for long-running scenarios where Durable Functions can't be used. Consider an App Service plan in the following situations:

- ☞ You have existing, underutilized VMs that are already running other App Service instances.
- ☞ You want to provide a custom image on which to run your functions.
- ☞ Predictive scaling and costs are required.

Note: When you create a function app in Azure, you must choose a hosting plan for your app. There are three basic hosting plans available for Azure Functions:

Consumption plan, Premium plan, and Dedicated (App Service) plan.

Incorrect Answers:

A: A Premium plan would be more costly.

C: Need the VNET functionality.

Reference:

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale>

*Community vote distribution*

B (100%)

✉  **ning**  2 years, 7 months ago

A is correct! I guess the guy gives the answer confused with which one is cheaper. Premium is cheaper than app service place. It can auto scale, warm starting and with VNET integration. In addition, it can run custom container as well, just the same as app service plan.

upvoted 24 times

✉  **xavi1** 2 years, 1 month ago

Premium does NOT support VNET in multiple regions: <https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale#networking-features>, i beleive it's B

upvoted 8 times

✉  **wangga** 2 years, 1 month ago

I agree, VNET and multiple regions only available for AppService plan

upvoted 2 times

✉  **troy89** 2 years, 1 month ago

Are you sure? When I compare the costs (same ACU, memory, etc.) then App Service Plan is always cheaper.

upvoted 3 times

✉ **ning** 2 years, 7 months ago

Too add some more stuff here, ASE(application service environment) is very different app service plan and way more expensive, in addition, those two docker images are in azure registry so, definitely can be supported by premium plan.

upvoted 1 times

✉ **altafpatel1984** 2 years, 4 months ago

but here will use existing app service plan, will not create new one. so using existing app service plan will be cost effective.

upvoted 3 times

✉ **j888** Highly Voted 2 years, 7 months ago

I believed the answer is correct.

<https://docs.microsoft.com/en-us/azure/azure-functions/dedicated-plan>

"You pay for function apps in an App Service Plan as you would for other App Service resources. This differs from Azure Functions Consumption plan or Premium plan hosting..."

So.. ASE can be made available on the App service plan that hosting the function

upvoted 8 times

✉ **ENGs** Most Recent 6 months, 1 week ago

On my exam 2023-10 before the Update of the Exam

upvoted 2 times

✉ **MikeAWS** 5 months, 3 weeks ago

sorry, what do you mean by "before the update of the Exam"?

upvoted 1 times

✉ **dddddd111** 4 months, 4 weeks ago

Microsoft have recently updated AZ-204 courses. (Not that much actually, but it may have impact to some of the questions in the exam)

upvoted 2 times

✉ **NightshadeRC** 8 months, 2 weeks ago

Had this question today: 2023-07-26

upvoted 2 times

✉ **appieazure** 1 year, 2 months ago

Selected Answer: B

On My Exam:2022-12-02

upvoted 1 times

✉ **KingChuang** 1 year, 3 months ago

Selected Answer: B

On My Exam:2022-12-26

My Choice:

B:App Service plan

upvoted 3 times

✉ **OPT\_001122** 1 year, 4 months ago

Selected Answer: B

<https://learn.microsoft.com/en-us/azure/azure-functions/functions-scale#networking-features>

Premium plan Vnet integration is regional hence for this question it is not the correct answer.

Correct Answer - App Service Plan

upvoted 5 times

✉ **gmishra88** 1 year, 6 months ago

Another highly debated question. Very good points on whether Premium is costly or (dedicated) app service plan is costly. No idea. Only thing sure is it cannot be consumption because of the hidden wording for vnet integration. But I guess Microsoft guys forgot that they added that vnet integration requirement and expected us to answer Consumption plan. But my intelligence will make me answer app service plan and hope for the best

upvoted 3 times

✉ **naicud** 2 years ago

I think B is correct

The virtual network integration feature is used in Azure App Service dedicated compute pricing tiers. If your app is in an App Service Environment, it's already in a virtual network and doesn't require use of the VNet integration feature to reach resources in the same virtual network: <https://docs.microsoft.com/en-us/azure/azure-functions/functions-networking-options#:~:text=The%20virtual%20network%20integration%20feature,in%20the%20same%20virtual%20network>.

upvoted 2 times

✉ **SivajiTheBoss** 2 years, 1 month ago

Correct Answer: A

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale>

upvoted 1 times

 **Mev4953** 2 years, 2 months ago

The given answer and explanation seem correct.  
upvoted 1 times

 **altafpatel1984** 2 years, 4 months ago

"If you just want to run your function app in a virtual network, you can do this using the Premium plan."

Reference: <https://docs.microsoft.com/en-us/azure/azure-functions/dedicated-plan>  
upvoted 4 times

 **phvogel** 2 years, 5 months ago

I'm liking the App Service plan (B). It's 10 cents an hour cheaper than Premium at the S1 level (even cheaper at higher levels) and has the VNet integration the case study requires. The only thing that Premium adds is private endpoints which aren't required here.  
<https://azure.microsoft.com/en-us/pricing/details/app-service/windows/>  
upvoted 4 times

 **Kalaisuran** 2 years, 9 months ago

Option: A.  
Reason : As per the security rule : All Internal services must only be accessible from internal Virtual Networks (VNets). Since the AZ function consumption plan does n't support vnet, So choose the next option Premium Plan  
upvoted 3 times

 **ZodiaC** 2 years, 8 months ago

ANY LINKS?  
upvoted 1 times

 **SWedig** 2 years, 8 months ago

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale>  
upvoted 1 times

 **JamesDC** 2 years, 8 months ago

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale>  
with this document, ASE provides vNet integration. So, answer should be ASE for sure.  
upvoted 2 times

 **Jurgen1234** 2 years, 9 months ago

Should'be A Imho, both the UploadService and AnalysisService run in container instances on in app service plans  
upvoted 1 times

 **ZodiaC** 2 years, 8 months ago

ANY LINKS ???  
upvoted 1 times

 **SWedig** 2 years, 8 months ago

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale>  
upvoted 2 times

 **ning** 2 years, 6 months ago

Completely wrong! Container instance is different from app service plan, two very different ways to host container images, there is no way you can have a container instance running on top of a service plan  
upvoted 1 times

 **PhILLI** 2 years, 2 months ago

after choosing Docker Image you can still select an App Service Plan ....  
upvoted 1 times

## Topic 28 - Testlet 5

Question #1

Topic 28

### Introductory Info

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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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 the Next button. 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 the Question button to return to the question.

LabelMaker app -

Coho Winery produces, bottles, and distributes a variety of wines globally. You are a developer implementing highly scalable and resilient applications to support online order processing by using Azure solutions.

Coho Winery has a LabelMaker application that prints labels for wine bottles. The application sends data to several printers. The application consists of five modules that run independently on virtual machines (VMs). Coho Winery plans to move the application to Azure and continue to support label creation.

External partners send data to the LabelMaker application to include artwork and text for custom label designs.

Requirements. Data -

You identify the following requirements for data management and manipulation:

Order data is stored as nonrelational JSON and must be queried using SQL.

Changes to the Order data must reflect immediately across all partitions. All reads to the Order data must fetch the most recent writes.

Requirements. Security -

You have the following security requirements:

Users of Coho Winery applications must be able to provide access to documents, resources, and applications to external partners.

External partners must use their own credentials and authenticate with their organization's identity management solution.

External partner logins must be audited monthly for application use by a user account administrator to maintain company compliance.

Storage of e-commerce application settings must be maintained in Azure Key Vault.

E-commerce application sign-ins must be secured by using Azure App Service authentication and Azure Active Directory (AAD).

Conditional access policies must be applied at the application level to protect company content.

The LabelMaker application must be secured by using an AAD account that has full access to all namespaces of the Azure Kubernetes Service (AKS) cluster.

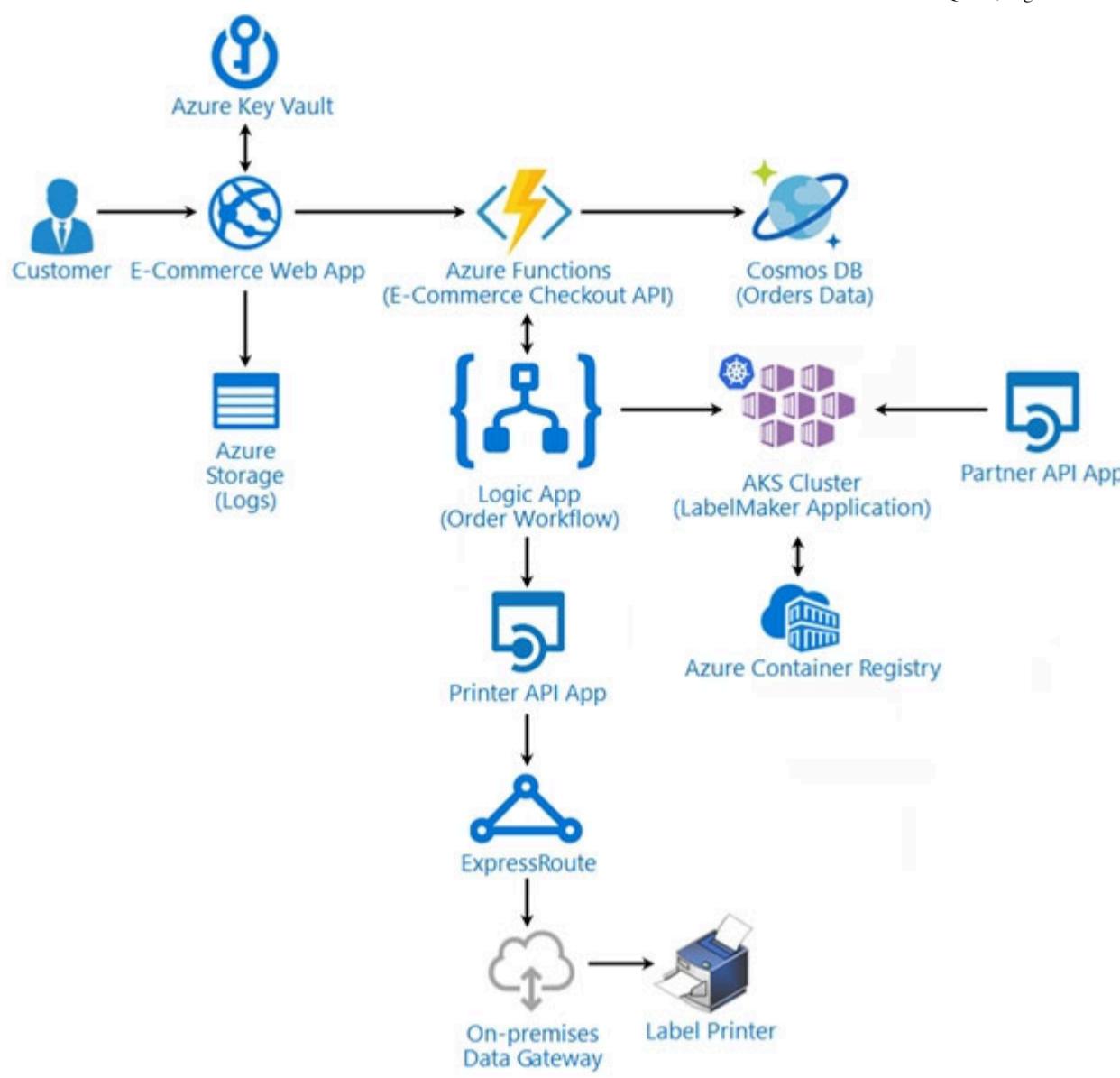
Requirements. LabelMaker app -

Azure Monitor Container Health must be used to monitor the performance of workloads that are deployed to Kubernetes environments and hosted on Azure

Kubernetes Service (AKS).

You must use Azure Container Registry to publish images that support the AKS deployment.

Architecture -



#### Issues -

Calls to the Printer API App fail periodically due to printer communication timeouts.

Printer communication timeouts occur after 10 seconds. The label printer must only receive up to 5 attempts within one minute.

The order workflow fails to run upon initial deployment to Azure.

#### Order.json -

Relevant portions of the app files are shown below. Line numbers are included for reference only.

This JSON file contains a representation of the data for an order that includes a single item.

Order.json -

**Order.json**

```
01 {
02 "id" : 1,
03 "customers" : [
04 {
05 "familyName" : "Doe",
06 "givenName" : "John",
07 "customerid" : 5
08 }
09],
10 "line_items" : [
11 {
12 "fulfillable_quantity" : 1,
13 "id": 6,
14 "price" : "199.99" ,
15 "product_id" : 7513594,
16 "quantity": 1,
17 "requires_shipping" : true ,
18 "sku": "SFC-342-N" ,
19 "title" : "Surface Go" ,
20 "vendor" : "Microsoft" ,
21 "name" : "Surface Go - 8GB" ,
22 "taxable" : true ,
23 "tax_lines" : [
24 {
25 "title" : "State Tax" ,
26 "price" : "3.98" ,
27 "rate" : 0.06
28 }
29],
30 "total_discount" : "5.00" ,
31 "discount_allocations" : [
32 {
33 "amount" : "5.00" ,
34 "discount_application_index" : 2
35 }
36]
37 }
```

**Question**

DRAG DROP -

You need to deploy a new version of the LabelMaker application to ACR.

Which three 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.

Select and Place:

**Actions**

Log in to the registry and push image.

Create an alias of the image with a new build number.

Create an alias of the image with the fully qualified path to the registry.

Download the image to your local computer.

Build a new application image by using dockerfile.

**Answer area**

Correct Answer:

**Actions**

Create an alias of the image with a new build number.

Download the image to your local computer.

**Answer area**

Build a new application image by using dockerfile.

Create an alias of the image with the fully qualified path to the registry.

Log in to the registry and push image.

Step 1: Build a new application image by using dockerfile

Step 2: Create an alias if the image with the fully qualified path to the registry

Before you can push the image to a private registry, you've to ensure a proper image name. This can be achieved using the docker tag command. For demonstration purpose, we'll use Docker's hello world image, rename it and push it to ACR.

# pulls hello-world from the public docker hub

\$ docker pull hello-world

# tag the image in order to be able to push it to a private registry

\$ docker tag hello-world <REGISTRY\_NAME>/hello-world

# push the image

\$ docker push <REGISTRY\_NAME>/hello-world

Step 3: Log in to the registry and push image

In order to push images to the newly created ACR instance, you need to login to ACR from the Docker CLI. Once logged in, you can push any existing docker image to your ACR instance.

Scenario:

Coho Winery plans to move the application to Azure and continue to support label creation.

LabelMaker app -

Azure Monitor Container Health must be used to monitor the performance of workloads that are deployed to Kubernetes environments and hosted on Azure

Kubernetes Service (AKS).

You must use Azure Container Registry to publish images that support the AKS deployment.

Reference:

<https://thorsten-hans.com/how-to-use-a-private-azure-container-registry-with-kubernetes-9b86e67b93b6> <https://docs.microsoft.com/en-us/azure/container-registry/container-registry-tutorial-quick-task>

 **SivajiTheBoss**  2 years, 1 month ago

Correct answer given.

Step 1: Build a new application image by using dockerfile

```
FROM node:8.9.3-alpine
RUN mkdir -p /usr/src/app
COPY ./app/ /usr/src/app/
WORKDIR /usr/src/app
RUN npm install
CMD node /usr/src/app/index.js
```

docker build ./aci-helloworld -t aci-test-app  
docker images

docker run -d -p 8080:80 aci-test-app  
(Example to build image only and run locally)

Step 2: Create an alias if the image with the fully qualified path to the registry  
docker tag mcr.microsoft.com/oss/nginx/nginx:1.15.5-alpine myregistry.azurecr.io/samples/nginx

Step 3: Log in to the registry and push image  
docker push myregistry.azurecr.io/samples/nginx

upvoted 20 times

✉ **OPT\_001122** 1 year, 4 months ago

nice explanation

upvoted 1 times

✉ **jay158** Highly Voted 2 years, 9 months ago

Correct

<https://docs.microsoft.com/en-us/azure/container-registry/container-registry-get-started-docker-cli?tabs=azure-cli>

upvoted 10 times

✉ **AnKiLa** 2 years, 8 months ago

Agree

But it's an update - so this link looks better for me:

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

upvoted 3 times

✉ **whiteblack** Most Recent 1 year, 3 months ago

Very Useful.

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

You could still alias with a new build number, but yeah, not required. And, yes, the version can be a build number. But if only three can be chosen I will not select that

upvoted 1 times

✉ **meoukg** 2 years ago

Got it on 03/2022, I chose as below:

Step 1: Build a new application image by using dockerfile

Step 2: Create an alias if the image with the fully qualified path to the registry

Step 3: Log in to the registry and push image

upvoted 3 times

✉ **mc0re** 2 years, 7 months ago

Strange question. I realize that from the provided options this is the only solution one can assemble. But the project describes LabelMaker app to be a set of images running in AKS. Pushing a new image into ACR won't change a thing, as one needs to update the YAML deployment file for Kubernetes to pick up the image, and then tell AKS to reconcile.

upvoted 4 times

✉ **gmishra88** 1 year, 6 months ago

It is a Microsoft question. Keep intelligence out of it

upvoted 6 times

Question #2

## Introductory Info

Case study -

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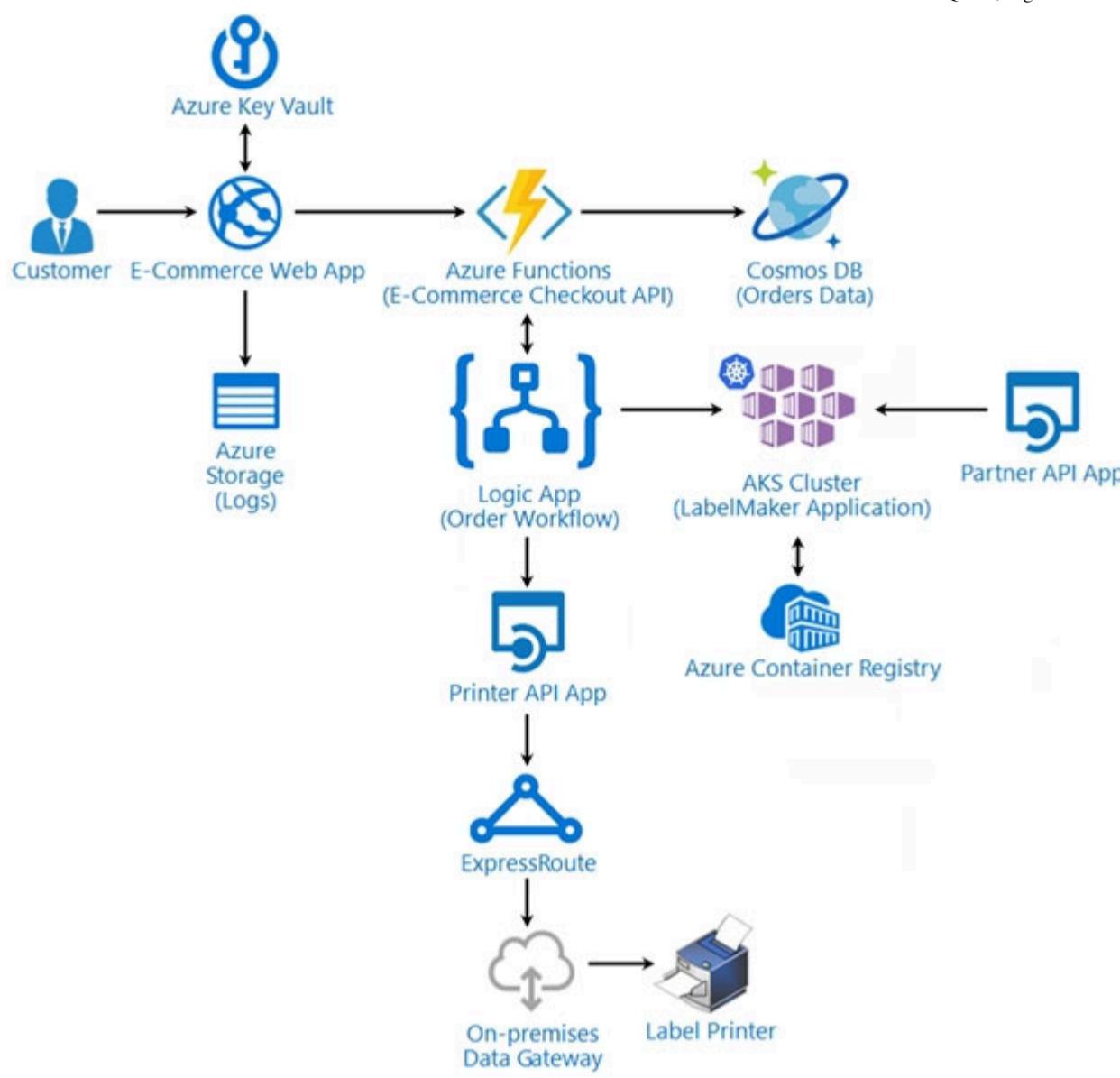
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Azure Monitor Container Health must be used to monitor the performance of workloads that are deployed to Kubernetes environments and hosted on Azure Kubernetes Service (AKS).

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Architecture -



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#### Order.json -

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Order.json -

**Order.json**

```

01 {
02 "id" : 1,
03 "customers" : [
04 {
05 "familyName" : "Doe",
06 "givenName" : "John",
07 "customerid" : 5
08 }
09],
10 "line_items" : [
11 {
12 "fulfillable_quantity" : 1,
13 "id": 6,
14 "price" : "199.99" ,
15 "product_id" : 7513594,
16 "quantity": 1,
17 "requires_shipping" : true ,
18 "sku": "SFC-342-N" ,
19 "title" : "Surface Go" ,
20 "vendor" : "Microsoft" ,
21 "name" : "Surface Go - 8GB" ,
22 "taxable" : true ,
23 "tax_lines" : [
24 {
25 "title" : "State Tax" ,
26 "price" : "3.98" ,
27 "rate" : 0.06
28 }
29],
30 "total_discount" : "5.00" ,
31 "discount_allocations" : [
32 {
33 "amount" : "5.00" ,
34 "discount_application_index" : 2
35 }
36]

```

**Question**

You need to access data from the user claim object in the e-commerce web app.

What should you do first?

- A. Write custom code to make a Microsoft Graph API call from the e-commerce web app.
- B. Assign the Contributor RBAC role to the e-commerce web app by using the Resource Manager create role assignment API.
- C. Update the e-commerce web app to read the HTTP request header values.
- D. Using the Azure CLI, enable Cross-origin resource sharing (CORS) from the e-commerce checkout API to the e-commerce web app.

**Correct Answer: C**

Methods to Get User Identity and Claims in a .NET Azure Functions App include:

⇒ ClaimsPrincipal from the Request Context

The ClaimsPrincipal object is also available as part of the request context and can be extracted from the `HttpRequest.HttpContext`.

⇒ User Claims from the Request Headers.

App Service passes user claims to the app by using special request headers.

Reference:

<https://levelup.gitconnected.com/four-alternative-methods-to-get-user-identity-and-claims-in-a-net-azure-functions-app-d98c40424bb>

*Community vote distribution*

C (100%)

✉  **j888** Highly Voted  2 years, 8 months ago

<https://docs.microsoft.com/en-us/azure/app-service/configure-authentication-user-identities>

The answer C

upvoted 26 times

✉  **Jonas\_86** 2 years, 6 months ago

your link is interesting but I think the answer you provide is FALSE.

As I understood from the link, if you want to access user claims from Azure Function then the C answer is OK but if you want to get it from webapp then the A answer is the good one.

Please, recheck the link above

upvoted 5 times

 **wsellmair** 2 years, 2 months ago

in Function you can access the user claims from headers, ClaimsPrincipal

For Azure Functions, ClaimsPrincipal.Current is not populated for .NET code, but you can still find the user claims in the request headers, or get the ClaimsPrincipal object from the request context or even through a binding parameter. See working with client identities in Azure Functions for more information.

<https://docs.microsoft.com/en-us/azure/app-service/configure-authentication-user-identities>

upvoted 1 times

 **phvogel** 2 years, 5 months ago

To quote the link provided:

"For all language frameworks, App Service makes the claims in the incoming token (whether from an authenticated end user or a client application) available to your code by injecting them into the request headers. External requests aren't allowed to set these headers, so they are present only if set by App Service...."

So the first thing that happens in the the Web App is to read the information from the request headers that was inserted by the App Service as part of authenticating the user in order to provide the user's claims.

upvoted 6 times

 **troy89** 2 years, 1 month ago

I would say this is correct because the JWT is sent in the header and it contains the claims. No need to access the GraphAPI

upvoted 1 times

 **hubekpeter** 1 year, 4 months ago

Exactly.

upvoted 1 times

 **justyoung17** Highly Voted  2 years, 6 months ago

I think it's (A) though because it's a e-commerce 'web app' which is not an 'Azure function'.

upvoted 6 times

 **ensa** 2 years, 5 months ago

But Azure function will get data from web app and App Service passes user claims to the app by using special request headers. External requests aren't allowed to set these headers, so they are present only if set by the App Service. then

```
[FunctionName("ClaimsDemo")]
public static IActionResult Run
([HttpTrigger(AuthorizationLevel.Anonymous, "get", "post", Route = null)]
HttpRequest req, ILogger log)
{
```

//Extract User ID and Claims from the request headers

```
var principal_name = req.Headers["X-MS-CLIENT-PRINCIPAL-NAME"].FirstOrDefault();
var principal_Id = req.Headers["X-MS-CLIENT-PRINCIPAL-ID"].FirstOrDefault();
So CCCCCCCCCCCCCCCCCCCCC
```

upvoted 3 times

 **paddy23** Most Recent  2 months, 1 week ago

The answer C

upvoted 1 times

 **katrang** 6 months, 4 weeks ago

**Selected Answer: C**

App Service makes the claims in the incoming token (whether from an authenticated end user or a client application) available to your code by injecting them into the request headers.

So from this point, you just need to read them in your code

upvoted 2 times

 **JH81** 9 months, 3 weeks ago

**Selected Answer: C**

"E-commerce application sign-ins must be secured by using Azure App Service authentication and Azure Active Directory (AAD)." so using Microsoft Graph API call is probably what you want to do but the tricky part is the question asks what should you do first. Read the header to get the info you need to make the Graph API call would be my vote.

upvoted 1 times

 **OPT\_001122** 1 year, 4 months ago

**Selected Answer: C**

The answer C

upvoted 1 times

✉ **wsellmair** 2 years, 1 month ago

**Selected Answer: C**

<https://docs.microsoft.com/en-us/azure/app-service/configure-authentication-user-identities>

upvoted 1 times

✉ **wsellmair** 2 years, 2 months ago

in Function you can access the user claims from headers, ClaimsPrincipal

For Azure Functions, ClaimsPrincipal.Current is not populated for .NET code, but you can still find the user claims in the request headers, or get the ClaimsPrincipal object from the request context or even through a binding parameter. See working with client identities in Azure Functions for more information.

<https://docs.microsoft.com/en-us/azure/app-service/configure-authentication-user-identities>

upvoted 2 times

✉ **surprise0011** 12 months ago

Great finding! New link from learn.microsoft:

<https://learn.microsoft.com/en-us/azure/app-service/configure-authentication-user-identities>

upvoted 1 times

✉ **MiraA** 2 years, 6 months ago

Answer is A.

Check this tutorial related to a web app accessing Microsoft Graph to get signed user's display name and his/her photo from Azure AD. It seems it corresponds to "access data from the user claim object" requirement.

<https://docs.microsoft.com/en-us/azure/app-service/scenario-secure-app-access-microsoft-graph-as-user>

Note: Reading HTTP headers (the answer C) could give basic information only - but the user claim contains more detailed data.

<https://docs.microsoft.com/en-us/azure/app-service/configure-authentication-user-identities>

upvoted 6 times

✉ **troy89** 2 years, 1 month ago

Yeah, but to access the GraphAPI you need the information from the token which is sent in the header, so in both ways, the first step is to read the header values.

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

The question does not ask anything but claims and does not say read profile (which has detailed information), in which case you might want to access the graphs API if given access.

upvoted 1 times

✉ **ning** 2 years, 7 months ago

I do not know if C is correct, the thing you need is <https://docs.microsoft.com/en-us/azure/active-directory/develop/msal-net-migration>, you cannot read the http header directly, you need MS library, best thing I can see is graph from A ... But it is not really, the name of the library ...

upvoted 3 times

## Topic 29 - Testlet 6

Question #1

Topic 29

### Introductory Info

Case study -

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Background -

VanArsdel, Ltd. is a global office supply company. The company is based in Canada and has retail store locations across the world. The company is developing several cloud-based solutions to support their stores, distributors, suppliers, and delivery services.

Current environment -

Corporate website -

The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

Retail Store Locations -

The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

Requirements -

The application components must meet the following requirements:

Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.

The website must have 99.95 percent uptime.

Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

Delivery services -

Store service telemetry data in Azure Cosmos DB by using an Azure Function. Data must include an item id, the delivery vehicle license plate, vehicle package capacity, and current vehicle location coordinates.

Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

**Security -**

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

**Issues -****Retail Store Locations -**

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

**Question****HOTSPOT -**

You need to implement the retail store location Azure Function.

How should you configure the solution? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

**Answer Area****Configuration****Value****Binding**

<input type="checkbox"/>	▼
<input type="checkbox"/>	<b>Blob storage</b>
<input type="checkbox"/>	Azure Cosmos DB
<input type="checkbox"/>	Event Grid
<input type="checkbox"/>	HTTP

**Binding Direction**

<input type="checkbox"/>	▼
<input type="checkbox"/>	<b>Input</b>
<input type="checkbox"/>	Output

**Trigger**

<input type="checkbox"/>	▼
<input type="checkbox"/>	<b>Blob storage</b>
<input type="checkbox"/>	Azure Cosmos DB
<input type="checkbox"/>	Event Grid
<input type="checkbox"/>	HTTP

## Answer Area

### Configuration      Value

#### Binding

	▼
Blob storage	
Azure Cosmos DB	
Event Grid	
HTTP	

Correct Answer:

#### Binding Direction

	▼
Input	
Output	

#### Trigger

	▼
Blob storage	
Azure Cosmos DB	
Event Grid	
HTTP	

Scenario: Retail store locations: Azure Functions must process data immediately when data is uploaded to Blob storage.

Box 1: HTTP -

Binding configuration example: [https://<storage\\_account\\_name>.blob.core.windows.net](https://<storage_account_name>.blob.core.windows.net)

Box 2: Input -

Read blob storage data in a function: Input binding

Box 3: Blob storage -

The Blob storage trigger starts a function when a new or updated blob is detected.

Azure Functions integrates with Azure Storage via triggers and bindings. Integrating with Blob storage allows you to build functions that react to changes in blob data as well as read and write values.

Reference:

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-trigger>

✉  **andrvelich** Highly Voted 1 year, 11 months ago

1. azure cosmos
  2. output
  3. blob storage
- upvoted 48 times

✉  **SaintBahamut** 1 year, 11 months ago

Agreed: We need write to cosmos output, so that deals box1 and 2, and func is triggered by changes on blob  
upvoted 4 times

✉  **Dani\_ac7** 1 year, 7 months ago

Seems ok, te person who writes answers in exam topics doesn't read questions...  
upvoted 11 times

✉  **adilkhan** 1 year ago

100% correct!  
upvoted 1 times

✉  **UzrShkl** 10 months, 3 weeks ago

Correct  
upvoted 1 times

✉  **SenseiJC** Highly Voted 1 year, 4 months ago

1. (binding) = Azure CosmosDB

reason: Azure Functions must update Azure Cosmos DB

2. (direction) = output

reason: all triggers are input, so we are not talking about the trigger binding. we must update Azure Cosmos DB so we need output binding. If input and output were selectable, i'd probably go for that

3. (trigger) = EventGrid

reason: the azure function is triggered by an EventGrid event so that processing happens immediately

upvoted 28 times

✉ **macobuzi** 7 months, 1 week ago

There is no EventGrid mentioned anywhere. You can simply use Azure Function Blob Trigger to get triggered from the Blob storage.

upvoted 1 times

✉ **ks321** 8 months, 3 weeks ago

This is the right answer and has to be highest voted

upvoted 1 times

✉ **FeriAZ** Most Recent 2 months ago

1. azure cosmos 2. output 3. blob storage

For updating Azure Cosmos DB upon processing the data, an output binding to Azure Cosmos DB is needed. This enables the function to write data directly to Cosmos DB without needing to manually implement the database connection and data insertion logic.

The trigger for this function should be Blob storage because the requirement is to start the processing immediately when data is uploaded to the Blob storage. This directly supports the scenario where store locations send data every hour to be processed.

upvoted 2 times

✉ **katrang** 6 months, 4 weeks ago

I would say Cosmos - Output - Blob.

You have a Blob storage trigger ( Azure Functions must process data immediately when data is uploaded to Blob storage).

And a Cosmos Output Binding (Azure Functions must update Azure Cosmos DB by using native SQL language queries)

upvoted 2 times

✉ **ciberclon** 2 months, 1 week ago

For me it is the correct answer

upvoted 1 times

✉ **applepie** 9 months ago

I wonder why the answer is not

binding - Blob

direction - in

trigger - event grid.

example scenario 2 - <https://learn.microsoft.com/en-us/azure/azure-functions/functions-triggers-bindings?tabs=csharp>

upvoted 2 times

✉ **macobuzi** 7 months, 1 week ago

Question stated that Function must update data to Azure Cosmos DB

upvoted 1 times

✉ **DenysEx** 11 months, 2 weeks ago

based on the Topic 21 - Testlet 22, question #1

event routing: BLOB -> EventGrid -> Function

1. CosmosDB

2. Output

3. trigger = EventGrid

upvoted 4 times

✉ **AQMA** 1 year, 1 month ago

1. Azure Cosmos DB

2. Output

3. Event Grid

using Event Grid Trigger for blob events instead of using Blob storage as input to function, provides low latency.

Reference: <https://learn.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-trigger?tabs=csharp-script&pivots=programming-language-csharp>

according to this reference, it says: "If you require faster or more reliable blob processing, you should instead implement one of the following strategies:

Add the source parameter with a value of EventGrid to your binding definition and create an event subscription on the same container.

OR

Replace the Blob Storage trigger with an Event Grid trigger using an event subscription on the same container."

upvoted 2 times

✉ **Nhiendo** 1 year, 3 months ago

1. azure cosmos

2. output

3. blob storage

Because

1.Triggers cause a function to run. A trigger defines how a function is invoked and a function must have exactly one trigger. Triggers have associated data, which is often provided as the payload of the function.  
 2.Binding to a function is a way of declaratively connecting another resource to the function; bindings may be connected as input bindings, output bindings, or both. Data from bindings is provided to the function as parameters.  
 refer : <https://learn.microsoft.com/en-us/azure/azure-functions/functions-triggers-bindings?tabs=csharp>

upvoted 2 times

✉ **OPT\_001122** 1 year, 4 months ago

1. azure cosmos
2. output
3. blob storage

upvoted 2 times

✉ **coffecold** 1 year, 5 months ago

Can someone give a clue from which system this configuration format is?

Azure functions : No

Cosmos DB : No

Azure Event Grid : No

Storage blob : No

upvoted 1 times

✉ **OPT\_001122** 1 year, 4 months ago

this is more convincing !! Thanks

upvoted 1 times

✉ **coffecold** 1 year, 5 months ago

If it was function.json it should have been something like:

```
{
 "disabled":false,
 "bindings":[
 // ... bindings here
 {
 "type": "EventGridTrigger",
 "direction": "in",
 "name": "inBinding",
 // ... more depending on binding
 },
 {
 "type": "CosmosDBOutput",
 "direction": "out",
 "name": "outBinding",
 // ... more depending on binding
 }
]
}
```

upvoted 6 times

✉ **OPT\_001122** 1 year, 4 months ago

this is more convincing !! Thanks

upvoted 1 times

✉ **elequiel** 1 year, 5 months ago

got for me in 20/10/2022

upvoted 3 times

✉ **darsak10** 11 months ago

Can you confirm what is the correct answer, it looks like the answer is not clear yet.

upvoted 1 times

✉ **Ciupaz** 5 months, 1 week ago

Should be:

Azure Cosmos DB

Output

Event Grid

upvoted 1 times

✉ **gmishra88** 1 year, 6 months ago

I do not understand this question. Binding is Azure cosmos, then the binding direction should be output. If it is trigger then binding direction should be in. So, I do not understand what this means. I just hope these kind of absurd questions are not asked by Microsoft.  
 But for the trigger I will use EventGrid because it says it should respond immediately. Blob triggers use polling, while event grid triggers are "event-driven" (basically Microsoft wants us to better use Event Grid for storage events)

upvoted 2 times

## Question #2

### Introductory Info

#### Case study -

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#### To start the case study -

To display the first question in this case study, click the Next button. 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 the Question button to return to the question.

#### Background -

VanArsdel, Ltd. is a global office supply company. The company is based in Canada and has retail store locations across the world. The company is developing several cloud-based solutions to support their stores, distributors, suppliers, and delivery services.

#### Current environment -

#### Corporate website -

The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

#### Retail Store Locations -

The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

#### Requirements -

The application components must meet the following requirements:

#### Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.

The website must have 99.95 percent uptime.

#### Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

#### Delivery services -

Store service telemetry data in Azure Cosmos DB by using an Azure Function. Data must include an item id, the delivery vehicle license plate, vehicle package capacity, and current vehicle location coordinates.

Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

#### Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

**Security -**

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

**Issues -****Retail Store Locations -**

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

**Question****HOTSPOT -**

You need to implement the corporate website.

How should you configure the solution? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

**Answer Area****Azure Configuration****Plan**

Free
Standard
Premium
Isolated

**Service**

App Service Web App
App Service Static Web App
Azure Function App
Azure Blob Storage

**Answer Area****Azure****Configuration****Plan**

Free
Standard
Premium
Isolated

Correct Answer:

**Service**

App Service Web App
App Service Static Web App
Azure Function App
Azure Blob Storage

Box 1: Standard -

Below is a high-level comparison of the features as per the pricing tier for the App Service Plan.

SKUs	FREE	SHARED	BASIC	STANDARD	Premium	ISOLATED*
<b>Limits</b>						
Apps	10	100	Unlimited	Unlimited	Unlimited	Unlimited
Disk space	1 GB	1 GB	10 GB	50 GB	250 GB	
Max instances			Up to 3	Up to 10	Up to 20	
SLA			99.95%	99.95%	99.95%	
<b>App Deployment</b>						
Continuous Deployment	Available	Available	Available	Available	Available	Available
Deployment Slots			Available	Available	Available	
<b>Development Tools</b>						
Clone App				Available	Available	
Site Extensions	Available	Available	Available	Available	Available	Available
Testing in Production			Available	Available	Available	

Note: Corporate website -

The company provides a public website located at <http://www.vanarsdelltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

Corporate website requirements:

- ⇒ Secure the website by using SSL.
- ⇒ Minimize costs for data storage and hosting.
- ⇒ Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).
- ⇒ Distribute the website content globally for local use.
- ⇒ Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.
- ⇒ The website must have 99.95 percent uptime.

Box 2: App Service Web App -

A Web App is a web application that is hosted in an App Service. The App Service is the managed service in Azure that enables you to deploy a web application and make it available to your customers on the Internet in a very short amount of time.

Incorrect:

A Static Web Application is any web application that can be delivered directly to an end user's browser without any server-side alteration of the HTML, CSS, or JavaScript content.

Reference:

<https://azure-training.com/2018/12/27/understanding-app-services-app-service-plan-and-ase/> <https://docs.microsoft.com/en-us/azure/app-service/overview>

✉  **AbdulMannan** Highly Voted 1 year, 6 months ago

Got this question on 30-Sep-2022 exam.

Answer is correct. Passed with 870 score.

upvoted 10 times

✉  **oskx2** Most Recent 5 days, 16 hours ago

It should be azure static web app since no where in the description it says about hosting the az functions in the same static web app resource or having the same hostname for both static web app and azure functions.

And azure static web app does support native github workflow: <https://azure.microsoft.com/en-us/products/app-service/static> "and native GitHub workflows for CI/CD."

upvoted 1 times

✉  **raymond\_abcd** 2 months ago

It is not the static (serverless) web app because you need to support native GitHub workflows for continuous integration and continuous deployment (CI/CD). This is only possible with the app service web app. See: <https://learn.microsoft.com/en-us/azure/app-service/deploy-github-actions?tabs=applevel%2Caspnetcore>

upvoted 1 times

✉  **darsak10** 11 months ago

Standard plan with app service web app would be the appropriate option.

upvoted 3 times

✉  **SenseiJC** 1 year, 4 months ago

Static web apps only support HTTP triggered functions (<https://learn.microsoft.com/en-us/azure/static-web-apps/functions-bring-your-own#link-an-existing-azure-functions-app>). The top of the case study reads: "several APIs hosted in Azure Functions."

If we assume that the referenced azure functions here (APIs) are NOT the Azure functions for processing blob storage, then they can be HTTP triggered and we are fine choosing Static Web App.

I think this is a reasonable assumption, but I leave it to the test taker to interpret which is correct.

upvoted 4 times

✉  **OPT\_001122** 1 year, 4 months ago

Answer is correct.

upvoted 1 times

✉  **OPT\_001122** 1 year, 4 months ago

All below requirements are met with standard plan

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

Implement monitoring by using Application Insights and availability web tests including SSL certificate validity and custom header value verification.

The website must have 99.95 percent uptime.

upvoted 3 times

✉  **coffecold** 1 year, 5 months ago

I think the tier is Standard is because of the Traffic manager support.  
requirement : "Distribute the website content globally for local use",  
Distributions slots (in the answer given) are not required.  
(+ static web app )

upvoted 3 times

 **Mousavi** 1 year, 6 months ago

1-CI/CD  
2-including SSL certificate  
3-Distribute the website content globally  
4-Minimize costs

with these criteria we can use standard Plan and for the web site we have to choose azure app service

upvoted 3 times

 **gmishra88** 1 year, 6 months ago

I would have said host it in azure static web app (a fine option) that has static part as well as support functions. A perfect option.  
If functions are to be created outside in another function app and then it contains only the static part then I will host it in blob-storage to get the 99.95% availability SLA of blob storage hot tier and CDN is also easy.  
It is very difficult to choose one when I cannot look into the head of the question creator. Another vague question from the "M\$"  
upvoted 4 times

 **gmishra88** 1 year, 6 months ago

See the link for Static web app: <https://azure.microsoft.com/en-us/products/app-service/static/#features>  
I have used this in real life (but do not know if available for enterprise customers)  
upvoted 2 times

 **gmishra88** 1 year, 6 months ago

Yes, another evil question to sow confusion. Microsoft takes it personally when people answer correctly  
upvoted 2 times

 **gmishra88** 1 year, 6 months ago

It is DEFINITELY static web app and Standard plan. Check the availability SLA. Static web app guarantees 99.95% availability and it supports git workflow. It has Functions capability. And in practice also it is a beautiful solution unlike many solutions from Microsoft  
upvoted 2 times

## Topic 30 - Testlet 7

Question #1

Topic 30

### Introductory Info

Case study -

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Background -

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Current environment -

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The company provides a public website located at <http://www.vanarsdeltd.com>. The website consists of a React JavaScript user interface, HTML, CSS, image assets, and several APIs hosted in Azure Functions.

Retail Store Locations -

The company supports thousands of store locations globally. Store locations send data every hour to an Azure Blob storage account to support inventory, purchasing and delivery services. Each record includes a location identifier and sales transaction information.

Requirements -

The application components must meet the following requirements:

Corporate website -

Secure the website by using SSL.

Minimize costs for data storage and hosting.

Implement native GitHub workflows for continuous integration and continuous deployment (CI/CD).

Distribute the website content globally for local use.

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The website must have 99.95 percent uptime.

Retail store locations -

Azure Functions must process data immediately when data is uploaded to Blob storage. Azure Functions must update Azure Cosmos DB by using native SQL language queries.

Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.

Delivery services -

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Store delivery driver profile information in Azure Active Directory (Azure AD) by using an Azure Function called from the corporate website.

Inventory services -

The company has contracted a third-party to develop an API for inventory processing that requires access to a specific blob within the retail store storage account for three months to include read-only access to the data.

#### Security -

All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.

Authentication and authorization must use Azure AD and services must use managed identities where possible.

#### Issues -

##### Retail Store Locations -

You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Azure Cosmos DB queries from the Azure Function exhibit high Request Unit (RU) usage and contain multiple, complex queries that exhibit high point read latency for large items as the function app is scaling.

#### Question

You need to implement a solution to resolve the retail store location data issue.

Which three Azure Blob features should you enable? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Soft delete
- B. Change feed
- C. Snapshots
- D. Versioning
- E. Object replication
- F. Immutability

#### Correct Answer: ABD

Scenario: You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.

Before you enable and configure point-in-time restore, enable its prerequisites for the storage account: soft delete, change feed, and blob versioning.

Reference:

<https://docs.microsoft.com/en-us/azure/storage/blobs/point-in-time-restore-manage>

*Community vote distribution*

ABD (100%)

OPT\_001122 [Highly Voted] 1 year, 4 months ago

Selected Answer: ABD

a b and d

upvoted 14 times

andrvelich [Highly Voted] 1 year, 11 months ago

correct

upvoted 7 times

Weam [Most Recent] 4 months ago

Correct

Microsoft recommends that after you enable blob versioning, you also update your application to stop taking snapshots of block blobs. If versioning is enabled for your storage account, all block blob updates and deletions are captured and preserved by versions. Taking snapshots does not offer any additional protections to your block blob data if blob versioning is enabled, and may increase costs and application complexity.

upvoted 1 times

juanckar 9 months, 1 week ago

This was on the exam (July 2023). Went with highly voted. Scored 917

upvoted 4 times

AQMA 1 year, 1 month ago

Selected Answer: ABD

<https://learn.microsoft.com/en-us/azure/storage/blobs/point-in-time-restore-overview#prerequisites-for-point-in-time-restore>  
according to the above reference Point-in-time restore requires that the following Azure Storage features be enabled before you can enable point-

in-time restore:

Soft delete  
Change feed  
Blob versioning  
upvoted 5 times

 **coffecold** 1 year, 5 months ago

In portal

"Select Turn on point-in-time restore. When you select this option, soft delete for blobs, versioning, and change feed are also enabled" So it needs the three options to do point in time restore. You probably can't clear them, once Turn on point-in-time is chosen.

upvoted 4 times

 **gmishra88** 1 year, 6 months ago

"Before you enable and configure point-in-time restore, enable its prerequisites for the storage account: soft delete, change feed, and blob versioning"

upvoted 2 times

 **AbdulMannan** 1 year, 6 months ago

Got this question on 30-Sep-2022 exam.  
Answer is correct. Passed with 870 score.

upvoted 3 times

 **Mousavi** 1 year, 6 months ago

I will take exam on 5 October. Any suggestion?

upvoted 3 times

## Topic 31 - Testlet 8

Question #1

Topic 31

### Introductory Info

Case study -

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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
```

## ApplicationManifest -

```

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 }

```

## Question

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

## Correct Answer: B

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>

*Community vote distribution*

B (100%)

✉  **perry230**  3 years, 10 months ago

Correct: "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."

upvoted 33 times

✉  **GCMan** 3 years, 5 months ago

I think Azure Event Hub is correct but I see arguments of a couple other options.

upvoted 1 times

✉  **Juanlu** 3 years, 4 months ago

As @coolest said: B is correct, so the answer is correct. Note: "You can use Event Capture to store the agreements into Azure blob storage for long term storage".

upvoted 1 times

✉  **coffecold** 1 year, 5 months ago

If you need to store data for more than 7 days, a feature of Azure Event Hubs called Capture is the preferred solution for longer-term storage. When configuring Capture, there are two locations where this information can be stored: Azure Blob Storage or Azure Data Lake Store account"

So Event capture just uses a storage solution as well.

upvoted 2 times

✉️ **KingChuang** 1 year, 3 months ago

On My Exam:2022-12-26

My Choice:

B:Azure Event Hub

upvoted 2 times

✉️ **coolest**  3 years, 8 months ago

B - Azure Event Hub is Correct.

If you are looking at millions of agreements per hour, you need to use a data ingestion service like the Azure Event Hub. You can use Event Capture to store the agreements into Azure blob storage for long term storage.

upvoted 15 times

✉️ **Ciupaz**  5 months, 3 weeks ago

**Selected Answer: B**

Should be Azure Blob Storage, if was a choice...

Azure Blob Storage is a highly scalable object storage service that can store any type of data. It is a good option for storing user agreements for long periods of time because it is cost-effective and durable.

upvoted 1 times

✉️ **ENGs** 6 months, 1 week ago

On my exam 2023-10 before the Update of the Exam

upvoted 1 times

✉️ **BaoNguyen2411** 8 months, 2 weeks ago

Got this question on 29/06/2023

upvoted 1 times

✉️ **OPT\_001122** 1 year, 4 months ago

**Selected Answer: B**

Azure Event Hub

upvoted 2 times

✉️ **gmishra88** 1 year, 6 months ago

Another brilliant question from Microsoft. The wording is very vague. Where to store after it is completed. After it is completed, store it in Archive till the retention period. But because that is not in the answer, and I guess Microsoft does not potentially understand the meaning of "complete" properly, and guessing that word is added just to add some: entertainment: I choose event-hub

But you should not use any of these options for storing information. But yes, you can use events capture with storage blob, but that is a lot of thinking

upvoted 7 times

✉️ **coffecold** 1 year, 5 months ago

Storing is storing, it is not the 7-days data that is kept in retention in the event hub. Completed is if the data is finally stored in a storage solution. So I go for option A

upvoted 1 times

✉️ **meoukg** 2 years ago

Got it on 03/2022!

upvoted 2 times

✉️ **aruni\_mishra** 2 years, 3 months ago

Azure Event Hubs enables you to automatically capture the streaming data in Event Hubs in an Azure Blob storage or Azure Data Lake Storage Gen 1 or Gen 2 account of your choice, with the added flexibility of specifying a time or size interval.

<https://docs.microsoft.com/en-us/azure/event-hubs/event-hubs-capture-overview>

Ans: Azure Event Hub

upvoted 1 times

✉️ **altafpatel1984** 2 years, 4 months ago

Azure Storage Queue can process 2000 messages per second. i.e. 72 million messages per hour. Since message is to be processed here, it cannot be event and hence Storage Queue will be used to store data and hence answer is A - Storage Queue

<https://docs.microsoft.com/en-us/learn/modules/communicate-between-apps-with-azure-queue-storage/2-create-the-azure-storage-infrastructure>

upvoted 3 times

✉️ **Bartimaeus** 2 years, 1 month ago

It's 7.2 million, but it's only target throughput - max is 20\_000/s = 72 million

upvoted 1 times

✉️ **paru123456789** 3 years, 1 month ago

Answer: B

upvoted 3 times

✉️ **cbn** 3 years, 2 months ago

"Information regarding agreements is used by multiple divisions within Contoso, Ltd."

- This needs multiple subscribers. Storage queue cannot be used for this.

"The volume of agreements is expected to be in the millions per hour."

- This leads to choice for Event Hub / Service bus topic

"When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version"

- This is not about agreements, however an Event Hub supports this scenario as well.

I will go with C (Event Hub)

upvoted 5 times

 **cbn** 3 years, 2 months ago

Sorry, I mean B (Event Hub)

upvoted 2 times

 **mvr** 3 years, 2 months ago

Ok, yeah, so we need to handle millions. So Storage Queue or Event Hub.

But then, do we need messages or events?

It says we need to store (maybe temporarily, until processed), and events do not contain content to be stored. So I'd say Storage Queue. Right?

upvoted 5 times

 **matejka** 3 years, 2 months ago

Azure Event Hub is correct as it is able to handle millions of events per second. But the question is very confusing as it states "to store..." and Event Hub is not designed to persistently store data. It stores the events and should route those to eg. storage account or so.

upvoted 2 times

 **khoant** 3 years, 3 months ago

should be B

upvoted 1 times

 **Cornholioz** 3 years, 3 months ago

I still don't know for sure. The scenario gives a few facts and the question asks to store the agreements. Couldn't find a strong argument to say Event Hub is better than Queue in this case. I can eliminate Service Bus Topic and Event Grid Topic, because of the traffic numbers. But between the other two, it's hard.

Even after all the research, I'm only making a guess here: Event Hub

upvoted 1 times

 **luppitegui** 3 years, 3 months ago

Who talks about store? The case says: "When a user submits content, they must agree to a user agreement", so ALWAYS a user submits content, they MUST agree.

"Event Hubs Standard tier currently supports a maximum retention period of seven days." so it's more than enough for an approval process

upvoted 1 times

## Introductory Info

### Case study -

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To display the first question in this case study, click the Next button. 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 the Question button 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.

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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.

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All services must run in multiple regions. The failure of any service in a region must not impact overall application availability.

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An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU cores.

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You have the following security requirements:

- Any web service accessible over the Internet must be protected from cross site scripting attacks.
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- All parts of the system must support inbound and outbound traffic restrictions.
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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.

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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
```

ApplicationManifest -

```
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 }
```

#### Question

HOTSPOT -

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.

Hot Area:

#### Answer Area

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

## Answer Area

Correct 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,
 Stream output)
 {
 ...
 }
}
```

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>

✉ **MohmmadFayez** Highly Voted 2 years, 8 months ago

1- Queue Trigre[]

2- Blob[]

upvoted 44 times

✉ **Lucario95** 2 years, 4 months ago

This is correct according to the data type of "content" for the first binding and "output" for the second.

upvoted 1 times

✉ **KingChuang** 1 year, 3 months ago

On My Exam:2022-12-26

My Answer:

Quere Trigger

Blob

upvoted 1 times

✉ **warchoon** 1 year ago

agree

This is the only one reason to transform a string to a stream in the binding function

upvoted 1 times

✉ **MiraA** 2 years, 6 months ago

The "content" parameter is of type "string" so it must be QueueTrigger.

For example BlobTrigger uses Stream type, CosmosDBTrigger uses IReadonlyList<> type, it seems the Table Storage has no trigger binding.

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-triggers-bindings?tabs=csharp#supported-bindings>

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-queue-trigger>

<https://docs.microsoft.com/cs-cz/azure/azure-functions/functions-bindings-storage-blob-trigger>

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-cosmosdb-v2-trigger>

upvoted 17 times

✉ **PhILLI** 2 years, 2 months ago

Agree with Azure Queue Storage trigger indeed (see example on <https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-queue-trigger?tabs=csharp#example>)

upvoted 1 times

✉ **Mev4953** 2 years, 2 months ago

BlobTrigge can also use string parameter

```
[FunctionName("BlobTriggerCSharp")]
public static void Run([BlobTrigger("samples-workitems/{name}")] Stream myBlob, string name, ILogger log)
```

{

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-trigger?tabs=csharp>

upvoted 4 times

✉ **gmishra88** Highly Voted 1 year, 6 months ago

Another CSI Miami question from Microsoft.

Yes, detectives, the content has to be a Stream if it is Blob trigger.

Microsoft (don't be evil) did not give any information on how the function is triggered, but stereotypically put the red-herring in the description: "website shows the content from azure storage blob". Of course that does not mean the function is triggered from it. Next my only clue is the type of this parameter.

Microsoft says .Net knowledge is required and any SDK is enough. But how will a javascript person know this that it is Stream and not the content given as String?

upvoted 15 times

✉ **oskx2** Most Recent 5 days, 14 hours ago

I think it should be BlobTrigger/Blob because the output it has the Stream data type and from where the binding expression will come {{name}} if it's not specified in the trigger. Also, blob trigger also receives the content as string.

Anyways, this is an awful question. Shame on Microsoft

upvoted 1 times

✉ **raymond\_abcd** 2 months ago

Requirement/question is unclear. Think the idea is that the function reads the uploaded data by the user. So it should be triggered by the Blob trigger. After the check it updates the content in the blob storage. So blob storage is the output parameter.

upvoted 1 times

✉ **LSandro** 5 months ago

BlobTrigger + Blob

Source: <https://learn.microsoft.com/en-us/answers/questions/1186952/how-to-get-a-blobtrigger-with-a-stream-in-azure-fu>

upvoted 1 times

✉ **Dianahu** 8 months, 1 week ago

<https://learn.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-input?tabs=python-v2%2Cin-process&pivots=programming-language-csharp>

[FunctionName("BlobInput")]

public static void Run(

[QueueTrigger("myqueue-items")] string myQueueItem,

[Blob("samples-workitems/{queueTrigger}", FileAccess.Read)] Stream myBlob,

ILogger log)

{

log.LogInformation(\$"BlobInput processed blob\n Name:{myQueueItem} \n Size: {myBlob.Length} bytes");

}

upvoted 1 times

✉ **JH81** 9 months, 3 weeks ago

Terrible requirements that leave us questioning the actual implementation. But I have to agree that QueueTrigger is the first answer because the requirements state "accepts user generated content as a string". That can only be the QueueTrigger. Blob for the output is not in question.

upvoted 2 times

✉ **le129** 1 year, 7 months ago

Blob trigger seems correct. trigger binding can be string if the content is small.

Binding to string, or Byte[] is only recommended when the blob size is small. This is recommended because the entire blob contents are loaded into memory. For most blobs, use a Stream or CloudBlockBlob type. For more information, see Concurrency and memory usage.

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-trigger?tabs=in-process%2Cextensionv5&pivots=programming-language-csharp>

upvoted 1 times

✉ **shawnz** 2 years, 2 months ago

the question said accept user upload content as a string.  
and user upload to blob to trigger the content check.  
so blobtrigger and blob are correct.

upvoted 3 times

✉ **leonidn** 2 years, 2 months ago

"content" is of type string. Then QueueTrigger is the only what that is applicable. Agree with "blob".

upvoted 3 times

✉ **gfiorini** 2 years, 4 months ago

It is really annoying the way the question is worded. Where in the specs is written the source and the target of the Function ?! It is true that we can infer it from the possible answers. But why dont ask then "which are valid input / output" for the function ?

upvoted 8 times

✉ **gmishra88** 1 year, 6 months ago

It is Microsoft

upvoted 3 times

✉ **phvogel** 2 years, 5 months ago

The question has nothing to do with the architecture or design. It's actually asking if you can recognize valid trigger and output bindings. The only valid bindings are Queue Trigger (string) and Blob output (File.Write supports writing to a stream).

upvoted 3 times

✉ **ning** 2 years, 7 months ago

I believe this is blobtrigger --> user upload contents into blob storage ...  
Need send to a service ... So I am think send to a queue for processing ...  
Just from the given info ...

upvoted 2 times

✉ **ning** 2 years, 7 months ago

Depends on your interpretation for what is final step for azure function, whether to send the contents to the service, or remove the contents from the blob storage ... The requirements are not clear ...

upvoted 2 times

✉ **mcanic** 2 years, 3 months ago

Blob trigger receives stream, Service Bus Queue trigger receives string, therefore the first option is not blob trigger but a queue trigger

upvoted 2 times

✉ **j888** 2 years, 8 months ago

This is tricky, storage will be my general choice, however this statement "Messages are sent to contentuploadservice" leading me to believe this is a service bus.

upvoted 1 times

✉ **j888** 2 years, 8 months ago

I was wrong.  
The service bus trigger would be  
public static void Run([ServiceBusTrigger("CustomerQueue"....

upvoted 1 times

✉ **SuperPetey** 2 years, 11 months ago

I believe the answer is QueueTrigger and Queue. This is an architectural design issue -- the entire reason to do user content auditing is to prohibit bad content from being stored and used. Therefore, use a queue to store these messages until they are verified. No need to store content in a blob until then -- Azure Storage Queue perfect solution.

upvoted 6 times

✉ **Spooky7** 2 years, 10 months ago

Well, based what information was given it seems that entire design looks little bit different. User post content and it is saved in BlobStorage and available immediately. After that check is done and if content is invalid then it is replaced. So given answer is correct.

upvoted 5 times

✉ **warchoon** 1 year ago

So why did you transform stream to string and then transform it to stream again?

upvoted 1 times

✉ **clarionprogrammer** 2 years, 12 months ago

Correct.

Ref: <https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-output?tabs=csharp>  
<https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-input?tabs=csharp>

upvoted 14 times

✉ **kwaazaar** 3 years ago

Correct

upvoted 6 times

## Question #3

### Introductory Info

#### Case study -

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#### 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
```

## ApplicationManifest -

```

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 }

```

## Question

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: type: 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: type: Public

## Correct Answer: A

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/>

## Community vote distribution

A (58%)	C (42%)
---------	---------

 **Mo\_Mo\_01**  3 years ago

A

<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-virtual-network-concepts#unsupported-networking-scenarios>

C

<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-region-availability#windows-container-groups>

upvoted 43 times

 **jokergester** 3 years ago

yep currently, container groups are not supported on Windows containers

upvoted 6 times

 **KingChuang** 1 year, 3 months ago

On My Exam:2022-12-26

My Answer:

A, C

upvoted 2 times

 **SnakePlissken**  2 years, 11 months ago

Besides, IP address is in the private address range 10.0.0.0/24, so it can only be private.

upvoted 8 times

 **Ciupaz**  3 months, 2 weeks ago

**Selected Answer: A**

Private IP addresses start with the numbers 10, 172.16, or 192.168. These numbers are assigned by the Internet Assigned Numbers Authority (IANA) and are reserved for private use.

upvoted 2 times

 **ENGs** 6 months, 1 week ago

On my exam 2023-10 before the Update of the Exam

upvoted 1 times

 **BaoNguyen2411** 8 months, 2 weeks ago

go this question on 29/06/2023

My answer: A/ C

upvoted 1 times

 **JH81** 9 months, 3 weeks ago

**Selected Answer: C**

I get that we can infer its private because of the IP address range 10. or 192. are private but having to know only that container groups are only supported on Linux. Why?

upvoted 1 times

 **CODE\_STS** 1 year, 1 month ago

Got this in the exam today! Feb 28, 2023

upvoted 2 times

 **AlexeyG** 1 year, 1 month ago

Got this in 16/02/2023

upvoted 3 times

 **rotimislaw** 1 year, 3 months ago

**Selected Answer: A**

A. Private - it's internal app

C. Linux - container groups not supported on Win

upvoted 4 times

 **OPT\_001122** 1 year, 4 months ago

**Selected Answer: A**

private

linux

upvoted 1 times

 **coffecold** 1 year, 5 months ago

Type belongs to the ipAddress settings

OSType belongs to the container group

<https://learn.microsoft.com/en-us/azure/container-instances/container-instances-reference-yaml#schema>

upvoted 1 times

 **Eltooth** 1 year, 9 months ago

**Selected Answer: C**

A & C are correct answers.

upvoted 4 times

 **petitbilly** 2 years, 1 month ago

Got this one 03/2022

upvoted 2 times

 **SivajiTheBoss** 2 years, 1 month ago

Both A and C

Currently, only Linux containers are supported in a container group deployed to a virtual network.

upvoted 1 times

 **leonidn** 2 years, 2 months ago

A & C

Container group deployment to a virtual network is generally available for Linux containers. <https://docs.microsoft.com/en-us/azure/container-instances/container-instances-virtual-network-concepts#unsupported-networking-scenarios>

All Internal services must only be accessible from internal Virtual Networks (VNets).

upvoted 2 times

 **Mev4953** 2 years, 2 months ago

10.23.121.112 is private range IP

upvoted 1 times

 **MiraA** 2 years, 6 months ago

What about this tutorial with sample YAML file?

<https://docs.microsoft.com/en-us/azure/container-instances/container-instances-multi-container-yaml#configure-a-yaml-file>

There is "type: Public" but no "ip" value together with "type: Microsoft.ContainerInstance/containerGroups".

Does it mean the "Public" option is supported now?

Or specifying "ip" with value "10.x.x.x" in the assignment still means the private network?

upvoted 1 times

**Topic 32 - Testlet 9**

Question #1

Topic 32

**Introductory Info**

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 the Next button. 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 the Question button 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.cpndl.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.

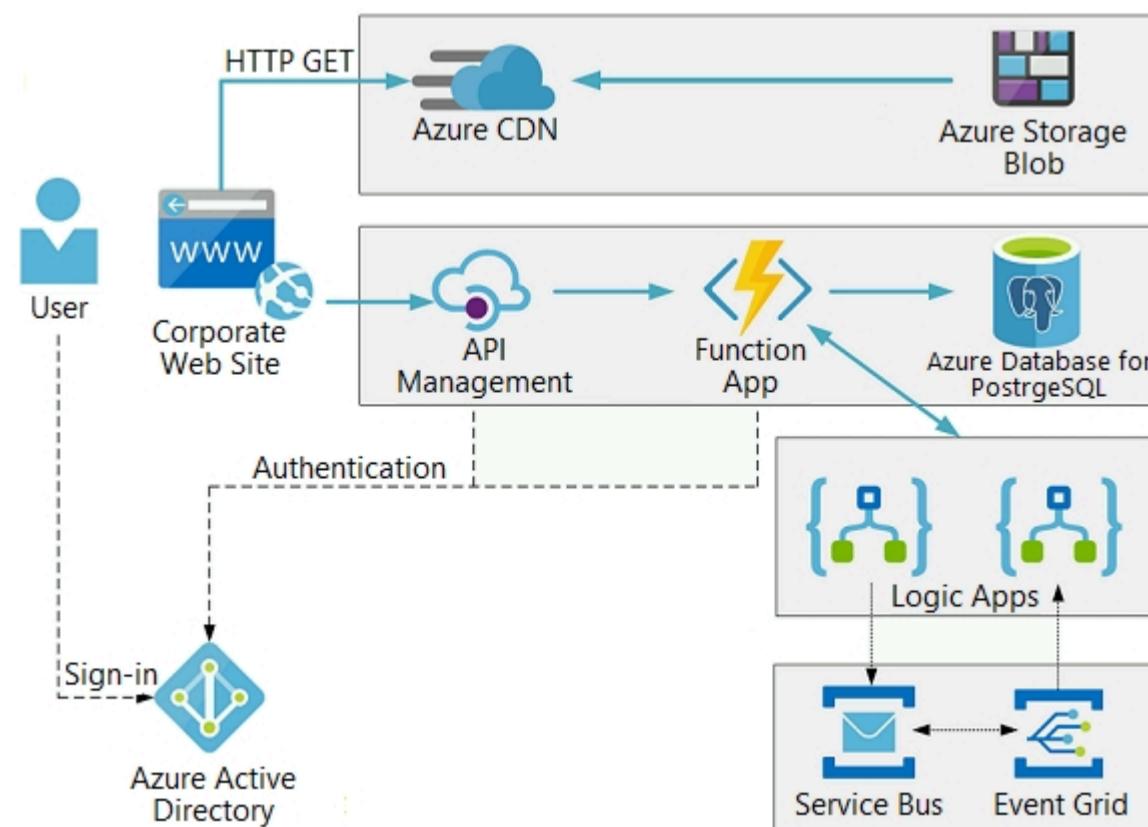
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus 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:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. 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.
6. 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,
RA06 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(HttpContext req)
RA14 {
RA15 ...
RA16 }
RA17 }
```

## Question

HOTSPOT -

You need to configure the Account Kind, Replication, and Access 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.

Hot Area:

## Create storage account

Basics Networking 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.

### 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

Correct Answer:

## Create storage account

Basics Networking 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.

### 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
	<a href="#">Create new</a>

### 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 ⓘ	<input checked="" type="radio"/> Standard <input type="radio"/> Premium
Account kind ⓘ	<ul style="list-style-type: none"> <li>StorageV2 (general purpose v2)</li> <li>Storage (general purpose v1)</li> <li>BlobStorage</li> </ul>
Replication ⓘ	<ul style="list-style-type: none"> <li>Locally-redundant storage (LRS)</li> <li>Zone-redundant storage (ZRS)</li> <li>Geo-redundant storage (GRS)</li> <li>Read-access geo-redundant storage (RA-GRS)</li> <li>Geo-zone-redundant storage (GZRS)</li> <li>Read-access geo-zone-redundant storage (RA-GZRS)</li> </ul>
Access tier (default) ⓘ	<input type="radio"/> Cool <input checked="" type="radio"/> Hot

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.

Incorrect Answers:

☞ BlockBlobStorage accounts: Storage accounts with premium performance characteristics for block blobs and append blobs. Recommended for scenarios with high transaction rates, or scenarios that use smaller objects or require consistently low storage latency.

☞ General-purpose v1 accounts: Legacy account type for blobs, files, queues, and tables. Use general-purpose v2 accounts instead when possible.

Replication: Geo-redundant Storage

Scenario: Data must be replicated to a secondary region and three availability zones.

Geo-redundant storage (GRS) copies your data synchronously three times within a single physical location in the primary region using LRS. It then copies your data asynchronously to a single physical location in the secondary region.

## Incorrect Answers:

Geo-zone-redundant storage (GZRS), but it would be more costly.

Access tier: Cool -

Data storage costs must be minimized.

Note: Azure storage offers different access tiers, which allow you to store blob object data in the most cost-effective manner. The available access tiers include:

Hot - Optimized for storing data that is accessed frequently.

Cool - Optimized for storing data that is infrequently accessed and stored for at least 30 days.

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>

✉  **Paolo93** Highly Voted 2 years, 9 months ago

Replication should be GZRS.

Requirements ask "Data must be replicated to a secondary region and three availability zones". GRS option doesn't copy data in different availability zones

upvoted 38 times

✉  **gunz123** 2 years, 9 months ago

Geo-redundant storage (GRS) copies your data synchronously three times within a single physical location in the primary region using LRS. It then copies your data asynchronously to a single physical location in the secondary region. Within the secondary region, your data is copied synchronously three times using LRS.

Geo-zone-redundant storage (GZRS) copies your data synchronously across three Azure availability zones in the primary region using ZRS. It then copies your data asynchronously to a single physical location in the secondary region. Within the secondary region, your data is copied synchronously three times using LRS.

upvoted 3 times

✉  **gunz123** 2 years, 9 months ago

GZRS is correct answer

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

upvoted 5 times

✉  **MrXBasit** 2 years, 8 months ago

I also agree the answer should be gpv2, gtrs and cool

upvoted 2 times

✉  **Fengtong** 2 years, 7 months ago

Why is not RA-GZRS? Isn't it much cheaper than GZRS?

upvoted 2 times

✉  **vokep77043** 2 years, 7 months ago

No, RA is additional option which costs MORE.

upvoted 4 times

✉  **jkes80** Highly Voted 2 years, 9 months ago

What about cool vs hot in the last box? Shouldn't this be hot, because the site gets accessed frequently?

upvoted 12 times

✉  **ning** 2 years, 7 months ago

That is also my question? Any where mention performance requirements? Only thing to make it cool, is that behind CDN, cached inside CDN maybe?

upvoted 1 times

✉  **alperc** 2 years, 4 months ago

No, even though its behind CDN, it should still be hot, because the CDN will most likely ask Storage Account several times a day. Cool will only be considered if the read frequency of storage account will be less than 1 per month.

upvoted 5 times

✉  **ReniRechner** 2 years, 1 month ago

But is only important to minimize storage costs, not storage access costs.

If they had said "minimize total storage costs" I also would have chosen hot.

upvoted 1 times

✉  **lswwhoami** Most Recent 2 weeks ago

On my exam today March 27th, 2024.

> Storage V2 (general purpose v2), GZRS, Cool.

Score 902.

upvoted 1 times

↪ **onlyforheros** 1 month ago

Scroll to the last question in the topic exam

upvoted 1 times

↪ **notedo** 4 months, 3 weeks ago

Got this on 10/20/2023

upvoted 2 times

↪ **ENGs** 6 months, 1 week ago

On my exam 2023-10 before the Update of the Exam

upvoted 1 times

↪ **kakajos** 6 months, 2 weeks ago

The right answers are off-course: Storage V2 (general purpose v2), GZRS, Cool

upvoted 2 times

↪ **Vipul123** 9 months, 1 week ago

This question was there on 29th June exam. Went with storage v2, GZRS and Cool.

upvoted 2 times

↪ **Chris2349** 9 months, 4 weeks ago

Got this case study on 15th of June.

Passed with 887

On this one I answered: StorageV2, GZRS and Cool.

upvoted 1 times

↪ **Vmwarevirtual** 10 months, 2 weeks ago

Had this question on 27 May 2023.

I chose StorageV2 (general-purpose v2) , GZRS , Cool tier .

upvoted 1 times

↪ **surprise0011** 11 months, 4 weeks ago

received 2023-17-04 went with gpv2,GZRS,cool , score 926

upvoted 5 times

↪ **mounir2** 1 year ago

1. V2

2. GZRS

3. Hot (website should be visit a least a few times a month...)

microsoft questions are poorly worded as always

upvoted 2 times

↪ **st0rmtrooperx** 1 year, 3 months ago

Got this on Dec 16th, 2022. Scored 921 and answered StorageV2, GZRS and Cool.

upvoted 7 times

↪ **SivajiTheBoss** 2 years, 1 month ago

Correct Answer: StorageV2, GZRS & Cool.

upvoted 5 times

↪ **leonidn** 2 years, 2 months ago

1. StorageV2 is a recommended kind.

2. GZRS because "Data must be replicated to a secondary region and three availability zones." and are not required for reading access in the secondary region. Due to GZRS is cheaper than RA-GZRS, we select it.

3. There are no specific requirements that lead us to which access tier is better. Cool has an advantage when we care about storage cost and we do not change files. We store SPA. It is not supposed to be huge. But due to we expect that the modern development process may be turned into multiple releases per day, I believe that hot is preferable. And again, because we do not have specific requirements and default is used to be "hot", I select "hot":

upvoted 11 times

↪ **lugospod** 2 years, 2 months ago

Got this one 01/2022. Went with most voted (to avoid writing answers again)

upvoted 4 times

↪ **Lucario95** 2 years, 4 months ago

I agree with StorageV2, GZRS and COOL

upvoted 1 times

↪ **Lucario95** 2 years, 3 months ago

Thinking back, HOT should be better because of @alperc reply.

upvoted 1 times

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