

## **1. Different Types of Cloud Storage**

Cloud storage is used to store data on remote servers. The main types are:

### **1. Object Storage**

- Stores data as objects (data + metadata + ID)
- Highly scalable
- Used for images, videos, backups

**Example:** Amazon S3, Azure Blob Storage

### **2. Block Storage**

- Data stored in blocks
- Used for databases and virtual machines
- High performance

**Example:** Amazon EBS

### **3. File Storage**

- Data stored in files and folders
- Shared access like a traditional file system

**Example:** Amazon EFS, Azure Files

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

### **Role-Based Access Control (RBAC)**

- Access permissions are assigned based on **roles**
- Users get access according to their job role
- Improves security and simplifies management

**Example:** Admin, Developer, Viewer

### **Identity and Access Management (IAM)**

- Controls **who can access** cloud resources
- Manages users, roles, and permissions
- Ensures secure authentication and authorization

### **Multi-Factor Authentication (MFA)**

- Adds an extra security layer
- Requires **more than one verification**
  - Password

- OTP (One-Time Password)
  - Biometric or mobile app
  - Protects against unauthorized access
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### 3. Physical and Virtual Host Allocation

#### Physical Host Allocation

- Resources allocated on **physical servers**
- Dedicated hardware for a single tenant
- More secure but expensive

#### Virtual Host Allocation

- Uses **virtual machines (VMs)**
  - Multiple VMs run on one physical server
  - Cost-effective and flexible
  - Widely used in cloud environments
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### 4. How to Access Cloud Computing Resources

Cloud resources can be accessed using:

1. **Web Console**
    - Browser-based access
    - Easy to use (GUI)
  2. **Command Line Interface (CLI)**
    - Used by developers and administrators
    - Faster and automated access
  3. **APIs**
    - Programmatic access
    - Used for automation and application integration
  4. **Remote Desktop / SSH**
    - Secure access to virtual machines
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### 5. Types of Backup in Cloud

## **1. Full Backup**

- Complete copy of all data
- Takes more storage and time

## **2. Incremental Backup**

- Backs up only changed data since last backup
- Faster and storage efficient

## **3. Differential Backup**

- Backs up changes since last full backup

## **4. Snapshot Backup**

- Point-in-time copy of data
  - Very fast recovery
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## **6. What is Disaster Recovery (DR)?**

Disaster Recovery is a strategy to **restore cloud services and data** after a failure or disaster.

### **Disasters include:**

- Hardware failure
- Cyberattacks
- Natural disasters
- Power outages

### **Key Goals of Disaster Recovery:**

- **Minimize downtime**
- **Prevent data loss**
- Ensure business continuity

### **Common DR Techniques:**

- Data replication
- Regular backups
- Failover systems
- Provide **real-world examples**