**Cloud storage**

**1. Different Types of Cloud Storage**

There are mainly three types of cloud storage:

* **Object Storage**:
  + Stores data as objects (e.g., Amazon S3, Google Cloud Storage).
  + Ideal for unstructured data like media files, backups, logs.
* **File Storage**:
  + Stores data in a hierarchical file/folder format.
  + Example: Amazon EFS, Azure Files.
  + Suitable for shared access and file-based applications.
* **Block Storage**:
  + Data is stored in fixed-size blocks, similar to a hard drive.
  + Example: Amazon EBS, Azure Managed Disks.
  + Best for databases, VMs, and applications requiring fast I/O.

**2. Role-Based Access Control (RBAC), Identity and Access Management (IAM), and Multi-Factor Authentication (MFA)**

* **RBAC (Role-Based Access Control)**:
  + Access is given based on the user's role (e.g., Admin, Developer, Viewer).
  + Ensures users only get permissions they need.
* **IAM (Identity and Access Management)**:
  + Manages users, roles, and permissions to resources.
  + Handles authentication (who you are) and authorization (what you can access).
  + Used in AWS, Azure, and Google Cloud to secure cloud services.
* **MFA (Multi-Factor Authentication)**:
  + Adds a second layer of security.
  + Combines something you know (password) with something you have (OTP on phone).
  + Helps prevent unauthorized access even if passwords are compromised.

**3. What is Physical and Virtual Host Allocation?**

* **Physical Host Allocation**:
  + Cloud provider assigns an entire physical server to a customer (bare metal).
  + Offers high performance and control.
* **Virtual Host Allocation**:
  + Physical resources are virtualized using a hypervisor (e.g., VMware, Hyper-V).
  + Multiple virtual machines (VMs) share the same physical server.
  + Offers flexibility, scalability, and cost efficiency.

**4. How to Access Resources in Cloud Computing?**

You can access cloud resources through:

* **Web-based Console (GUI)**: User-friendly dashboards provided by cloud providers.
* **Command Line Interface (CLI)**: For scripting and automation (e.g., AWS CLI, Azure CLI).
* **APIs and SDKs**: Programmatic access for developers.
* **Remote Desktop or SSH**: Direct access to VMs.

**5. Types of Backup in Cloud**

Common cloud backup types include:

* **Full Backup**: Entire data is backed up every time.
* **Incremental Backup**: Only changes since the last backup are saved.
* **Differential Backup**: Saves changes since the last full backup.
* **Snapshot Backup**: Captures the state of a system or disk at a point in time.
* **Continuous Backup**: Real-time data backup for critical systems.

**6. What is Disaster Recovery?**

* **Disaster Recovery (DR)**:
  + A strategy to restore operations and data after a disaster (e.g., hardware failure, cyberattack, natural disaster).
  + Involves:
    - **Data Backup**
    - **Redundant Systems**
    - **Failover Mechanisms**
  + Examples: Geo-replication, automated backups, standby servers in another region.