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Exam : **DP-300**

Title : Administering Relational
Databases on Microsoft
Azure

Version : DEMO

1. Testlet 1

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.

Existing Environment

Network Environment

The manufacturing and research datacenters connect to the primary datacenter by using a VPN.

The primary datacenter has an ExpressRoute connection that uses both Microsoft peering and private peering. The private peering connects to an Azure virtual network named HubVNet.

Identity Environment

Litware has a hybrid Azure Active Directory (Azure AD) deployment that uses a domain named litwareinc.com. All Azure subscriptions are associated to the litwareinc.com Azure AD tenant.

Database Environment

The sales department has the following database workload:

- An on-premises named SERVER1 hosts an instance of Microsoft SQL Server 2012 and two 1-TB databases.
- A logical server named SalesSrv01A contains a geo-replicated Azure SQL database named SalesSQLDb1. SalesSQLDb1 is in an elastic pool named SalesSQLDb1Pool. SalesSQLDb1 uses database firewall rules and contained database users.
- An application named SalesSQLDb1App1 uses SalesSQLDb1.

The manufacturing office contains two on-premises SQL Server 2016 servers named SERVER2 and SERVER3. The servers are nodes in the same Always On availability group. The availability group contains a database named ManufacturingSQLDb1

Database administrators have two Azure virtual machines in HubVnet named VM1 and VM2 that run Windows Server 2019 and are used to manage all the Azure databases.

Licensing Agreement

Litware is a Microsoft Volume Licensing customer that has License Mobility through Software Assurance.

Current Problems

SalesSQLDb1 experiences performance issues that are likely due to out-of-date statistics and frequent blocking queries.

Requirements

Planned Changes

Litware plans to implement the following changes:

- Implement 30 new databases in Azure, which will be used by time-sensitive manufacturing apps that have varying usage patterns. Each database will be approximately 20 GB.
- Create a new Azure SQL database named ResearchDB1 on a logical server named ResearchSrv01. ResearchDB1 will contain Personally Identifiable Information (PII) data.
- Develop an app named ResearchApp1 that will be used by the research department to populate and access ResearchDB1.
- Migrate ManufacturingSQLDb1 to the Azure virtual machine platform.
- Migrate the SERVER1 databases to the Azure SQL Database platform.

Technical Requirements

Litware identifies the following technical requirements:

- Maintenance tasks must be automated.
- The 30 new databases must scale automatically.
- The use of an on-premises infrastructure must be minimized.
- Azure Hybrid Use Benefits must be leveraged for Azure SQL Database deployments.
- All SQL Server and Azure SQL Database metrics related to CPU and storage usage and limits must be analyzed by using Azure built-in functionality.

Security and Compliance Requirements

Litware identifies the following security and compliance requirements:

- Store encryption keys in Azure Key Vault.
- Retain backups of the PII data for two months.
- Encrypt the PII data at rest, in transit, and in use.
- Use the principle of least privilege whenever possible.
- Authenticate database users by using Active Directory credentials.
- Protect Azure SQL Database instances by using database-level firewall rules.
- Ensure that all databases hosted in Azure are accessible from VM1 and VM2 without relying on public

endpoints.

Business Requirements

Litware identifies the following business requirements:

- Meet an SLA of 99.99% availability for all Azure deployments.
- Minimize downtime during the migration of the SERVER1 databases.
- Use the Azure Hybrid Use Benefits when migrating workloads to Azure.
- Once all requirements are met, minimize costs whenever possible.

HOTSPOT

You are planning the migration of the SERVER1 databases. The solution must meet the business requirements.

What should you include in the migration plan? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.

Answer Area

Azure Database Migration

Service pricing tier:

	▼
Standard 2-vCore	
Standard 4-vCore	
Premium 4-vCore	

Required Azure resource:

	▼
A virtual network that has service endpoints	
A VPN gateway	
An Azure Logic app	

Answer:

Answer Area

Azure Database Migration

Service pricing tier:

	▼
Standard 2-vCore	
Standard 4-vCore	
Premium 4-vCore	

Required Azure resource:

	▼
A virtual network that has service endpoints	
A VPN gateway	
An Azure Logic app	

Explanation:

Azure Database Migration service
Box 1: Premium 4-VCore

Scenario: Migrate the SERVER1 databases to the Azure SQL Database platform.

Minimize downtime during the migration of the SERVER1 databases.

Premium 4-vCore is for large or business critical workloads. It supports online migrations, offline migrations, and faster migration speeds.

Incorrect Answers:

The Standard pricing tier suits most small- to medium- business workloads, but it supports offline migration only.

Box 2: A VPN gateway

You need to create a Microsoft Azure Virtual Network for the Azure Database Migration Service by using the Azure Resource Manager deployment model, which provides site-to-site connectivity to your on-premises source servers by using either ExpressRoute or VPN.

Reference:

<https://azure.microsoft.com/pricing/details/database-migration/>

<https://docs.microsoft.com/en-us/azure/dms/tutorial-sql-server-azure-sql-online>

2. Question Set 2

You have an Azure SQL database that contains a table named factSales.

FactSales contains the columns shown in the following table.

Name	Data type
SalesID	Int
Product	Int
Total Number	Numeric(8,4)
Tax Number	Numeric(8,4)
SalesRep	Varchar(30)

FactSales has 6 billion rows and is loaded nightly by using a batch process.

Which type of compression provides the greatest space reduction for the database?

- A. page compression
- B. row compression
- C. columnstore compression
- D. columnstore archival compression

Answer: D

Explanation:

Columnstore tables and indexes are always stored with columnstore compression. You can further reduce the size of columnstore data by configuring an additional compression called archival compression.

Note: Columnstore — The columnstore index is also logically organized as a table with rows and columns, but the data is physically stored in a column-wise data format.

Incorrect Answers:

B: Rowstore — The rowstore index is the traditional style that has been around since the initial release of SQL Server.

For rowstore tables and indexes, use the data compression feature to help reduce the size of the database.

Reference:

<https://docs.microsoft.com/en-us/sql/relational-databases/data-compression/data-compression>

3.You have a Microsoft SQL Server 2019 instance in an on-premises datacenter. The instance contains a 4TB database named DB1. You plan to migrate DB1 to an Azure SQL Database managed instance. What should you use to minimize downtime and data loss during the migration?

- A. distributed availability groups
- B. database mirroring
- C. log shipping
- D. Database Migration Assistant

Answer: A

Explanation:

The Data Migration Assistant (DMA) helps you upgrade to a modern data platform by detecting compatibility issues that can impact database functionality in your new version of SQL Server or Azure SQL Database. DMA recommends performance and reliability improvements for your target environment and allows you to move your schema, data, and uncontained objects from your source server to your target server.

Note: SQL Managed Instance supports the following database migration options (currently these are the only supported migration methods):

- Azure Database Migration Service - migration with near-zero downtime.
- Native RESTORE DATABASE FROM URL - uses native backups from SQL Server and requires some downtime.

Reference: <https://docs.microsoft.com/en-us/sql/dma/dma-overview>

4.HOTSPOT

You have an on-premises Microsoft SQL Server 2016 server named Server1 that contains a database named DB1.

You need to perform an online migration of DB1 to an Azure SQL Database managed instance by using Azure Database Migration Service.

How should you configure the backup of DB1? To answer, select the appropriate options in the answer area. NOTE: Each correct selection is worth one point.

Answer Area

Backup type:

	▼
Full and log backups only	
Full backup only	
Log backup only	

Backup option:

	▼
WITH CHECKSUM	
WITH NOINIT	
WITH UNLOAD	

Answer:

Answer Area

Backup type:

	▼
Full and log backups only	
Full backup only	
Log backup only	

Backup option:

	▼
WITH CHECKSUM	
WITH NOINIT	
WITH UNLOAD	

Explanation:

Box 1: Full and log backups only

Make sure to take every backup on a separate backup media (backup files). Azure Database Migration Service doesn't support backups that are appended to a single backup file. Take full backup and log backups to separate backup files.

Box 2: WITH CHECKSUM

Azure Database Migration Service uses the backup and restore method to migrate your on-premises databases to SQL Managed Instance. Azure Database Migration Service only supports backups created using checksum.

Incorrect Answers:

NOINIT Indicates that the backup set is appended to the specified media set, preserving existing backup sets. If a media password is defined for the media set, the password must be supplied. NOINIT is the default.

UNLOAD

Specifies that the tape is automatically rewound and unloaded when the backup is finished. UNLOAD is the default when a session begins.

Reference:

<https://docs.microsoft.com/en-us/azure/dms/known-issues-azure-sql-db-managed-instance-online>

5.DRAG DROP

You have a resource group named App1Dev that contains an Azure SQL Database server named DevServer1. DevServer1 contains an Azure SQL database named DB1. The schema and permissions for DB1 are saved in a Microsoft SQL Server Data Tools (SSDT) database project.

You need to populate a new resource group named App1Test with the DB1 database and an Azure SQL Server named TestServer1. The resources in App1Test must have the same configurations as the resources in App1Dev.

Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Answer Area

Change the Active Directory Admin on TestServer1

Change the server name and related variables in the templates

From the database project, deploy the database schema and permissions

Add IP addresses to the firewall

From the Azure portal, export the Azure Resource Manager templates

From the Azure portal, deploy the templates.

Answer:

Actions

Change the Active Directory Admin on TestServer1

Change the server name and related variables in the templates

From the database project, deploy the database schema and permissions

Add IP addresses to the firewall

From the Azure portal, export the Azure Resource Manager templates

From the Azure portal, deploy the templates.

Answer Area

From the Azure portal, export the Azure Resource Manager templates

Change the server name and related variables in the templates

From the Azure portal, deploy the templates.

From the database project, deploy the database schema and permissions