

# Knowledge check

Total points 5

## 1. Question 1

Azure Synapse Link for Azure Cosmos DB provides the capability that enables you to run near real-time analytics over operational data stored in Azure Cosmos DB. This capability is referred to as cloud-native:

1 / 1 point

☐ OLAP

☐ OLTP

☒ HTAP

Correct

Azure Synapse Link for Azure Cosmos DB is a cloud-native HTAP capability that enables you to run near real-time analytics over operational data stored in Azure Cosmos DB

## 2. Question 2

True or false?

Azure Cosmos DB provides a transactional store and an analytical store with a fully managed autosync process that keeps the data within these stores in sync.

1 / 1 point

☒ True

☐ False

Correct

Azure Cosmos DB provides both a transactional store optimized for transactional workloads and an analytical store optimized for analytical workloads and a fully managed autosync process to keep the data within these stores in sync.

## 3. Question 3

The benefits of enabling the analytical store on an Azure Cosmos DB container include which of the following?

Select all options that apply.

1 / 1 point

☒ Run near real-time analytics with no-ETL required

Correct

Running near real-time analytics over operational data with no-ETL is one of the benefits of enabling the analytical store on a container.

☒ All transactional data is automatically stored in a fully isolated Column store

**Correct**

All transactional data automatically stored in a fully isolated column store is one of the benefits of enabling the analytical store on a container.

☐ All transactional data is automatically stored in a fully isolated Table store

☒ Provides full performance isolation from transactional workloads.

**Correct**

Providing full performance isolation from transactional workloads is one of the benefits of enabling the analytical store on a container.,

#### 4. Question 4

When using Azure Cosmos DB analytical store, the autosync process transparently maintains the schema in the analytical store based on items added or updated in the transactional store. There are two modes of schema representation for data stored in the analytical store.

Which of the following schema representations creates a simple tabular representation of the schema-agnostic data in the transactional store as it copies it to the analytical store?

**1 / 1 point**

☒ Well-defined schema representation

☐ Best effort schema representation

☐ Full fidelity schema representation

**Correct**

The well-defined schema representation creates a simple tabular representation of the schema-agnostic data in the transactional store as it copies it to the analytical store.

#### 5. Question 5

Within Azure Synapse Link for Azure Cosmos DB, which of the following is a Column-oriented store optimized for analytical queries?

**1 / 1 point**

☐ Cosmos DB store

☐ Transactional store

☒ Analytical store

**Correct**

An analytical store is a data store optimized for analytical queries.

## Knowledge check

Total points 5

### 1. Question 1

Synapse Link is not enabled by default. When will Synapse Link begin to incur billing charges once it has been enabled?

0 / 1 point

- ☐ As soon as the Analytical store is enabled
- ☐ As soon as Synapse Link is initially enabled
- ☐ As soon as the Analytical store is enabled, and containers are created

☒ As soon as containers are created

**Incorrect**

Enabling Synapse Link on the account has no billing implications until containers are created with the analytical store enabled.

### 2. Question 2

To verify that the Azure Synapse Link feature is enabled on an Azure Cosmos DB SQL (Core) API account, which of the following steps would you complete?

1 / 1 point

☒ Navigate to the Azure Cosmos DB SQL (Core) API account -> select Features -> Verify the Synapse Link feature shows a Status of ON

☐ Navigate to the Azure Cosmos DB SQL (Core) API account -> Select Data Explorer -> select Features - Verify the Synapse Link feature shows a Status of onON

☐ Navigate to the Azure Cosmos DB SQL (Core) API account -> Select Connection string -> select Features -> Verify the Synapse Link feature shows a Status of on

**Correct**

To verify Azure Synapse Link is enabled navigate to the Azure Cosmos DB SQL (Core) API account -> select Features -> Verify the Synapse Link feature shows a Status of ONon

**3. Question 3**

In Azure Cosmos DB enabling an analytical store is available only at the time of creating a container. How can you effectively disable an analytical store?

Choose all that apply.

**1 / 1 point**



Delete the container

**Correct**

Enabling analytical store is available only at the time of creating a container and cannot be completely disabled without deleting the container.



From within the API disable the analytical store feature



Set the default TTL to 0 (Null)

**Correct**

Setting the default analytical store TTL value to 0 or NULL effectively disables the analytical store by no longer synchronizing new items to it from the transactional store and deleting items already synchronized from the analytical store.

**4. Question 4**

From where do you enable Azure Synapse Link for Azure Cosmos DB?

**1 / 1 point**



In Azure Synapse Link



Azure Synapse Analytics



In Azure Cosmos DB

**Correct**

When you enable Azure Synapse Link for Azure Cosmos DB it must be done in Azure Cosmos DB.

**5. Question 5**

With Synapse Link, you can directly connect to your Azure Cosmos DB containers from Azure Synapse Analytics. Azure Synapse Analytics currently supports Synapse Link with which of the following

Choose all that apply

**1 / 1 point**



Dedicated SQL Pool



Synapse Apache Spark

**Correct**

Azure Synapse Analytics supports Synapse Link with Synapse Apache Spark



Serverless SQL pool

**Correct**

Azure Synapse Analytics supports Synapse Link with serverless SQL pools.

## Knowledge check

**Total points 6**

### 1. Question 1

While interacting with Azure Cosmos DB using Apache Spark in Azure Synapse Link which of the following capabilities are supported?

Choose all that apply.

**0.5 / 1 point**

☒ The first 1500 properties from the transactional schema are available in the analytical schema

**This should not be selected**

The first 1000 properties from the transactional schema are available in the analytical schema

☒ Load to a Spark DataFrame

**Correct**

One of the supported features includes the ability to load to a Spark DataFrame

☒ Analyze data in Azure Cosmos DB containers that are enabled with Azure Synapse Link in near real-time without impacting the performance of the transactional workloads

**Correct**

One of the supported features includes the ability to analyze data in Azure Cosmos DB containers that are enabled with Azure Synapse Link in near real-time without impacting the performance of the transactional workloads.

☐ Create a Spark table

## 2. Question 2

The following snippet of code has been added to the first cell of a notebook.

```
1: dfCustomer = spark.read\  
2: .format("cosmos.olap")\  
3: .option("spark.synapse.linkedService", "AdventureWorksSQL")\  
4: .option("spark.cosmos.container", "Customer")\  
5: .load()
```

Assuming all the requirements to run this code are already in place what is the purpose of the code on line number 2: `.format("cosmos.olap")`

**1 / 1 point**

- ☐ Read from an Azure SQL Database.
- ☐ Format the contents of the DataFrame as aggregated values.

☒ It indicates that we want to read from an Azure Cosmos DB analytical store.

**Correct**

cosmos.olap indicates that we are want to read from an Azure Cosmos DB analytical store.

## 3. Question 3

Azure Cosmos DB automatically has system properties such as `_ts`, `_self`, `_attachments`, `_rid`, and `_etag` associated with every document. These system document properties are seldom useful for analytical store query purposes and can be removed using which of the following PySpark code snippet examples?

1 / 1 point

- ☐ `system_document_properties = {'_attachments', '_etag', '_rid', '_self', '_ts'}`
- `customer_columns = list(set(dfCustomer.columns) - system_document_properties)`
- ☒ `system_document_properties = {'_attachments', '_etag', '_rid', '_self', '_ts'}`
- `customer_columns = list(set(dfCustomer.columns) - system_document_properties)`
- ☐ `customer_columns = list(set(dfCustomer.columns) = system_document_properties)`
- `system_document_properties = {'_attachments', '_etag', '_rid', '_self', '_ts'}`

**Correct**

This is the correct syntax to remove the system properties.

#### 4. Question 4

True or false?

You can write query aggregation results from Synapse back to the analytical store.

1 / 1 point

- ☐ True

☒ False

**Correct**

Analytical store is a read-only store in an Azure Cosmos DB container. So, you cannot directly write back the aggregation results to the analytical store, but you can write them to the Azure Cosmos DB transactional store of another container, which can later be leveraged as a serving layer.

#### 5. Question 5

Which of the following SparkSQL methods creates a connection to allow reading data from an analytical store?

1 / 1 point

☒ `cosmos.olap`

☐ `cosmos.db`

☐ `cosmos.oltp`

**Correct**

`Cosmos.olap` is the method that connects to the analytical store in Azure Cosmos DB.

#### 6. Question 6

When you want to switch to SparkSQL in a notebook, what is the first command to type?

1 / 1 point

- ☐ %%spark
- ☐ %%sparksql
- ☒ %%sql

Correct

When you want to switch to SparkSQL in a notebook, type the %%sql command.

## Knowledge check

Total points 4

### 1. Question 1

By default, the OPENJSON table-valued function returns three columns. These are?

Select all that apply.

1 / 1 point

- ☐ Schema Name
- ☒ Value

Correct

Value contains the value of the property.



☐ Name

☒ Key

**Correct**

Key contains the name of the specified property or the index of the element in the specified array.

☒ Type

**Correct**

Contains the JSON type of the value. This is represented as an int value (from 0 to 5). This column is only returned when you use the default schema.

## 2. Question 2

By default, the OPENJSON table-valued function returns three columns. As an alternative, you can explicitly specify the schema of the result set that OPENJSON returns by providing which of the following clauses?

Select all that apply.

**1 / 1 point**

☐ Include

☒ With

☐ Explicit

☐ Insert

**Correct**

You can explicitly specify the schema of the result set that OPENJSON returns by providing a “with” clause.

## 3. Question 3

Once Azure Synapse Link is configured on Cosmos DB, what is the first step to perform to use Azure Synapse Analytics serverless SQL pools to query the Azure Cosmos DB data?

**1 / 1 point**

☒ Create a database

☐ Use the OPENROWSET function

☐ Use a SELECT clause.

**Correct**

Before being able to issue any queries using Azure Synapse Analytics serverless SQL pools, you first must create a database.

## 4. Question 4

What function provides a rowset view over a JSON document?

**1 / 1 point**

- ☐ WITH
- ☒ OPENJSON
- ☐ OPENROWSET

**Correct**

The OPENJSON function provides a rowset view over a JSON document.

## Test prep

**Latest Submission Grade 95.83%**

### 1. Question 1

HTAP (Hybrid Transactional/Analytical processing) enables business to run advanced analytics in near real-time on data stored and processed in which of the following?

**1 / 1 point**

- ☐ ELT
- ☐ ETL
- ☒ OLTP
- ☐ OLAP

**Correct**

Online Transactional processing, commonly referred to as OLTP systems, work with operational data. HTAP enables business to run advanced analytics in near real-time on data stored and processed by OLTP systems.

## 2. Question 2

Which of the following are common use cases for using Azure Synapse Link for Azure Cosmos DB?

Choose all that apply.

**0.75 / 1 point**

☐ Integration with APIs such as Gremlin API, Cassandra API, and Table API

☒ Supply chain analytics, forecasting and reporting

**Correct**

Azure Synapse Link for Cosmos DB allows organizations to store data from their sales systems, ingest real-time telemetry data from in vehicle systems and integrate data from their ERP systems into a common operational store in Azure Cosmos DB and then leverage the data from Synapse analytics to enable both predictive analytics scenarios, such as stock out monitoring and supply chain bottleneck management.

☐ IOT predictive maintenance

☒ Real-time personalization

**Correct**

In retail, many web-based retailers will perform real-time basket analysis to make product recommendations to customers who are about to purchase products. This increased revenues for these organizations by providing targeted suggestions at the point of sales.

You didn't select all the correct answers

## 3. Question 3

With Synapse Link, you can directly connect to your Azure Cosmos DB containers from Azure Synapse Analytics. Azure Synapse Analytics currently supports Synapse Link with which of the following?

Choose all that apply.

**1 / 1 point**

☒ Serverless SQL pool

**Correct**

Azure Synapse Analytics supports Synapse Link with serverless SQL pools.

☒ Synapse Apache Spark

**Correct**

Azure Synapse Analytics supports Synapse Link with Synapse Apache Spark

☐ Dedicated SQL Pool

#### 4. Question 4

True or False

In Azure Cosmos DB you can enable an analytical store on an existing container.

1 / 1 point



☐ True

**Correct**

Analytical store can only be enabled for new containers. To use analytical store for existing containers, migrate data from your existing containers to new containers using Azure Cosmos DB migration tools.

#### 5. Question 5

How can you manage the lifecycle of data and define how long it will be retained for in an analytical store?

1 / 1 point

☐ Configure the purge duration in a container

☐ Configure the deletion duration for records in the transactional store.

☒ Configure the default Time to Live (TTL) property for records stored.

**Correct**

Configuring the default Time to Live (TTL) property for records stored in an analytical store can manage the lifecycle of data and define how long it will be retained for.

#### 6. Question 6

The benefits of enabling the analytical store on an Azure Cosmos DB container include which of the following?

Choose all that apply.

1 / 1 point

☒ provides full performance isolation from transactional workloads

**Correct**

Providing full performance isolation from transactional workloads is one of the benefits of enabling the analytical store on a container.

☒ Run near real-time analytics with no-ETL required

**Correct**

Running near real-time analytics over operational data with no ETL is one of the benefits of enabling the analytical store on a container.

☐ All transactional data is automatically stored in a fully isolated Table store

☒ All transactional data is automatically stored in a fully isolated Column store

**Correct**

All transactional data automatically stored in a fully isolated column store is one of the benefits of enabling the analytical store on a container.

## Test prep

**Latest Submission Grade 87.5%**

### 1. Question 1

Synapse Apache Spark allows you to ingest data into an Azure Cosmos DB. Data is always ingested into Azure Cosmos DB containers through which of the following:

**1 / 1 point**

☒ The Transactional store

☐ The Relational store

☐ The Analytical store

**Correct**

Synapse Apache Spark allows you to ingest data into Azure Cosmos DB. Data is always ingested into Azure Cosmos DB containers through the transactional store.

### 2. Question 2

The following snippet of code has been added to the first cell of a notebook.

```
dfCustomer = spark.read\  
    .format("cosmos.olap")\  
    .option("spark.synapse.linkedService", "AdventureWorksSQL")\  
    .option("spark.cosmos.container", "Customer")\  
    .load()
```

Assuming all the requirements to run this code are already in place, what is the purpose of the code on line 4?

```
.option("spark.cosmos.container", "Customer")\
```

**0 / 1 point**

- ☐ Specifies the destination to load data into after a query has run against the source data
- ☐ Specifies the name of the container that we wish to read



Creates a new container

**Incorrect**

Try going back and reviewing the Query Azure Cosmos DB with Apache Spark for Azure Synapse Analytics lesson.

### 3. Question 3

Assuming all prerequisites have been met to run the following snippet of code in an Azure Synapse Analytics notebook what will this piece of code output?

```
display(dfCustomer.groupBy("address.country","address.city").count().orderBy("count",  
ascending=False).limit(10))
```

**1 / 1 point**



The result will display the top 10 country, city combinations having the most customers, At the top of the list will be customers who have no country or city information within the customer profile

- ☐ The result will only display the top 10 countries having the most customers, At the bottom of the list will be customers who have no country or city information within the customer profile
- ☐ The result will display the top 10 country, city combinations having the most customers, At the bottom of the list will be customers who have no country or city information within the customer profile
- ☐ The result will only display the top 10 countries having the most customers, At the top of the list will be customers who have no country or city information within the customer profile

**Correct**

The result will display the top 10 country, city combinations having the most customers, At the top of the list will be customers who have no country or city information within the customer profile.

#### 4. Question 4

Which of the following SparkSQL methods creates a connection to allow reading data from an analytical store?

1 / 1 point

☒ cosmos.olap

☐ cosmos.oltp

☐ cosmos.db

Correct

Cosmos.olap is the method that connects to the analytical store in Azure Cosmos DB.

#### 5. Question 5

Azure Cosmos Core API account for MongoDB, uses full fidelity schema representation by default. This means that all top-level properties of a document are represented as columns with the associated property values as the value of the column.

Azure Cosmos DB automatically has system properties such as `_ts`, `_self`, `_attachments`, `_rid`, and `_etag` associated with every document. These system document properties are seldom useful for analytical store query purposes and can be removed using which of the following PySpark code snippet examples?

1 / 1 point

☐ `system_document_properties - {'_attachments', '_etag', '_rid', '_self', '_ts'}`

`customer_columns = list(set(dfCustomer.columns) - system_document_properties)`

☐

`customer_columns = list(set(dfCustomer.columns) - system_document_properties)`

`system_document_properties = {'_attachments', '_etag', '_rid', '_self', '_ts'}`

☒ `system_document_properties = {'_attachments', '_etag', '_rid', '_self', '_ts'}`

`customer_columns = list(set(dfCustomer.columns) - system_document_properties)`

Correct

This is the correct syntax to remove the system properties.

#### 6. Question 6

By default, the OPENJSON table-valued function returns three columns. As an alternative, you can explicitly specify the schema of the result set that OPENJSON returns by providing which of the following clauses?

1 / 1 point

☐ Include

☐ Explicit

☒ With

☐ Insert

**Correct**

You can explicitly specify the schema of the result set that OPENJSON returns by providing a “with” clause.

### 7. Question 7

Once Azure Synapse Link is configured on Cosmos DB, what is the first step to perform to use Azure Synapse Analytics serverless SQL pools to query the Azure Cosmos DB data?

**1 / 1 point**

☐ Use a SELECT clause

☐ Use the OPENROWSET function

☒ Create a database

**Correct**

Before being able to issue any queries using Azure Synapse Analytics serverless SQL pools, you first must create a database.

### 8. Question 8

What function provides a rowset view over a JSON document?

**1 / 1 point**

☒ OPENJSON

☐ WITH

☐ OPENROWSET

**Correct**

The OPENJSON function provides a rowset view over a JSON document.



# Course practice exam

Latest Submission Grade 90%

## 1. Question 1

HTAP (Hybrid Transactional/Analytical processing) enables business to run advanced analytics in near-real-time on data stored and processed in which of the following?

1 / 1 point

☐ ELT

☐ ETL

☒ OLTP

☐ OLAP

Correct

Online Transactional processing commonly referred to as OLTP systems work with operational data. HTAP enables business to run advanced analytics in near-real-time on data stored and processed by OLTP systems.

## 2. Question 2

Which of the following are common use cases for using Azure Synapse Link for Azure Cosmos DB?

Choose all that apply.

1 / 1 point

☒ Real-time personalization

Correct

In retail, many web-based retailers will perform real-time basket analysis to make product recommendations to customers who are about to purchase products. This increased revenues for these organizations as the provided targeted suggestions at the point of sales.

☒ IOT predictive maintenance

Correct

Industrial IOT innovations have drastically reduced downtimes of machinery and increased overall efficiency across all fields of industry. One of such innovations is predictive maintenance analytics for machinery at the edge of the cloud.

☐ Integration with APIs such as Gremlin API, Cassandra API, and Table API

☒ Supply chain analytics, forecasting and reporting

Correct

Azure Synapse Link for Cosmos DB allows these organizations to store data from their sales systems, ingest real-time telemetry data from in vehicle systems and integrate data from their ERP systems into a common operational store in Azure Cosmos DB and then leverage the data from Synapse analytics to enable both predictive analytics scenarios such as stock out monitoring and supply chain bottleneck management.

### 3. Question 3

With Synapse Link, you can directly connect to your Azure Cosmos DB containers from Azure Synapse Analytics. Azure Synapse Analytics currently supports Synapse Link with which of the following?

Choose all that apply

1 / 1 point



Dedicated SQL Pool



Serverless SQL pool

Correct

Azure Synapse Analytics supports Synapse Link with serverless SQL pools.



Synapse Apache Spark

Correct

Azure Synapse Analytics supports Synapse Link with Synapse Apache Spark.

### 4. Question 4

True or false?

In Azure Cosmos DB you can enable an analytical store on an existing container.

1 / 1 point



False



True

Correct

Analytical store can only be enabled for new containers. To use analytical store for existing containers, migrate data from your existing containers to new containers using Azure Cosmos DB migration tools.

### 5. Question 5

Within Azure Synapse Link for Azure Cosmos DB, which of the following is a Column-oriented store optimized for analytical queries?

0 / 1 point



Transactional store



Cosmos DB store



Analytical store

**Incorrect**

Try going back and reviewing Design hybrid transactional and analytical processing using Azure Synapse Analytics.

**6. Question 6**

Currently once the Azure Synapse Link feature is enabled on an account you cannot disable it. Enabling Synapse Link on an account. When will Synapse Link begin to incur billing charges?

**1 / 1 point**

- ☐ As soon as containers are created
- ☐ As soon as Synapse Link is initially enabled
- ☒ As soon as the Analytical store is enabled, and containers are created
- ☐ As soon as the Analytical store is enabled

**Correct**

Enabling Synapse Link on the account has no billing implications until containers are created with the analytical store enabled.

**7. Question 7**

In Azure Cosmos DB enabling an analytical store is only available at the time of creating a container. How can you effectively disable an analytical store?

Choose all that apply.

**1 / 1 point**

- ☒ Delete the container

**Correct**

Enabling analytical store is only available at the time of creating a container and cannot be completely disabled without deleting the container.

- ☐ From within the API disable the analytical store feature

- ☒ Set the default TTL to 0 (Null)

**Correct**

Setting the default analytical store TTL value to 0 or null effectively disables the analytical store by no longer synchronize new items to it from the transactional store and deleting items already synchronized from the analytical store.

**8. Question 8**

Azure Cosmos DB automatically has system properties such as `_ts`, `_self`, `_attachments`, `_rid`, and `_etag` associated with every document. These system document properties are seldom useful for analytical store query purposes and can be removed using which of the following PySpark code snippet examples

1 / 1 point

- ☒ `system_document_properties = {'_attachments', '_etag', '_rid', '_self', '_ts'}`
- `customer_columns = list(set(dfCustomer.columns) - system_document_properties)`
- ☐ `customer_columns = list(set(dfCustomer.columns) = system_document_properties)`
- `system_document_properties = {'_attachments', '_etag', '_rid', '_self', '_ts'}`
- ☐ `system_document_properties - {'_attachments', '_etag', '_rid', '_self', '_ts'}`
- `customer_columns = list(set(dfCustomer.columns) = system_document_properties)`

Correct

This is the correct syntax to remove the system properties.

### 9. Question 9

The following snippet of code has been added to the first cell of a notebook.

```
1: dfCustomer = spark.read\  
2: .format("cosmos.olap")\  
3: .option("spark.synapse.linkedService", "AdventureWorksSQL")\  
4: .option("spark.cosmos.container", "Customer")\  
5: .load()
```

Assuming all the requirements to run this code are already in place, what is the purpose of the code on line number 2? `.format("cosmos.olap")`

1 / 1 point

- ☒ indicates that we want to read from an Azure Cosmos DB analytical store
- ☐ Format the contents of the DataFrame as aggregated values
- ☐ Read from an Azure SQL Database.

Correct

`cosmos.olap` indicates that we are want to read from an Azure Cosmos DB analytical store.

### 10. Question 10

By default, the OPENJSON table-valued function returns three columns. These are?

1 / 1 point

- ☒ Value

### Correct

Value contains the value of the property.

☒ Key

### Correct

Key contains the name of the specified property or the index of the element in the specified array.

☐ Name

☐ Schema Name

☒ Type

### Correct

Contains the JSON type of the value. This is represented as an int value (from 0 to 5). This column is only returned when you use the default schema.