

Subject: Azure Fundamentals

Unit 2 : Familiarity with the various Azure services

Computer Science & Engineering

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Outline

- **Familiarity with the various Azure services and their common use cases**
- **Azure Virtual Machines**
- **Azure App Services**
- **Azure Storage**
- **Azure Functions**
- **Azure SQL Database**



Familiarity with the various Azure services

Regions:

A region is a geographical area on the planet that contains one, or multiple datacenters that are nearby and connected with a low-latency network. When you deploy a resource in Azure, you'll need to choose the region where you want your resource deployed.

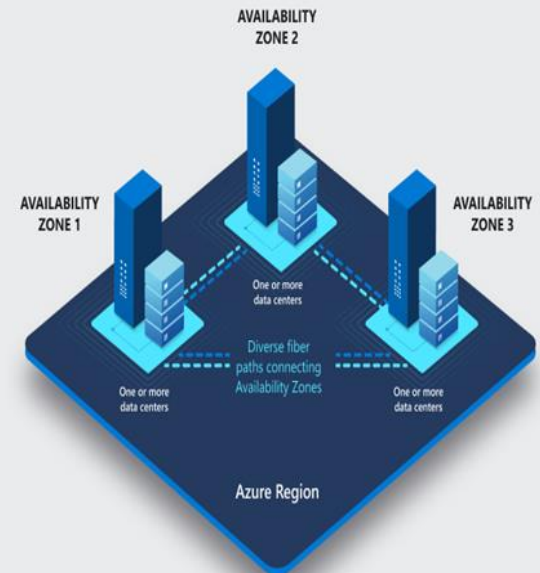
Familiarity with the various Azure services



Familiarity with the various Azure services

Availability Zones

- Availability zones are physically separate datacenters within an Azure region.
- Each availability zone is made up of one or more datacenters equipped with independent power, cooling, and networking.
- An availability zone is set up to be an isolation boundary. If one zone goes down, the other continues working.

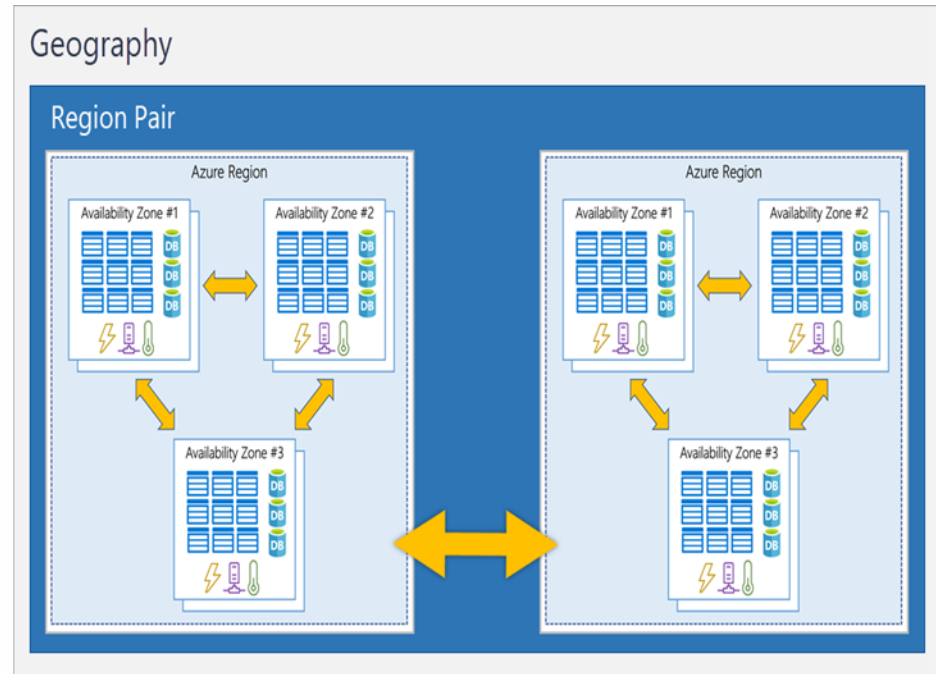




Familiarity with the various Azure services

Region Pairs

- Most Azure regions are paired with another region within the same geography (such as US, Europe, or Asia) at least 300 miles away
- This approach allows for the replication of resources across a geography that helps reduce the likelihood of interruptions because of events such as natural disasters, civil unrest, power outages, or physical network outages that affect an entire region
- For example, if a region in a pair was affected by a natural disaster, services would automatically fail over to the other region in its region pair.



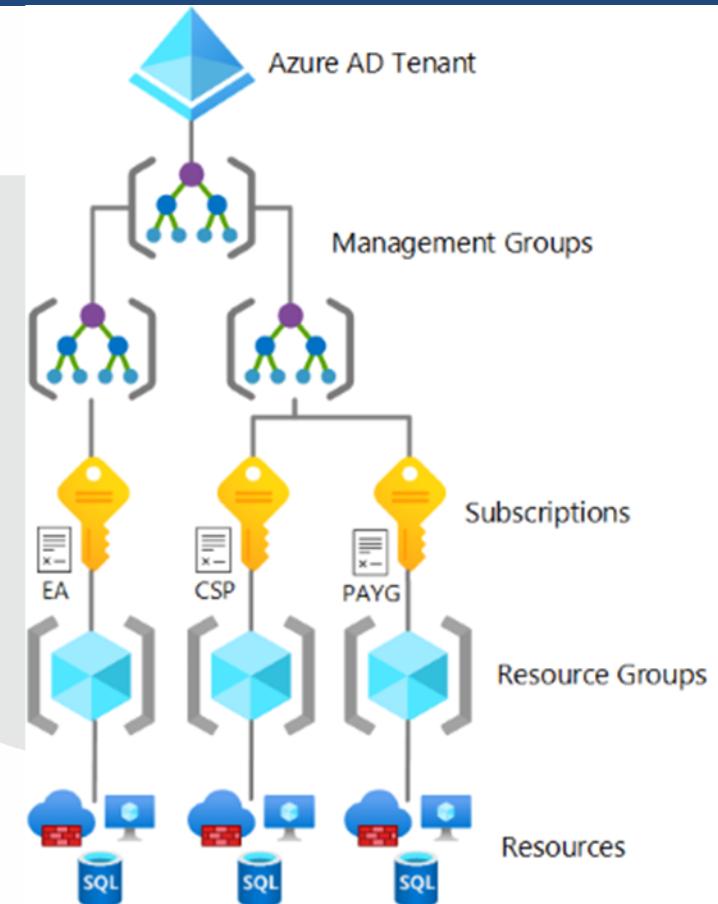
Familiarity with the various Azure services

Azure subscription

- In Azure, subscriptions are a unit of management, billing, and scale.
- Similar to how resource groups are a way to logically organize resources, subscriptions allow you to logically organize your resource groups and facilitate billing.
- Using Azure requires an Azure subscription
- An account can have multiple subscriptions

There are two types of subscription boundaries that you can use

- **Billing boundary:** This subscription type determines how an Azure account is billed for using Azure – E.g. Pay As You Go, CSP, Enterprise Agreement
- **Access control boundary:** Azure applies access-management policies at the subscription level



Familiarity with the various Azure services

- A resource is the basic building block of Azure. Anything you create, provision, deploy, etc. is a resource. Virtual Machines (VMs), virtual networks, databases, cognitive services, etc. are all considered resources within Azure.
- Resource groups are logical groupings of resources. When you create a resource, you're required to place it into a resource group.
- When you apply an action to a resource group, that action will apply to all the resources within the resource group. If you delete a resource group, all the resources will be deleted. If you grant or deny access to a resource group, you've granted or denied access to all the resources within the resource group.



Key Azure Services and Their Common Use Cases

a. Compute Services

1. Azure Virtual Machines (VMs)

Use Cases: Running Windows and Linux virtual machines in the cloud, hosting applications, disaster recovery, and running development and test environments.

2. Azure App Services

Use Cases: Hosting web apps, RESTful APIs, and mobile backends. It supports .NET, .NET Core, Java, Ruby, Node.js, PHP, or Python.

3. Azure Kubernetes Service (AKS)

Use Cases: Simplifying the deployment, management, and operations of Kubernetes. Running containerized applications.

Key Azure Services and Their Common Use Cases

Networking Services

1. Azure Virtual Network

Use Cases: Creating a logically isolated network in Azure. Connects Azure resources securely with each other, the internet, and on-premises networks.

2. Azure Load Balancer

Use Cases: Distributing incoming network traffic across multiple servers to ensure no single server becomes overwhelmed.

3. Azure Content Delivery Network (CDN)

Use Cases: Delivering high-bandwidth content by caching data at strategically placed physical nodes across the world.

Key Azure Services and Their Common Use Cases

Storage Services

1. Azure Blob Storage

Use Cases: Storing massive amounts of unstructured data, such as text or binary data. Serving images or documents directly to a browser.

2. Azure File Storage

Use Cases: Replacing or supplementing on-premises file servers. Lift-and-shift applications that use native file system APIs to share file data across applications.

3. Azure Disk Storage

Use Cases: Providing high-performance, durable block storage for Azure VMs.

Key Azure Services and Their Common Use Cases

Database Services

1. Azure SQL Database

Use Cases: Running relational databases in the cloud. Supporting existing SQL Server applications.

2. Azure Cosmos DB

Use Cases: Building highly responsive and highly available global applications. Storing and managing large amounts of data with elastic and rapid scalability.

3. Azure Database for PostgreSQL/MySQL

Use Cases: Hosting relational databases that support PostgreSQL/MySQL. Modernizing and deploying applications faster.

Key Azure Services and Their Common Use Cases

Analytics Services

1. Azure Synapse Analytics

Use Cases: Combining big data and data warehousing. Integrating with other Azure services for a full analytics solution.

2. Azure Data Lake Storage

Use Cases: Storing data of any size, shape, and speed for big data analytics. Integrating with Hadoop and other big data frameworks.

3. Azure Data Factory

Use Cases: Orchestrating and automating data movement and data transformation. Data integration and ETL.

Key Azure Services and Their Common Use Cases

AI and Machine Learning Services

1. Azure Machine Learning

Use Cases: Building, training, and deploying machine learning models.
Managing the entire machine learning lifecycle.

2. Azure Cognitive Services

Use Cases: Adding vision, speech, language, and decision-making capabilities to applications.

3. Azure Bot Service

Use Cases: Developing intelligent bots that can interact with users naturally.

Key Azure Services and Their Common Use Cases

Internet of Things (IoT) Services

1. Azure IoT Hub

Use Cases: Connecting, monitoring, and managing billions of IoT assets. Secure and reliable bi-directional communication between IoT applications and devices.

2. Azure IoT Central

Use Cases: Simplifying IoT solution development and management. Rapidly deploying IoT solutions without deep cloud solution development skills.

3. Azure Sphere

Use Cases: Providing secured, connected microcontroller unit (MCU) devices from the silicon to the cloud.

Key Azure Services and Their Common Use Cases

DevOps Services

1. Azure DevOps

Use Cases: Planning smarter, collaborating better, and delivering faster with a set of modern dev services.

2. Azure Pipelines

Use Cases: Automating builds and deployments, integrating CI/CD.

3. Azure Repos

Use Cases: Providing Git repositories or Team Foundation Version Control for source control.

Key Azure Services and Their Common Use Cases

Security Services

1. Azure Security Center

Use Cases: Providing unified security management and advanced threat protection across hybrid cloud workloads.

2. Azure Key Vault

Use Cases: Managing keys, secrets, and certificates. Enhancing data protection and compliance.

3. Azure Active Directory (AD)

Use Cases: Providing identity and access management for cloud applications. Enabling single sign-on and multi-factor authentication.

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Key Azure Services and Their Common Use Cases

Management Tools

1. Azure Monitor

Use Cases: Collecting, analyzing, and acting on telemetry data from Azure and on-premises environments. Monitoring applications, infrastructure, and network.

2. Azure Automation

Use Cases: Automating frequent, time-consuming, and error-prone IT management tasks.

3. Azure Advisor

Use Cases: Providing personalized best practices recommendations to optimize Azure deployments.

Cloud Concepts

Thank You!!!

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