

Microsoft

Exam Questions DP-420

Designing and Implementing Cloud-Native Applications Using Microsoft Azure Cosmos DB



NEW QUESTION 1

- (Exam Topic 1)

You are troubleshooting the current issues caused by the application updates.

Which action can address the application updates issue without affecting the functionality of the application?

- A. Enable time to live for the con-product container.
- B. Set the default consistency level of account1 to strong.
- C. Set the default consistency level of account1 to bounded staleness.
- D. Add a custom indexing policy to the con-product container.

Answer: C

Explanation:

Bounded staleness is frequently chosen by globally distributed applications that expect low write latencies but require total global order guarantee. Bounded staleness is great for applications featuring group collaboration and sharing, stock ticker, publish-subscribe/queueing etc.

Scenario: Application updates in con-product frequently cause HTTP status code 429 "Too many requests". You discover that the 429 status code relates to excessive request unit (RU) consumption during the updates.

Reference:

<https://docs.microsoft.com/en-us/azure/cosmos-db/consistency-levels>

NEW QUESTION 2

- (Exam Topic 2)

You have an Azure Cosmos DB Core (SQL) API account named account1.

In account1, you run the following query in a container that contains 100GB of data. SELECT *

FROM c

WHERE LOWER(c.categoryid) = "hockey"

You view the following metrics while performing the query.

| | | |
|--------------------------------------|---|-----------------------|
| Retrieved Document Count | : | 45,654 |
| Retrieved Document Size | : | 543,765,234 bytes |
| Output Document Count | : | 12 |
| Output Document Size | : | 451 bytes |
| Index Utilization | : | 0.00 % |
| Total Query Execution Time | : | 2,400.34 milliseconds |
| Query Preparation Times | | |
| Query Compilation Time | : | 0.09 milliseconds |
| Logical Plan Build Time | : | 0.04 milliseconds |
| Physical Plan Build Time | : | 0.03 milliseconds |
| Query Optimization Time | : | 0.01 milliseconds |
| Index Lookup Time | : | 0.00 milliseconds |
| Document Load Time | : | 3,167.26 milliseconds |
| Runtime Execution Times | | |
| Query Engine Times | : | 299.16 milliseconds |
| System Function Execution Time | : | 79.34 milliseconds |
| User-defined Function Execution Time | : | 0.00 milliseconds |
| Document Write Time | : | 0.01 milliseconds |
| Client Side Metrics | | |
| Retry Count | : | 0 |
| Request Charge | : | 3,898.95 RUs |

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

Answer Area

| Statements | Yes | No |
|--|-----------------------|-----------------------|
| The query performs a cross-partition query | <input type="radio"/> | <input type="radio"/> |
| The query uses an index | <input type="radio"/> | <input type="radio"/> |
| Recreating the container with the partition key set to /categoryid will improve the performance of the query | <input type="radio"/> | <input type="radio"/> |

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: No

Each physical partition should have its own index, but since no index is used, the query is not cross-partition.

Box 2: No

Index utilization is 0% and Index Look up time is also zero.

Box 3: Yes

A partition key index will be created, and the query will perform across the partitions. Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/how-to-query-container>

NEW QUESTION 3

- (Exam Topic 2)
You have a container named container1 in an Azure Cosmos DB Core (SQL) API account. The following is a sample of a document in container1.

```
{
  "studentId": "631282", "firstName": "James", "lastName": "Smith", "enrollmentYear": 1990, "isActivelyEnrolled": true, "address": {
    "street": "",
    "city": "",
    "stateProvince": "",
    "postal": ""
  }
}
```

The container1 container has the following indexing policy.

```
{
  "indexingMode": "consistent", "includePaths": [
    {
      "path": "/"
    },
    {
      "path": "/address/city/"
    }
  ],
  "excludePaths": [
    {
      "path": "/address/"
    },
    {
      "path": "/firstName/"
    }
  ]
}
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

Answer Area

| Statements | Yes | No |
|---|-----------------------|-----------------------|
| The /isActivelyEnrolled property is included in the index | <input type="radio"/> | <input type="radio"/> |
| The /fisrtname property is included in the index | <input type="radio"/> | <input type="radio"/> |
| The /address/city property is included in the index | <input type="radio"/> | <input type="radio"/> |

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Box 1: Yes
"path": "/" is in includePaths.
Include the root path to selectively exclude paths that don't need to be indexed. This is the recommended approach as it lets Azure Cosmos DB proactively index any new property that may be added to your model.

Box 2: No
"path": "/firstName/" is in excludePaths.

Box 3: Yes
"path": "/address/city/" is in includePaths

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/index-policy>

NEW QUESTION 4

- (Exam Topic 2)
You maintain a relational database for a book publisher. The database contains the following tables.

| Name | Column |
|---------------|------------------------|
| Author | authorId (primary key) |
| | fullname |
| | address |
| | contactinfo |
| Book | bookId (primary key) |
| | isbn |
| | title |
| | genre |
| Bookauthorlnk | authorId (foreign key) |
| | bookId (foreign key) |

The most common query lists the books for a given authorId.
You need to develop a non-relational data model for Azure Cosmos DB Core (SQL) API that will replace the relational database. The solution must minimize latency and read operation costs.
What should you include in the solution?

- A. Create a container for Author and a container for Boo
- B. In each Author document, embed bookId for each book by the autho
- C. In each Book document embed authorId of each author.
- D. Create Author, Book, and Bookauthorlnk documents in the same container.
- E. Create a container that contains a document for each Author and a document for each Boo
- F. In each Book document, embed authorId.
- G. Create a container for Author and a container for Boo
- H. In each Author document and Book document embed the data from Bookauthorlnk.

Answer: A

Explanation:
Store multiple entity types in the same container.

NEW QUESTION 5
- (Exam Topic 2)
You provision Azure resources by using the following Azure Resource Manager (ARM) template.

```
{
  "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
  "contentVersion": "1.0.0.0",
  "parameters": {
    "db": {
      "defaultValue": "[resourceId('Microsoft.DocumentDB/databaseAccounts', 'prod1')]",
      "type": "String"
    },
    "sms": {
      "defaultValue": "[resourceId('microsoft.insights/actionGroups', 'sms')]",
      "type": "String"
    }
  },
  "variables": {},
  "resources": [
    {
      "type": "microsoft.insights/actionGroups",
      "apiVersion": "2019-06-01",
      "name": "sms",
      "location": "Global",
      "properties": {
        "groupShortName": "Send message",
        "enabled": true,
        "emailReceivers": [],
        "smsReceivers": [
          {
            "name": "Action-SMS",
            "countryCode": "44",
            "phoneNumber": "7111111111"
          }
        ]
      }
    },
    {
      "type": "microsoft.insights/activityLogAlerts",
      "apiVersion": "2020-10-01",
      "name": "Alert1",
      "location": "Global",
      "dependsOn": ["sms"],
      "properties": {
        "scopes": [ "[parameters('db')]" ],
        "condition": {
          "allOf": [
            {
              "field": "category",
              "equals": "Administrative"
            },
            {
              "field": "operationName",
              "equals": "Microsoft.DocumentDB/databaseAccounts/regenerateKey/action"
            }
          ]
        },
        "actions": {
          "actionGroups": [
            {
              "actionGroupId": "[parameters('sms')]",
              "webhookProperties": {}
            }
          ]
        },
        "enabled": true
      }
    }
  ]
}
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

Answer Area

| Statements | Yes | No |
|--|-----------------------|-----------------------|
| The alert will be triggered when an Azure Cosmos DB key is used | <input type="radio"/> | <input type="radio"/> |
| Two alert actions will be performed when the alert is triggered | <input type="radio"/> | <input type="radio"/> |
| The alert will be triggered when an item that has a new partition key value is created | <input type="radio"/> | <input type="radio"/> |

- A. Mastered
 B. Not Mastered

Answer: A

Explanation:

Box 1: No

An alert is triggered when the DB key is regenerated, not when it is used.

Note: The az cosmosdb keys regenerate command regenerates an access key for a Azure Cosmos DB database account.

Box 2: No

Only an SMS action will be taken.

Emailreceivers is empty so no email action is taken.

Box 3: Yes

Yes, an alert is triggered when the DB key is regenerated.

Reference: <https://docs.microsoft.com/en-us/cli/azure/cosmosdb/keys>

NEW QUESTION 6

- (Exam Topic 2)
You have an Azure Cosmos DB Core (SQL) API account that is configured for multi-region writes. The account contains a database that has two containers named container1 and container2.

The following is a sample of a document in container1:

```
{
  "customerId": 1234, "firstName": "John",
  "lastName": "Smith", "policyYear": 2021
}
```

The following is a sample of a document in container2:

```
{
  "gpsId": 1234,
  "latitude": 38.8951,
  "longitude": -77.0364
}
```

You need to configure conflict resolution to meet the following requirements:
For container1 you must resolve conflicts by using the highest value for policyYear.
For container2 you must resolve conflicts by accepting the distance closest to latitude: 40.730610 and longitude: -73.935242.
Administrative effort must be minimized to implement the solution.

What should you configure for each container? To answer, drag the appropriate configurations to the correct containers. Each configuration 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.

Configurations

Last Write Wins (default) mode

Merge Procedures (custom) mode

An application that reads from the conflicts feed

Answer Area

Container1:

Container2:

- A. Mastered
B. Not Mastered

Answer: A

Explanation:

Box 1: Last Write Wins (LWW) (default) mode
Last Write Wins (LWW): This resolution policy, by default, uses a system-defined timestamp property. It's based on the time-synchronization clock protocol.
Box 2: Merge Procedures (custom) mode
Custom: This resolution policy is designed for application-defined semantics for reconciliation of conflicts. When you set this policy on your Azure Cosmos container, you also need to register a merge stored procedure. This procedure is automatically invoked when conflicts are detected under a database transaction on the server. The system provides exactly once guarantee for the execution of a merge procedure as part of the commitment protocol.
Reference:
<https://docs.microsoft.com/en-us/azure/cosmos-db/conflict-resolution-policies> <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/how-to-manage-conflicts>

NEW QUESTION 7

- (Exam Topic 2)
You have three containers in an Azure Cosmos DB Core (SQL) API account as shown in the following table.

| Name | Database | Time to Live |
|------|----------|-----------------|
| cn1 | db1 | On (no default) |
| cn2 | db1 | Off |
| cn3 | db1 | On (no default) |

You have the following Azure functions:
A function named Fn1 that reads the change feed of cn1 A function named Fn2 that reads the change feed of cn2 A function named Fn3 that reads the change feed of cn3
You perform the following actions: Delete an item named item1 from cn1. Update an item named item2 in cn2.
For an item named item3 in cn3, update the item time to live to 3,600 seconds.
For each of the following statements, select Yes if the statement is true. Otherwise, select No. NOTE: Each correct selection is worth one point.

Answer Area

Statements

Yes

No

Fn1 will receive item1 from the change feed

☐

☐

Fn2 can check the `_etag` of item2 to see whether the item is an update or an insert

☐

☐

Fn3 will receive item3 from the change feed

☐

☐

- A. Mastered
B. Not Mastered

Answer: A

Explanation:

Box 1: No

Azure Cosmos DB's change feed is a great choice as a central data store in event sourcing architectures where all data ingestion is modeled as writes (no updates or deletes).

Note: The change feed does not capture deletes. If you delete an item from your container, it is also removed from the change feed. The most common method of handling this is adding a soft marker on the items that are being deleted. You can add a property called "deleted" and set it to "true" at the time of deletion. This document update will show up in the change feed. You can set a TTL on this item so that it can be automatically deleted later.

Box 2: No

The _etag format is internal and you should not take dependency on it, because it can change anytime.

Box 3: Yes

Change feed support in Azure Cosmos DB works by listening to an Azure Cosmos container for any changes. Reference:

<https://docs.microsoft.com/en-us/azure/cosmos-db/sql/change-feed-design-patterns> <https://docs.microsoft.com/en-us/azure/cosmos-db/change-feed>

NEW QUESTION 8

- (Exam Topic 2)

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 have a container named container1 in an Azure Cosmos DB Core (SQL) API account.

You need to make the contents of container1 available as reference data for an Azure Stream Analytics job. Solution: You create an Azure Data Factory pipeline that uses Azure Cosmos DB Core (SQL) API as the input and Azure Blob Storage as the output.

Does this meet the goal?

A. Yes

B. No

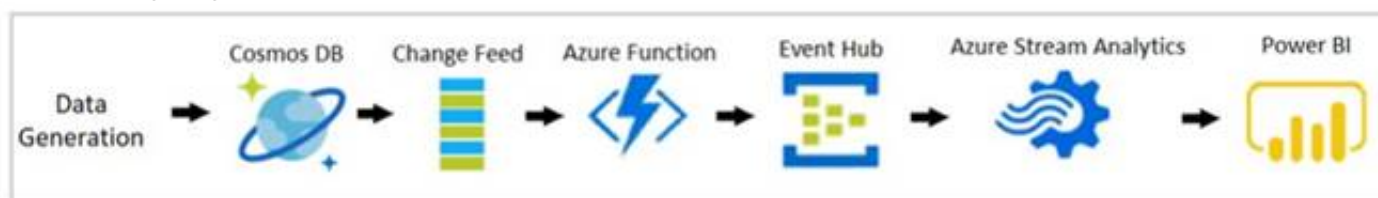
Answer: B

Explanation:

Instead create an Azure function that uses Azure Cosmos DB Core (SQL) API change feed as a trigger and Azure event hub as the output.

The Azure Cosmos DB change feed is a mechanism to get a continuous and incremental feed of records from an Azure Cosmos container as those records are being created or modified. Change feed support works by listening to container for any changes. It then outputs the sorted list of documents that were changed in the order in which they were modified.

The following diagram represents the data flow and components involved in the solution:



C:\Users\Admin\Desktop\Data\Odt data\Untitled.jpg

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/changefeed-ecommerce-solution>

NEW QUESTION 9

- (Exam Topic 2)

You need to configure an Apache Kafka instance to ingest data from an Azure Cosmos DB Core (SQL) API account. The data from a container named telemetry must be added to a Kafka topic named iot. The solution must store the data in a compact binary format.

Which three configuration items should you include in the solution? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

A. "connector.class": "com.azure.cosmos.kafka.connect.source.CosmosDBSourceConnector"

B. "key.converter": "org.apache.kafka.connect.json.JsonConverter"

C. "key.converter": "io.confluent.connect.avro.AvroConverter"

D. "connect.cosmos.containers.topicmap": "iot#telemetry"

E. "connect.cosmos.containers.topicmap": "iot"

F. "connector.class": "com.azure.cosmos.kafka.connect.source.CosmosDBSinkConnector"

Answer: CDF

Explanation:

C: Avro is binary format, while JSON is text.

F: Kafka Connect for Azure Cosmos DB is a connector to read from and write data to Azure Cosmos DB. The Azure Cosmos DB sink connector allows you to export data from Apache Kafka topics to an Azure Cosmos DB database. The connector polls data from Kafka to write to containers in the database based on the topics subscription.

D: Create the Azure Cosmos DB sink connector in Kafka Connect. The following JSON body defines config for the sink connector.

Extract:

"connector.class": "com.azure.cosmos.kafka.connect.sink.CosmosDBSinkConnector", "key.converter": "org.apache.kafka.connect.json.AvroConverter"

"connect.cosmos.containers.topicmap": "hotels#kafka"

Reference:

<https://docs.microsoft.com/en-us/azure/cosmos-db/sql/kafka-connector-sink> <https://www.confluent.io/blog/kafka-connect-deep-dive-converters-serialization-explained/>

NEW QUESTION 10

- (Exam Topic 2)

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.

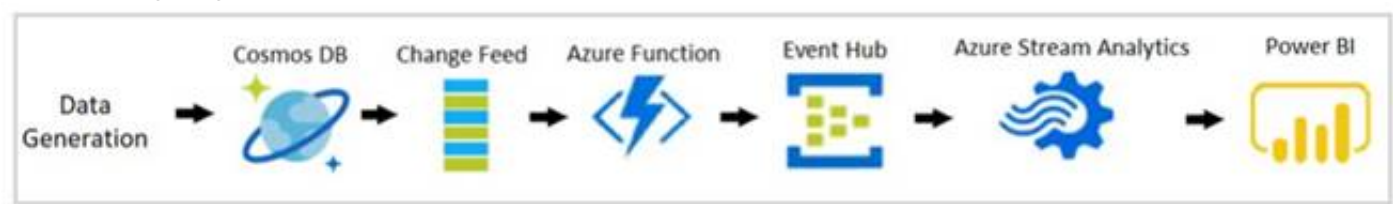
You have a container named container1 in an Azure Cosmos DB Core (SQL) API account.
You need to make the contents of container1 available as reference data for an Azure Stream Analytics job. Solution: You create an Azure function that uses Azure Cosmos DB Core (SQL) API change feed as a trigger and Azure event hub as the output.
Does this meet the goal?

- A. Yes
- B. No

Answer: A

Explanation:

The Azure Cosmos DB change feed is a mechanism to get a continuous and incremental feed of records from an Azure Cosmos container as those records are being created or modified. Change feed support works by listening to container for any changes. It then outputs the sorted list of documents that were changed in the order in which they were modified.
The following diagram represents the data flow and components involved in the solution:



C:\Users\Admin\Desktop\Data\Odt

data\Untitled.jpg

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/changefeed-ecommerce-solution>

NEW QUESTION 10

- (Exam Topic 2)

You have an app that stores data in an Azure Cosmos DB Core (SQL) API account The app performs queries that return large result sets.
You need to return a complete result set to the app by using pagination. Each page of results must return 80 items.
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.

Actions

Configure MaxItemCount in QueryRequestOptions

Run the query and provide a continuation token

Configure MaxBufferedItemCount in QueryRequestOptions

Append the results to a variable

Run the query and increment MaxItemCount

Answer Area

>

<

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Step 1: Configure the MaxItemCount in QueryRequestOptions
You can specify the maximum number of items returned by a query by setting the MaxItemCount. The MaxItemCount is specified per request and tells the query engine to return that number of items or fewer.
Box 2: Run the query and provide a continuation token
In the .NET SDK and Java SDK you can optionally use continuation tokens as a bookmark for your query's progress. Azure Cosmos DB query executions are stateless at the server side and can be resumed at any time using the continuation token.
If the query returns a continuation token, then there are additional query results.
Step 3: Append the results to a variable
Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/sql/sql-query-pagination>

NEW QUESTION 14

- (Exam Topic 2)

You plan to create an Azure Cosmos DB Core (SQL) API account that will use customer-managed keys stored in Azure Key Vault.
You need to configure an access policy in Key Vault to allow Azure Cosmos DB access to the keys. Which three permissions should you enable in the access policy? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

- A. Wrap Key
- B. Get
- C. List
- D. Update
- E. Sign
- F. Verify
- G. Unwrap Key

Answer: ABG

Explanation:

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/how-to-setup-cmk>

NEW QUESTION 15

- (Exam Topic 2)

You have an application named App1 that reads the data in an Azure Cosmos DB Core (SQL) API account. App1 runs the same read queries every minute. The default consistency level for the account is set to eventual.

You discover that every query consumes request units (RUs) instead of using the cache.

You verify the IntegratedCacheItemHitRate metric and the IntegratedCacheQueryHitRate metric. Both metrics have values of 0.

You verify that the dedicated gateway cluster is provisioned and used in the connection string. You need to ensure that App1 uses the Azure Cosmos DB integrated cache.

What should you configure?

- A. the indexing policy of the Azure Cosmos DB container
- B. the consistency level of the requests from App1
- C. the connectivity mode of the App1 CosmosClient
- D. the default consistency level of the Azure Cosmos DB account

Answer: C

Explanation:

Because the integrated cache is specific to your Azure Cosmos DB account and requires significant CPU and memory, it requires a dedicated gateway node.

Connect to Azure Cosmos DB using gateway mode.

Reference: <https://docs.microsoft.com/en-us/azure/cosmos-db/integrated-cache-faq>

NEW QUESTION 16

- (Exam Topic 2)

You have an Azure Cosmos DB Core (SQL) API account that is used by 10 web apps.

You need to analyze the data stored in the account by using Apache Spark to create machine learning models. The solution must NOT affect the performance of the web apps.

Which two actions should you perform? Each correct answer presents part of the solution. NOTE: Each correct selection is worth one point.

- A. In an Apache Spark pool in Azure Synapse, create a table that uses cosmos.olap as the data source.
- B. Create a private endpoint connection to the account.
- C. In an Azure Synapse Analytics serverless SQL pool, create a view that uses OPENROWSET and the CosmosDB provider.
- D. Enable Azure Synapse Link for the account and Analytical store on the container.
- E. In an Apache Spark pool in Azure Synapse, create a table that uses cosmos.oltp as the data source.

Answer: AD

Explanation:

Reference:

<https://github.com/microsoft/MCW-Cosmos-DB-Real-Time-Advanced-Analytics/blob/main/Hands-on%20lab/H>

NEW QUESTION 19

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