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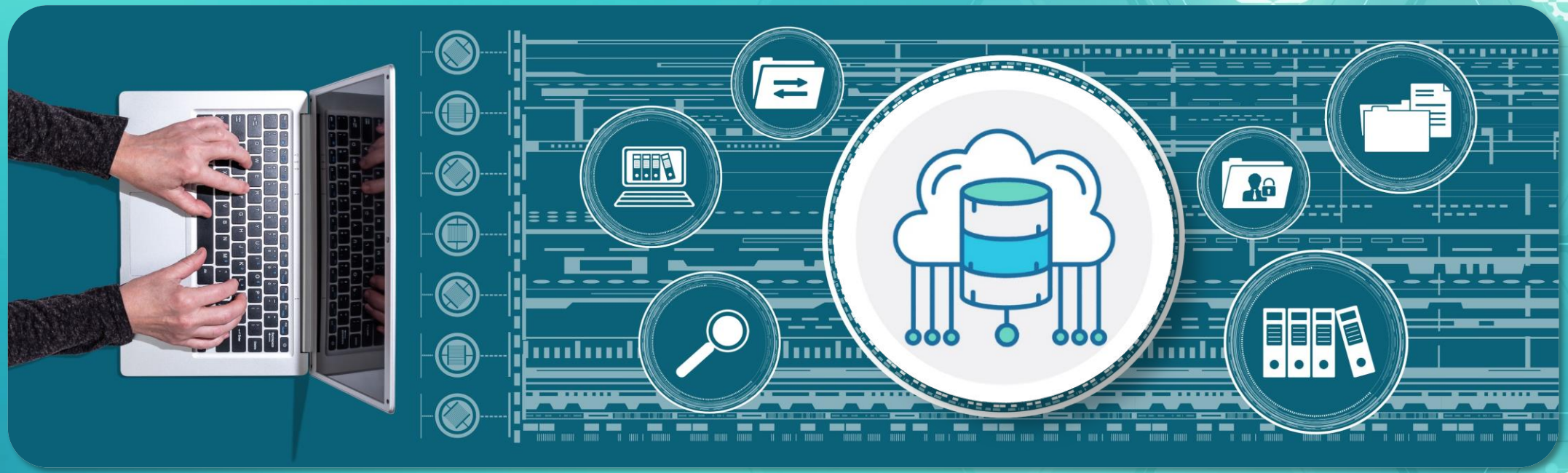
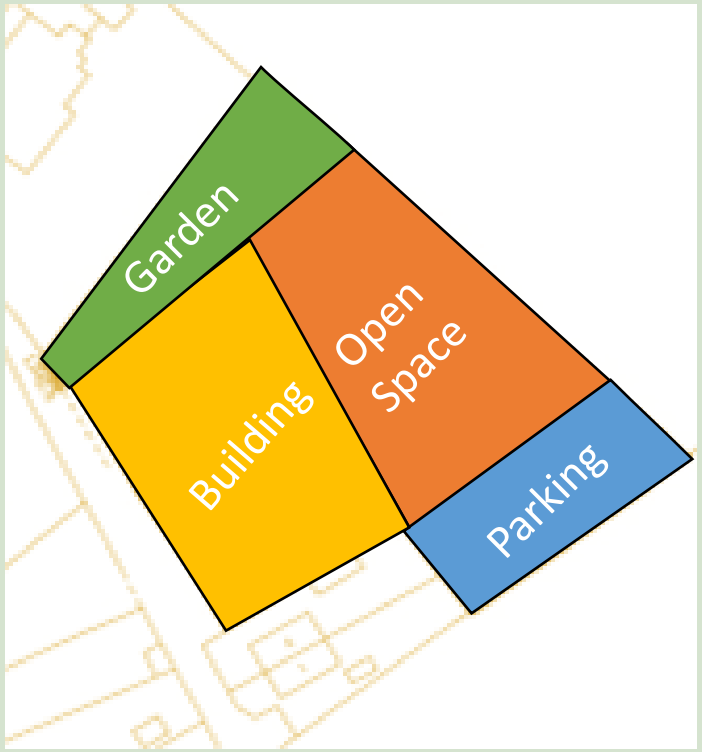
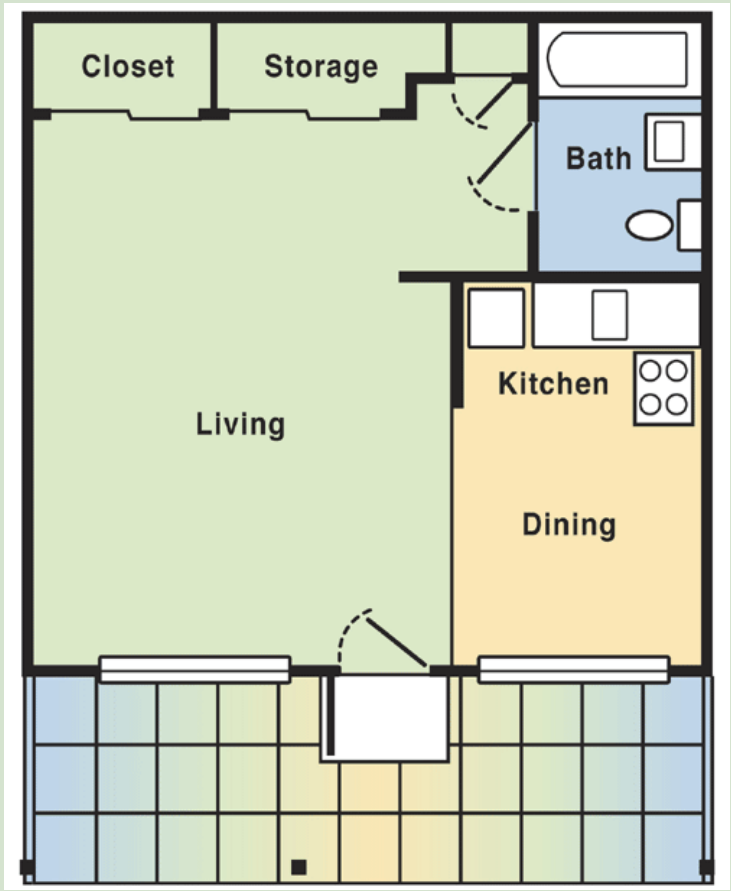
# Storage in AWS Cloud



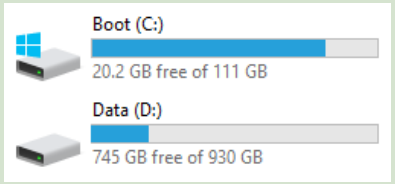
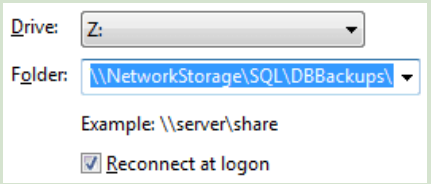
# Storage Types

| Block Storage | File Storage | Object Storage |
| --- | --- | --- |
| A Piece of Land | An Apartment | Storage Unit |



# Storage Types

| | Block Storage | File Storage | Object Storage |
|---|---|---|---|
| Unit of Transaction | Blocks | Files | Objects (files with metadata) |
| Example | Laptop Disk   | Windows Share   | OneDrive / Google Drive / Dropbox |
| How can you update? | You can directly update the file | You can directly update the file | You cannot update the object directly.<br>You create a new version of the object and replace the existing one or keep multiple versions of the same object. |
| Protocols | SCSI, Fiber Channel, SATA | SMB, CIFS, NFS | REST/SOAP over HTTP/HTTPs |
| Support for metadata | No metadata support it stores only file system attributes | No metadata support it stores only file system attributes | Supports custom metadata |
| AWS Services | Amazon EBS<br>Amazon Instance Store | Amazon EFS<br>Amazon FSX | Amazon S3<br>Amazon Glacier |

# Amazon Simple Storage Service (S3)

# Bucket and Objects

- S3 Name Space – Global
- Bucket – Regional
- Durability – 99.999999999 %
- Availability – 99.9x %
- Max object size 5 terabytes
- Can host a static website

Files (Objects)

Objects

Bucket

| S3 Pricing | |
|---|---|
| Compute | Number of requests |
| Storage | Capacity used |
| Network | Data transfer out |

# Free Training on Udemy

## Storage in Cloud - Amazon S3

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Created by Ashish Prajapati

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**Reference:**

FAQs

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Amazon Simple Storage Service (Amazon S3)

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## What?

- Amazon S3 is a simple key-based object storage built to store and retrieve any amount of data from anywhere.
- Data is stored as objects within resources called “buckets”, and a single object can be up to 5 terabytes in size.
- It is designed to provide 99.999999999% (11 9's) of data durability.

## Why?

- You can use a simple web service interface to store and retrieve virtually any amount of data in any format.
- Highly scalable, highly available, fast, inexpensive data storage infrastructure and you only pay for what you use.
- It offers a range of storage classes to choose from based on the data access, resiliency, and cost requirements of workloads.

## When?

- You want to store static content, storage backups, want to build data lakes.
- You require version controlled object storage, Multi-Factor Authentication (MFA) Delete capability and selectively grant permissions to users and groups of users.

## Where?

- Amazon S3 stores data as objects within buckets. A bucket is created in a Region and requires a globally unique name.
- S3 storage classes provide multi-Availability Zone (AZ) resiliency by redundantly storing data on multiple devices and physically separated AWS Availability Zones in an AWS Region (except S3 One Zone-IA storage class).

## Who?

- Upon creation, only you have access to Amazon S3 buckets that you create, and you have complete control over who has access to your data.
- You can use the Amazon S3 Management Console, the AWS SDKs, or the Amazon S3 APIs to interact with it.

## How?

- You can get started by creating a bucket in a specific Region and can defining access controls and management options.
- To store an object in Amazon S3, upload the file into a bucket. An object is composed of a file and any metadata that describes that file. When you store data, you assign a unique object key that can later be used to retrieve the data.

## How much?

- There are six Amazon S3 cost components to consider when storing and managing your data— storage pricing, request and data retrieval pricing, data transfer and transfer acceleration pricing, data management and analytics pricing, replication pricing, and the price to process your data with S3 Object Lambda.

**Reference:**

Overview

**Category:**

Storage

Amazon S3 Glacier

## What?

- Amazon S3 Glacier is a storage service optimized for infrequently used data, or "cold data“. The service provides durable and extremely low-cost storage with security features for data archiving and backup.
- S3 Glacier is one of the many different storage classes for Amazon S3.

## Why?

- Amazon S3 Glacier enables you to offload the administrative burdens of operating and scaling storage to AWS, so you don't have to worry about capacity planning, hardware provisioning, data replication, hardware failure detection and recovery, or time-consuming hardware migrations.

## When?

- You want to store your data cost effectively for months, years, or even decades.
- You need to use query-in-place functionality, allowing you to run powerful analytics directly on your archived data at rest.

## Where?

- Amazon S3 Glacier is a regional service.
- Your data such as a photo, video, or document (called Archive) is stored in a Vault in your selected region.
- Data is redundantly stored across multiple Availability Zones that are physically separated within an AWS Region.

## Who?

- You can choose from three storage classes optimized for different access patterns and storage duration - S3 Glacier Instant Retrieval (milliseconds retrieval), S3 Glacier Flexible Retrieval (retrieval in minutes or free bulk retrievals in 5-12 hours), S3 Glacier Deep Archive (retrieval within twelve hours).

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## How?

- S3 Glacier provides a management console. You can use the console to create and delete vaults. However, all other interactions with S3 Glacier require that you use the AWS CLI or write code.
- You can initiate a S3 Glacier job to perform a select query on an archive, retrieve an archive, or get an inventory of a vault.

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## How much?

- S3 Glacier charges are calculated based on monthly storage (GB-Month), number of requests (based on the request type), and data retrievals (per GB). Incoming transfers are free.
- Amazon S3 Glacier has minimum capacity charges for objects depending on the storage class you use.