Security In The Cloud

1-Different type of cloud storage

ANS :

Cloud storage can be categorized based on how data is stored and accessed:

1.1 Block Storage:

- Data is stored in fixed-size blocks.

- Each block has a unique address and can be managed by an operating system.

- Use Case: Databases, virtual machines.

- Example: Amazon EBS (Elastic Block Store).

1.2 File Storage:

- Data is stored as files in directories, like a traditional file system.

- Accessed over a network using standard protocols like NFS or SMB.

- Use Case: Shared documents, backups.

- Example: Amazon EFS (Elastic File System), NAS.

1.3 Object Storage:

- Data is stored as objects with metadata and a unique ID.

- Designed for massive scalability and unstructured data.

- Use Case: Media files, backups, logs.

- Example: Amazon S3, Google Cloud Storage.

2-What is role base access control and identity and access management and MFA

ANS :

2.1 Role-Based Access Control (RBAC):

- A method of restricting system access based on user roles.

- Each role has specific permissions; users are assigned roles according to their responsibilities.

- Example: In a company, an "Admin" can manage all resources, while a "User" can only view files.

2.2 Identity and Access Management (IAM):

- A framework to manage users, roles, and access permissions in a system or cloud environment.

- Ensures only authorized users can access specific resources.

- Example: AWS IAM allows defining users, groups, roles, and policies for cloud resources.

2.3 Multi-Factor Authentication (MFA):

- A security mechanism that requires two or more verification factors to access a system.

- Combines something you know (password), something you have (phone or token), or something you are (fingerprint).

- Example: Logging into Gmail using password + OTP sent to your phone.

3-What is physical and virtual host allocation?

ANS :

In cloud computing, host allocation refers to assigning computing resources (like CPU, memory, storage) to workloads or virtual machines (VMs).

3.1 Physical Host Allocation:

- Involves assigning workloads directly to physical servers in a data center.

- The server's CPU, memory, and storage are used without virtualization.

- Use Case: High-performance tasks requiring dedicated hardware.

- Advantage: Full use of hardware resources.

- Disadvantage: Less flexible and inefficient for resource sharing.

3.2 Virtual Host Allocation:

- Involves assigning workloads to virtual machines running on physical servers using a hypervisor.

- A single physical server can host multiple VMs, each acting as an independent virtual host.

- Use Case: Cloud environments with multiple users or services sharing the same hardware.

- Advantage: Efficient resource utilization, scalability, isolation.

- Disadvantage: Slight performance overhead due to virtualization.

4-How to access resource of cloud computing?

ANS :

Cloud computing resources (like storage, applications, and servers) can be accessed in several ways:

1. Web-Based Interface (Dashboard/Portal):
   - Most cloud providers offer a web console to manage resources.
   - Example: AWS Management Console, Azure Portal.

2. Command Line Interface (CLI):
   - Allows advanced users to manage cloud resources using commands.
   - Example: AWS CLI, Azure CLI, Google Cloud SDK.

3. APIs (Application Programming Interfaces):
   - Developers can programmatically access and manage resources via RESTful APIs or SDKs.

4. Remote Desktop / SSH Access:
   - Access virtual machines or servers directly for administration.
   - Example: SSH for Linux VM, RDP for Windows VM.

5. Mobile Apps:
   - Some cloud providers offer mobile apps to monitor and manage cloud resources on the go.

5-Type of backup in cloud?

ANS :

Cloud backups are used to protect data by storing copies on remote servers. The main types are:

1. Full Backup:
   - Copies all data every time the backup runs.
   - Advantage: Complete copy of data.
   - Disadvantage: Time-consuming and uses more storage.

2. Incremental Backup:

   o Backs up only the data that has changed since the last backup (full or incremental).

   o Advantage: Faster and uses less storage.

   o Disadvantage: Recovery can take longer because multiple backup sets may be needed.

3. Differential Backup:

   o Backs up all data changed since the last full backup.

   o Advantage: Faster than full backup, easier recovery than incremental.

   o Disadvantage: Takes more storage than incremental.

4. Snapshot Backup:

   o Captures the state of a system or VM at a specific point in time.

   o Advantage: Quick and allows easy rollback.

   o Disadvantage: Usually depends on existing storage system.

5. Continuous Data Protection (CDP):

   o Automatically backs up every change in real-time.

   o Advantage: Minimal data loss in case of failure.

   o Disadvantage: Can be resource-intensive.

6-What is disaster recovery?

ANS:

Disaster Recovery is a set of policies, tools, and procedures to recover and maintain IT systems and data after a disaster, such as hardware failure, cyberattack, or natural calamity.

- Goal: Minimize downtime and data loss, ensuring business continuity.
- Types of DR in Cloud:

  1. Backup and Restore: Data is restored from cloud backups after a disaster.

  2. Hot Site / Warm Site / Cold Site: Secondary sites prepared to take over operations (hot site is ready immediately, cold site needs setup).

3. Disaster Recovery as a Service (DRaaS): Cloud provider manages backup, failover, and recovery.