Microsoft

70-473 Exam

Microsoft Designing and Implementing Cloud Data Platform Solutions Exam

Version: 13.0

Case Study: 1

Proseware, Inc.
Overview
General Overview
Proseware, Inc. is a software engineering company that has 100 employees. Proseware has sales, marketing, accounts, human resources IT, and development departments.

The IT department has one team dedicated to managing the internal resources and one team dedicated to managing customer resources, which are located in the company's hosting environment.

Proseware develops websites, basic web apps, and custom web apps. The websites and the apps are hosted and maintained in the hosting environment of Proseware.

Physical Locations
Proseware has two offices located in Seattle and Montreal. The Seattle office contains all of the hardware required to host its customers' websites, web apps, and databases. The Seattle office contains the IT team for the hosting environment.

The Montreal office contains all of the hardware required to host the company's internal applications, databases, and websites.

Each office connects directly to the Internet. Testing reveals that the minimum latency from the offices to Microsoft Azure is 20 ms.

Existing Environment
Internal Microsoft SQL Server Environment

Proseware uses a custom customer relationship management (CRM) application.

The internal Microsoft SQL Server environment contains two physical servers named CRM-A and CRM-B. Both servers run SQL Server 2012 Standard and host databases for the CRM application.

CRM-A hosts the principal instance and CRM-B hosts the mirrored instance of the CRM database. CRM-A also hosts databases for several other applications that are used by the company's internal applications.

CRM-A has a quad core processor and 12 GB of RAM. CRM-B has a dual core processor and 8 GB of RAM.

Custom Web Applications Environment
Some Proseware customers request custom web-based applications that require more than just databases, such as SQL Server Integration Services (SSIS) and CLR stored procedures.

Proseware uses a Hyper-V server named Host1. Host1 has four instances of SQL

Server 2014 Enterprise in the host operating system. The instances are mirrored on a server named Host2.

Host1 also hosts four virtual machines named VM1, VM2, VM3, and VM4. VM1 has SQL Server 2005 Standard installed. VM2 has SQL Server 2005 Enterprise Edition installed. VM3 has SQL Server 2008 Standard Edition installed. VM4 has SQL Server 2008 R2 Standard Edition installed.

Host1 uses a SAN to store all of the data and log files for the four SQL Server instances and the four virtual machines.

Websites and Basic Web Apps Environment

Proseware has two physical servers named WebServer1 and WebData1. WebServer1 hosts basic web apps and websites for its customers. WebData1 has a database for each website and each basic web app that Proseware hosts. WebData1 has four cores and 8 GB of RAM.

Each website database contains customer information for billing purposes. Proseware generates a consolidated report that contains data from all of these databases.

The relevant databases on WebData1 are:

*CWDB: Currently 60 GB and is not expected to exceed 100 GB. CWDB contains a table named Personallinfo.

*MovieReviewDB: Currently 5 GB and is not expected to exceed 10 GB.

Marketing Department

Proseware has a web app for the marketing department. The web app uses an Azure SQL database. Managers in the marketing department occasionally bulk load data by using a custom application. The database is updated daily.

Problem Statements

Proseware identifies the following issues:

*   Lack of planning and knowledge has complicated the database environment

* Customers who have web apps hosted on Webserver1 report frequent outages caused by failures on

WebDatal. The current uptime is less than 90 percent .

* internally users complain of slow performance by the CRM application when the databases fail over to CRM-B

* WebDatal has no high availability option for the databases or the server.

* An internal licensing audit of SQL Server identifies that Proseware is non compliant. Hostl, CRM- A, and CRM-B are licensed properly. VM1 VM2, VM3, VM4, and WebDatal are unlicensed.

Business Requirements

Proseware identifies the following business requirements:

- Upgrade the infrastructure to address the issues reported by the internal users and customers.
- Minimize upgrade costs associated with purchasing hardware and software.
- Ensure that all software is licensed properly.
- Minimize the complexity of the database environment.
- Consolidate the instances of SQL Server that support the custom web app environment.
- Implement a service level agreement (SLA) of 99.95 percent uptime for the website and basic web app environment.
- Implement a disaster recovery environment in Azure for the CRM application.
- Ensure that any changes to the SQL Server environments either maintain or increase overall performance.
- Migrate all web front ends to Azure.
- Reuse licenses, whenever possible.
- Minimize the administrative effort required to generate the internal reports from the website databases.

Security Requirements

Proseware hosts a database for a company named Contoso, Ltd. Currently, all of the employees at Contoso can access all of the data in the database.

Contoso plans to limit user access to the CWDU database so that customer service representatives can see only the data from the PersonalInfo table that relates to their own customers.

Question: 1

HOTSPOT

You need to identify which methods to use to migrate MovieReviewDB and CWDB.
Which method should you identify for each database? To answer, select the appropriate options in the answer are
a.

Answer Area

CWDB:
- Azure Import and Export Service
- Azure ExpressRoute
- the bcp utility

MovieReviewDB:
- Azure ExpressRoute
- the BACKUP and RESTORE statements
- the Deploy Database to Microsoft Azure Database task

Answer:

Answer Area

CWDB:

Azure Import and Export Service
Azure ExpressRoute
the bcp utility

MovieReviewDB:

Azure ExpressRoute
the BACKUP and RESTORE statements
the Deploy Database to Microsoft Azure Database task

References:
https://azure.microsoft.com/en-gb/documentation/articles/sql-database-cloud-migrate-compatible-using-ssms-migration-wizard/

Question: 2

You are planning the consolidation of the databases from Host1.
You need to identify which methods to use to back up the data after the consolidation completes. What are two possible methods that achieve this goal? Each correct answer presents a complete solution.

A. BACKUP TO URL
B. AlwaysOn failover clustering
C. a maintenance plan
D. AlwaysOn Availability Groups

Answer: A,C

Question: 3

You need to recommend a disaster recovery solution for the CRM application that meets the business requirements.
What should you recommend?

A. backup and restore by using Windows Azure Storage
B. log shipping
C. AlwaysOn Availability Groups
D. database mirroring

Answer: A

Question: 4

HOTSPOT
You are evaluating the migration of the databases from Host1 and WebData1 to Azure.
You need to recommend the most cost-effective solution for storing the database in Azure. The solution must meet the business requirements.
In the table below, recommend the most cost-effective storage solution for Host1 and WebData1. NOTE: Make only one selection in each column.

Answer Area

Solutions	Host1	WebData1
SQL Server 2014 Standard edition installed on an Azure virtual machine	O	O
SQL Server 2014 Enterprise edition installed on an Azure virtual machine	O	O
a single Azure SQL database on the Basic service tier	O	O
an Azure SQL Database elastic database pool on the Basic service tier	O	O
a single Azure SQL database on the Standard service tier	O	O
an Azure SQL Database elastic database pool on the Standard service tier	O	O

Answer:

Answer Area

Solutions	Host1	WebData1
SQL Server 2014 Standard edition installed on an Azure virtual machine	O	O
SQL Server 2014 Enterprise edition installed on an Azure virtual machine	**[O]**	O
a single Azure SQL database on the Basic service tier	O	O
an Azure SQL Database elastic database pool on the Basic service tier	O	O
a single Azure SQL database on the Standard service tier	O	O
an Azure SQL Database elastic database pool on the Standard service tier	O	**[O]**

Question: 5

You are evaluating moving the data from WebData1 to an Azure SQL database.

You need to recommend a solution to generate the consolidated report for billing. The solution must meet the business requirements.
What should you include in the recommendation?

A. SQL Server Integration Services (SSIS)
B. SQL Server Analysis Services (SSAS)
C. an elastic database job
D. an elastic query

Answer: D

Question: 6

DRAG DROP
You plan to implement row-level security for the CWDB database.
You create the fn_limitusers function under the restriction schem
a.
You need to create the policy.
How should you complete the policy? To answer, drag the appropriate elements to the correct locations. Each element 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.

Code elements		Answer area
ADD BLOCK PREDICATE restriction.fn_limitusers (CRS)		CREATE SECURITY POLICY CSRFILTER
ADD FILTER PREDICATE restriction.fn_limitusers (CRS)	●	Code element
ON CWDB	●	Code element
ON PersonalInfo	●	Code element
WITH (STATE = ON)		
WITH SCHEMABINDING		

Answer:

Answer area

CREATE SECURITY POLICY CSRFILTER

ADD FILTER PREDICATE restriction.fn_limitusers (CRS)

ON PersonalInfo

WITH (STATE = ON)

References:
https://msdn.microsoft.com/en-us/library/dn765131.aspx

Question: 7

DRAG DROP

A marketing department manager reports that the marketing department database contains incorrect dat

a. The manager reports that the data was correct yesterday.

You need to recommend a method to recover the data.

Which three 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.

Actions   **Answer Area**

| Perform a point-in-time restore. |

| Modify the firewall rules. |

| Rename the database. |

| Enable Change Tracking. | (>)

| Create a new Azure SQL database server. | (<)

| Delete the database. |

| Migrate the database to an on-premises instance. |

Answer:

Actions   **Answer Area**

| Perform a point-in-time restore. | | Rename the database. |

| Modify the firewall rules. | | Perform a point-in-time restore. |

| Rename the database. | | Delete the database. |

| Enable Change Tracking. | (>)

| Create a new Azure SQL database server. | (<)

| Delete the database. |

| Migrate the database to an on-premises instance. |

Question: 8

You are evaluating whether to replace CRM-B with an Azure virtual machine.
You need to identify the required virtual machine service tier to replace CRM-B. The solution must meet the following requirements:
Which virtual machine service tier should you identify?

A. Standard DS3
B. Standard A6
C. Standard GS2
D. Standard D3

Answer: A

Explanation:
References:
https://azure.microsoft.com/en-gb/documentation/articles/virtual-machines-windows-sizes/

Case Study: 2

A DatumCorporation
Overview
General Overview
ADatumCorporation is a real estate firm that has offices throughout North America.
ADatumhas a main office and four branch offices. The main office is located in Seattle. The branch offices are located in New York, Montreal, Denver, and Vancouver.
Existing Environment
Network Infrastructure
The network contains one Active Directory domain namedADatum.com. Each office contains one domain controller.
Each office has a 100-Mbps connection to the Internet that is 20 percent saturated on average. The offices connect to each other through the Internet by using VPN appliances.
ADatumuses the public IP addresses shown in the following table.

Office	Public IP address
Seattle	131.107.1.6
New York	131.107.2.6
Montreal	131.107.3.6
Denver	131.107.4.6
Vancouver	131.107.5.6

SQL Server Infrastructure

In the main office, ADatumhosts a Microsoft SQL Server instance on a server named SQL1. SQL1 has a 400-GB database named Listings. Log-shipped copies of Listings are present in each branch office. The copies are used for reporting. Currently, all of the SQL Server instances run SQL Server 2014 Enterprise edition.

Each branch office has an application server that hosts an application named App1. App1 is configured to connect to the Listings database on each local SQL Server instance for reporting and to connect to the SQL Server instance in the main office for any updates to property listings.

The main office also has an application server that hosts App1. The application server connects to the local Listings database for reporting and for any updates to the property listings.

Historic activity of the Listings database shows a maximum of 475 concurrent requests from as many as 200 concurrent connections.

User Issues

Users report that, frequently, they are disconnected from the Listings database when they run reports. Users also report that there is an unacceptable delay between when a property listing is updated and when the updated listing appears in the listings reports.

Developers report concerns about the lack of a testing environment in which code changes can be validated before being deployed to the production Listings database.

Requirements

Business Requirements

ADatumidentifies the following business requirements:

- Minimize costs, whenever possible.
- Ensure that confidential data is encrypted at all times.
- Ensure that the primary database is hosted in Microsoft Azure.
- Ensure that all production databases maintain 99.9 percent availability.
- Ensure that all of the data between the offices and Azure is encrypted.

Planned changes

ADatumplans to implement the following changes:

- Move the primary database to Azure.
- Implement a data warehouse for reporting to offload reporting from the transactional Listings database.

Technical Requirements

ADatumidentifies the following technical requirements:

- A test environment that has a 200-GB subset of data from the Listings database must be implemented. The new database will be named ListTest. The new test environment will have a maximum of 10 concurrent connections.
- The migration of the Listings database must be completed in less than 60 minutes. During the migration, data must be prevented from being modified.
- The firewall settings of the Azure SQL databases must be configured to provide access to the main office only.
- Changes to the settings and the properties of the Listings database must be audited at all times.
- Access to the Clients table must be audited and data from the audit must be queryable.
- The query performance of the ListTest database must be monitored at all times.
- Reporting must be offloaded from the transactional Listings database.

High-Availability and Recovery Requirements

ADatumidentifies the following high-availability and recovery requirements:

- All production databases must support automatic failover.
- Backups for the Listings database must be stored in Azure.
- The database must be recoverable if a major data loss occurs.
- A weekly backup of the ListTest database must be maintained on-premises.
- SQL1 must be integrated into the high-availability solution as a reporting server.

Question: 9

You need to recommend a backup solution for the ListTest database. What should you include in the recommendation?

A. Extract a data-tier application (DAC).
B. Use the bcp command.
C. Use the SQL Server Migration Assistant (SSMA).
D. Export a data-tier application (DAC).

Answer: D

Explanation:

Question: 10

You need to recommend a solution to migrate the Listings database to the cloud. What should you recommend?

A. Stage the Listings database on an Azure virtual machine prior to the outage. During the outage, perform a data import from the main office by using SQL Server Management Studio.

B. Implement log-shipping between the main office and an Azure virtual machine prior to the migration date. During the planned outage, perform a final log backup, restore the backup to the secondary, and then switch the secondary to the primary role.

C. Run a full backup during the outage and restore the backup to the Azure virtual machine.

D. Implement merge replication between the main office and the Azure virtual machine.

Answer: B

Question: 11

DRAG DROP
You need to configure auditing to meet the technical requirements.
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   **Answer Area**

Create and start a server audit.

Configure a database audit specification.

Enable auditing for failed and successful logins.

Read the audit file.

Enable C2 audit mode.

Answer:

Actions

| Create and start a server audit. |

| Configure a database audit specification. |

| Enable auditing for failed and successful logins. |

| Read the audit file. |

| Enable C2 audit mode. |

⊗ ⊗

Answer Area

| Create and start a server audit. |

| Enable auditing for failed and successful logins. |

| Configure a database audit specification. |

⊙ ⊙

References:
http://solutioncenter.apexsql.com/how-to-setup-and-use-sql-server-audit-feature/

Question: 12
DRAG DROP

You need to implement the monitoring solution for the Listings database.
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   **Answer Area**

Use the **sys.fn_get_audit_file()** function
to review and report on the trapped events.

Execute the following statement.

```
CREATE EVENT SESSION
ListingsDBChange ON DATABASE
ADD EVENT
sqlserver.object_altered ( SET
collect_database_name = (1)
  ACTION ( sqlserver.sql_text
  ,sqlserver.nt_username
  ,sqlserver.server_principal_name
  ,sqlserver.client_hostname )
  WHERE object_type =
`DATABASE`
      AND
sqlserver.database_name =
`Listings`
  )
ADD TARGET package0.event_file
( SET filename =
N´C:\Database\XE\ListingsDBChange
WITH (STARTUP_STATE = ON);
```

Execute the following statement.

```
ALTER EVENT SESSION
ListingsDBChange
ON SERVER
STATE = START;
GO
```

Use the
sys.fn_xe_file_target_read_file()
function to review and report on the trapped
events.

Execute the following statement.

```
CREATE EVENT SESSION
ListingsDBChange ON SERVER
ADD EVENT
sqlserver.object_altered ( SET
collect_database_name = (1)
  ACTION ( sqlserver.sql_text
  ,sqlserver.nt_username
  ,sqlserver.server_principal_name
  ,sqlserver.client_hostname )
  WHERE object_type =
`DATABASE`
      AND
sqlserver.database_name =
`Listings`
  )
ADD TARGET package0.event_file
( SET filename =
N´C:\Database\XE\ListingsDBChange
WITH (STARTUP_STATE = ON);
```

Answer:

Actions

Use the **sys.fn_get_audit_file()** function to review and report on the trapped events.

Execute the following statement.

```
CREATE EVENT SESSION
ListingsDBChange ON DATABASE
ADD EVENT
sqlserver.object_altered ( SET
collect_database_name = (1)
  ACTION ( sqlserver.sql_text
  ,sqlserver.nt_username
  ,sqlserver.server_principal_name
  ,sqlserver.client_hostname )
  WHERE object_type =
`DATABASE`
      AND
sqlserver.database_name =
`Listings`
  )
ADD TARGET package0.event_file
( SET filename =
N´C:\Database\XE\ListingsDBChange
WITH (STARTUP_STATE = ON);
```

Execute the following statement.

```
ALTER EVENT SESSION
ListingsDBChange
ON SERVER
STATE = START;
GO
```

Use the **sys.fn_xe_file_target_read_file()** function to review and report on the trapped events.

Execute the following statement.

```
CREATE EVENT SESSION
ListingsDBChange ON SERVER
ADD EVENT
sqlserver.object_altered ( SET
collect_database_name = (1)
  ACTION ( sqlserver.sql_text
  ,sqlserver.nt_username
  ,sqlserver.server_principal_name
  ,sqlserver.client_hostname )
  WHERE object_type =
`DATABASE`
      AND
sqlserver.database_name =
`Listings`
  )
ADD TARGET package0.event_file
( SET filename =
N´C:\Database\XE\ListingsDBChange
WITH (STARTUP_STATE = ON);
```

Answer Area

Execute the following statement.

```
CREATE EVENT SESSION
ListingsDBChange ON SERVER
ADD EVENT
sqlserver.object_altered ( SET
collect_database_name = (1)
  ACTION ( sqlserver.sql_text
  ,sqlserver.nt_username
  ,sqlserver.server_principal_name
  ,sqlserver.client_hostname )
  WHERE object_type =
`DATABASE`
      AND
sqlserver.database_name =
`Listings`
  )
ADD TARGET package0.event_file
( SET filename =
N´C:\Database\XE\ListingsDBChange
WITH (STARTUP_STATE = ON);
```

Execute the following statement.

```
ALTER EVENT SESSION
ListingsDBChange
ON SERVER
STATE = START;
GO
```

Use the **sys.fn_xe_file_target_read_file()** function to review and report on the trapped events.

Question: 13
DRAG DROP

You need to back up the Listings database to meet the high-availability and recovery requirements.

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

| Create a database snapshot. |
| Create storage keys. |
| Create a credential. |
| Back up the database to Azure Blob storage. |
| Create a database copy. |

Answer Area

Answer:

Actions

| Create a database snapshot. |
| Create storage keys. |
| Create a credential. |
| Back up the database to Azure Blob storage. |
| Create a database copy. |

Answer Area

| Create a credential. |
| Create storage keys. |
| Back up the database to Azure Blob storage. |

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