

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

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

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**