



# 70-764<sup>Q&As</sup>

Administering a SQL Database Infrastructure

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## QUESTION 1

### HOTSPOT

You have a database named DB1.

Users report that queries that use a specific table take a long time to complete. You suspect an issue with how often checkpoints are issued.

You need to create an Extended Events session to monitor the database checkpoint activity on DB1.

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:

#### Configuration

#### Setting

Event

	▼
sqlserver.checkpoint_begin	
sqlserver.database_name	
sqlserver.database_name=N'DB1'	

Action

	▼
sqlserver.checkpoint_begin	
sqlserver.database_name	
sqlserver.database_name=N'DB1'	

Where

	▼
sqlserver.checkpoint_begin	
sqlserver.database_name	
sqlserver.database_name=N'DB1'	

Correct Answer:

**Configuration****Setting**

Event

	▼
sqlserver.checkpoint_begin	
sqlserver.database_name	
sqlserver.database_name=N'DB1'	

Action

	▼
sqlserver.checkpoint_begin	
sqlserver.database_name	
sqlserver.database_name=N'DB1'	

Where

	▼
sqlserver.checkpoint_begin	
sqlserver.database_name	
sqlserver.database_name=N'DB1'	

References: <https://docs.microsoft.com/en-us/sql/relational-databases/extended-events/targets-for-extended-events-in-sql-server>

**QUESTION 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 database named DB1 that is 640 GB and is updated frequently.

You enable log shipping for DB1 and configure backup and restore to occur every 30 minutes.

You discover that the hard disks on the database server are almost full.

You need to reduce the amount of disk space used by the log shipping process.

Solution: You enable compression for the transaction log backups.

Does this meet the goal?



A. Yes

B. No

Correct Answer: A

SQL Server 2017 supports backup compression. When creating a log shipping configuration, you can control the backup compression behavior of log backups by choosing one of the following options: Use the default server setting,

Compress backup, or Do not compress backup

Note: SQL Server 2008 Enterprise and later versions support backup compression.

References: <https://docs.microsoft.com/en-us/sql/database-engine/log-shipping/configure-log-shipping-sql-server?view=sql-server-2017>

### QUESTION 3

#### HOTSPOT

Note: This question is part of a series of questions that use the same scenario. For your convenience, the scenario is repeated in each question. Each question presents a different goal and answer choices, but the next of the scenario is exactly the same in each question in this series. Start of repeated scenario

Contoso, Ltd. has Microsoft SQL Server databases that support a custom application. The current SQL Server environment consists of two servers: ContosoSQL1 and ContosoSQL2. These two servers participate in an Always On Availability

Group named ContosoAG1 that is configured to use synchronous-commit with automatic failover. The secondary replica is not configured for read-only access.

The application performs both transactional processing and historical data retrieval in a database named ContosoDB. The application includes an inventory management module. The inventory management module and database have experienced performance issues.

Users report that a query named InventoryQuery1 takes a long time to complete. The query is shown as follows:

```
SELECT ProductNumber, Name, ProductLine
```

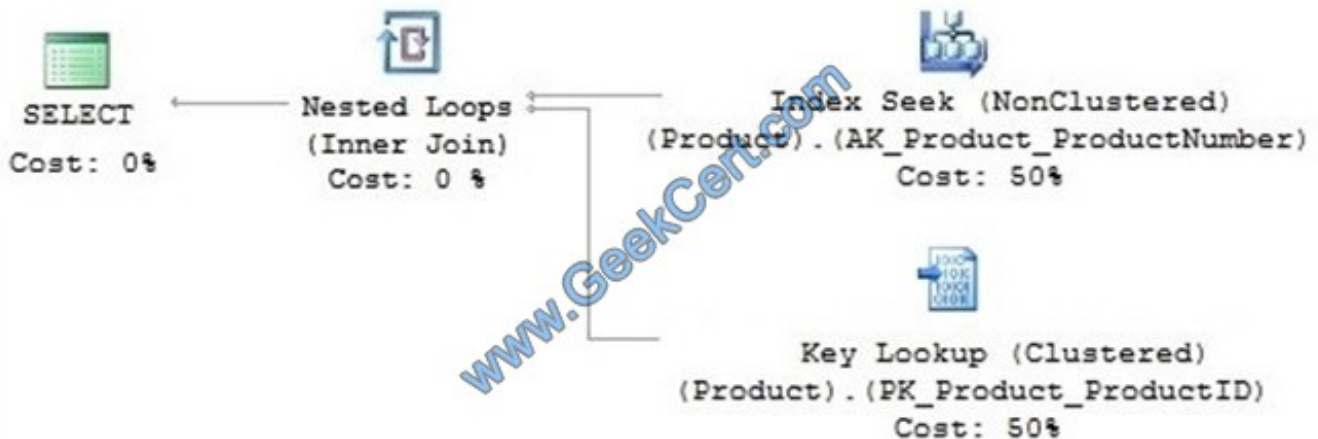
```
FROM Production.Product
```

```
WHERE ProductNumber = N'\'
```

The query plan used by SQL Server for this query is shown in the exhibit. (Click the Exhibit tab.) Various performance issues, including frequent long-term blocking episodes, prevent business users from completing their daily tasks. You

suspect the tempdb database resources could be responsible. You must create Blocking reports for the ContosoDB database to identify issues.

Exhibit.



Hot Area:

## Answer Area

What operator in the query plan for InventoryQuery1 is making the plan inefficient?

SELECT
Nested Loops
Key Lookup (Clustered)
Index Seek (NonClustered)

What change to the database should be implemented to improve this query's plan?

Create a covering index for this query.
Create new statistics on the Product.ProductNumber column.
Change the table's primary key to the Product.ProductNumber column.

Correct Answer:

## Answer Area

What operator in the query plan for InventoryQuery1 is making the plan inefficient?

SELECT
Nested Loops
Key Lookup (Clustered)
Index Seek (NonClustered)

What change to the database should be implemented to improve this query's plan?

Create a covering index for this query.
Create new statistics on the Product.ProductNumber column.
Change the table's primary key to the Product.ProductNumber column.

Box 1: Key Lookup (clustered)

They Key Lookup (clustered) should be less than 50%.



---

Box 2: Change the table's primary key to the Product.ProductNumber column.

Incorrect: Non-Clustered Index Seek

Non-Clustered Index Seek occurs when Columns part of non-clustered index accessed in query and rows located in the B+ tree.

It is good and ideal to have a Non-Clustered Index Seek.

Action: Evaluate other operators

References:

<https://www.sqlshack.com/sql-server-query-execution-plans-beginners-non-clustered-index-operators/>

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#### QUESTION 4

You work as a Database Administrator (DBA) at ABC.com.

You are in the process of deploying new servers running SQL Server 2012.

You need to deploy a SQL Server 2012 server to host databases used by Research and Development department.

The databases used by the Research and Development department will store sensitive data.

A company security policy states that if Research and Development department database files are moved to another server, the files must be encrypted.

Which of the following solutions would meet the encryption requirement?

- A. Encrypting File System (EFS).
- B. Transparent Data Encryption (TDE).
- C. Windows Bitlocker Drive Encryption.
- D. Secure Sockets Layer (SSL)

Correct Answer: B

---

#### QUESTION 5

Background

Corporate Information

Fabrikam, Inc. is a retailer that sells electronics products on the Internet. The company has a headquarters site and one satellite sales office. You have been hired as the database administrator, and the company wants you to change the architecture of the Fabrikam ecommerce site to optimize performance and reduce downtime while keeping capital expenditures to a minimum. To help with the solution, Fabrikam has decided to use cloud resources as well as on-premise servers.



### Physical Locations

All of the corporate executives, product managers, and support staff are stationed at the headquarters office. Half of the sales force works at this location. There is also a satellite sales office. The other half of the sales force works at the

satellite office in order to have sales people closer to clients in that area. Only sales people work at the satellite location.

### Problem Statement

To be successful, Fabrikam needs a website that is fast and has a high degree of system uptime. The current system operates on a single server and the company is not happy with the single point of failure this presents. The current nightly

backups have been failing due to insufficient space on the available drives and manual drive cleanup often needing to happen to get past the errors. Additional space will not be made available for backups on the HQ or satellite servers.

During your investigation, you discover that the sales force reports are causing significant contention.

### Configuration

#### Windows Logins

The network administrators have set up Windows groups to make it easier to manage security. Users may belong to more than one group depending on their role. The groups have been set up as shown in the following table:

Group	Members
OurDomain\Management	All corporate executives
OurDomain\SalesStaff	All sales people
OurDomain\ProductionStaff	All product managers and support staff
OurDomain\AllUsers	Everyone
OurDomain\CustomerSupport	Customer support representatives

**Server Configuration** The IT department has configured two physical servers with Microsoft Windows Server 2012 R2 and SQL Server 2014 Enterprise Edition and one Windows Azure Server. There are two tiers of storage available for use by database files only a fast tier and a slower tier. Currently the data and log files are stored on the fast tier of storage only. If a possible use case exists, management would like to utilize the slower tier storage for data files. The servers are configured as shown in the following table:

Location	Server
Company headquarters	HQ_Server
Satellite sales office	Satellite_Server
Microsoft Windows Azure (cloud)	Cloud_File Server

### Database

Currently all information is stored in a single database called ProdDB, created with the following script:



```
CREATE DATABASE ProdDB
```

```
GO
```

```
ALTER DATABASE ProdDB SET RECOVERY SIMPLE
```

```
GO
```

The Product table is in the Production schema owned by the ProductionStaff Windows group. It is the main table in the system so access to information in the Product table should be as fast as possible. The columns in the Product table are defined as shown in the following table:

Column	Data type
ProductID	INT
ProductName	VARCHAR(100)
ProductDescription	VARCHAR(MAX)
ProductPrice	SMALLMONEY
QuantityOnHand	INT
ProductCost	SMALLMONEY
ProductSupplierID	INT

The SalesOrderDetail table holds the details about each sale. It is in the Sales schema owned by the SalesStaff Windows group. This table is constantly being updated, inserted into, and read. The columns in the SalesOrderDetail table are defined as shown in the following table:

Column	Data type
SalesOrderDetailID	INT
ProductID	INT
SalePrice	SMALLMONEY
SaleQuantity	INT

### Database Issues

The current database does not perform well. Additionally, a recent disk problem caused the system to go down, resulting in lost sales revenue. In reviewing the current system, you found that there are no automated maintenance procedures.

The database is severely fragmented, and everyone has read and write access.

### Requirements

#### Database

The database should be configured to maximize uptime and to ensure that very little data is lost in the event of a server failure. To help with performance, the database needs to be modified so that it can support in-memory data, specifically

for the Product table, which the CIO has indicated should be a memoryoptimized table. The auto-update statistics option is set off on this database. Only product managers are allowed to add products or to make

changes to the name, description, price, cost, and supplier. The changes are made in an internal database and pushed to the Product table in ProdDB during system maintenance time. Product managers and others working at the



headquarters location also should be able to generate reports that include supplier and cost information.

#### Customer data access

Customers access the company's website to order products, so they must be able to read product information such as name, description, and price from the Product table. When customers place orders, stored procedures called by the website

update product quantity-on-hand values. This means the product table is constantly updated at random times.

#### Customer support data access

Customer support representatives need to be able to view and not update or change product information. Management does not want the customer support representatives to be able to see the product cost or any supplier information.

#### Sales force data access

Sales people at both the headquarters office and the satellite office must generate reports that read from the Product and SalesOrderDetail tables. No updates or inserts are ever made by sales people. These reports are run at random times

and there can be no reporting downtime to refresh the data set except during the monthly maintenance window.

The reports that run from the satellite office are process intensive queries with large data sets. Regardless of which office runs a sales force report, the SalesOrderDetail table should only return valid, committed order data; any orders not yet

committed should be ignored.

#### Historical Data

The system should keep historical information about customers who access the site so that sales people can see how frequently customers log in and how long they stay on the site.

The information should be stored in a table called Customer Access. Supporting this requirement should have minimal impact on production website performance.

#### Backups

The recovery strategy for Fabrikam needs to include the ability to do point in time restores and minimize the risk of data loss by performing transaction log backups every 15 minutes.

#### Database Maintenance

The company has defined a maintenance window every month when the server can be unavailable. Any maintenance functions that require exclusive access should be accomplished during that window.

#### Project milestones completed

Revoked all existing read and write access to the database, leaving the schema ownership in place.

Configured an Azure storage container secured with the storage account name MyStorageAccount with the primary access key StorageAccountKey on the cloud file server.

SQL Server 2014 has been configured on the satellite server and is ready for use.

On each database server, the fast storage has been assigned to drive letter F:,



and the slow storage has been assigned to drive letter D:.

You need to create a job to automate some database maintenance tasks. Which code fragment should you use in each location in the command to complete one of the commands you will need to include in the job? To answer, drag the

appropriate lines of code to the correct locations in the command. Each line of code 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.

Select and Place:

Lines of Code	Answer Area
STATISTICS	UPDATE      Line of Code      Production.Product
CONSTRAINT	Line of Code      Line of Code
MEMBER	
WITH FULLSCAN	
WITH SAMPLE 50 PERCENT	
WITH SAMPLE 1000 ROWS	
RECOMPUTE	
NOCOMPUTE	
NORECOMPUTE	

Correct Answer:



Lines of Code

CONSTRAINT
MEMBER
WITH SAMPLE 50 PERCENT
WITH SAMPLE 1000 ROWS
RECOMPUTE
NOCOMPUTE

Answer Area

UPDATE	STATISTICS	roduction.Product
WITH FULLSCAN	NORECOMPUTE	

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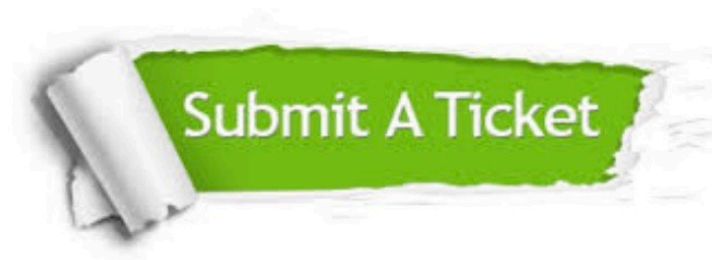
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