

**AZ-301.85q**

Number: AZ-301  
Passing Score: 800  
Time Limit: 120 min

**AZ-301**



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**Microsoft Azure Architect Design**

**Testlet 1**

**Case study**

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This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

### **To start the case study**

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirement, existing environment, and problem statements. If the case study has an **All Information** tab, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question.

### **Overview**

Fabrikam, Inc. is an engineering company that has offices throughout Europe. The company has a main office in London and three branch offices in Amsterdam, Berlin, and Rome.

### **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 onpremises 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?



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- 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:

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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 onpremises 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 2

### 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 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:**

Explanation:

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

### 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 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 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:**

Explanation:

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

### QUESTION 3

**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 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 4

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 5

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 6

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 7

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:**

#### QUESTION 8

You have an Azure Active Directory (Azure AD) tenant named contoso.com that contains several administrative user accounts.

You need to recommend a solution to identify which administrative user accounts have **NOT** signed in during the previous 30 days.

Which service should you include in the recommendation?

- A. Azure AD Identity Protection
- B. Azure Activity Log
- C. Azure Advisor
- D. Azure AD Privileged Identity Management (PIM)

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 9

You manage a single-domain, on-premises Active Directory forest named contoso.com. The forest functional level is Windows Server 2016.

You have several on-premises applications that depend on Active Directory.

You plan to migrate the applications to Azure.

You need to recommend an identity solution for the applications. The solution must meet the following requirements:

- Eliminate the need for hybrid network connectivity.
- Minimize management overhead for Active Directory.

What should you recommend?

- A. In Azure, deploy an additional child domain to the contoso.com forest.
- B. In Azure, deploy additional domain controllers for the contoso.com domain.
- C. Implement a new Active Directory forest in Azure.
- D. Implement Azure Active Directory Domain Services (Azure AD DS).

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 10

**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: In Project1, create a network security group (NSG) named NSG1. Assign Project1admins the Owner role for NSG1. Assign the App2Dev the Contributor role for NSG1.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

You should use a separate subscription for Project2.

**QUESTION 11**

**HOTSPOT**

You manage a network that includes an on-premises Active Directory Domain Services domain and an Azure Active Directory (Azure AD).

Employees are required to use different accounts when using on-premises or cloud resources. You must recommend a solution that lets employees sign in to all company resources by using a single account. The solution must implement an identity provider.

You need provide guidance on the different identity providers.

How should you describe each identity provider? To answer, select the appropriate description from each list in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Answer Area**

Identity provider	Description
synchronized identity	<div style="border: 1px solid black; padding: 5px;"> <p>User management occurs on-premises. Azure AD authenticates employees by using on-premises passwords.</p> <p>User management occurs on-premises. The on-premises domain controller authenticates employee credentials.</p> <p>Both user management and authentication occur in Azure AD.</p> </div>
federated identity	<div style="border: 1px solid black; padding: 5px;"> <p>User management occurs on-premises. Azure AD authenticates employees by using on-premises passwords.</p> <p>User management occurs on-premises. The on-premises domain controller authenticates employee credentials.</p> <p>Both user management and authentication occur in Azure AD.</p> </div>

**Correct Answer:**

**Answer Area**

Identity provider	Description
synchronized identity	<div style="border: 1px solid gray; padding: 2px;"> <p>User management occurs on-premises. Azure AD authenticates employees by using on-premises passwords.</p> <p>User management occurs on-premises. The on-premises domain controller authenticates employee credentials.</p> <p>Both user management and authentication occur in Azure AD.</p> </div>
federated identity	<div style="border: 1px solid gray; padding: 2px;"> <p>User management occurs on-premises. Azure AD authenticates employees by using on-premises passwords.</p> <p>User management occurs on-premises. The on-premises domain controller authenticates employee credentials.</p> <p>Both user management and authentication occur in Azure AD.</p> </div>

**Section:** [none]  
**Explanation**

**Explanation/Reference:**  
 Explanation:

Box1: User management occurs on-premises. Azure AD authenticates employees by using on-premises passwords.

Azure AD Domain Services for hybrid organizations

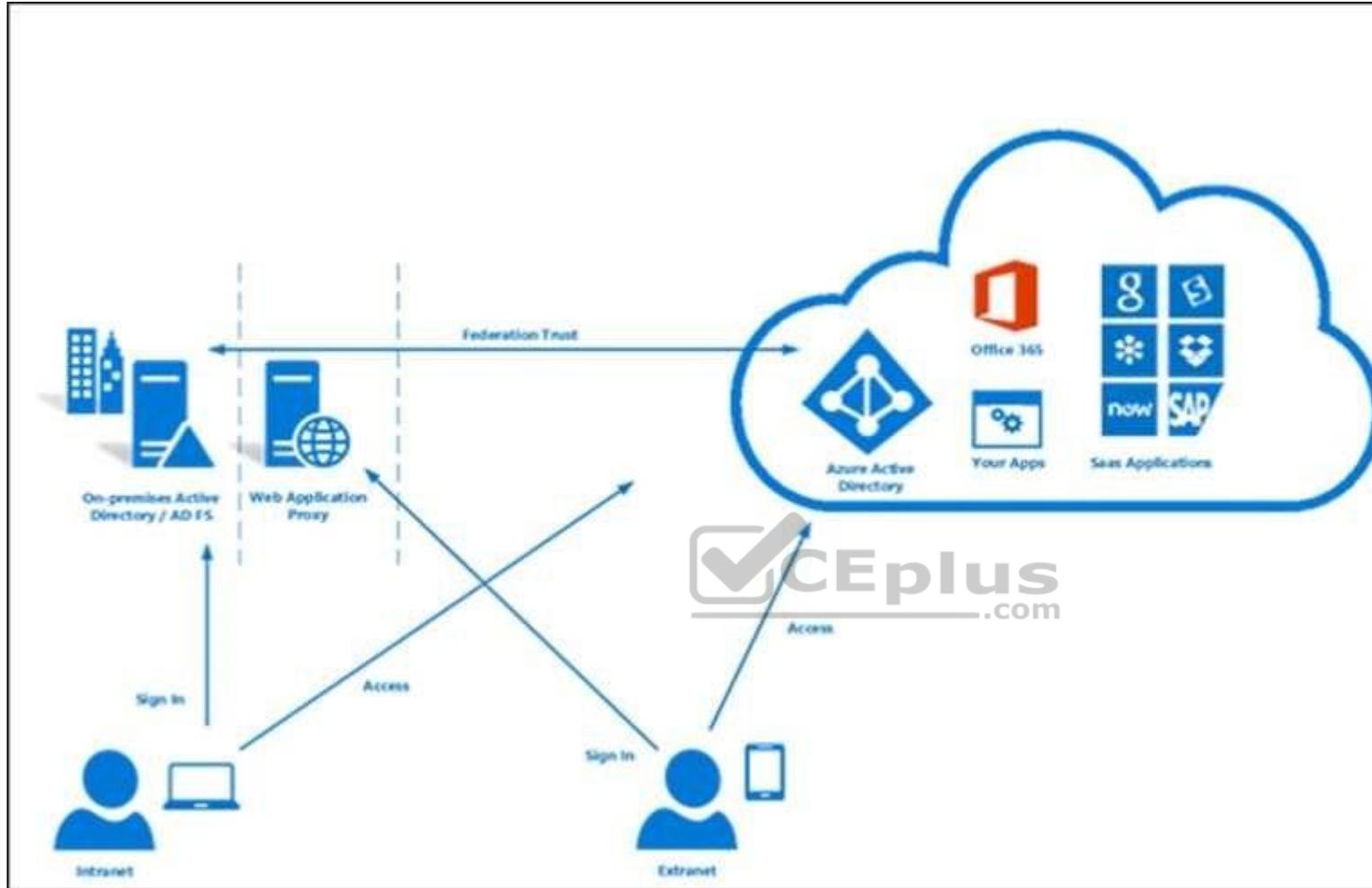
Organizations with a hybrid IT infrastructure consume a mix of cloud resources and on-premises resources. Such organizations synchronize identity information from their on-premises directory to their Azure AD tenant. As hybrid organizations look to migrate more of their on-premises applications to the cloud, especially legacy directory-aware applications, Azure AD Domain Services can be useful to them.

Example: Litware Corporation has deployed Azure AD Connect, to synchronize identity information from their on-premises directory to their Azure AD tenant. The identity information that is synchronized includes user accounts, their credential hashes for authentication (password hash sync) and group memberships.



User accounts, group memberships, and credentials from Litware's on-premises directory are synchronized to Azure AD via Azure AD Connect. These user accounts, group memberships, and credentials are automatically available within the managed domain.

Box 2: User management occurs on-premises. The on-premises domain controller authenticates employee credentials. You can federate your on-premises environment with Azure AD and use this federation for authentication and authorization. This sign-in method ensures that all user authentication occurs on-premises.



References:

<https://docs.microsoft.com/en-us/azure/active-directory-domain-services/active-directory-ds-overview>

<https://docs.microsoft.com/en-us/azure/active-directory/hybrid/whatis-fed>

**QUESTION 12**

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**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 a custom role-based access control (RBAC) role to the ResearchUsers group.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

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

### **QUESTION 13**

A company deploys Azure Active Directory (Azure AD) Connect to synchronize identity information from their on-premises Active Directory Domain Services (AD DS) directory to their Azure AD tenant. The identity information that is synchronized includes user accounts , credential hashes for authentication (password sync), and group membership. The company plans to deploy several Windows and Linux virtual machines (VMs) to support their applications.

The VMs have the following requirements:

- Support domain join, LDAP read, LDAP bind, NTLM and Kerberos authentication, and Group Policy.
- Allow users to sign in to the domain using their corporate credentials and connect remotely to the VM by using Remote Desktop.

You need to support the VM deployment.



Which service should you use?

- A. Azure AD Domain Services
- B. Azure AD Privileged Identity Management
- C. Azure AD Managed Service Identity
- D. Active Directory Federation Services (AD FS)

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Azure AD Domain Services provides managed domain services such as domain join, group policy, LDAP, Kerberos/NTLM authentication that are fully compatible with Windows Server Active Directory.

References: <https://docs.microsoft.com/en-us/azure/active-directory-domain-services/active-directory-ds-overview>

#### QUESTION 14

**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.**

Your company has deployed several virtual machines (VMs) on-premises and to Azure. Azure ExpressRoute has been deployed and configured for on-premises to Azure connectivity.

Several VMs are exhibiting network connectivity issues.

You need to analyze the network traffic to determine whether packets are being allowed or denied to the VMs.

Solution: Use the Azure traffic analytics solution in Azure Log Analytics to analyze the network traffic.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Instead use Azure Network Watcher to run IP flow verify to analyze the network traffic.

References: <https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-monitoring-overview> <https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-ip-flow-verify-overview>

### QUESTION 15

**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.**

Your company has deployed several virtual machines (VMs) on-premises and to Azure. Azure ExpressRoute has been deployed and configured for on-premises to Azure connectivity.

Several VMs are exhibiting network connectivity issues.

You need to analyze the network traffic to determine whether packets are being allowed or denied to the VMs.

Solution: Use Azure Network Watcher to run IP flow verify to analyze the network traffic.

Does the solution meet the goal?

A. Yes

B. No

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

The Network Watcher Network performance monitor is a cloud-based hybrid network monitoring solution that helps you monitor network performance between various points in your network infrastructure. It also helps you monitor network connectivity to service and application endpoints and monitor the performance of Azure ExpressRoute.

Note:

IP flow verify checks if a packet is allowed or denied to or from a virtual machine. The information consists of direction, protocol, local IP, remote IP, local port, and remote port. If the packet is denied by a security group, the name of the rule that denied the packet is returned. While any source or destination IP can be chosen, IP flow verify helps administrators quickly diagnose connectivity issues from or to the internet and from or to the on-premises environment.

IP flow verify looks at the rules for all Network Security Groups (NSGs) applied to the network interface, such as a subnet or virtual machine NIC. Traffic flow is then verified based on the configured settings to or from that network interface. IP flow verify is useful in confirming if a rule in a Network Security Group is blocking ingress or egress traffic to or from a virtual machine.

References: <https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-monitoring-overview> <https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-ip-flow-verify-overview>

#### QUESTION 16

**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.**

Your company has deployed several virtual machines (VMs) on-premises and to Azure. Azure ExpressRoute has been deployed and configured for on-premises to Azure connectivity.

Several VMs are exhibiting network connectivity issues.

You need to analyze the network traffic to determine whether packets are being allowed or denied to the VMs.

Solution: Install and configure the Log Analytics and Dependency Agents on all VMs. Use the Wire Data solution in Azure Log Analytics to analyze the network traffic.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead use Azure Network Watcher to run IP flow verify to analyze the network traffic.

References: <https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-monitoring-overview> <https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-ip-flow-verify-overview>

### QUESTION 17

Your network contains an on-premises Active Directory forest named contoso.com. The forest is synced to an Azure Active Directory (Azure AD) tenant named contoso.com and an Azure AD Domain Services (Azure AD DS) domain named contoso-aad.com.

You have an Azure Storage account named Storage1 that contains a file share named Share1.

You configure NTFS permissions on Share1. You plan to deploy a virtual machine that will be used by several users to access Share1.

You need to ensure that the users can access Share1.

Which type virtual machine should you deploy?

- A. a virtual machine that runs Windows Server 2016 and is joined to the contoso.com domain
- B. a virtual machine that runs Windows 10 and is joined to the contoso-add.com domain
- C. a virtual machine that runs Windows 10 and is hybrid Azure AD joined to the contoso.com domain
- D. an Azure virtual machine that runs Windows Server 2016 and is joined to the contoso-add.com domain

**Correct Answer: D**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

You join the Windows Server virtual machine to the Azure AD DS-managed domain, here named contoso-aad.com.

Note: Azure Files supports identity-based authentication over SMB (Server Message Block) (preview) through Azure Active Directory (Azure AD) Domain Services. Your domain-joined Windows virtual machines (VMs) can access Azure file shares using Azure AD credentials.

Incorrect Answers:

B, C: Azure AD authentication over SMB is not supported for Linux VMs for the preview release. Only Windows Server VMs are supported.

References: <https://docs.microsoft.com/en-us/azure/storage/files/storage-files-active-directory-enable#mount-a-file-share-from-a-domain-joined-vm>

### QUESTION 18

**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.**

Your company has an on-premises data center and an Azure subscription. The on-premises data center contains a Hardware Security Module (HSM).

Your network contains an Active Directory domain that is synchronized to an Azure Active Directory (Azure AD) tenant.

The company is developing an application named Application1. Application1 will be hosted in Azure by using 10 virtual machines that run Windows Server 2016. Five virtual machines will be in the West Europe Azure region and five virtual machines will be in the East US Azure region. The virtual machines will store sensitive company information. All the virtual machines will use managed disks.

You need to recommend a solution to encrypt the virtual machine disks by using BitLocker Drive Encryption (BitLocker).

Solution: Deploy one Azure Key Vault to each region. Create two Azure AD service principals. Configure the virtual machines to use Azure Disk Encryption and specify a different service principal for the virtual machines in each region.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

You would also have to import Import the security keys from the HSM into each Azure key vault.

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

### QUESTION 19

**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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Your network contains an Active Directory domain that is synchronized to an Azure Active Directory (Azure AD) tenant.

The company is developing an application named Application1. Application1 will be hosted in Azure by using 10 virtual machines that run Windows Server 2016. Five virtual machines will be in the West Europe Azure region and five virtual machines will be in the East US Azure region. The virtual machines will store sensitive company information. All the virtual machines will use managed disks.

You need to recommend a solution to encrypt the virtual machine disks by using BitLocker Drive Encryption (BitLocker).

**Solution:** Export a security key from the on-premises HSM. Create one Azure AD service principal. Configure the virtual machines to use Azure Storage Service Encryption.

Does this meet the goal?

- A. Yes
- B. No



**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

We use the Azure Premium Key Vault with Hardware Security Modules (HSM) backed keys. The Key Vault has to be in the same region as the VM that will be encrypted.

References: <https://www.ciraltos.com/azure-disk-encryption-v2/>

### QUESTION 20

**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.**

Your company has an on-premises data center and an Azure subscription. The on-premises data center contains a Hardware Security Module (HSM).

Your network contains an Active Directory domain that is synchronized to an Azure Active Directory (Azure AD) tenant.

The company is developing an application named Application1. Application1 will be hosted in Azure by using 10 virtual machines that run Windows Server 2016. Five virtual machines will be in the West Europe Azure region and five virtual machines will be in the East US Azure region. The virtual machines will store sensitive company information. All the virtual machines will use managed disks.

You need to recommend a solution to encrypt the virtual machine disks by using BitLocker Drive Encryption (BitLocker).

Solution:

- Deploy one Azure key vault to each region
- Export two security keys from the on-premises HSM
- Import the security keys from the HSM into each Azure key vault
- Create two Azure AD service principals
- Configure the virtual machines to use Azure Disk Encryption
- Specify a different service principal for the virtual machines in each region

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

We use the Azure Premium Key Vault with Hardware Security Modules (HSM) backed keys. The Key Vault has to be in the same region as the VM that will be encrypted.

Note: If you want to use a key encryption key (KEK) for an additional layer of security for encryption keys, add a KEK to your key vault. Use the Add-AzKeyVaultKey cmdlet to create a key encryption key in the key vault. You can also import a KEK from your on-premises key management HSM.

References: <https://www.ciraltos.com/azure-disk-encryption-v2/> <https://docs.microsoft.com/en-us/azure/security/azure-security-disk-encryption-prerequisites-aad>

### QUESTION 21

**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.**

Your company has an on-premises Active Directory Domain Services (AD DS) domain and an established Azure Active Directory (Azure AD) environment.

Your company would like users to be automatically signed in to cloud apps when they are on their corporate desktops that are connected to the corporate network.

You need to enable single sign-on (SSO) for company users.

Solution: Install and configure an Azure AD Connect server to use password hash synchronization and select the **Enable single sign-on** option.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**



### QUESTION 22

You have an Azure subscription that contains a custom application named Application1. Application1 was developed by an external company named Fabrikam, Ltd. Developers at Fabrikam were assigned role-based access control (RBAC) permissions to the Application1 components. All users are licensed for the Microsoft 365 E5 plan.

You need to recommend a solution to verify whether the Fabrikam developers still require permissions to Application1. The solution must meet the following requirements:

- To the manager of the developers, send a monthly email message that lists the access permissions to Application1.
- If the manager does not verify an access permission, automatically revoke that permission. ▪ Minimize development effort.

What should you recommend?

- A. In Azure Active Directory (AD) Privileged Identity Management, create a custom role assignment for the Application1 resources

- B. Create an Azure Automation runbook that runs the `Get-AzureADUserAppRoleAssignment` cmdlet
- C. Create an Azure Automation runbook that runs the `Get-AzureRmRoleAssignment` cmdlet
- D. In Azure Active Directory (Azure AD), create an access review of Application1

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 23

**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.**

Your company has an on-premises Active Directory Domain Services (AD DS) domain and an established Azure Active Directory (Azure AD) environment.

Your company would like users to be automatically signed in to cloud apps when they are on their corporate desktops that are connected to the corporate network.

You need to enable single sign-on (SSO) for company users.

Solution: Configure an AD DS server in an Azure virtual machine (VM). Configure bidirectional replication.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 24

You are designing a security solution for a company's Azure Active Directory (Azure AD). The company currently uses Azure AD Premium for all employees. Contractors will periodically access the corporate network based on demand.

You must ensure that all employees and contractors are required to log on by using two-factor authentication. The solution must minimize costs.

You need to recommend a solution.

What should you recommend?

- A. Purchase Azure Multi-Factor Authentication licenses for the employees and the contractors
- B. Use the Multi-Factor Authentication provider in Azure and configure the usage model for each authentication type
- C. Use the Multi-Factor Authentication provider in Azure and configure the usage model for each enabled user
- D. Purchase Azure Multi-Factor Authentication licenses for the contractors only

**Correct Answer: C**

**Section: [none]**

**Explanation**

**Explanation/Reference:**



#### **QUESTION 25**

**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 Active Directory (Azure AZD) tenant named contoso.com. The tenant contains a group named Group1. Group1 contains all the administrative user accounts.

You discover several login attempts to the Azure portal from countries where administrative users do **NOT** work.

You need to ensure that all login attempts to the Azure portal from those countries require Azure Multi-Factor Authentication (MFA).

Solution: Create an Access Review for Group1.

Does this solution meet the goal?

- A. Yes
- B. No

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 26

You store web access logs data in Azure Blob storage.

You plan to generate monthly reports from the access logs.

You need to recommend an automated process to upload the data to Azure SQL Database every month.

What should you include in the recommendation?

- A. Microsoft SQL Server Migration Assistant (SSMA)
- B. Azure Data Factory
- C. Data Migration Assistant
- D. AzCopy

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**Testlet 1**

### Case study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.



### To start the case study

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirement, existing environment, and problem statements. If the case study has an **All Information** tab, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question. **Overview**

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 2

You need to recommend a solution for protecting the content of the payment processing system.

What should you include in the recommendation?

- A. Transparent Data Encryption (TDE)
- B. Azure Storage Service Encryption
- C. Always Encrypted with randomized encryption
- D. Always Encrypted with deterministic encryption

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**



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## Question Set 2

### QUESTION 1

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 2

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 3

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 4

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 5**

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>

**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 are designing an Azure solution for a company that has four departments. Each department will deploy several Azure app services and Azure SQL databases.

You need to recommend a solution to report the costs for each department to deploy the app services and the databases. The solution must provide a consolidated view for cost reporting.

Solution: Place all resources in the same resource group. Assign tags to each resource.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead, create a resources group for each resource type. Assign tags to each resource

Note: Tags enable you to retrieve related resources from different resource groups. This approach is helpful when you need to organize resources for billing or management.

References: <https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-group-using-tags>

**QUESTION 7**

**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 are designing an Azure solution for a company that has four departments. Each department will deploy several Azure app services and Azure SQL databases.

You need to recommend a solution to report the costs for each department to deploy the app services and the databases. The solution must provide a consolidated view for cost reporting.

Solution: Create a new subscription for each department.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead, create a resources group for each resource type. Assign tags to each resource

Note: Tags enable you to retrieve related resources from different resource groups. This approach is helpful when you need to organize resources for billing or management.

References:

<https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-group-using-tags>

**Testlet 1**

**Case study**

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### **To start the case study**

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirement, existing environment, and problem statements. If the case study has an **All Information** tab, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question.

### **Overview**

Fabrikam, Inc. is an engineering company that has offices throughout Europe. The company has a main office in London and three branch offices in Amsterdam, Berlin, and Rome.

### **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 onpremises 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

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



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 2**

### QUESTION 1

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.

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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 2

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	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
	Sales: Azure Site Recovery and Azure Backup
	Finance: Azure Backup only
	Reporting: Azure Site Recovery only

**Section: [none]**  
**Explanation**

**Explanation/Reference:**

**QUESTION 3**

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

App1 depends on a custom COM component 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?

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

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

#### QUESTION 4

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 120 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:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

If your storage account has GRS enabled, then your data is durable even in the case of a complete regional outage or a disaster in which the primary region isn't recoverable.

Note: The recovery time objective (RTO) is the targeted duration of time and a service level within which a business process must be restored after a disaster (or disruption) in order to avoid unacceptable consequences associated with a break in business continuity.

Incorrect Answers:

B: Azure Site Recovery would not protect against an Azure region failure.

Azure Site Recovery guarantees a two-hour Recovery Time Objective.

References: <https://docs.microsoft.com/en-us/azure/storage/common/storage-redundancy-grs> [https://azure.microsoft.com/en-us/support/legal/sla/site-recovery/v1\\_0/](https://azure.microsoft.com/en-us/support/legal/sla/site-recovery/v1_0/)

### QUESTION 5

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 6

You plan to store data in Azure Blob storage for many years. The stored data will be accessed rarely.

You need to ensure that the data in Blob storage is always available for immediate access. The solution must minimize storage costs.

Which storage tier should you use?

- A. Cool
- B. Archive
- C. Hot

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Azure cool tier is equivalent to the Amazon S3 Infrequent Access (S3-IA) storage in AWS that provides a low cost high performance storage for infrequently access data.

Note: Azure's cool storage tier, also known as Azure cool Blob storage, is for infrequently-accessed data that needs to be stored for a minimum of 30 days. Typical use cases include backing up data before tiering to archival systems, legal data, media files, system audit information, datasets used for big data analysis and more.

The storage cost for this Azure cold storage tier is lower than that of hot storage tier. Since it is expected that the data stored in this tier will be accessed less frequently, the data access charges are high when compared to hot tier. There are no additional changes required in your applications as these tiers can be accessed using APIs in the same manner that you access Azure storage.

Incorrect Answers:

B: Even though Azure archive storage offers the lowest cost in terms of data storage, its data retrieval charges are higher than that of hot and cool tiers. In fact, the data in the archive tier remains offline until the tier of the data is changed using a process called hydration. The process of hydrating data in the archive storage tier and moving it to either hot or cool tier could take up to 15 hours and, hence, it is only intended for data that can afford that kind of access delay.

C: The storage cost for this Azure cold storage tier is lower than that of hot storage tier.

References:

<https://cloud.netapp.com/blog/low-cost-storage-options-on-azure>

**Testlet 1**

**Case study**

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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.

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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.

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

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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.

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

### **Requirements**

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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 onpremises 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

You need to recommend a strategy for migrating the database content of WebApp1 to Azure.

What should you include in the recommendation?

- A. Use Azure Site Recovery to replicate the SQL servers to Azure
- B. Use SQL Server transactional replication
- C. Copy the VHD that contains the Azure SQL database files to Azure Blob storage
- D. Copy the BACPAC file that contains the Azure SQL database files to Azure Blob storage

**Correct Answer:** B

**Section:** [none]

**Explanation**



**Explanation/Reference:**

### QUESTION 2

You need to recommend a strategy for the web tier of WebApp1. The solution must minimize costs.

What should you recommend?

- A. Configure the Scale Up settings for a web app
- B. Create a runbook that resizes virtual machines automatically to a smaller size outside of business hours
- C. Deploy a virtual machine scale set that scales out on a 75 percent CPU threshold
- D. Configure the Scale Out settings for a web app

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**



<https://vceplus.com/>

## Question Set 2

### QUESTION 1

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>



### QUESTION 2

Your company has 300 virtual machines hosted in a VMware environment. The virtual machines vary in size and have various utilization levels.

You plan to move all the virtual machines to Azure.

You need to recommend how many and what size Azure virtual machines will be required to move the current workloads to Azure. The solution must minimize administrative effort.

What should you use to make the recommendation?

- A. Azure Advisor
- B. Azure Migrate
- C. Azure Pricing calculator
- D. Azure Cost Management

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 3

**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 are designing an Azure solution for a company that wants to move a .NET Core web application from an on-premises data center to Azure. The web application relies on a Microsoft SQL Server 2016 database on Windows Server 2016. The database server will not move to Azure.

A separate networking team is responsible for configuring network permissions.

The company uses Azure ExpressRoute and has an ExpressRoute gateway connected to an Azure virtual network named VNET1.

You need to recommend a solution for deploying the web application.

**Solution:**

Deploy the web application to a web app hosted in a Standard App Service plan. Create and configure an Azure App Service Hybrid Connections endpoint. On the on-premises network, deploy the Hybrid Connection Manager. Configure the Hybrid Connection Manager to access both the Hybrid Connection endpoint and the SQL Server instance.

Does this meet the goal?

A. Yes

B. No

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**Explanation:**

Instead, use VNet Integration.

Note: VNet Integration gives your web app access to resources in your virtual network. VNet Integration is often used to enable access from apps to a databases and web services running in your VNet.

References: <https://docs.microsoft.com/en-us/azure/app-service/web-sites-integrate-with-vnet>

#### QUESTION 4

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A company has custom ASP.NET and Java applications that run old versions of Windows and Linux. The company plans to place applications in containers.

You need to design a solution that includes networking, service discovery, and load balancing for the applications. The solution must support storage orchestration.

Solution: You create an Azure virtual network, public IP address, and load balancer. Then add virtual machines (VMs) to the solution and deploy individual containers on them.

Does the solution meet the goal?

- A. Yes
- B. No



**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead you should deploy each application to an Azure Container instance.

Note: Docker Containers are the global standard and are natively supported in Azure, offering enterprises an interesting and flexible way to migrate legacy apps for both future proofing and cost benefits.

References: <https://docs.microsoft.com/en-us/dotnet/standard/modernize-with-azure-and-containers/modernize-existing-apps-to-cloud-optimized/deploy-existing-net-apps-aswindows-containers>

#### QUESTION 5

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A company has custom ASP.NET and Java applications that run old versions of Windows and Linux. The company plans to place applications in containers.

You need to design a solution that includes networking, service discovery, and load balancing for the applications. The solution must support storage orchestration.

Solution: Deploy a Kubernetes cluster that has the desired number of instances of the applications.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead you should deploy each application to an Azure Container instance.



Note: Docker Containers are the global standard and are natively supported in Azure, offering enterprises an interesting and flexible way to migrate legacy apps for both future proofing and cost benefits.

References: <https://docs.microsoft.com/en-us/dotnet/standard/modernize-with-azure-and-containers/modernize-existing-apps-to-cloud-optimized/deploy-existing-net-apps-aswindows-containers>

## QUESTION 6

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You need to design a solution that includes networking, service discovery, and load balancing for the applications. The solution must support storage orchestration.

Solution: You deploy each application to an Azure Container instance.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Docker Containers are the global standard and are natively supported in Azure, offering enterprises an interesting and flexible way to migrate legacy apps for both future proofing and cost benefits.

Containers are modular and portable. Docker containers are supported on any server operating system (Linux and Windows), in any major public cloud (Microsoft Azure, Amazon AWS, Google, IBM), and in on-premises and private or hybrid cloud environments.

References: <https://docs.microsoft.com/en-us/dotnet/standard/modernize-with-azure-and-containers/modernize-existing-apps-to-cloud-optimized/deploy-existing-net-apps-as-windows-containers>

**QUESTION 7**

**HOTSPOT**

You have a web application that uses a MongoDB database. You plan to migrate the web application to Azure.

You must migrate to Cosmos DB while minimizing code and configuration changes.

You need to design the Cosmos DB configuration.

What should you recommend? To answer, select the appropriate values in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**



### Answer Area

Option	Value					
MongoDB compatibility	<table border="1"><tr><td>Database</td></tr><tr><td>API</td></tr><tr><td>Collection</td></tr><tr><td>Account</td></tr></table>	Database	API	Collection	Account	
Database						
API						
Collection						
Account						
API	<table border="1"><tr><td>Cassandra API</td></tr><tr><td>DocumentDB API</td></tr><tr><td>Graph API</td></tr><tr><td>MongoDB API</td></tr><tr><td>Table API</td></tr></table>	Cassandra API	DocumentDB API	Graph API	MongoDB API	Table API
Cassandra API						
DocumentDB API						
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Table API						

Correct Answer:

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Cassandra API						
DocumentDB API						
Graph API						
MongoDB API						
Table API						

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

MongoDB compatibility: API

API: MongoDB API

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Azure Cosmos DB comes with multiple APIs:

- SQL API, a JSON document database service that supports SQL queries. This is compatible with the former Azure DocumentDB.
- MongoDB API, compatible with existing Mongo DB libraries, drivers, tools and applications.
- Cassandra API, compatible with existing Apache Cassandra libraries, drivers, tools, and applications.
- Azure Table API, a key-value database service compatible with existing Azure Table Storage.
- Gremlin (graph) API, a graph database service supporting Apache Tinkerpop's graph traversal language, Gremlin.

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

### QUESTION 8

You manage an application instance. The application consumes data from multiple databases. Application code references database tables using a combination of the server, database, and table name.

You need to migrate the application instance to Azure.

What are two possible ways to achieve this goal? Each correct answer presents a complete solution.

**NOTE:** Each correct selection is worth one point.

- A. SQL Server Stretch Database
- B. SQL Server in an Azure virtual machine
- C. Azure SQL Database
- D. SQL Managed Instance



**Correct Answer:** AD

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

A: Access your SQL Server data seamlessly regardless of whether it's on-premises or stretched to the cloud. You set the policy that determines where data is stored, and SQL Server handles the data movement in the background. The entire table is always online and queryable. And, Stretch Database doesn't require any changes to existing queries or applications - the location of the data is completely transparent to the application.

D: The managed instance deployment model is designed for customers looking to migrate a large number of apps from on-premises or IaaS, self-built, or ISV provided environment to fully managed PaaS cloud environment, with as low migration effort as possible. Using the fully automated Data Migration Service (DMS) in Azure, customers can lift and shift their on-premises SQL Server to a managed instance that offers compatibility with SQL Server on-premises and complete isolation of customer instances with native VNet support.

References:

<https://docs.microsoft.com/en-us/sql/sql-server/stretch-database/stretch-database>

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

### QUESTION 9

You have 100 Microsoft SQL Server Integration Services (SSIS) packages that are configured to use 10 on-premises SQL Server databases as their destinations.

You plan to migrate the 10 on-premises databases to Azure SQL Database.

You need to recommend a solution to host the SSIS packages in Azure. The solution must ensure that the packages can target the SQL Database instances as their destinations.

What should you include in the recommendation?

- A. SQL Server Migration Assistant (SSMA)
- B. Azure Data Factory
- C. Data Migration Assistant
- D. Azure Data Catalog

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**Testlet 1**

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

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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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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.

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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

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

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### 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.
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- Database metrics for the production instance of WebApp1, must be available for analysis so that database administrators can optimize the performance settings.
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- 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

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 2

#### QUESTION 1

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

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**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 2

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 3

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 4

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 5

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:

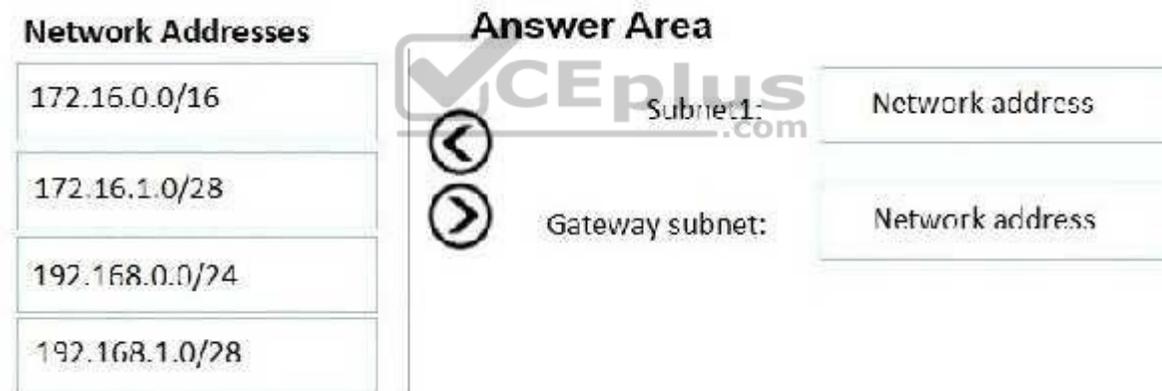
- All Azure virtual machines must be placed on the same subnet named Subnet1.
- All the Azure virtual machines must be able to communicate with all on-premises servers.
- The servers must be able to communicate between the on-premises network and Azure by using a site-to-site VPN.

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:**



**Correct Answer:**

Network Addresses	Answer Area
172.16.0.0/16	Subnet1: 192.168.0.0/24
172.16.1.0/28	Gateway subnet: 192.168.1.0/28

Section: [none]

Explanation

Explanation/Reference:

#### QUESTION 6

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You are migrating an on-premises application to Azure. One component of the application is a legacy Windows native executable that performs image processing.

The image processing application must run every hour. During times that the image processing application is not running, it should not be consuming any Azure compute resources.

You need to ensure that the image processing application runs correctly every hour.

Solution: Create an Azure WebJob that runs the image processing application every hour.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead use an Azure Logic Apps, which helps you automate workflows that run on a schedule.

References: <https://docs.microsoft.com/en-us/azure/logic-apps/tutorial-build-schedule-recurring-logic-app-workflow>

### QUESTION 7

**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 are migrating an on-premises application to Azure. One component of the application is a legacy Windows native executable that performs image processing.

The image processing application must run every hour. During times that the image processing application is not running, it should not be consuming any Azure compute resources.

You need to ensure that the image processing application runs correctly every hour.

Solution: Create an Azure Function to run the image processing application every hour.



<https://vceplus.com/> Does the solution meet the goal?

- A. Yes
- B. No

<https://vceplus.com/>

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Instead use an Azure Logic Apps, which helps you automate workflows that run on a schedule.

References: <https://docs.microsoft.com/en-us/azure/logic-apps/tutorial-build-schedule-recurring-logic-app-workflow>

### QUESTION 8

**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 are migrating an on-premises application to Azure. One component of the application is a legacy Windows native executable that performs image processing.

The image processing application must run every hour. During times that the image processing application is not running, it should not be consuming any Azure compute resources.

You need to ensure that the image processing application runs correctly every hour.

Solution: Create a Logic App to run the image processing application every hour.

Does the solution meet the goal?

A. Yes

B. No

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Azure Logic Apps helps you automate workflows that run on a schedule.

References: <https://docs.microsoft.com/en-us/azure/logic-apps/tutorial-build-schedule-recurring-logic-app-workflow>

### QUESTION 9

**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 are designing an Azure solution for a company that wants to move a .NET Core web application from an on-premises data center to Azure. The web application relies on a Microsoft SQL Server 2016 database on Windows Server 2016. The database server will not move to Azure.

A separate networking team is responsible for configuring network permissions.

The company uses Azure ExpressRoute and has an ExpressRoute gateway connected to an Azure virtual network named VNET1.

You need to recommend a solution for deploying the web application.

Solution: Deploy the web application by using an Azure Kubernetes Service (AKS) container on VNET1.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead, use VNet Integration.

Note: VNet Integration gives your web app access to resources in your virtual network. VNet Integration is often used to enable access from apps to a databases and web services running in your VNet.

References: <https://docs.microsoft.com/en-us/azure/app-service/web-sites-integrate-with-vnet>

### QUESTION 10

**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 are designing an Azure solution for a company that wants to move a .NET Core web application from an on-premises data center to Azure. The web application relies on a Microsoft SQL Server 2016 database on Windows Server 2016. The database server will not move to Azure.

A separate networking team is responsible for configuring network permissions.

The company uses Azure ExpressRoute and has an ExpressRoute gateway connected to an Azure virtual network named VNET1.

You need to recommend a solution for deploying the web application.

Solution: Deploy the web application to a web app hosted in an isolated App Service plan on VNET1.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead, use VNet Integration.

Note: VNet Integration gives your web app access to resources in your virtual network. VNet Integration is often used to enable access from apps to a databases and web services running in your VNet.

References: <https://docs.microsoft.com/en-us/azure/app-service/web-sites-integrate-with-vnet>

#### QUESTION 11

**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 need to deploy resources to host a stateless web app in an Azure subscription. The solution must meet the following requirements:

- Provide access to the full .NET framework.
- Provide redundancy if an Azure region fails.
- Grant administrators access to the operating system to install custom application dependencies.

Solution: You deploy a virtual machine scale set that uses autoscaling.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead, you should deploy an Azure virtual machine to two Azure regions, and you create a Traffic Manager profile.

#### **QUESTION 12**

**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 need to deploy resources to host a stateless web app in an Azure subscription. The solution must meet the following requirements:

- Provide access to the full .NET framework.
- Provide redundancy if an Azure region fails.
- Grant administrators access to the operating system to install custom application dependencies.

Solution: You deploy an Azure virtual machine to two Azure regions, and you create a Traffic Manager profile.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer:** A  
**Section:** [none]  
**Explanation**

**Explanation/Reference:**

### QUESTION 13

You plan to deploy an API by using Azure API Management.

You need to recommend a solution to protect the API from a distributed denial of service (DDoS) attack.

What should you recommend?

- A. Create network security groups (NSGs).
- B. Enable quotas.
- C. Enable rate limiting.
- D. Strip the Powered-By responsible header.

**Correct Answer:** C  
**Section:** [none]  
**Explanation**

**Explanation/Reference:**



### QUESTION 14

You manage on-premises networks and Azure virtual networks.

You need a secure private connection between the on-premises networks and the Azure virtual networks. The connection must offer a redundant pair of cross connections to provide high availability.

What should you recommend?

- A. ExpressRoute
- B. Azure Load Balancer
- C. virtual network peering
- D. VPN Gateway

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 15

You use a virtual network to extend an on-premises IT environment into the cloud. The virtual network has two virtual machines (VMs) that store sensitive data.

The data must only be available using internal communication channels. Internet access to those VMs is not permitted.

You need to ensure that the VMs cannot access the Internet.

Which two options should you recommend? Each correct answer presents a complete solution.

**NOTE:** Each correct selection is worth one point.

- A. network interface (NIC)
- B. Source Network Address Translation (SNAT)
- C. Azure ExpressRoute
- D. Network Security Groups (NSG)



**Correct Answer:** CD

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 16

Your company plans to migrate its on-premises data to Azure.

You need to recommend which Azure services can be used to store the data. The solution must meet the following requirements:

- Encrypt all data while at rest.
- Encrypt data only by using a key generated by the company.

Which two possible services can you recommend? Each correct answer presents a complete solution.

**NOTE:** Each correct selection is worth one point.

- A. Azure Table storage
- B. Azure Backup
- C. Azure Blob storage
- D. Azure Queue storage
- E. Azure Files

**Correct Answer:** CE

**Section:** [none]

**Explanation**

**Explanation/Reference:**

References: <https://docs.microsoft.com/en-us/azure/storage/common/storage-service-encryption-customer-managed-keys>

#### QUESTION 17

You architect a solution that calculates 3D geometry from height-map data.

You have the following requirements:

- Perform calculations in Azure.
  - Each node must communicate data to every other node.
  - Maximize the number of nodes to calculate multiple scenes as fast as possible. ▪
- Require the least amount of effort to implement.

You need to recommend a solution.

Which two actions should you recommend? Each correct answer presents part of the solution.

**NOTE:** Each correct selection is worth one point.

- A. Create a render farm that uses Azure Batch.
- B. Enable parallel file systems on Azure.
- C. Enable parallel task execution on compute nodes.
- D. Create a render farm that uses virtual machine (VM) scale sets.
- E. Create a render farm that uses virtual machines (VMs).

**Correct Answer:** AC

**Section:** [none]

**Explanation**

**Explanation/Reference:**

### QUESTION 18

You are developing a web application that provides streaming video to users. You configure the application to use continuous integration and deployment.

The app must be highly available and provide a continuous streaming experience for users.

You need to recommend a solution that allows the application to store data in a geographical location that is closest to the user.

What should you recommend?

- A. Azure App Service Web Apps
- B. Azure App Service Isolated
- C. Azure Redis Cache
- D. Azure Content Delivery Network (CDN)



**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Azure Content Delivery Network (CDN) is a global CDN solution for delivering high-bandwidth content. It can be hosted in Azure or any other location. With Azure CDN, you can cache static objects loaded from Azure Blob storage, a web application, or any publicly accessible web server, by using the closest point of presence (POP) server. Azure CDN can also accelerate dynamic content, which cannot be cached, by leveraging various network and routing optimizations.

References: <https://docs.microsoft.com/en-in/azure/cdn/>

### QUESTION 19

HOTSPOT

Your company deploys an Azure App Service Web App.

During testing the application fails under load. The application cannot handle more than 100 concurrent user sessions. You enable the Always On feature. You also configure auto-scaling to increase counts from two to 10 based on HTTP queue length.

You need to improve the performance of the application.

Which solution should you use for each application scenario? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

### Answer Area

Scenario	Solution
Store content close to end users.	<div data-bbox="1144 751 1697 794">▼</div> <ul style="list-style-type: none"><li data-bbox="1144 799 1697 839">Azure Redis Cache</li><li data-bbox="1144 844 1697 884">Azure Traffic Manager</li><li data-bbox="1144 888 1697 928">Azure Content Delivery Network</li><li data-bbox="1144 933 1697 967">Azure Application Gateway</li></ul>
Store content close to the application.	<div data-bbox="1144 995 1697 1038">▼</div> <ul style="list-style-type: none"><li data-bbox="1144 1043 1697 1083">Azure Redis Cache</li><li data-bbox="1144 1088 1697 1128">Azure Traffic Manager</li><li data-bbox="1144 1133 1697 1173">Azure Content Delivery Network</li><li data-bbox="1144 1177 1697 1211">Azure Application Gateway</li></ul>

**Correct Answer:**

## Answer Area

Scenario	Solution
Store content close to end users.	<div style="border: 1px solid black; padding: 2px;"> <div style="background-color: #cccccc; padding: 2px; text-align: right;">▼</div> <div style="padding: 2px;"> <p>Azure Redis Cache</p> <p>Azure Traffic Manager</p> <p style="background-color: #d9ead3;">Azure Content Delivery Network</p> <p>Azure Application Gateway</p> </div> </div>
Store content close to the application.	<div style="border: 1px solid black; padding: 2px;"> <div style="background-color: #cccccc; padding: 2px; text-align: right;">▼</div> <div style="padding: 2px;"> <p style="background-color: #d9ead3;">Azure Redis Cache</p> <p>Azure Traffic Manager</p> <p>Azure Content Delivery Network</p> <p>Azure Application Gateway</p> </div> </div>

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: Content Delivery Network

A content delivery network (CDN) is a distributed network of servers that can efficiently deliver web content to users. CDNs store cached content on edge servers in point-of-presence (POP) locations that are close to end users, to minimize latency.

Azure Content Delivery Network (CDN) offers developers a global solution for rapidly delivering high-bandwidth content to users by caching their content at strategically placed physical nodes across the world. Azure CDN can also accelerate dynamic content, which cannot be cached, by leveraging various network optimizations using CDN POPs. For example, route optimization to bypass Border Gateway Protocol (BGP).

Box 2: Azure Redis Cache

<https://vceplus.com/>

Azure Cache for Redis is based on the popular software Redis. It is typically used as a cache to improve the performance and scalability of systems that rely heavily on backend data-stores. Performance is improved by temporarily copying frequently accessed data to fast storage located close to the application. With Azure Cache for Redis, this fast storage is located in-memory with Azure Cache for Redis instead of being loaded from disk by a database.

References: <https://docs.microsoft.com/en-us/azure/azure-cache-for-redis/cache-overview>

## QUESTION 20

**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 need to deploy resources to host a stateless web app in an Azure subscription. The solution must meet the following requirements:

- Provide access to the full .NET framework.
- Provide redundancy if an Azure region fails.
- Grant administrators access to the operating system to install custom application dependencies.

Solution: You deploy a web app in an Isolated App Service plan.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Instead, you should deploy an Azure virtual machine to two Azure regions, and you create a Traffic Manager profile.

## QUESTION 21

You are designing an Azure solution.

The network traffic for the solution must be securely distributed by providing the following features:

- HTTPS protocol
- Round robin routing
  
- SSL offloading

You need to recommend a load balancing option.

What should you recommend?

- A. Azure Load Balancer
- B. Azure Traffic Manager
- C. Azure Internal Load Balancer (ILB)
- D. Azure Application Gateway

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

If you are looking for Transport Layer Security (TLS) protocol termination ("SSL offload") or per-HTTP/HTTPS request, application-layer processing, review Application Gateway.

Application Gateway is a layer 7 load balancer, which means it works only with web traffic (HTTP, HTTPS, WebSocket, and HTTP/2). It supports capabilities such as SSL termination, cookie-based session affinity, and round robin for load-balancing traffic. Load Balancer load-balances traffic at layer 4 (TCP or UDP).

References: <https://docs.microsoft.com/en-us/azure/application-gateway/application-gateway-faq>

## QUESTION 22

You manage a solution in Azure.

You must collect usage data including MAC addresses from all devices on the network.

You need to recommend a monitoring solution.

What should you recommend?

- A. Activity Log Analytics
- B. Azure Network Security Group Analytics

- C. Network Performance Monitor
- D. Azure Application Gateway Analytics
- E. Azure Wire Data

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

A network security group (NSG) includes rules that allow or deny traffic to a virtual network subnet, network interface, or both. When you enable diagnostic logging for an NSG, you can log the following categories of information:

Event: Entries are logged for which NSG rules are applied to VMs, based on MAC address. The status for these rules is collected every 60 seconds.

Rule counter: Contains entries for how many times each NSG rule is applied to deny or allow traffic.

References: <https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-nsg-manage-log>

### QUESTION 23

A partner manages on-premises and Azure environments. The partner deploys an on-premises solution that needs to use Azure services. The partner deploys a virtual appliance.

All network traffic that is directed to a specific subnet must flow through the virtual appliance.

You need to recommend solutions to manage network traffic.

Which two options should you recommend? Each correct answer presents a complete solution.

**NOTE:** Each correct selection is worth one point.

- A. Configure Azure Traffic Manager
- B. Implement an Azure virtual network
- C. Configure a routing table with forced tunneling
- D. Implement Azure ExpressRoute

**Correct Answer:** CD

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

C: Forced tunneling lets you redirect or "force" all Internet-bound traffic back to your on-premises location via a Site-to-Site VPN tunnel for inspection and auditing. This is a critical security requirement for most enterprise IT policies. Without forced tunneling, Internet-bound traffic from your VMs in Azure always traverses from Azure network infrastructure directly out to the Internet, without the option to allow you to inspect or audit the traffic.

Forced tunneling in Azure is configured via virtual network user-defined routes.

D: ExpressRoute lets you extend your on-premises networks into the Microsoft cloud over a private connection facilitated by a connectivity provider. With ExpressRoute, you can establish connections to Microsoft cloud services, such as Microsoft Azure, Office 365, and Dynamics 365.

Connectivity can be from an any-to-any (IP VPN) network, a point-to-point Ethernet network, or a virtual cross-connection through a connectivity provider at a colocation facility. ExpressRoute connections do not go over the public Internet. This allows ExpressRoute connections to offer more reliability, faster speeds, lower latencies, and higher security than typical connections over the Internet.

References:

<https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-forced-tunneling-rm>

<https://docs.microsoft.com/en-us/azure/expressroute/expressroute-introduction>

**QUESTION 24**

**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 are migrating an on-premises application to Azure. One component of the application is a legacy Windows native executable that performs image processing.

The image processing application must run every hour. During times that the image processing application is not running, it should not be consuming any Azure compute resources.

You need to ensure that the image processing application runs correctly every hour.

Solution: Create an Azure Batch application that runs the image processing application every hour.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Instead use an Azure Logic Apps, which helps you automate workflows that run on a schedule.

References: <https://docs.microsoft.com/en-us/azure/logic-apps/tutorial-build-schedule-recurring-logic-app-workflow>

### QUESTION 25

**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 are designing a storage solution to support on-premises resources and Azure-hosted resources.

You need to provide on-premises storage that has built-in replication to Azure.

Solution: You include Azure Blob storage in the design.

Does the solution meet the goal?

A. Yes

B. No

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Azure StorSimple replicates to Azure Blob storage.

### QUESTION 26

**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 are designing a storage solution to support on-premises resources and Azure-hosted resources.

You need to provide on-premises storage that has built-in replication to Azure.

Solution: You include Azure Data Lake Storage in the design.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

#### QUESTION 27

**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 are designing a storage solution to support on-premises resources and Azure-hosted resources.

You need to provide on-premises storage that has built-in replication to Azure.

Solution: You include Azure Data Table Storage in the design.

Does the solution meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

**QUESTION 28**

You use Azure virtual machines to run a custom application that uses an Azure SQL Database instance on the back end.

The IT department at your company recently enabled forced tunneling.

Since the configuration change, developers have noticed degraded performance when they access the database.

You need to recommend a solution to minimize latency when accessing the database. The solution must minimize costs.

What should you include in the recommendation?

- A. Azure SQL Database Managed Instance
- B. virtual network service endpoints
- C. Always On availability groups
- D. Azure virtual machines that run Microsoft SQL Server servers

**Correct Answer:** B

**Section:** [none]

**Explanation**



**Explanation/Reference:**

**QUESTION 29**

You develop a new Azure Web App that uses multiple Azure blobs and static content. The Web App uses a large number of JavaScript files and cascading style sheets. Some of these files contain references to other files. Users are geographically dispersed.

You need to minimize the time to load individual pages.

What should you do?

- A. Migrate the Web App to Azure Service Fabric
- B. Use an Azure Content Delivery Network (CDN)
- C. Implement an Azure Redis Cache
- D. Create a services layer by using an Azure-hosted ASP.NET web API
- E. Enable the Always On feature of the Web App

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**QUESTION 30**

You have 100 Standard\_F2s\_v2 Azure virtual machines. Each virtual machine has two network adapters.

You need to increase the network performance of the workloads running on the virtual machines. The solution must meet the following requirements:

- The CPU-to-memory ratio must remain the same. ▪
- The solution must minimize costs.

What should you do?

- A. Configure NIC teaming
- B. Enable RDMA over InfiniBand
- C. Enable SR-IOV
- D. Install an additional network adapter

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**



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