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AZ-301

Microsoft Azure Architect Design



Version 1.0

Testlet 1

Case study

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Contoso, Ltd. is a US-based financial services company that has a main office in New York and a branch office in San Francisco.

Existing Environment

Payment Processing System

Contoso hosts a business-critical payment processing system in its New York data center. The system has three tiers: a front-end web app, a middle-tier web API, and a back-end data store implemented as a Microsoft SQL Server 2014 database. All servers run Windows Server 2012 R2.

The front-end and middle-tier components are hosted by using Microsoft Internet Information Services (IIS). The application code is written in C# and ASP.NET. The middle-tier API uses the Entity Framework to communicate to the SQL Server database. Maintenance of the database is performed by using SQL Server Agent jobs.

The database is currently 2 TB and is not expected to grow beyond 3 TB.

The payment processing system has the following compliance-related requirements:

- Encrypt data in transit and at rest. Only the front-end and middle-tier components must be able to access the encryption keys that protect the data store.
 - Keep backups of the data in two separate physical locations that are at least 200 miles apart and can be restored for up to seven years.
 - Support blocking inbound and outbound traffic based on the source IP address, the destination IP address, and the port number.
 - Collect Windows security logs from all the middle-tier servers and retain the logs for a period of seven years.
 - Inspect inbound and outbound traffic from the front-end tier by using highly available network appliances. ▪
- Only allow all access to all the tiers from the internal network of Contoso.

Tape backups are configured by using an on-premises deployment of Microsoft System Center Data Protection Manager (DPM), and then shipped offsite for long term storage.

Historical Transaction Query System

Contoso recently migrated a business-critical workload to Azure. The workload contains a .NET web service for querying the historical transaction data residing in Azure Table Storage. The .NET web service is accessible from a client app that was developed in-house and runs on the client computers in the New York office. The data in the table storage is 50 GB and is not expected to increase.

Current Issues

The Contoso IT team discovers poor performance of the historical transaction query system, at the queries frequently cause table scans.

Requirements

Planned Changes

Contoso plans to implement the following changes:

- Migrate the payment processing system to Azure.
- Migrate the historical transaction data to Azure Cosmos DB to address the performance issues.

Migration Requirements

Contoso identifies the following general migration requirements:

- Infrastructure services must remain available if a region or a data center fails. Failover must occur without any administrative intervention.
- Whenever possible, Azure managed services must be used to minimize management overhead.
- Whenever possible, costs must be minimized.

Contoso identifies the following requirements for the payment processing system:

- If a data center fails, ensure that the payment processing system remains available without any administrative intervention. The middle-tier and the web front end must continue to operate without any additional configurations.
 - Ensure that the number of compute nodes of the front-end and the middle tiers of the payment processing system can increase or decrease automatically based on CPU utilization.
 - Ensure that each tier of the payment processing system is subject to a Service Level Agreement (SLA) of 99.99 percent availability.
 - Minimize the effort required to modify the middle-tier API and the back-end tier of the payment processing system.
 - Generate alerts when unauthorized login attempts occur on the middle-tier virtual machines.
 - Ensure that the payment processing system preserves its current compliance status.
- Host the middle tier of the payment processing system on a virtual machine.

Contoso identifies the following requirements for the historical transaction query system:

- Minimize the use of on-premises infrastructure services.
- Minimize the effort required to modify the .NET web service querying Azure Cosmos DB.
- Minimize the frequency of table scans.
- If a region fails, ensure that the historical transactions query system remains available without any administrative intervention.

Information Security Requirements

The IT security team wants to ensure that identity management is performed by using Active Directory. Password hashes must be stored on-premises only.

Access to all business-critical systems must rely on Active Directory credentials. Any suspicious authentication attempts must trigger a multi-factor authentication prompt automatically. legitimate users must be able to authenticate successfully by using multi-factor authentication.

QUESTION 1

You need to recommend a solution for the collection of security logs for the middle tier of the payment processing system.

What should you include in the recommendation?

- A. the Azure Log Analytics agent
- B. Azure Event Hubs
- C. Azure Notification Hubs
- D. the Azure Diagnostics agent

Correct Answer: D

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/azure-monitor/platform/diagnostics-extension-overview> **Question Set 2**

QUESTION 1

HOTSPOT

You deploy several Azure SQL Database instances.

You plan to configure the Diagnostics settings on the databases as shown in the following exhibit.

Diagnostics settings

Save
Discard
Delete

*

Diagnostics

☒ Archive to a storage account

Storage account

csa14d260928e42x4ea7xb77

☐ Stream to an event hub

☒ Send to Log Analytics

Log Analytics

fabrikamproductionworkspace

LOG

☒ SQLInsights

Retention (days) ⓘ

90

☒ AutomaticTuning

Retention (days) ⓘ

30

☐ QueryStoreRuntimeStatistics

Retention (days) ⓘ

0

☐ QueryStoreWaitStatistics

Retention (days) ⓘ

0

Use the drop-down menus to select the answer choice that completes each statement based on the information presented in the graphic.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

The amount of time that SQLInsights data will be stored in blob storage is **[answer choice]**.

| | |
|------------|---|
| | ▼ |
| 30 days | |
| 90 days | |
| 730 days | |
| indefinite | |

The maximum amount of time that SQLInsights data can be stored in Azure Log Analytics is **[answer choice]**.

| | |
|------------|---|
| | ▼ |
| 30 days | |
| 90 days | |
| 730 days | |
| indefinite | |

Correct Answer:

Answer Area

The amount of time that SQLInsights data will be stored in blob storage is **[answer choice]**.

| | |
|------------|---|
| | ▼ |
| 30 days | |
| 90 days | |
| 730 days | |
| indefinite | |

The maximum amount of time that SQLInsights data can be stored in Azure Log Analytics is **[answer choice]**.

| | |
|------------|---|
| | ▼ |
| 30 days | |
| 90 days | |
| 730 days | |
| indefinite | |

Section: [none]
Explanation
Explanation/Reference:

Explanation:

In the exhibit, the SQLInsights data is configured to be stored in Azure Log Analytics for 90 days. However, the question is asking for the “maximum” amount of time that the data can be stored which is 730 days.

QUESTION 2 Your company uses Microsoft System Center – Service Manager on its on-premises network.

You plan to deploy several services to Azure.

You need to recommend a solution to push Azure service health to Service Manager.

What should you include in the recommendation?

- A. Azure Notification Hubs
- B. Azure Event Hubs
- C. IT Service Management Connector (ITSM)
- D. Application Insights Connector

Correct Answer: C

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/azure-monitor/platform/itsmc-overview>

QUESTION 3

You have an on-premises Hyper-V cluster. The cluster contains Hyper-V hosts that run Windows Server 2016 Datacenter. The hosts are licensed under a Microsoft Enterprise Agreement that has Software Assurance.

The Hyper-V cluster hosts 3 virtual machines that run Windows Server 2012 R2. Each virtual machine runs a different workload. The workloads have predictable consumption patterns.

You plan to replace the virtual machines with Azure virtual machines that run Windows Server 2016. The virtual machines will be sized according to the consumption pattern of each workload.

You need to recommend a solution to minimize the compute costs of the Azure virtual machines.

Which two recommendations should you include in the solution? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- A. Purchase Azure Reserved Virtual Machine Instances for the Azure virtual machines
- B. Create a virtual machine scale set that uses autoscaling
- C. Configure a spending limit in the Azure account center
- D. Create a lab in Azure DevTest Labs and place the Azure virtual machines in the lab
- E. Activate Azure Hybrid Benefit for the Azure virtual machines

Correct Answer: AE

Section: [none]

Explanation

Explanation/Reference:

QUESTION 4

You have an on-premises Active Directory forest and an Azure Active Directory (Azure AD) tenant. All Azure AD users are assigned a Premium P1 license.

You deploy Azure AD Connect.

Which two features are available in this environment that can reduce operational overhead for your company’s help desk? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- A. Azure AD Privileged Identity Management policies

- B. access reviews
- C. self-service password reset
- D. Microsoft Cloud App Security Conditional Access App Control
- E. password writeback

Correct Answer: CE

Section: [none]

Explanation

Explanation/Reference:

QUESTION 5

You are planning the implementation of an order processing web service that will contain microservices hosted in an Azure Service Fabric cluster.

You need to recommend a solution to provide developers with the ability to proactively identify and fix performance issues. The developers must be able to simulate user connections to the order processing web service from the Internet, as well as simulate user transactions. The developers must be notified if the goals for the transaction response times are not met.

What should you include in the recommendation?

- A. container health
- B. Azure Network Watcher
- C. Application Insights
- D. Service Fabric Analytics

Correct Answer: C

Section: [none]

Explanation

Explanation/Reference:

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- Minimize the frequency of table scans.
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The IT security team wants to ensure that identity management is performed by using Active Directory. Password hashes must be stored on-premises only.

Access to all business-critical systems must rely on Active Directory credentials. Any suspicious authentication attempts must trigger a multi-factor authentication prompt automatically. legitimate users must be able to authenticate successfully by using multi-factor authentication.



QUESTION 1

HOTSPOT

You need to recommend a solution for configuring the Azure Multi-Factor Authentication (MFA) settings.

What should you include in the recommendation? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Azure AD license:

| | |
|------------|---|
| | ▼ |
| Free | |
| Basic | |
| Premium P1 | |
| Premium P2 | |

Access control for the sign-in risk policy:

| | |
|--|---|
| | ▼ |
| Allow access and require multi-factor authentication | |
| Block access and require multi-factor authentication | |
| Allow access and require Azure MFA registration | |
| Block access | |

Access control for the multi-factor authentication registration policy:

| | |
|--|---|
| | ▼ |
| Allow access and require multi-factor authentication | |
| Block access and require multi-factor authentication | |
| Allow access and require Azure MFA registration | |
| Block access | |

Correct Answer:

Answer Area

Azure AD license:

| | |
|------------|---|
| | ▼ |
| Free | |
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Access control for the sign-in risk policy:

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Access control for the multi-factor authentication registration policy:

| | |
|--|---|
| | ▼ |
| Allow access and require multi-factor authentication | |
| Block access and require multi-factor authentication | |
| Allow access and require Azure MFA registration | |
| Block access | |



Section: [none]

Explanation

Explanation/Reference:

References:

<https://docs.microsoft.com/en-us/azure/active-directory/identity-protection/howto-sign-in-risk-policy> <https://docs.microsoft.com/en-us/azure/active-directory/identity-protection/howto-mfa-policy>

QUESTION 2

HOTSPOT

You need to design a solution for securing access to the historical transaction data.

What should you include in the solution? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

The Azure Cosmos DB account
will be used to:

| | |
|---|---|
| | ▼ |
| Create users and generate resource tokens | |
| Create users and request resource tokens | |
| Generate resource tokens and perform authentication | |
| Request resource tokens and perform authentication | |

The .NET web service
will be used to:

| | |
|---|---|
| | ▼ |
| Create users and generate resource tokens | |
| Create users and request resource tokens | |
| Generate resource tokens and perform authentication | |
| Request resource tokens and perform authentication | |

Correct Answer:

Answer Area



The Azure Cosmos DB account
will be used to:

| | |
|---|---|
| | ▼ |
| Create users and generate resource tokens | |
| Create users and request resource tokens | |
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The .NET web service
will be used to:

| | |
|---|---|
| | ▼ |
| Create users and generate resource tokens | |
| Create users and request resource tokens | |
| Generate resource tokens and perform authentication | |
| Request resource tokens and perform authentication | |

Section: [none]
Explanation

Explanation/Reference:

Testlet 2

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Overview

Existing Environment

Active Directory Environment

The network contains two Active Directory forests named corp.fabrikam.com and rd.fabrikam.com. There are no trust relationships between the forests.

Corp.fabrikam.com is a production forest that contains identities used for internal user and computer authentication.

Rd.fabrikam.com is used by the research and development (R&D) department only.

Network Infrastructure

Each office contains at least one domain controller from the corp.fabrikam.com domain. The main office contains all the domain controllers for the rd.fabrikam.com forest.

All the offices have a high-speed connection to the Internet.

An existing application named WebApp1 is hosted in the data center of the London office. WebApp1 is used by customers to place and track orders.

WebApp1 has a web tier that uses Microsoft Internet Information Services (IIS) and a database tier that runs Microsoft SQL Server 2016. The web tier and the database tier are deployed to virtual machines that run on Hyper-V.

The IT department currently uses a separate Hyper-V environment to test updates to WebApp1.

Fabrikam purchases all Microsoft licenses through a Microsoft Enterprise Agreement that includes Software Assurance.

Problem Statements

The use of Web App1 is unpredictable. At peak times, users often report delays. At other times, many resources for WebApp1 are underutilized.

Requirements

Planned Changes

Fabrikam plans to move most of its production workloads to Azure during the next few years.

As one of its first projects, the company plans to establish a hybrid identity model, facilitating an upcoming Microsoft Office 365 deployment.

All R&D operations will remain on-premises.

Fabrikam plans to migrate the production and test instances of WebApp1 to Azure. **Technical**

Requirements

Fabrikam identifies the following technical requirements:

- Web site content must be easily updated from a single point.
- User input must be minimized when provisioning new app instances.
- Whenever possible, existing on-premises licenses must be used to reduce cost.
- Users must always authenticate by using their corp.fabrikam.com UPN identity.
- Any new deployments to Azure must be redundant in case an Azure region fails.
- Whenever possible, solutions must be deployed to Azure by using platform as a service (PaaS).
- An email distribution group named IT Support must be notified of any issues relating to the directory synchronization services.
- Directory synchronization between Azure Active Directory (Azure AD) and corp.fabrikam.com must not be affected by a link failure between Azure and the on-premises network. **Database**

Requirements

Fabrikam identifies the following database requirements:

- Database metrics for the production instance of WebApp1, must be available for analysis so that database administrators can optimize the performance settings.
- To avoid disrupting customer access, database downtime must be minimized when databases are migrated.
- Database backups must be retained for a minimum of seven years to meet compliance requirements.

Security Requirements

Fabrikam identifies the following security requirements:

- Company information including policies, templates, and data must be inaccessible to anyone outside the company.
 - Users on the on-premises network must be able to authenticate to corp.fabrikam.com if an Internet link fails.
 - Administrators must be able to authenticate to the Azure portal by using their corp.fabrikam.com credentials.
 - All administrative access to the Azure portal must be secured by using multi-factor authentication.
- The testing of WebApp1 updates must not be visible to anyone outside the company.

QUESTION 1 What should you include in the identity management strategy to support the planned changes?

- A. Move all the domain controllers from corp.fabrikam.com to virtual networks in Azure.
- B. Deploy domain controllers for corp.fabrikam.com to virtual networks in Azure.
- C. Deploy a new Azure AD tenant for the authentication of new R&D projects.
- D. Deploy domain controllers for the rd.fabrikam.com forest to virtual networks in Azure.

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

Explanation:

Directory synchronization between Azure Active Directory (Azure AD) and corp.fabrikam.com must not be affected by a link failure between Azure and the on-premises network. (This requires domain controllers in Azure) Users on the on-premises network must be able to authenticate to corp.fabrikam.com if an Internet link fails. (This requires domain controllers on-premises)

Question Set 3

QUESTION 1

Note: This question is part of 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 an Azure subscription named Project1. Only a group named Project1admins is assigned roles in the Project1 subscription. The Project1 subscription contains all the resources for an application named Application1.

Your company is developing a new application named Application2. The members of the Application2 development team belong to an Azure Active Directory (Azure AD) group named App2Dev.

You identify the following requirements for Application2:

- The members of App2Dev must be prevented from changing the role assignments in Azure.
- The members of App2Dev must be able to create new Azure resources required by Application2.

- All the required role assignments for Application2 will be performed by the members of Project1admins.

You need to recommend a solution for the role assignments of Application2.

Solution: Create a new Azure subscription named Project2. Assign Project1admins the Owner role for the Project2 subscription. Assign App2Dev the Contributor role for the Project2 subscription.

Does this meet the goal?

- A. Yes
- B. No

Correct Answer: A

Section: [none]

Explanation

Explanation/Reference:

QUESTION 2

Note: This question is part of 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.

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You have an Azure subscription named Project1. Only a group named Project1admins is assigned roles in the Project1 subscription. The Project1 subscription contains all the resources for an application named Application1.

Your company is developing a new application named Application2. The members of the Application2 development team belong to an Azure Active Directory (Azure AD) group named App2Dev.

You identify the following requirements for Application2:

- The members of App2Dev must be prevented from changing the role assignments in Azure.
- The members of App2Dev must be able to create new Azure resources required by Application2.
- All the required role assignments for Application2 will be performed by the members of Project1admins.



You need to recommend a solution for the role assignments of Application2.

Solution: Create a new Azure subscription named Project2. Assign Project1admins the User Access Administrator role for the Project2 subscription. Assign App2Dev the Owner role for the Project2 subscription.

Does this meet the goal?

- A. Yes
- B. No

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

QUESTION 3

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- The members of App2Dev must be able to create new Azure resources required by Application2.
- All the required role assignments for Application2 will be performed by the members of Project1admins.

You need to recommend a solution for the role assignments of Application2.

Solution: In Project1, create a resource group named Application2RG. Assign Project1admins the Owner role for Application2RG. Assign App2Dev the Contributor role for Application2RG.

Does this meet the goal?

- A. Yes
- B. No

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

QUESTION 4

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You have an Azure subscription that contains a resource group named RG1.

You create an Azure Active Directory (Azure AD) group named ResearchUsers that contains the user accounts of all researchers.

You need to recommend a solution that meets the following requirements:

- The researchers must be allowed to create Azure virtual machines.
- The researchers must only be able to create Azure virtual machines by using specific Azure Resource Manager templates.

Solution: Create a lab in Azure DevTest Lab. Configure the DevTest Labs settings. Assign the DevTest Labs User role to the ResearchUsers group.

Does this meet the goal?

- A. Yes
- B. No

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

QUESTION 5

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- The researchers must be allowed to create Azure virtual machines.

- The researchers must only be able to create Azure virtual machines by using specific Azure Resource Manager templates.

Solution: Create an Azure DevOps Project. Configure the DevOps Project settings.

Does this meet the goal?

- A. Yes
- B. No

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

QUESTION 6

Note: This question is part of 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 an Azure subscription that contains a resource group named RG1.

You create an Azure Active Directory (Azure AD) group named ResearchUsers that contains the user accounts of all researchers.

You need to recommend a solution that meets the following requirements:

- The researchers must be allowed to create Azure virtual machines.
- The researchers must only be able to create Azure virtual machines by using specific Azure Resource Manager templates.

Solution: On RG1, assign the Contributor role to the ResearchUsers group. Create a custom Azure Policy definition and assign the policy to RG1.

Does this meet the goal?

- A. Yes
- B. No

Correct Answer: A

Section: [none]

Explanation

Explanation/Reference:

QUESTION 7 A company named Contoso Ltd., has a single-domain Active Directory forest named contoso.com.

Contoso is preparing to migrate all workloads to Azure. Contoso wants users to use single sign-on (SSO) when they access cloud-based services that integrate with Azure Active Directory (Azure AD).

You need to identify any objects in Active Directory that will fail to synchronize to Azure AD due to formatting issues. The solution must minimize costs.

What should you include in the solution?

- A. Azure Advisor
- B. Microsoft Office 365 IdFix
- C. Azure AD Connect Health
- D. Password Export Server version 3.1 (PES v3.1) in Active Directory Migration Tool (ADMT)

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

QUESTION 8
HOTSPOT

Your company has an API that returns XML data to internal applications.

You plan to migrate the applications to Azure. You also plan to allow the company's partners to access the API.

You need to recommend an API management solution that meets the following requirements:

- Internal applications must receive data in the JSON format once the applications migrate to Azure.
- Partner applications must have their header information stripped before the applications receive the data.

What should you include in the recommendation? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Minimum number of APIs to add to Azure API Management:

| | |
|---|---|
| | ▼ |
| 1 | |
| 2 | |
| 3 | |

Minimum number of products to publish in Azure API Management:

| | |
|---|---|
| | ▼ |
| 1 | |
| 2 | |
| 3 | |

Minimum number of policy elements to add:

| | |
|---|---|
| | ▼ |
| 1 | |
| 2 | |
| 3 | |

Correct Answer:

Answer Area

Minimum number of APIs to add to Azure API Management:

| | |
|---|---|
| | ▼ |
| 1 | |
| 2 | |
| 3 | |

Minimum number of products to publish in Azure API Management:

| | |
|---|---|
| | ▼ |
| 1 | |
| 2 | |
| 3 | |

Minimum number of policy elements to add:

| | |
|---|---|
| | ▼ |
| 1 | |
| 2 | |
| 3 | |



Section: [none]
Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/api-management/api-management-howto-add-products> <https://docs.microsoft.com/en-us/azure/api-management/api-management-howto-policies> <https://docs.microsoft.com/en-us/azure/api-management/transform-api>

QUESTION 9 You have an Azure subscription.

You need to recommend a solution to provide developers with the ability to provision Azure virtual machines. The solution must meet the following requirements:

- Only allow the creation of the virtual machines in specific regions.
- Only allow the creation of specific sizes of virtual machines.

What should include in the recommendation?

- A. conditional access policies
- B. Azure Policy
- C. Azure Resource Manager templates
- D. role-based access control (RBAC)

Correct Answer: B

Section: [none]
Explanation

Explanation/Reference:

QUESTION 10

HOTSPOT

Your company has 20 web APIs that were developed in-house.

The company is developing 10 web apps that will use the web APIs. The web apps and the APIs are registered in the company's Azure Active Directory (Azure AD) tenant. The web APIs are published by using Azure API Management.

You need to recommend a solution to block unauthorized requests originating from the web apps from reaching the web APIs. The solution must meet the following requirements:

- Use Azure AD-generated claims.
- Minimize configuration and management effort.

What should you include in the recommendation? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Grant permissions to allow the web apps to access the web APIs by using:

| | |
|----------------------|---|
| | ▼ |
| Azure AD | |
| Azure API Management | |
| The web APIs | |

Configure a JSON Web Token (JWT) validation policy by using:

| | |
|----------------------|---|
| | ▼ |
| Azure AD | |
| Azure API Management | |
| The web APIs | |

Correct Answer:

Answer Area

Grant permissions to allow the web apps to access the web APIs by using:

| | |
|----------------------|---|
| | ▼ |
| Azure AD | |
| Azure API Management | |
| The web APIs | |

Configure a JSON Web Token (JWT) validation policy by using:

| | |
|----------------------|---|
| | ▼ |
| Azure AD | |
| Azure API Management | |
| The web APIs | |

Section: [none]

Explanation

Explanation/Reference:

QUESTION 11

HOTSPOT

You are designing an access policy for the sales department at your company.

Occasionally, the developers at the company must stop, start, and restart Azure virtual machines. The development team changes often.

You need to recommend a solution to provide the developers with the required access to the virtual machines. The solution must meet the following requirements:

- Provide permissions only when needed. ▪
- Use the principle of least privilege.
- Minimize costs.

What should you include in the recommendation? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Azure Active Directory (Azure ID)
license:

Free
Basic
Premium P1
Premium P2

Security feature:

Just in time VM access
A conditional access policy
Privileged Identity Management for the Azure resources

Correct Answer:

Answer Area

Azure Active Directory (Azure AD) license:

Security feature:

| | |
|------------|---|
| | ▼ |
| Free | |
| Basic | |
| Premium P1 | |
| Premium P2 | |

| | |
|--|---|
| | ▼ |
| Just in time VM access | |
| A conditional access policy | |
| Privileged Identity Management for the Azure resources | |

Section: [none]

Explanation

Explanation/Reference:

QUESTION 12 Your network contains an on-premises Active Directory forest.

You discover that when users change jobs within your company, the membership of the user groups are not being updated. As a result, the users can access resources that are no longer relevant to their job.

You plan to integrate Active Directory and Azure Active Directory (Azure AD) by using Azure AD Connect.

You need to recommend a solution to ensure that group owners are emailed monthly about the group memberships they manage.

What should you include in the recommendation?

- A. Azure AD access reviews
- B. Tenant Restrictions
- C. Azure AD Identity Protection
- D. conditional access policies

Correct Answer: A

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/active-directory/governance/access-reviews-overview>

QUESTION 13

HOTSPOT

You are designing a software as a service (SaaS) application that will enable Azure Active Directory (Azure AD) users to create and publish surveys. The SaaS application will have a front-end web app and a back-end web API. The web app will rely on the web API to handle updates to customer surveys.

You need to design an authorization flow for the SaaS application. The solution must meet the following requirements:

- To access the back-end web API, the web app must authenticate by using OAuth 2 bearer tokens. ▪
- The web app must authenticate by using the identities of individual users.

What should you include in the solution? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area:

The access tokens will be generated by:

| | |
|--------------------------|-----------|
| <input type="checkbox"/> | Azure AD |
| <input type="checkbox"/> | A web app |
| <input type="checkbox"/> | A web API |

Authorization decisions will be performed by:

| | |
|--------------------------|-----------|
| <input type="checkbox"/> | Azure AD |
| <input type="checkbox"/> | A web app |
| <input type="checkbox"/> | A web API |

Correct Answer:

Answer Area:



The access tokens will be generated by:

| | |
|-------------------------------------|-----------|
| <input checked="" type="checkbox"/> | Azure AD |
| <input type="checkbox"/> | A web app |
| <input type="checkbox"/> | A web API |

Authorization decisions will be performed by:

| | |
|-------------------------------------|-----------|
| <input type="checkbox"/> | Azure AD |
| <input type="checkbox"/> | A web app |
| <input checked="" type="checkbox"/> | A web API |

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/lb-lu/azure/architecture/multitenant-identity/web-api>
<https://docs.microsoft.com/en-us/azure/active-directory/develop/quickstart-v1-dotnet-webapi>

QUESTION 14

HOTSPOT

You have five .NET Core applications that run on 10 Azure virtual machines in the same subscription.

You need to recommend a solution to ensure that the applications can authenticate by using the same Azure Active Directory (Azure AD) identity. The solution must meet the following requirements:

- Ensure that the applications can authenticate only when running on the 10 virtual machines. ▪
- Minimize administrative effort.

What should you include in the recommendation? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

To provision the Azure AD identity:

| | |
|---|---|
| | ▼ |
| Create a system-assigned Managed Service Identity | |
| Create a user-assigned Managed Service Identity | |
| Register each application in Azure AD | |

To authenticate request a token by using:

| | |
|---|---|
| | ▼ |
| An Azure AD v1.0 endpoint | |
| An Azure AD v2.0 endpoint | |
| An Azure Instance Metadata Service Identity | |
| OAuth2 endpoint | |

Correct Answer:

Answer Area

To provision the Azure AD identity:

| | |
|---|---|
| | ▼ |
| Create a system-assigned Managed Service Identity | |
| Create a user-assigned Managed Service Identity | |
| Register each application in Azure AD | |

To authenticate request a token by using:

| | |
|---|---|
| | ▼ |
| An Azure AD v1.0 endpoint | |
| An Azure AD v2.0 endpoint | |
| An Azure Instance Metadata Service Identity | |
| OAuth2 endpoint | |

Section: [none]

Explanation

Explanation/Reference:

QUESTION 15

A company named Contoso, Ltd. has an Azure Active Directory (Azure AD) tenant that is integrated with Microsoft Office 365 and an Azure subscription.

Contoso has an on-premises identity infrastructure. The infrastructure includes servers that run Active Directory Domain Services (AD DS), Active Directory Federation Services (AD FS), Azure AD Connect, and Microsoft Identity Manager (MIM).

Contoso has a partnership with a company named Fabrikam, Inc. Fabrikam has an Active Directory forest and an Office 365 tenant. Fabrikam has the same on-premises identity infrastructure as Contoso.

A team of 10 developers from Fabrikam will work on an Azure solution that will be hosted in the Azure subscription of Contoso. The developers must be added to the Contributor role for a resource in the Contoso subscription.

You need to recommend a solution to ensure that Contoso can assign the role to the 10 Fabrikam developers. The solution must ensure that the Fabrikam developers use their existing credentials to access resources.

What should you recommend?

- A. Configure a forest trust between the on-premises Active Directory forests of Contoso and Fabrikam.
- B. Configure an organization relationship between the Office 365 tenants of Fabrikam and Contoso.
- C. In the Azure AD tenant of Contoso, enable Azure Active Directory Domain Services (Azure AD DS). Create a one-way forest trust that uses selective authentication between the Active Directory forests of Contoso and Fabrikam.
- D. In the Azure AD tenant of Contoso, create guest accounts for the Fabrikam developers.

Correct Answer: D

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/role-based-access-control/role-assignments-external-users>

QUESTION 16 You have a hybrid deployment of Azure Active Directory (Azure AD).

You need to recommend a solution to ensure that the Azure AD tenant can be managed only from the computers on your on-premises network.

What should you include in the recommendation?

- A. Azure AD roles and administrators
- B. a conditional access policy
- C. Azure AD Application Proxy
- D. Azure AD Privileged Identity Management

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

Testlet 1

Case study

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Contoso, Ltd. is a US-based financial services company that has a main office in New York and a branch office in San Francisco.

Existing Environment

Payment Processing System

Contoso hosts a business-critical payment processing system in its New York data center. The system has three tiers: a front-end web app, a middle-tier web API, and a back-end data store implemented as a Microsoft SQL Server 2014 database. All servers run Windows Server 2012 R2.

The front-end and middle-tier components are hosted by using Microsoft Internet Information Services (IIS). The application code is written in C# and ASP.NET. The middle-tier API uses the Entity Framework to communicate to the SQL Server database. Maintenance of the database is performed by using SQL Server Agent jobs.

The database is currently 2 TB and is not expected to grow beyond 3 TB.

The payment processing system has the following compliance-related requirements:

- Encrypt data in transit and at rest. Only the front-end and middle-tier components must be able to access the encryption keys that protect the data store.
- Keep backups of the data in two separate physical locations that are at least 200 miles apart and can be restored for up to seven years.
- Support blocking inbound and outbound traffic based on the source IP address, the destination IP address, and the port number.
- Collect Windows security logs from all the middle-tier servers and retain the logs for a period of seven years.
- Inspect inbound and outbound traffic from the front-end tier by using highly available network appliances. ▪

Only allow all access to all the tiers from the internal network of Contoso.

Tape backups are configured by using an on-premises deployment of Microsoft System Center Data Protection Manager (DPM), and then shipped offsite for long term storage.

Historical Transaction Query System

Contoso recently migrated a business-critical workload to Azure. The workload contains a .NET web service for querying the historical transaction data residing in Azure Table Storage. The .NET web service is accessible from a client app that was developed in-house and runs on the client computers in the New York office. The data in the table storage is 50 GB and is not expected to increase.

Current Issues

The Contoso IT team discovers poor performance of the historical transaction query system, at the queries frequently cause table scans.

Requirements

Planned Changes

Contoso plans to implement the following changes:

- Migrate the payment processing system to Azure.
- Migrate the historical transaction data to Azure Cosmos DB to address the performance issues.

Migration Requirements

Contoso identifies the following general migration requirements:

- Infrastructure services must remain available if a region or a data center fails. Failover must occur without any administrative intervention.
 - Whenever possible, Azure managed services must be used to minimize management overhead. ▪
- Whenever possible, costs must be minimized.

Contoso identifies the following requirements for the payment processing system:

- If a data center fails, ensure that the payment processing system remains available without any administrative intervention. The middle-tier and the web front end must continue to operate without any additional configurations. ▪
- Ensure that the number of compute nodes of the front-end and the middle tiers of the payment processing system can increase or decrease automatically based on CPU utilization. ▪
- Ensure that each tier of the payment processing system is subject to a Service Level Agreement (SLA) of 99.99 percent availability. ▪
- Minimize the effort required to modify the middle-tier API and the back-end tier of the payment processing system.
- Generate alerts when unauthorized login attempts occur on the middle-tier virtual machines.

- Ensure that the payment processing system preserves its current compliance status. ▪
- Host the middle tier of the payment processing system on a virtual machine.

Contoso identifies the following requirements for the historical transaction query system:

- Minimize the use of on-premises infrastructure services.
- Minimize the effort required to modify the .NET web service querying Azure Cosmos DB.
- Minimize the frequency of table scans.
- If a region fails, ensure that the historical transactions query system remains available without any administrative intervention.

Information Security Requirements

The IT security team wants to ensure that identity management is performed by using Active Directory. Password hashes must be stored on-premises only.

Access to all business-critical systems must rely on Active Directory credentials. Any suspicious authentication attempts must trigger a multi-factor authentication prompt automatically. legitimate users must be able to authenticate successfully by using multi-factor authentication.

QUESTION 1

You need to recommend a solution for implementing the back-end tier of the payment processing system in Azure.

What should you include in the recommendation?

- A. an Azure SQL Database managed instance
- B. a SQL Server database on an Azure virtual machine
- C. an Azure SQL Database single database
- D. an Azure SQL Database elastic pool

Correct Answer: C

Section: [none]

Explanation

Explanation/Reference:

Question Set 2



QUESTION 1

You are developing a sales application that will contain several Azure cloud services and will handle different components of a transactions. Different cloud services will process customer orders, billing, payment, inventory, and shipping.

You need to recommend a solution to enable the cloud services to asynchronously communicate transaction information by using REST messages.

What would you include in the recommendation?

- A. Traffic Manager
- B. Azure Notification Hubs
- C. Azure Blob storage
- D. Azure Queue storage

Correct Answer: D

Section: [none]

Explanation

Explanation/Reference:

QUESTION 2 You have an Azure subscription that contains an Azure Cosmos DB account.

You need to recommend a solution to generate an alert from Azure Log Analytics when a request charge for a query exceeds 50 request units more than 20 times within a 15-minute window.

What should you recommend?

- A. Create a search query to identify when requestCharge_s exceeds 50. Configure an alert threshold of 20 and a period of 15.
- B. Create a search query to identify when duration_s exceeds 20 and requestCharge_s exceeds 50. Configure a period of 15.
- C. Create a search query to identify when requestCharge_s exceeds 20. Configure a period of 15 and a frequency of 20.
- D. Create a search query to identify when duration_s exceeds 20. Configure a period of 15.

Correct Answer: A

Section: [none]

Explanation

Explanation/Reference:

QUESTION 3

You are designing a data protection strategy for Azure virtual machines. All the virtual machines are in the Standard tier and use managed disks.

You need to recommend a solution that meets the following requirements:

- The use of encryption keys is audited.
- All the data is encrypted at rest always.
- You manage the encryption keys, not Microsoft.

What should you include in the recommendation?

- A. BitLocker Drive Encryption (BitLocker)
- B. Azure Storage Service Encryption
- C. client-side encryption
- D. Azure Disk Encryption

Correct Answer: D

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/security/azure-security-disk-encryption-overview>



QUESTION 4

You have 100 servers that run Windows Server 2012 R2 and host Microsoft SQL Server 2012 R2 instances. The instances host databases that have the following characteristics:

- The largest database is currently 3 TB. None of the databases will ever exceed 4 TB. ▪
- Stored procedures are implemented by using CLR.

You plan to move all the data from SQL Server to Azure.

You need to recommend an Azure service to host the databases. The solution must meet the following requirements:

- Whenever possible, minimize management overhead for the migrated databases.
- Minimize the number of database changes required to facilitate the migration.
- Ensure that users can authenticate by using their Active Directory credentials.

What should you include in the recommendation?

- A. Azure SQL Database single databases
- B. Azure SQL Database Managed Instance
- C. Azure SQL Database elastic pools
- D. SQL Server 2016 on Azure virtual machines

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-managed-instance>

QUESTION 5

DRAG DROP

You are designing a virtual machine that will run Microsoft SQL Server and will contain two data disks. The first data disk will store log files, and the second data disk will store data. Both disks are P40 managed disks.

You need to recommend a caching policy for each disk. The policy must provide the best overall performance for the virtual machine.

Which caching policy should you recommend for each disk? To answer, drag the appropriate policies to the correct disks. Each policy 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.

Select and Place:

| Policies | | Answer Area |
|-----------|---------------------------|--------------|
| None | <div>⏪</div> <div>⏩</div> | Log: Policy |
| ReadOnly | | Data: Policy |
| ReadWrite | | |

Correct Answer:

| Policies | | Answer Area |
|-----------|---------------------------|----------------|
| | <div>⏪</div> <div>⏩</div> | Log: None |
| | | Data: ReadOnly |
| ReadWrite | | |

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-sql-performance>

QUESTION 6

You plan to create an Azure Cosmos DB account that uses the SQL API. The account will contain data added by a web application. The web application will send data daily.

You need to recommend a notification solution that meets the following requirements:

- Sends email notification when data is received from IoT devices. ▪
- Minimizes compute cost.

What should you include in the recommendation?

- A. Deploy an Azure logic app that has the Azure Cosmos DB connector configured to use a SendGrid action.
- B. Deploy a function app that is configured to use the Consumption plan and a SendGrid binding.
- C. Deploy an Azure logic app that has a SendGrid connector configured to use an Azure Cosmos DB action.
- D. Deploy a function app that is configured to use the Consumption plan and an Azure Event Hubs binding.

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

QUESTION 7 You have Azure virtual machines that run a custom line-of-business web application.

You plan to use a third-party solution to parse event logs from the virtual machines stored in an Azure storage account.

You need to recommend a solution to save the event logs from the virtual machines to the Azure Storage account. The solution must minimize costs and complexity.

What should you include in the recommendation?

- A. Azure VM Diagnostics Extension
- B. Azure Monitor
- C. event log subscriptions
- D. Azure Log Analytics

Correct Answer: A

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/virtual-machines/windows/extensions-diagnostics>



Testlet 1

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 - Collect Windows security logs from all the middle-tier servers and retain the logs for a period of seven years.
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Contoso identifies the following requirements for the historical transaction query system:

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- Minimize the frequency of table scans.
- If a region fails, ensure that the historical transactions query system remains available without any administrative intervention.

Information Security Requirements

The IT security team wants to ensure that identity management is performed by using Active Directory. Password hashes must be stored on-premises only.

Access to all business-critical systems must rely on Active Directory credentials. Any suspicious authentication attempts must trigger a multi-factor authentication prompt automatically. legitimate users must be able to authenticate successfully by using multi-factor authentication.

QUESTION 1 You need to recommend a backup solution for the data store of the payment processing system.



What should you include in the recommendation?

- A. Microsoft System Center Data Protection Manager (DPM)
- B. long-term retention
- C. Azure Backup Server
- D. a Recovery Services vault

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-long-term-backup-retention-configure>

QUESTION 2

You need to recommend a disaster recovery solution for the back-end tier of the payment processing system.

What should you include in the recommendation?

- A. Always On Failover Cluster Instances
- B. active geo-replication
- C. Azure Site Recovery
- D. an auto-failover group

Correct Answer: D

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-auto-failover-group>



Testlet 2

Case study

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Each office contains at least one domain controller from the corp.fabrikam.com domain. The main office contains all the domain controllers for the rd.fabrikam.com forest.

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WebApp1 has a web tier that uses Microsoft Internet Information Services (IIS) and a database tier that runs Microsoft SQL Server 2016. The web tier and the database tier are deployed to virtual machines that run on Hyper-V.

The IT department currently uses a separate Hyper-V environment to test updates to WebApp1.

Fabrikam purchases all Microsoft licenses through a Microsoft Enterprise Agreement that includes Software Assurance.

Problem Statements

The use of Web App1 is unpredictable. At peak times, users often report delays. At other times, many resources for WebApp1 are underutilized.

Requirements

Planned Changes

Fabrikam plans to move most of its production workloads to Azure during the next few years.

As one of its first projects, the company plans to establish a hybrid identity model, facilitating an upcoming Microsoft Office 365 deployment.

All R&D operations will remain on-premises.

Fabrikam plans to migrate the production and test instances of WebApp1 to Azure. **Technical**

Requirements

Fabrikam identifies the following technical requirements:

- Web site content must be easily updated from a single point.
- User input must be minimized when provisioning new app instances.
- Whenever possible, existing on-premises licenses must be used to reduce cost.
- Users must always authenticate by using their corp.fabrikam.com UPN identity.
- Any new deployments to Azure must be redundant in case an Azure region fails.
- Whenever possible, solutions must be deployed to Azure by using platform as a service (PaaS).
- An email distribution group named IT Support must be notified of any issues relating to the directory synchronization services.
- Directory synchronization between Azure Active Directory (Azure AD) and corp.fabrikam.com must not be affected by a link failure between Azure and the on-premises network. **Database**

Requirements

Fabrikam identifies the following database requirements:

- Database metrics for the production instance of WebApp1, must be available for analysis so that database administrators can optimize the performance settings.
- To avoid disrupting customer access, database downtime must be minimized when databases are migrated. ▪

Database backups must be retained for a minimum of seven years to meet compliance requirements. **Security**

Requirements

Fabrikam identifies the following security requirements:

- Company information including policies, templates, and data must be inaccessible to anyone outside the company.
- Users on the on-premises network must be able to authenticate to corp.fabrikam.com if an Internet link fails.
- Administrators must be able authenticate to the Azure portal by using their corp.fabrikam.com credentials.
- All administrative access to the Azure portal must be secured by using multi-factor authentication. ▪

The testing of WebApp1 updates must not be visible to anyone outside the company.

QUESTION 1 You need to recommend a solution to meet the database retention requirement.

What should you recommend?

- A. Configure geo-replication of the database
- B. Configure Azure Site Recovery
- C. Configure a long-term retention policy for the database
- D. Use automatic Azure SQL Database backups

Correct Answer: C

Section: [none]

Explanation

Explanation/Reference:

Question Set 3

QUESTION 1

HOTSPOT

You plan to deploy the backup policy shown in the following exhibit.



NOTE: Each correct selection is worth one point.

Answer Area

To access the files, you must **[answer choice]**.

- generate a snapshot
- modify the access tier
- modify the blob type

The files will be stored **[answer choice]**.

- at the highest storage cost
- at the lowest data retrieval cost
- at the lowest storage cost

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Answer Area

To access the files, you must **[answer choice]**.

| | |
|------------------------|---|
| | ▼ |
| generate a snapshot | |
| modify the access tier | |
| modify the blob type | |

The files will be stored **[answer choice]**.

| | |
|-----------------------------------|---|
| | ▼ |
| at the highest storage cost | |
| at the lowest data retrieval cost | |
| at the lowest storage cost | |

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-storage-tiers#archive-access-tier-preview>

QUESTION 2

You plan to use Azure Site Recovery to protect several on-premises physical server workloads. Each server workload is independent of the other. The workloads are stateless.

You need to recommend a failover strategy to ensure that if the on-premises data center fails, the workloads are available in Azure as quickly as possible.

Which failover strategy should you include in the recommendation?

- A. Latest
- B. Latest app-consistent
- C. Latest multi-VM processed
- D. Latest processed

Correct Answer: D

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/site-recovery/site-recovery-failover>

QUESTION 3

DRAG DROP

Your company identifies the following business continuity and disaster recovery objectives for virtual machines that host sales, finance, and reporting applications in the company's on-premises data center:

- The finance application requires that data be retained for seven years. In the event of a disaster, the application must be able to run from Azure. The recovery time objective (RTO) is 10 minutes.
- The reporting application must be able to recover point-in-time data at a daily granularity. The RTO is eight hours.
- The sales application must be able to fail over to a second on-premises data center.

You need to recommend which Azure services meet the business continuity and disaster recovery objectives. The solution must minimize costs.

What should you recommend for each application? To answer, drag the appropriate services to the correct applications. Each service 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.

Select and Place:

| Actions | | Answer Area |
|--------------------------------------|---------------------------|--------------------------------|
| Azure Backup only | <div>⏪</div> <div>⏩</div> | Sales: Service or Services |
| Azure Site Recovery only | | Finance: Service or Services |
| Azure Site Recovery and Azure Backup | | Reporting: Service or Services |

Correct Answer:

| Actions | | Answer Area |
|---------|---------------------------|---|
| | <div>⏪</div> <div>⏩</div> | Sales: Azure Site Recovery and Azure Backup |
| | | Finance: Azure Backup only |
| | | Reporting: Azure Site Recovery only |

Section: [none]

Explanation

Explanation/Reference:

QUESTION 4 You plan to move a web application named App1 from an on-premises data center to Azure.

App1 depends on a custom framework that is installed on the host server.

You need to recommend a solution to host App1 in Azure. The solution must meet the following requirements:

- App1 must be available to users if an Azure data center becomes unavailable. ▪
- Costs must be minimized.

What should you include in the recommendation?

- In two Azure regions, deploy a Traffic Manager profile and a web app.
- In two Azure regions, deploy a load balancer and a virtual machine scale set.
- Deploy a load balancer and a virtual machine scale set across two availability zones.
- In two Azure regions, deploy a load balancer and a web app.

Correct Answer: A

Section: [none]

Explanation

Explanation/Reference:

QUESTION 5

You plan to deploy a payroll system to Azure. The payroll system will use Azure virtual machines that run SUSE Linux Enterprise Server and Windows.

You need to recommend a business continuity solution for the payroll system. The solution must meet the following requirements:

- Minimize costs.
- Provide business continuity if an Azure region fails.
- Provide a recovery time objective (RTO) of 30 minutes.
- Provide a recovery point objective (RPO) of five minutes. What

should you include in the recommendation?

- A. Microsoft System Center Data Protection Manager (DPM)
- B. Azure Site Recovery
- C. unmanaged disks that use geo-redundant storage (GRS)
- D. Azure Backup

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

QUESTION 6

The accounting department at your company migrates to a new financial accounting software. The accounting department must keep file-based database backups for seven years for compliance purposes. It is unlikely that the backups will be used to recover data.

You need to move the backups to Azure. The solution must minimize costs.

Where should you store the backups?

- A. Azure SQL Database
- B. Azure Blob storage that uses the Archive tier
- C. a Recovery Services vault
- D. Azure Blob storage that uses the Cool tier

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

QUESTION 7

HOTSPOT

Your company has two on-premises sites in New York and Los Angeles and Azure virtual networks in the East US Azure region and the West US Azure region. Each on-premises site has Azure ExpressRoute circuits to both regions.

You need to recommend a solution that meets the following requirements:

- Outbound traffic to the Internet from workloads hosted on the virtual networks must be routed through the closest available on-premises site. ▪
- If an on-premises site fails, traffic from the workloads on the virtual networks to the Internet must reroute automatically to the other site.

What should you include in the recommendation? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area

| | | |
|---|---|---|
| Routing from the virtual networks to the on-premises locations must be configured by using: | | ▼ |
| | Azure default routes | |
| | Border Gateway Protocol (BGP) | |
| | User-defined routes | |
| The automatic routing configuration following a failover must be handled by using: | | ▼ |
| | Border Gateway Protocol (BGP) | |
| | Hot Standby Routing Protocol (HSRP) | |
| | Virtual Router Redundancy Protocol (VRRP) | |

Correct Answer:

Answer Area

| | | |
|---|---|---|
| Routing from the virtual networks to the on-premises locations must be configured by using: | | ▼ |
| | Azure default routes | |
| | Border Gateway Protocol (BGP) | |
| | User-defined routes | |
| The automatic routing configuration following a failover must be handled by using: | | ▼ |
| | Border Gateway Protocol (BGP) | |
| | Hot Standby Routing Protocol (HSRP) | |
| | Virtual Router Redundancy Protocol (VRRP) | |

Section: [none]
Explanation

Explanation/Reference:
Testlet 1

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The IT department currently uses a separate Hyper-V environment to test updates to WebApp1.

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Problem Statements

The use of Web App1 is unpredictable. At peak times, users often report delays. At other times, many resources for WebApp1 are underutilized.

Requirements

Planned Changes

Fabrikam plans to move most of its production workloads to Azure during the next few years.

As one of its first projects, the company plans to establish a hybrid identity model, facilitating an upcoming Microsoft Office 365 deployment.

All R&D operations will remain on-premises.

Fabrikam plans to migrate the production and test instances of WebApp1 to Azure. **Technical**

Requirements

Fabrikam identifies the following technical requirements:

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- Whenever possible, solutions must be deployed to Azure by using platform as a service (PaaS).
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- Directory synchronization between Azure Active Directory (Azure AD) and corp.fabrikam.com must not be affected by a link failure between Azure and the on-premises network. **Database**

Requirements

Fabrikam identifies the following database requirements:

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- To avoid disrupting customer access, database downtime must be minimized when databases are migrated. ▪

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Requirements

Fabrikam identifies the following security requirements:

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- All administrative access to the Azure portal must be secured by using multi-factor authentication. ▪

The testing of WebApp1 updates must not be visible to anyone outside the company.

QUESTION 1

HOTSPOT

You are evaluating the components of the migration to Azure that require you to provision an Azure Storage account.

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

| Statements | Yes | No |
|--|-----------------------|-----------------------|
| You must provision an Azure Storage account for the SQL Server database migration. | <input type="radio"/> | <input type="radio"/> |
| You must provision an Azure Storage account for the Web site content storage. | <input type="radio"/> | <input type="radio"/> |
| You must provision an Azure Storage account for the Database metric monitoring. | <input type="radio"/> | <input type="radio"/> |

Correct Answer:

Answer Area

| Statements | Yes | No |
|--|----------------------------------|----------------------------------|
| You must provision an Azure Storage account for the SQL Server database migration. | <input checked="" type="radio"/> | <input type="radio"/> |
| You must provision an Azure Storage account for the Web site content storage. | <input type="radio"/> | <input checked="" type="radio"/> |
| You must provision an Azure Storage account for the Database metric monitoring. | <input checked="" type="radio"/> | <input type="radio"/> |

Section: [none]

Explanation

Explanation/Reference:

Question Set 2

QUESTION 1

DRAG DROP

You plan to import data from your on-premises environment into Azure. The data is shown in the following table.

| On-premises source | Azure target |
|---|---|
| A Microsoft SQL Server 2012 database | An Azure SQL database |
| A table in a Microsoft SQL Server 2008 database | An Azure Cosmos account that uses the SQL API |

What should you recommend using to migrate the data? To answer, drag the appropriate tools to the correct data sources. Each tool 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.

Select and Place:

Tools

AzCopy

Azure Cosmos DB Data Migration Tool

Data Management Gateway

Data Migration Assistant

Answer Area

⏪

From the SQL Server 2012 database:

Tool

⏩

From the table in the SQL Server 2008 database:

Tool

Correct Answer:

Tools

AzCopy

Data Management Gateway

Answer Area

⏪

From the SQL Server 2012 database:

Data Migration Assistant

⏩

From the table in the SQL Server 2008 database:

Azure Cosmos DB Data Migration Tool

Section: [none]

Explanation

Explanation/Reference:

References:

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

<https://docs.microsoft.com/en-us/azure/cosmos-db/import-data>

You have an on-premises deployment of MongoDB.

You plan to migrate MongoDB to an Azure Cosmos DB account that uses the MongoDB API.

You need to recommend a solution for migrating MongoDB to Azure Cosmos DB.

What should you include in the recommendation?

- A. mongorestore
- B. Data Migration Assistant
- C. Azure Storage Explorer
- D. Azure Cosmos DB Data Migration Tool

Correct Answer: A

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/cosmos-db/mongodb-migrate>

Testlet 1

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Contoso, Ltd. is a US-based financial services company that has a main office in New York and a branch office in San Francisco.

Existing Environment

Payment Processing System

Contoso hosts a business-critical payment processing system in its New York data center. The system has three tiers: a front-end web app, a middle-tier web API, and a back-end data store implemented as a Microsoft SQL Server 2014 database. All servers run Windows Server 2012 R2.

The front-end and middle-tier components are hosted by using Microsoft Internet Information Services (IIS). The application code is written in C# and ASP.NET. The middle-tier API uses the Entity Framework to communicate to the SQL Server database. Maintenance of the database is performed by using SQL Server Agent jobs.

The database is currently 2 TB and is not expected to grow beyond 3 TB.

The payment processing system has the following compliance-related requirements:

- Encrypt data in transit and at rest. Only the front-end and middle-tier components must be able to access the encryption keys that protect the data store.
 - Keep backups of the data in two separate physical locations that are at least 200 miles apart and can be restored for up to seven years.
 - Support blocking inbound and outbound traffic based on the source IP address, the destination IP address, and the port number.
 - Collect Windows security logs from all the middle-tier servers and retain the logs for a period of seven years.
 - Inspect inbound and outbound traffic from the front-end tier by using highly available network appliances. ▪
- Only allow all access to all the tiers from the internal network of Contoso.

Tape backups are configured by using an on-premises deployment of Microsoft System Center Data Protection Manager (DPM), and then shipped offsite for long term storage.

Historical Transaction Query System

Contoso recently migrated a business-critical workload to Azure. The workload contains a .NET web service for querying the historical transaction data residing in Azure Table Storage. The .NET web service is accessible from a client app that was developed in-house and runs on the client computers in the New York office. The data in the table storage is 50 GB and is not expected to increase.

Current Issues

The Contoso IT team discovers poor performance of the historical transaction query system, at the queries frequently cause table scans.

Requirements

Planned Changes

Contoso plans to implement the following changes:

- Migrate the payment processing system to Azure.
- Migrate the historical transaction data to Azure Cosmos DB to address the performance issues.

Migration Requirements

Contoso identifies the following general migration requirements:

- Infrastructure services must remain available if a region or a data center fails. Failover must occur without any administrative intervention.
- Whenever possible, Azure managed services must be used to minimize management overhead.
- Whenever possible, costs must be minimized.

Contoso identifies the following requirements for the payment processing system:

- If a data center fails, ensure that the payment processing system remains available without any administrative intervention. The middle-tier and the web front end must continue to operate without any additional configurations.
- Ensure that the number of compute nodes of the front-end and the middle tiers of the payment processing system can increase or decrease automatically based on CPU utilization.
- Ensure that each tier of the payment processing system is subject to a Service Level Agreement (SLA) of 99.99 percent availability.
- Minimize the effort required to modify the middle-tier API and the back-end tier of the payment processing system.
- Generate alerts when unauthorized login attempts occur on the middle-tier virtual machines.
- Ensure that the payment processing system preserves its current compliance status.
- Host the middle tier of the payment processing system on a virtual machine.

Contoso identifies the following requirements for the historical transaction query system:

- Minimize the use of on-premises infrastructure services.
- Minimize the effort required to modify the .NET web service querying Azure Cosmos DB.
- Minimize the frequency of table scans.
- If a region fails, ensure that the historical transactions query system remains available without any administrative intervention.

Information Security Requirements

The IT security team wants to ensure that identity management is performed by using Active Directory. Password hashes must be stored on-premises only.

Access to all business-critical systems must rely on Active Directory credentials. Any suspicious authentication attempts must trigger a multi-factor authentication prompt automatically. legitimate users must be able to authenticate successfully by using multi-factor authentication.



QUESTION 1 You need to recommend a compute solution for the middle tier of the payment processing system.

What should you include in the recommendation?

- A. Azure Kubernetes Service (AKS)
- B. virtual machine scale sets
- C. availability sets
- D. App Service Environments (ASEs)

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

Testlet 2

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The IT department currently uses a separate Hyper-V environment to test updates to WebApp1.

Fabrikam purchases all Microsoft licenses through a Microsoft Enterprise Agreement that includes Software Assurance.

Problem Statements

The use of Web App1 is unpredictable. At peak times, users often report delays. At other times, many resources for WebApp1 are underutilized.

Requirements

Planned Changes

Fabrikam plans to move most of its production workloads to Azure during the next few years.

As one of its first projects, the company plans to establish a hybrid identity model, facilitating an upcoming Microsoft Office 365 deployment.

All R&D operations will remain on-premises.

Fabrikam plans to migrate the production and test instances of WebApp1 to Azure. **Technical**

Requirements

Fabrikam identifies the following technical requirements:

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Requirements

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- All administrative access to the Azure portal must be secured by using multi-factor authentication. ▪

The testing of WebApp1 updates must not be visible to anyone outside the company.

QUESTION 1 You need to recommend a notification solution for the IT Support distribution group.

What should you include in the recommendation?

- A. Azure Network Watcher
- B. an action group
- C. a SendGrid account with advanced reporting
- D. Azure AD Connect Health

Correct Answer: D

Section: [none]

Explanation

Explanation/Reference:

References:

<https://docs.microsoft.com/en-us/azure/active-directory/hybrid/how-to-connect-health-operations>

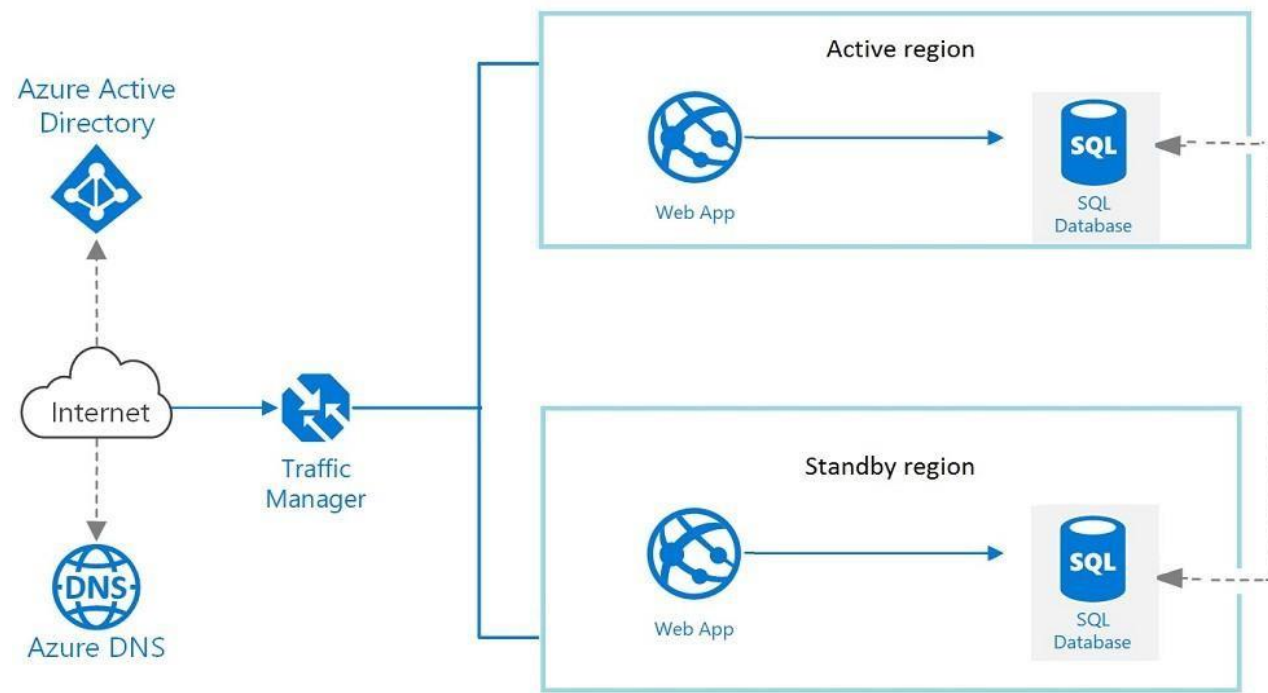


Question Set 3

QUESTION 1

HOTSPOT

You have the application architecture shown in the following exhibit.



Use the drop-down menus to select choice that completes each statement based on the information presented in the graphic.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area



To change the front end to an active/active architecture in which both regions process incoming connections, you must **[answer choice]**.

| | |
|---|---|
| | ▼ |
| add a load balancer to each region | |
| add an Azure Application Gateway to each region | |
| add an Azure content delivery network (CDN) | |
| modify the Traffic Manager routing method | |

To control the threshold for failing over the front end to the standby region, you must configure the **[answer choice]**.

| | |
|--|---|
| | ▼ |
| an Application Insights availability test | |
| Azure SQL Database failover groups | |
| Connection Monitor in Azure Network Watcher | |
| Endpoint monitor settings in Traffic Manager | |

Correct Answer:

Answer Area

To change the front end to an active/active architecture in which both regions process incoming connections, you must **[answer choice]**.

| | |
|---|---|
| | ▼ |
| add a load balancer to each region | |
| add an Azure Application Gateway to each region | |
| add an Azure content delivery network (CDN) | |
| modify the Traffic Manager routing method | |

To control the threshold for failing over the front end to the standby region, you must configure the **[answer choice]**.

| | |
|--|---|
| | ▼ |
| an Application Insights availability test | |
| Azure SQL Database failover groups | |
| Connection Monitor in Azure Network Watcher | |
| Endpoint monitor settings in Traffic Manager | |

Section: [none]

Explanation

Explanation/Reference:

References:

<https://docs.microsoft.com/en-us/azure/traffic-manager/traffic-manager-routing-methods>

<https://docs.microsoft.com/en-us/azure/traffic-manager/traffic-manager-monitoring>

HOTSPOT

QUESTION 2



You are designing a solution for a stateless front-end application named Application1. Application1 will be hosted on two Azure virtual machines named VM1 and VM2.

You plan to load balance connections to VM1 and VM2 from the Internet by using one Azure load balancer.

You need to recommend the minimum number of required public IP addresses.

How many public IP addresses should you recommend using for each resource? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Load balancer:

| | |
|---|---|
| | ▼ |
| 0 | |
| 1 | |
| 2 | |
| 3 | |

VM1:

| | |
|---|---|
| | ▼ |
| 0 | |
| 1 | |
| 2 | |
| 3 | |

VM2:

| | |
|---|---|
| | ▼ |
| 0 | |
| 1 | |
| 2 | |
| 3 | |

Correct Answer:

Answer Area

Load balancer:

| | |
|---|---|
| | ▼ |
| 0 | |
| 1 | |
| 2 | |
| 3 | |

VM1:

| | |
|---|---|
| | ▼ |
| 0 | |
| 1 | |
| 2 | |
| 3 | |

VM2:

| | |
|---|---|
| | ▼ |
| 0 | |
| 1 | |
| 2 | |
| 3 | |

Section: [none]

Explanation

Explanation/Reference:

QUESTION 3 You need to recommend a data storage solution that meets the following requirements:

- Ensures that application can access the data by using a REST connection
- Hosts 20 independent tables of varying sizes and usage patterns
- Automatically replicates the data to a second Azure region
- Minimizes costs

What should you recommend?

- A. an Azure SQL Database elastic database pool that uses active geo-replication
- B. tables in an Azure Storage account that uses geo-redundant storage (GRS)
- C. tables in an Azure Storage account that use read-access geo-redundant storage (RA-GR)
- D. an Azure SQL database that uses active geo-replication

Correct Answer: C

Section: [none]

Explanation

Explanation/Reference:

QUESTION 4

You deploy two instances of an Azure web app. One instance is in the East US Azure region and the other instance is in the West US Azure region. The web app uses Azure Blob storage to deliver large files to end users.

You need to recommend a solution for delivering the files to the users. The solution must meet the following requirements:

- Ensure that the users receive files from the same region as the web app that they access.
- Ensure that the files only need to be updated once.
- Minimize costs.

What should you include in the recommendation?

- A. Azure File Sync
- B. Distributed File System (DFS)
- C. read-access geo-redundant storage (RA-GRS)
- D. geo-redundant storage (GRS)

Correct Answer: C

Section: [none]

Explanation

Explanation/Reference:

QUESTION 5

Your company has an on-premises Windows HPC cluster. The cluster runs an intrinsically parallel, compute-intensive workload that performs financial risk modelling.

You plan to migrate the workload to Azure Batch.

You need to design a solution that will support the workload. The solution must meet the following requirements:

- Support the large-scale parallel execution of Azure Batch jobs.
- Minimize cost.

What should you include in the solution?

- A. Basic A-series virtual machines
- B. low-priority virtual machines
- C. burstable virtual machines
- D. Azure virtual machine sizes that support the Message Passing Interface (MPI) API

Correct Answer: B

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/batch/batch-technical-overview>

QUESTION 6

DRAG DROP

Your company has users who work remotely from laptops.

You plan to move some of the applications accessed by the remote users to Azure virtual machines. The users will access the applications in Azure by using a point-to-site VPN connection. You will use certificates generated from an onpremises-based certification authority (CA).

You need to recommend which certificates are required for the deployment.

What should you include in the recommendation? To answer, drag the appropriate certificates to the correct targets. Each certificate 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.

Select and Place:

| Certificates | Answer Area |
|--|--|
| A root CA certificate that has the private key | Trusted Root Certification Authorities certificate store on each laptop: Certificate |
| A root CA certificate that has the public key | The users' Personal store on each laptop: Certificate |
| A user certificate that has the private key | The Azure VPN gateway: Certificate |
| A user certificate that has the public key | |

Correct Answer:

Certificates

- A root CA certificate that has the private key
- A root CA certificate that has the public key
- A user certificate that has the private key
- A user certificate that has the public key

Answer Area

Trusted Root Certification Authorities certificate store on each laptop:

The users' Personal store on each laptop:

The Azure VPN gateway:

- A root CA certificate that has the public key
- A user certificate that has the private key
- A root CA certificate that has the public key

Section: [none]

Explanation

Explanation/Reference:

QUESTION 7

DRAG DROP

You have an Azure subscription. The subscription contains Azure virtual machines that run Windows Server 2016 and Linux.

You need to use Azure Log Analytics design an alerting strategy for security-related events.

Which Log Analytics tables should you query? To answer, drag the appropriate tables to the correct log types. Each value 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.

Select and Place:

Tables

- AzureActivity
- AzureDiagnostics
- Event
- Syslog

Answer Area

Events from Windows event logs:

Events from Linux system logging:

Table

Table

Correct Answer:

Tables

| |
|------------------|
| AzureActivity |
| AzureDiagnostics |
| Event |
| Syslog |

Answer Area

Events from Windows event logs:

Event

Events from Linux system logging:

Syslog

Section: [none]

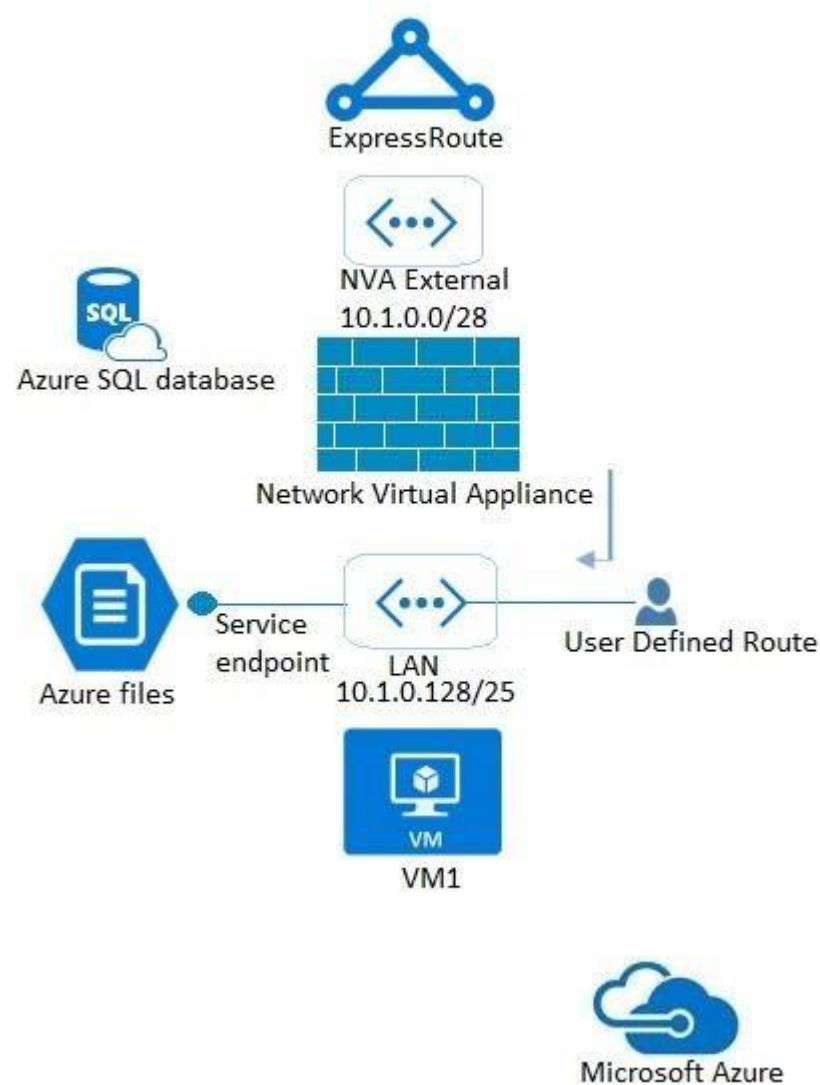
Explanation

Explanation/Reference:

QUESTION 8

HOTSPOT

You have the network topology shown in the following exhibit.



You have a user-defined route that has a default route of 0.0.0.0/0 and the next hop set to the network virtual appliance.

You configure the Azure Storage account to use virtual network service endpoints.

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

| Statements | Yes | No |
|---|-----------------------|-----------------------|
| From VM1, traffic destined to the Azure Key Management Service will be routed to the network virtual appliance. | <input type="radio"/> | <input type="radio"/> |
| From VM1, traffic destined to the Azure file share will be routed to the Internet. | <input type="radio"/> | <input type="radio"/> |
| From VM1, traffic destined to the Azure SQL database will be routed to the Internet. | <input type="radio"/> | <input type="radio"/> |

Correct Answer:

| Answer Area | | |
|---|----------------------------------|----------------------------------|
| Statements | Yes | No |
| From VM1, traffic destined to the Azure Key Management Service will be routed to the network virtual appliance. | <input checked="" type="radio"/> | <input type="radio"/> |
| From VM1, traffic destined to the Azure file share will be routed to the Internet. | <input type="radio"/> | <input checked="" type="radio"/> |
| From VM1, traffic destined to the Azure SQL database will be routed to the Internet. | <input type="radio"/> | <input checked="" type="radio"/> |

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-udr-overview>

QUESTION 9

You are designing a container solution in Azure that will include two containers. One container will host a web API that will be available to the public. The other container will perform health monitoring of the web API and will remain private. The two containers will be deployed together as a group.

You need to recommend a compute service for the containers. The solution must minimize costs and maintenance overhead.

What should you include in the recommendation?

- A. Azure Service Fabric
- B. Azure Container Service
- C. Azure Kubernetes Service (AKS)
- D. Azure Container Instances



Correct Answer: D

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/container-instances/container-instances-container-groups>

QUESTION 10

HOTSPOT

Your company has three branch offices and an Azure subscription. Each branch office contains a Hyper-V host that hosts application servers.

You need to recommend a storage solution for the branch offices. The solution must ensure that the application servers can connect to a central storage device by using iSCSI connections. Data saved to the iSCSI storage device from the application servers must be uploaded to Azure automatically.

Which components should you include in the recommendation? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Branch office Hyper-V hosts:

| | |
|-------------------------------------|---|
| | ▼ |
| Azure File Sync agent | |
| Azure Site Recovery agent | |
| Azure StorSimple Virtual Array | |
| Distributed File System Replication | |

Azure subscription:

| | |
|---------------------------|---|
| | ▼ |
| Azure file share | |
| Azure File Sync | |
| Azure Site Recovery vault | |
| Azure Storage account | |

Correct Answer:

Answer Area

Branch office Hyper-V hosts:

| | |
|-------------------------------------|---|
| | ▼ |
| Azure File Sync agent | |
| Azure Site Recovery agent | |
| Azure StorSimple Virtual Array | |
| Distributed File System Replication | |

Azure subscription:

| | |
|---------------------------|---|
| | ▼ |
| Azure file share | |
| Azure File Sync | |
| Azure Site Recovery vault | |
| Azure Storage account | |

Section: [none]

Explanation

Explanation/Reference:

References: <https://docs.microsoft.com/en-us/azure/storsimple/storsimple-ova-overview>

QUESTION 11

DRAG DROP

You have an on-premises network that uses an IP address space of 172.16.0.0/16.

You plan to deploy 25 virtual machines to a new Azure subscription.

You identify the following technical requirements:

- All Azure virtual machines must be placed on the same subnet named Subnet1.
- All the Azure virtual machines must be able to communicate with all on-premises servers.

- The servers must be able to communicate between the on-premises network and Azure by using a site-to-site VPN.

You need to recommend a subnet design that meets the technical requirements.

What should you include in the recommendation? To answer, drag the appropriate network addresses to the correct subnets. Each network address 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.

Select and Place:

| Network Addresses | | Answer Area |
|-------------------|---------------------------|--|
| 172.16.0.0/16 | <div>⏪</div> <div>⏩</div> | Subnet1: <input type="text" value="Network address"/> |
| 172.16.1.0/28 | | Gateway subnet: <input type="text" value="Network address"/> |
| 192.168.0.0/24 | | |
| 192.168.1.0/28 | | |

Correct Answer:

| Network Addresses | | Answer Area |
|-------------------|---------------------------|---|
| 172.16.0.0/16 | <div>⏪</div> <div>⏩</div> | Subnet1: <input type="text" value="192.168.0.0/24"/> |
| 172.16.1.0/28 | | Gateway subnet: <input type="text" value="192.168.1.0/28"/> |
| | | |
| | | |

Section: [none]

Explanation

Explanation/Reference: