**AZURE SERVICES**

1. **COMPUTE:**

Azure compute is an on-demand computing service for running cloud-based applications.

There are four common techniques for performing compute in Azure:

1. Virtual machines - software emulation of physical computers (IAAS)

2. Containers - virtualization environment for running applications (PAAS)

3. Azure App Service - Platform to host enterprise-grade web-oriented applications.(PAAS)

4. Serverless computing - cloud-hosted execution environment that runs your code but completely abstracts the underlying hosting environment.

* Virtual machines :

Scaling VMs in Azure -

1. Availability Sets :

An availability set is a logical grouping of two or more VMs that help keep your application available during planned or unplanned maintenance.

1. Scale sets :

Azure Virtual Machine Scale Sets let you create and manage a group of identical, load balanced VMs

3. Azure batch :

Azure Batch enables large-scale job scheduling and compute management with the ability to scale to tens, hundreds, or thousands of VMs.

* Containers :

If you wish to run multiple instances of an application on a single virtual machine, containers are an excellent choice. The task of automating and managing and interacting with a large number of containers is known as orchestration.

Azure supports Docker containers, and there are several ways to manage containers in Azure.

1. Azure Container Instances (ACI)

2. Azure Kubernetes Service (AKS)

* Azure App service

Azure App Service enables you to build and host web apps, background jobs, mobile backends, and RESTful APIs in the programming language of your choice without managing infrastructure. It offers auto-scaling and high availability, supports both Windows and Linux, and enables automated deployments from GitHub, Azure DevOps, or any Git repo to support a continuous deployment model.

ith Azure App Service, you can host most common web app styles including:

1. Web Apps
2. API Apps
3. Web Jobs
4. Mobile Apps

* Serverless Computing :

With serverless computing, Azure takes care of managing the server infrastructure and allocation/deallocation of resources based on demand.

The serverless app runs only when it's triggered by an event.

Azure has two implementations of serverless compute:

* Azure Functions which can execute code in almost any modern language.
* Azure Logic Apps which are designed in a web-based designer and can execute logic triggered by Azure services without writing any code.

1. **STORAGE :**

The Azure data storage options are cloud-based, secure, and scalable. Its features address the key challenges of cloud storage and provide you with a reliable and durable storage solution.

Benefits of using Azure storage -

* **Automated backup and recovery**
* **Replication across the globe**
* **Support for data analytics**
* **Encryption capabilities**
* **Multiple data types**
* **Data storage in virtual disks**
* **Storage tiers**

Business storage needs meetup :

1.Azure SQL database (structured data )

2.Azure cosmos Db (semi structured data)

3.Azure Blob storage(unstructured data)

4.Azure Datalake storage(structured and unstructured data)

5.Azure files

6.Azure Queue

7.Disk storage

8.storage tiers

**Encryption** :

Azure Storage Service Encryption

Client-side encryption

1. **NETWORKING :**

* **loosely coupled architectures** : An [N-tier architecture](https://docs.microsoft.com/azure/architecture/guide/architecture-styles/n-tier) divides an application into two or more logical tiers. Architecturally, a higher tier can access services from a lower tier, but a lower tier should never access a higher tier.

*Three-tier* refers to an n-tier application that has three tiers. Your e-commerce web application follows this three-tier architecture:

* The **web tier** provides the web interface to your users through a browser.
* The **application tier** runs business logic.
* The **data tier** includes databases and other storage that hold product information and customer orders.

**Azure region :** A region is one or more Azure data centers within a specific geographic location.

**virtual network :** A virtual network is a logically isolated network on Azure.

A virtual network is scoped to a single region; however, multiple virtual networks from different regions can be connected together using virtual network peering. Virtual networks can be segmented into one or more subnets.

**network security group:** A network security group, or NSG, allows or denies inbound network traffic to your Azure resources.

**Load Balancer**: A load balancer distributes traffic evenly among each system in a pool. A load balancer can help you achieve both high availability and resiliency.

Load Balancer supports inbound and outbound scenarios, provides low latency and high throughput, and scales up to millions of flows for all Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) applications.

**Application Gateway** : If all your traffic is HTTP, a potentially better option is to use Azure Application Gateway. Application Gateway is a load balancer designed for web applications. It uses Azure Load Balancer at the transport level (TCP) and applies sophisticated URL-based routing rules to support several advanced scenarios.

**Content Delivery Network**: A content delivery network (CDN) is a distributed network of servers that can efficiently deliver web content to users. It is a way to get content to users in their local region to minimize latency.

**Domain name system**: DNS, or Domain Name System, is a way to map user-friendly names to their IP addresses. You can think of DNS as the phonebook of the internet.

To avoid latency we can keep same services over all the data centres in globe.

**Traffic manager** :

Help to manage services by passing requests to closest endpoint centre.