# Designing Microsoft Azure Infrastructure Solutions

## Microsoft AZ-305

### Version Demo

**Total Demo Questions: 15**

**Total Premium Questions: 279**

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# Topic Break Down

| Topic | No. of Questions |
|---|---|
| Topic 2, New Update | 220 |
| Topic 3, Case Study 1 | 2 |
| Topic 4, Case Study 2 | 2 |
| Topic 5, Case Study 3 | 3 |
| Topic 6, Mixed Questions | 52 |
| Total | 279 |

## QUESTION NO: 1

You have to design a Data Engineering solution for your company. The company currently has an Azure subscription. They also have application data hosted in a database on a Microsoft SQL Server hosted in their on-premises data center server. They want to implement the following requirements Transfer transactional data from the on-premises SQL server onto a data warehouse in Azure. Data needs to be transferred every day in the night as a scheduled job

A managed Spark cluster needs to be in place for data engineers to perform analysis on the data stored in the SQL data warehouse. Here the data engineers should have the ability to develop notebooks in Scale, R and Python.

They also need to have a data lake store in place for the ingestion of data from multiple data sources Which of the following would the use for hosting the data warehouse in Azure?

**A.** Azure Data Factory

**B.** Azure Databricks

**C.** Azure Data Lake Gen2 Storage accounts

**D.** Azure Synapse Analytics

**ANSWER: D**

## QUESTION NO: 2

You have an on-premises application named App1 that uses an Oracle database.

You plan to use Azure Databricks to transform and load data from App1 to an Azure Synapse Analytics instance.

You need to ensure that the App1 data is available to Databricks.

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

NOTE: Each correct selection is worth one point.

**A.** Azure Data Box Edge

**B.** Azure Data Lake Storage

**C.** Azure Data Factory

**D.** Azure Data Box Gateway

**E.** Azure Import/Export service

**ANSWER: C E**

## QUESTION NO: 3 - (DRAG DROP)

Your company identifies the following business continuity and disaster recovery objectives for virtual machines that host sales, finance, and reporting application 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 in objective (RTO) is 10 minutes,

• The reporting application must be able to recover point in-time data al a daily granularity. The RTO is eight hours.

•The sales application must be able to fail over to second on-premises data center.

You need to recommend which Azure services meet the business community 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 application. Each service may be used owe. More than once not at an You may need to drag the spin bar between panes or scroll 10 view content.


**ANSWER:**


**Explanation:**

1) Sales: Azure Site Recovery only

2) Finance: Azure Site Recovery and Azure Backup

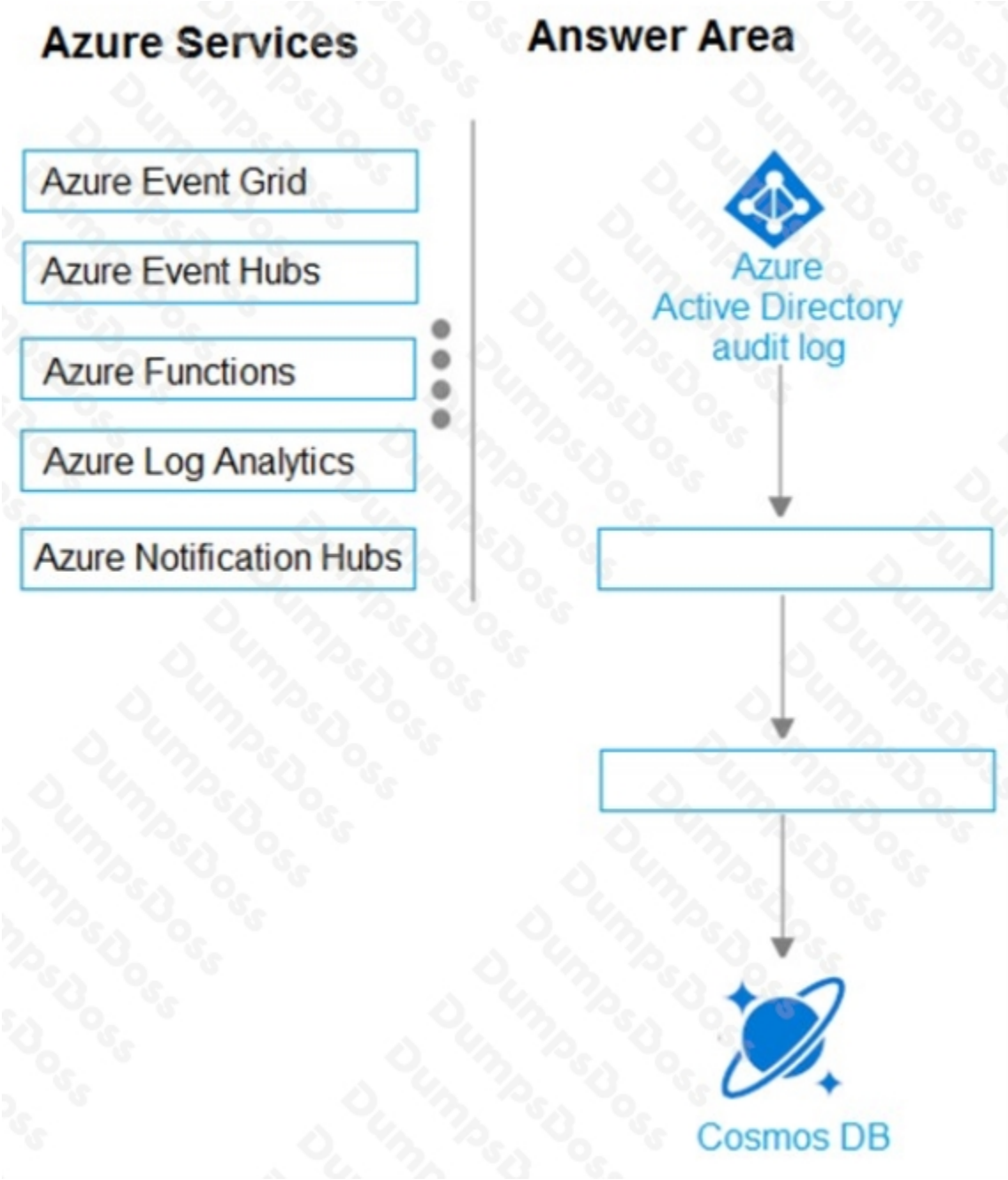
3) Reporting: Azure Backup only

## QUESTION NO: 4 - (DRAG DROP)

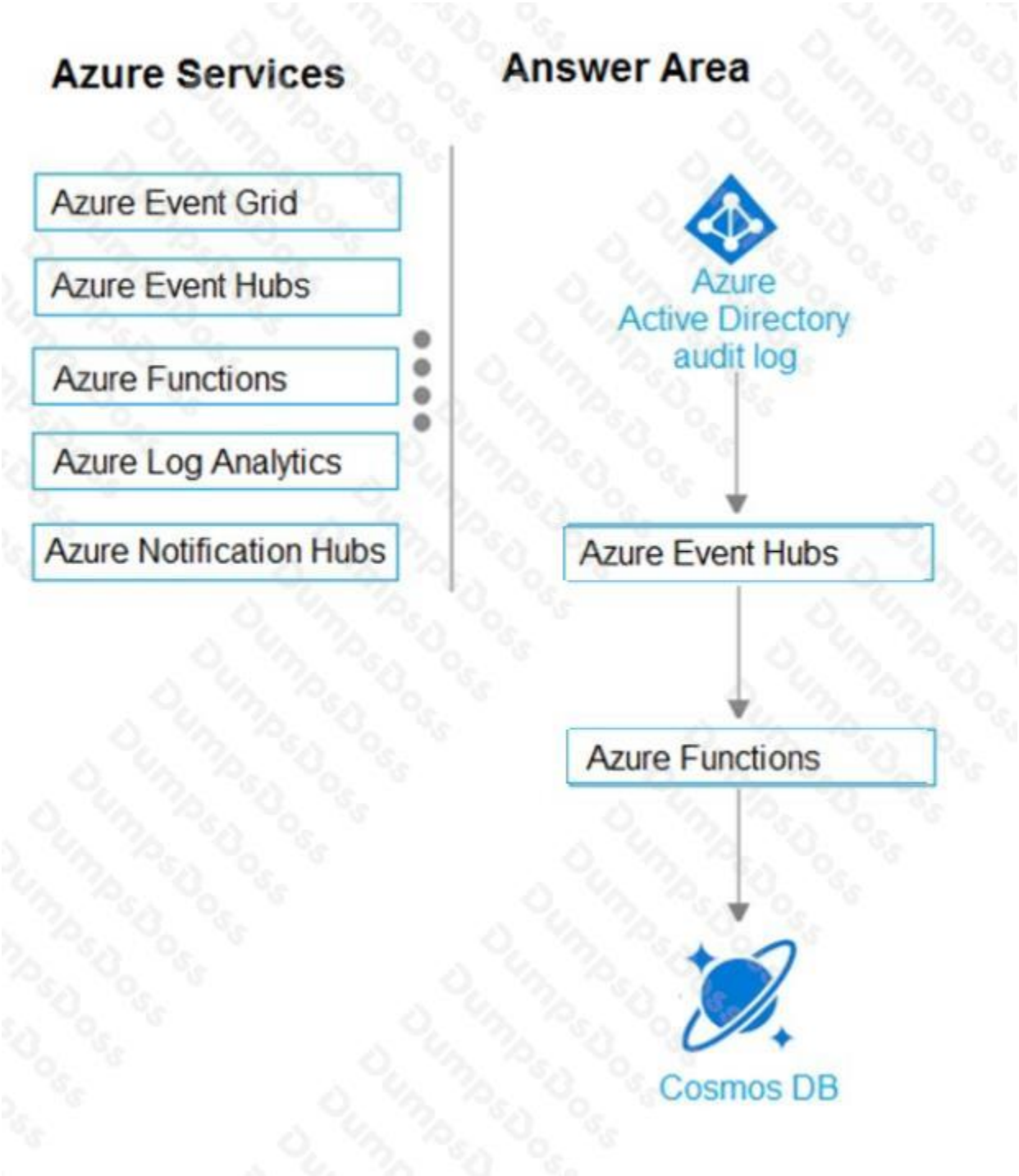
You need to design an architecture to capture the creation of users and the assignment of roles. The captured data must be stored in Azure Cosmos DB.

Which Azure services should you include in the design? To answer, drag the appropriate services to the correct targets. 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.

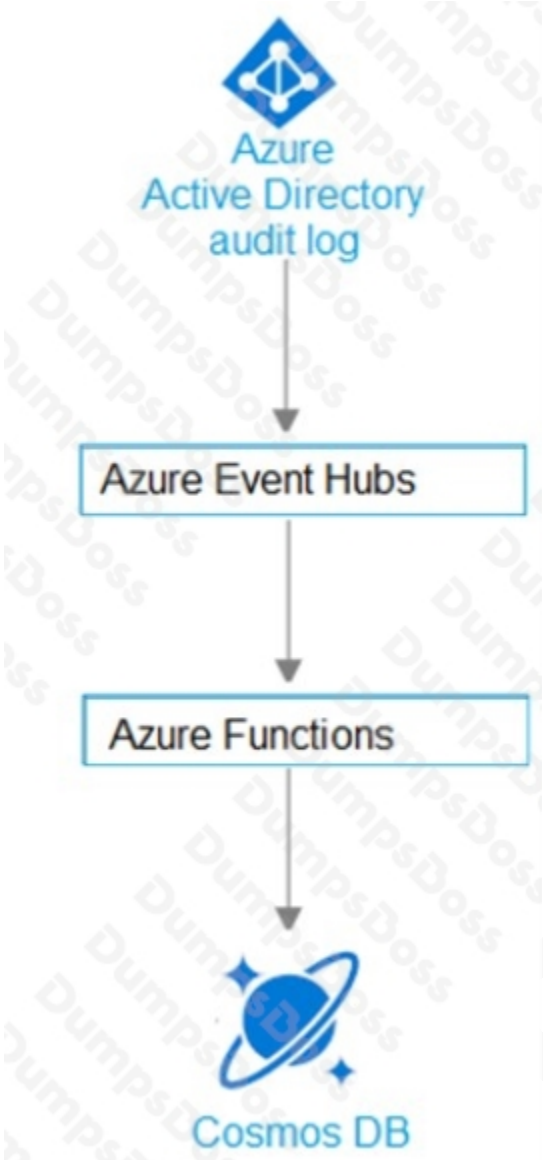
NOTE: Each correct selection is worth one point.



**ANSWER:**




**Explanation:**




1. AAD audit log -> Event Hub (other two choices, LAW, storage, but not available in this question)

https://docs.microsoft.com/en-us/azure/active-directory/reports-monitoring/tutorial-azure-monitor-stream-logs-to-event-hub

2. Azure function has the Event hub trigger and Cosmos output binding

a. Event Hub trigger for function

https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-event-hubs-trigger?tabs=csharp

## QUESTION NO: 5

You have an Azure Functions microservice app named Appl that is hosted in the Consumption plan. App1 uses an Azure Queue Storage trigger.

You plan to migrate App1 to an Azure Kubernetes Service (AKS) cluster.

You need to prepare the AKS cluster to support Appl. The solution must meet the following requirements:

• Use the same scaling mechanism as the current deployment.

• Support kubenet and Azure Container Netwoking Interface (CNI) networking.

Which two actions should you perform? Each correct answer presents part of the solution. NOTE: Each correct answer is worth one point.

**A.** Configure the horizontal pod autoscaler.

**B.** Install Virtual Kubelet.

**C.** Configure the AKS cluster autoscaler.

**D.** Configure the virtual node add-on.
Install Kubemetes-based Event Driven Autoscaling (KEDA).

**ANSWER: A C**

## QUESTION NO: 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

**ANSWER: A**

**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.

References:

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

## QUESTION NO: 7

You have an on-premises application named App1 that uses an Oracle database.

You plan to use Azure Databricks to transform and load data from App1 to an Azure Synapse Analytics instance.

You need to ensure that the App1 data is available to Databricks.

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

NOTE: Each correct selection is worth one point.

**A.** Azure Data Box Edge

**B.** Azure Data Lake Storage

**C.** Azure Data Factory

**D.** Azure Data Box Gateway

**E.** Azure Import/Export service

**ANSWER: C E**

## QUESTION NO: 8

You have an Azure subscription that contains an Azure SQL database.

You plan to use Azure reservations on the Azure SQL database.

To which resource type will the reservation discount be applied?

**A.** vCore compute

**B.** DTU compute

**C.** Storage

**D.** License

**ANSWER: A**

**Explanation:**

Quantity: The amount of compute resources being purchased within the capacity reservation. The quantity is a number of vCores in the selected Azure region and Performance tier that are being reserved and will get the billing discount. For example, if you run or plan to run multiple databases with the total compute capacity of Gen5 16 vCores in the East US region, then you would specify the quantity as 16 to maximize the benefit for all the databases.

Reference:

https://docs.microsoft.com/en-us/azure/azure-sql/database/reserved-capacity-overview

## QUESTION NO: 9 - (HOTSPOT)

HOTSPOT

You have an on-premises database that you plan to migrate to Azure.

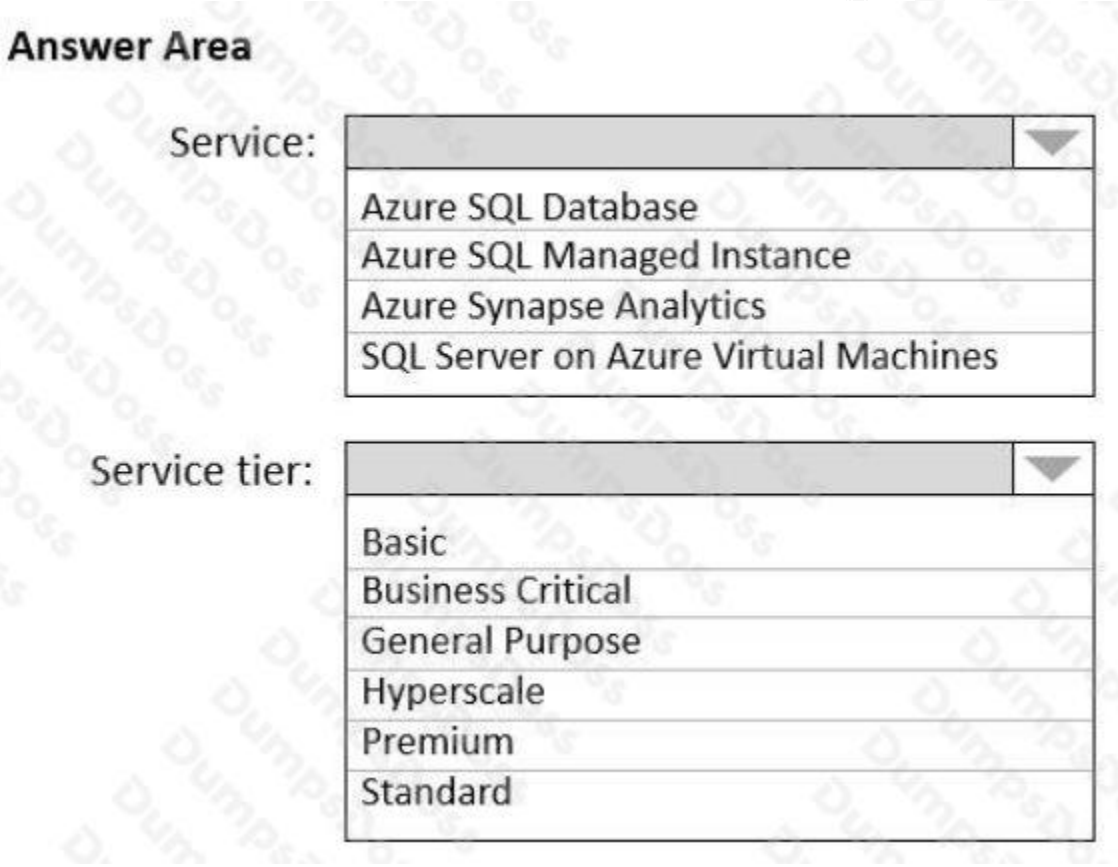
You need to design the database architecture to meet the following requirements:

- Support scaling up and down.
- Support geo-redundant backups.
- Support a database of up to 75 TB.
- Be optimized for online transaction processing (OLTP).

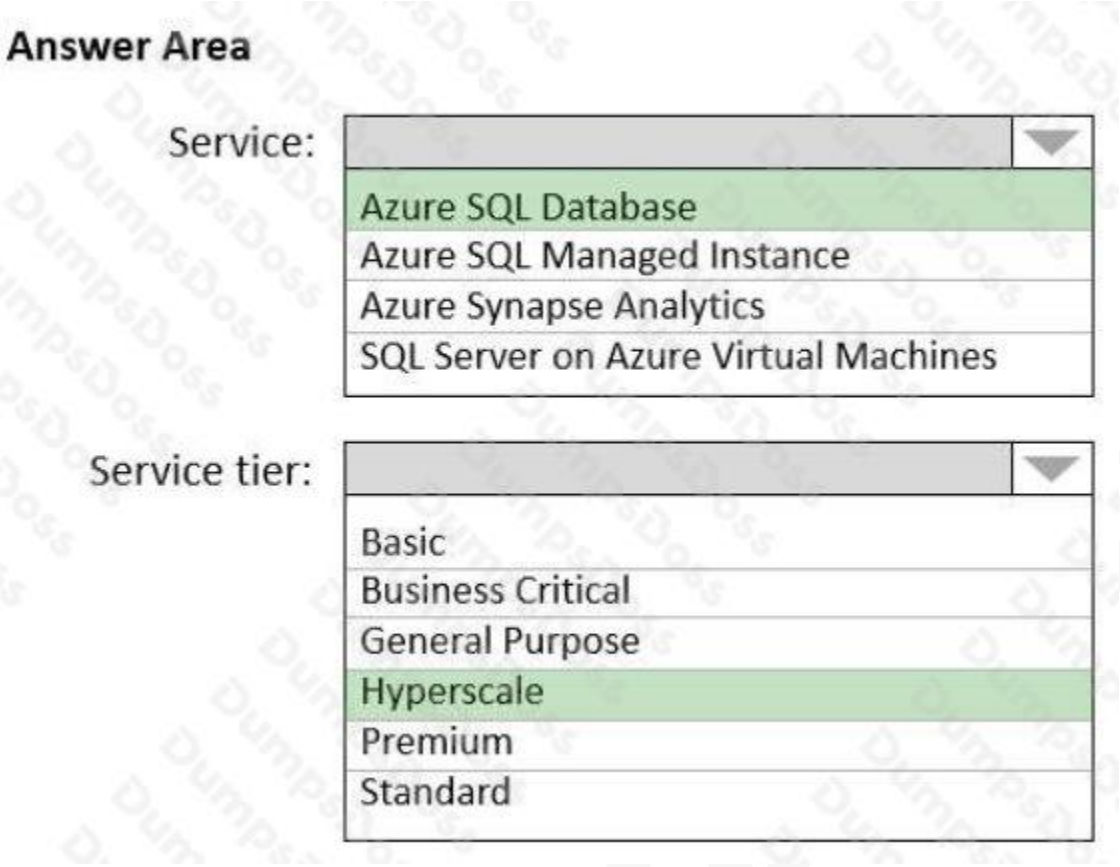
What should you include in the design? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

**Hot Area:**




**ANSWER:**




**Explanation:**

Box 1: Azure SQL Database Azure SQL Database:

Database size always depends on the underlying service tiers (e.g. Basic, Business Critical, Hyperscale). It supports databases of up to 100 TB with Hyperscale service tier model.

Active geo-replication is a feature that lets you to create a continuously synchronized readable secondary database for a primary database. The readable secondary database may be in the same Azure region as the primary, or, more commonly, in a different region. This kind of readable secondary databases are also known as geo-secondaries, or geo-replicas.

Azure SQL Database and SQL Managed Instance enable you to dynamically add more resources to your database with minimal downtime. Box 2: Hyperscale

Incorrect Answers:

- SQL Server on Azure VM: geo-replication not supported.
- Azure Synapse Analytics is not optimized for online transaction processing (OLTP).
- Azure SQL Managed Instance max database size is up to currently available instance size (depending on the number of vCores).

Max instance storage size (reserved) - 2 TB for 4 vCores

- 8 TB for 8 vCores - 16 TB for other sizes

Reference: https://docs.microsoft.com/en-us/azure/azure-sql/database/active-geo-replication-overview
https://medium.com/awesome-azure/azure-difference-between-azure-sql-database-and-sql-server-on-vm-comparison-azure-sql-vs-sql-server-vm-cf02578a1188

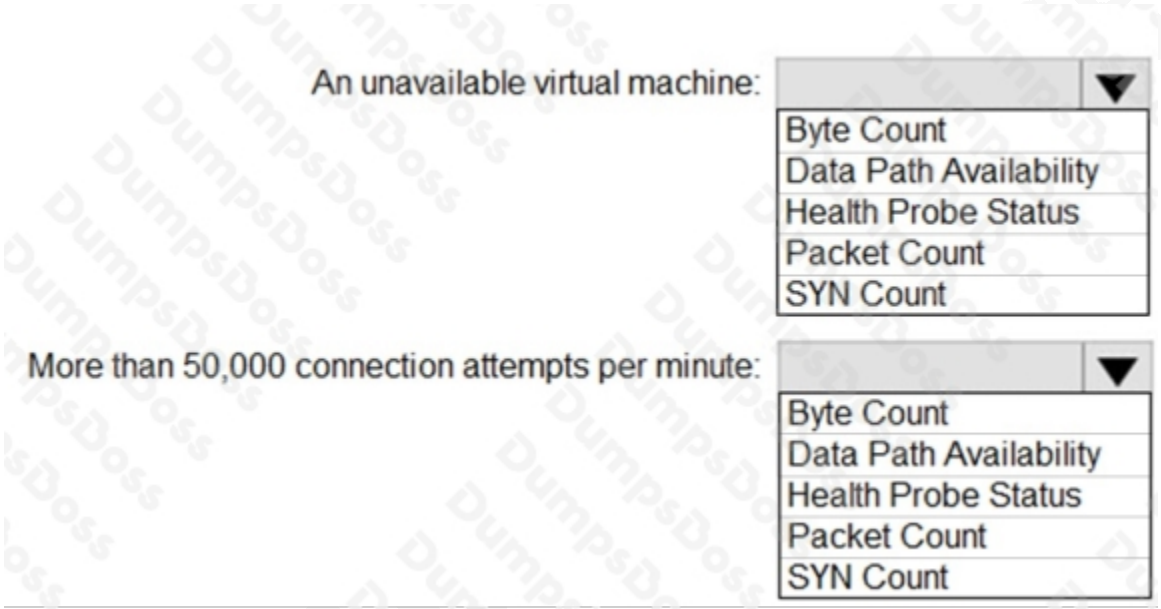
## QUESTION NO: 10 - (HOTSPOT)

You have an Azure Load Balancer named LB1 that balances requests to five Azure virtual machines.

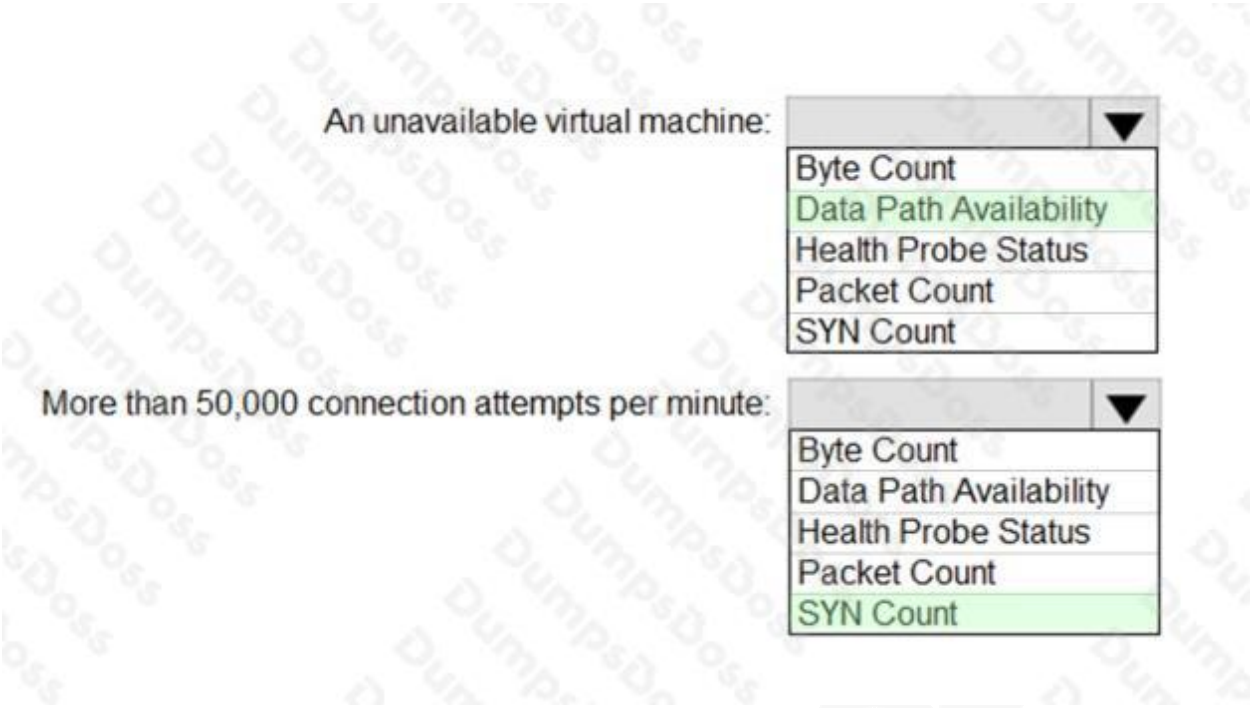
You need to develop a monitoring solution for LB1. The solution must generate an alert when any of the following conditions are met:

Which signal should you include in the solution for each condition? To answer, select the appropriate options in the answer area.

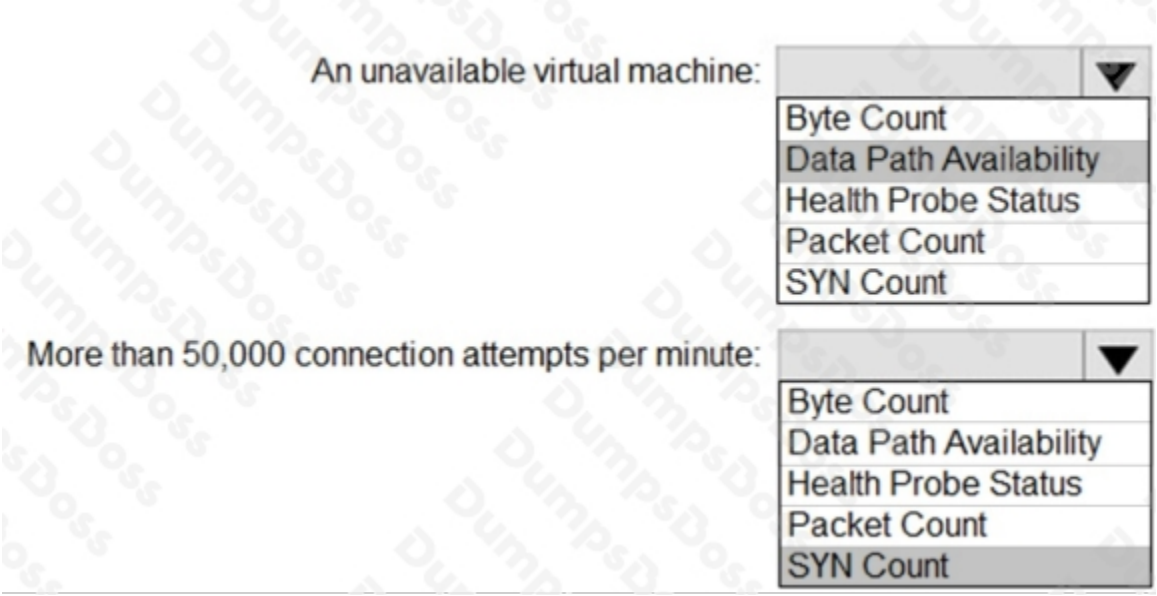
NOTE: Each correct selection is worth one point.




**ANSWER:**




**Explanation:**




Box 1: Data path availability

Standard Load Balancer continuously exercises the data path from within a region to the load balancer front end, all the way to the SDN stack that supports your VM. As long as healthy instances remain, the measurement follows the same path as your application's load-balanced traffic. The data path that your customers use is also validated. The measurement is invisible to your application and does not interfere with other operations.

Note: Load balancer distributes inbound flows that arrive at the load balancer's front end to backend pool instances. These flows are according to configured load-balancing rules and health probes. The backend pool instances can be Azure Virtual Machines or instances in a virtual machine scale set.

Box 2: SYN count

SYN (synchronize) count: Standard Load Balancer does not terminate Transmission Control Protocol (TCP) connections or interact with TCP or UDP packet flows. Flows and their handshakes are always between the source and the VM instance. To better troubleshoot your TCP protocol scenarios, you can make use of SYN packets counters to understand how many TCP connection attempts are made. The metric reports the number of TCP SYN packets that were received.

Reference:

https://docs.microsoft.com/en-us/azure/load-balancer/load-balancer-standard-diagnostics

## QUESTION NO: 11

You are designing a large Azure environment that will contain many subscriptions.

You plan to use Azure Policy as part of a governance solution.

To which three scopes can you assign Azure Policy definitions? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

**A.** Azure Active Directory (Azure AD) administrative units

**B.** Azure Active Directory (Azure AD) tenants

**C.** subscriptions

**D.** compute resources

**E.** resource groups

**F.** management groups

## ANSWER: A C F

**Explanation:**

Azure Policy evaluates resources in Azure by comparing the properties of those resources to business rules. Once your business rules have been formed, the policy definition or initiative is assigned to any scope of resources that Azure supports, such as management groups, subscriptions, resource groups, or individual resources.

Reference:

https://docs.microsoft.com/en-us/azure/governance/policy/overview

## QUESTION NO: 12

You have an Azure Active Directory (Azure AD) tenant that syncs with an on-premises Active Directory domain.

Your company has a line-of-business (LOB) application that was developed internally.

You need to implement. SAML single sign-on (SSO) and enforce multi-factor authentication (MFA) when users attempt to access the application from an unknown location.

Which two features should you include in the solution? Each correct answer presents part of the solution. NOTE: Each correct selection is worth one point.

**A.** Azure AD enterprise applications

**B.** Azure AD Identity Protection

**C.** Azure Application Gateway

**D.** Conditional Access policies

**E.** Azure AD Privileged Identity Management (PIM)

**ANSWER: A D**

## QUESTION NO: 13

You need to design a highly available Azure SQL database that meets the following requirements:

* Failover between replicas of the database must occur without any data loss.

* The database must remain available in the event of a zone outage.

* Costs must be minimized.

Which deployment option should you use?

**A.** Azure SQL Database Business Critical

**B.** Azure SQL Database Managed Instance Business Critical

**C.** Azure SQL Database Hyperscale

**D.** Azure SQL Database Standard

**ANSWER: A**

**Explanation:**

General Purpose / Standard prevents data loss through high available storage https://docs.microsoft.com/en-us/azure/azure-sql/database/service-tier-general-purpose?view=azuresql. This architectural model relies on high availability and reliability of Azure Blob storage that transparently replicates database files and guarantees no data loss if underlying infrastructure failure happens. General Purpose / Standard support Zone Redundancy For General Purpose tier the zone-redundant configuration is Generally Available in the following regions: https://docs.microsoft.com/en-us/azure/azure-sql/database/high-availability-sla?view=azuresql&tabs=azure-powershell Without any information regarding the usage pattern, serverless is possible. Other option is D https://docs.microsoft.com/en-us/azure/azure-sql/database/serverless-tier-overview?view=azuresql

## QUESTION NO: 14

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 Cost Management

**B.** Azure Pricing calculator

**C.** Azure Migrate

**D.** Azure Advisor

**ANSWER: C**

**Explanation:**

https://docs.microsoft.com/en-us/azure/migrate/migrate-appliance#collected-data---vmware

"Metadata discovered by the Azure Migrate appliance helps you to figure out whether servers are ready for migration to Azure, right-size servers, plans costs, and analyze application dependencies".

https://docs.microsoft.com/en-us/learn/modules/design-your-migration-to-azure/2-plan-your-azure-migration

## QUESTION NO: 15

The developers at your company are building a containerized Python Django app.

You need to recommend platform to host the app. The solution must meet the following requirements:

Which platform should you include in the recommendation?

**A.** Azure Container instances

**B.** an Azure App Service instance that uses containers

**C.** Azure Kubernetes Service (AKS)

**ANSWER: C**

**Explanation:**

To keep up with application demands in Azure Kubernetes Service (AKS), you may need to adjust the number of nodes that run your workloads. The cluster autoscaler component can watch for pods in your cluster that can't be scheduled because of resource constraints. When issues are detected, the number of nodes in a node pool is increased to meet the application demand.

Azure Container Registry is a private registry for hosting container images. It integrates well with orchestrators like Azure Container Service, including Docker Swarm, DC/OS, and the new Azure Kubernetes service.

Moreover, ACR provides capabilities such as Azure Active Directory-based authentication, webhook support, and delete operations.

Reference:

https://docs.microsoft.com/en-us/azure/aks/cluster-autoscaler

https://medium.com/velotio-perspectives/continuous-deployment-with-azure-kubernetes-service-azurecontainer-registry-jenkins-ca337940151b