



# **Introduction to Amazon Simple Storage Service (S3)**

# Learning Objectives

- Describe the Simple Storage Service (S3)
- Describe the Different classes in S3.



# Introduction to Simple Storage Service (S3)

- Object storage



- Block storage



- File storage



# Simple Storage Service (S3)

- S3 is type of Object Storage.
- S3 is a Global service.
- S3 maintains atleast 3 copies of data in min 3 seperate nodes may be in same or different regions.  
ensure 99.99% Availability and 11' 9s of durability.
- Objects can be size anywhere from 0 Bytes up to 5 Terabytes.
- Object accessible by globally unique key.
- Container in S3 called as Bucket.



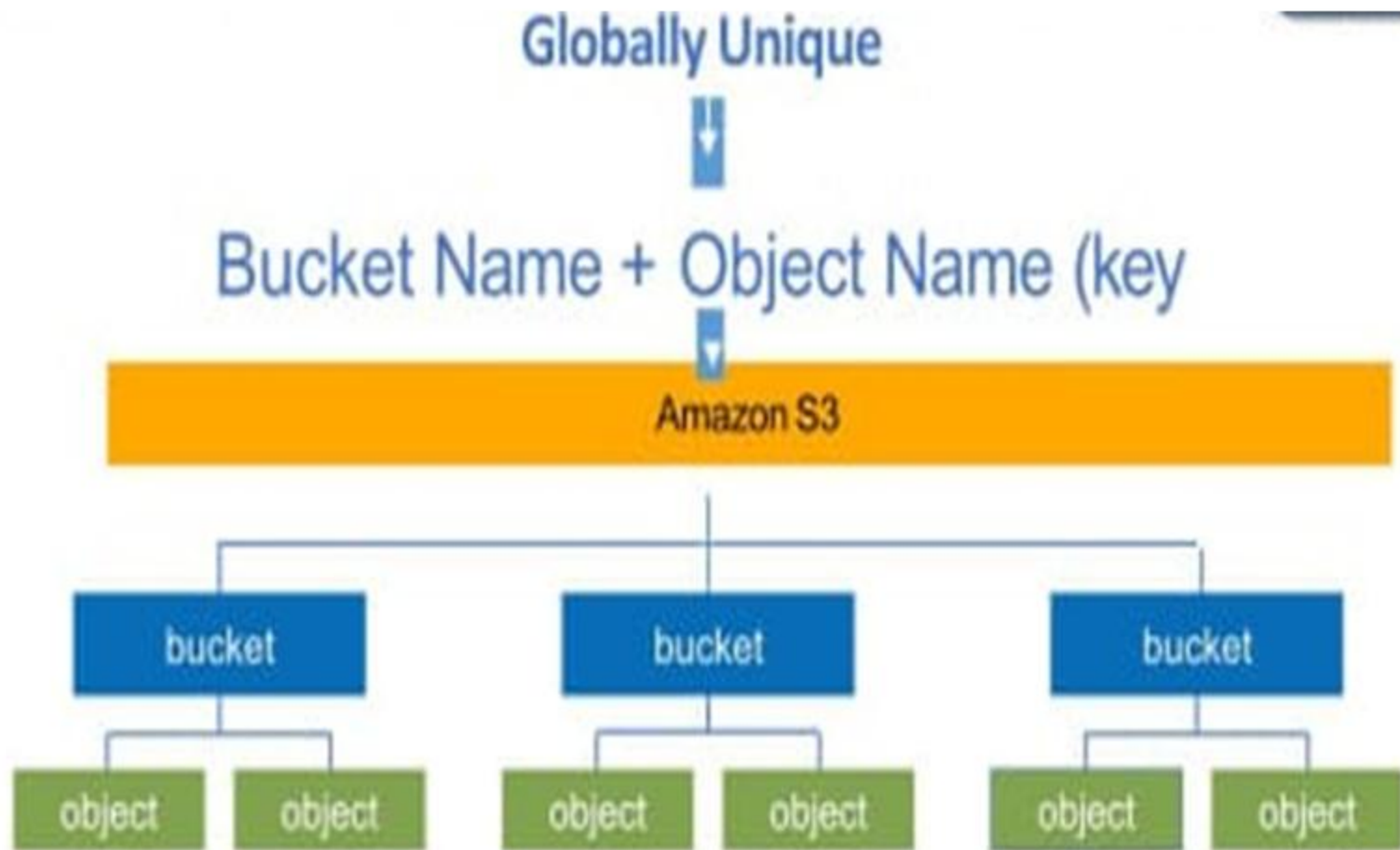
# Simple Storage Service Bucket

- A bucket logical unit of storage in Amazon Web Services (AWS) object storage service.
- Bucket names are unique across all AWS accounts. Like a domain name.
- Buckets are used to stored object, which contains data and metadata that describe the data.
- Under free tier by default 100 buckets can be created. Limit can increase with request.
- By default buckets are private. But according to requirement we can convert into public.



# Key Features

- Durable
- Scalable
- High Availability
- Cost Efficient
- Secure





# Create S3 Bucket on aws console.

## Buckets (7) [Info](#)



Copy ARN

Empty

Delete

Create bucket

Buckets are containers for data stored in S3. [Learn more](#)

Find buckets by name

< 1 >



Name ▲

AWS Region ▼

Access ▼

Creation date ▼



[generationindia2022](#)

Asia Pacific (Mumbai) ap-south-1

Bucket and objects not public

March 2, 2022, 18:24:05 (UTC+05:30)

- Lifecycle Management: Objects can be moved between storage classes or objects can be deleted automatically based on a schedule
- Versioning: Objects are given a Version ID. When new objects are uploaded the old objects are kept. You can access any object version. When you delete an object the previous object is restored. Once Versioning is turned on it cannot be turned off, only suspended.
- MFA (Multi factor Authentication) Delete : Enforce DELETE operations to require MFA token in order to delete an object. Must have versioning turned on to use. Root Account is only allowed to delete objects.
- Access logs: Logging can be turned on a bucket to log to track operations performed on objects.

# Features of S3

- Access Control List : Access control is configured using Bucket Policies and Access Control Lists (ACL).
  - Bucket Policies are JSON documents which let you write complex control access.
  - ACLs are the legacy method (not deprecated) where you grant access to objects and buckets with simple actions.
- Encryption: Security of objects in transit performed by Encryption. SSE-S3 and SSE-KMS these are two methods.
- Static website hosting with unique DNS name.

# AWS Hands-on Labs



# Labs on AWS Management Console

- How to create S3 bucket and upload object into bucket.
- How to enable versioning into bucket.
- How to convert bucket as public bucket by JSON policy.
- How to convert bucket as static website.
- How to manage Access control list and Access logs.
- How to delete bucket.

# S3 Storage Classes

- Standard
- Intelligent Tiering
- Standard-IA
- One Zone-IA
- Glacier Instant Retrieval
- Glacier Flexible Retrieval
- Glacier Deep Archive

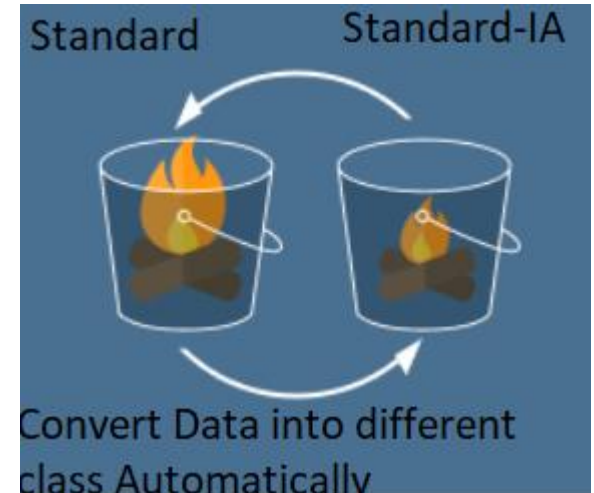
# S3 Standard Storage

- It is used for frequently accessed data.
- Data access immediately (millisecond access).
- High storage cost in comparison of other S3 classes.
- Use:
  - Frequently access information.
  - Static Website Hosting.
  - Mobile games and application.
  - Content Sharing.
  - Big Data.



# S3 Intelligent Tiering

- Depend on user access pattern it convert data into different class to save cost of storage.
- Scenario: If S3 intelligent tiering enable for S3 storage and data is not used from last 90days. So it automatically convert into Glacier storage which having less cost for storage.





# S3 Standard-IA

- It is used for infrequently access data.
- Lower cost compare to Standard
- 30days data deletion fees.
- Charges applied for retrival.
- Use:
  - Long storage data which rarely accessible.
  - Backup.
  - Disaster recovery data.



# S3 One Zone-IA

- It is used for non critical application as having less availability i.e. 99.5%.
- Lower storage cost.
- 30days data deletion fees.
- Higher restore cost.



# Glacier Instant Retrieval

- It is used for long lived archive data with instant retrieval in millisecond
- Lowest cost storage
- 90days data deletion fees.
- Use:
  - Health care data.
  - News Bulletin data.
  - Weather information data.
  - Bank statement data.



# Glacier Flexible Retrieval

- It is used for long lived archive data with flexible retrieval.
- Low cost as compare to Glacier instant retrieval.
- 90days data deletion fees.
- Types:
  - Expedited retrieval - 1-5 minutes.
  - Standard - 3-5 hours.
  - bulk - 5-12 hours.

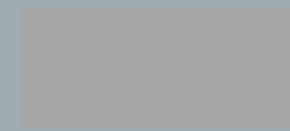


# Glacier Deep Archive

- It is used for long-term data archiving that is accessed once or twice in a year and can be restored within 12 hours.
- It having low cost among all S3 storage class.



# S3 Storage classes



	Storage class	Designed for	Availability Zones	Min storage duration	Min storage duration	Min billable object size	Monitoring and auto-tiering fees	Retrieval fees
<input checked="" type="radio"/>	Standard	Frequently accessed data (more than once a month) with milliseconds access	≥ 3	-	-	-	-	-
<input type="radio"/>	Intelligent-Tiering	Data with changing or unknown access patterns	≥ 3	-	-	-	Per-object fees apply for objects >= 128 KB	-
<input type="radio"/>	Standard-IA	Infrequently accessed data (once a month) with milliseconds access	≥ 3	30 days	30 days	128 KB	-	Per-GB fees apply
<input type="radio"/>	One Zone-IA	Recreatable, infrequently accessed data (once a month) stored in a single Availability Zone with milliseconds access	1	30 days	30 days	128 KB	-	Per-GB fees apply
<input type="radio"/>	Glacier Instant Retrieval	Long-lived archive data accessed once a quarter with instant retrieval in milliseconds	≥ 3	90 days	90 days	128 KB	-	Per-GB fees apply
<input type="radio"/>	Glacier Flexible Retrieval (formerly Glacier)	Long-lived archive data accessed once a year with retrieval of minutes to hours	≥ 3	90 days	90 days	-	-	Per-GB fees apply
<input type="radio"/>	Glacier Deep Archive	Long-lived archive data accessed less than once a year with retrieval of hours	≥ 3	180 days	180 days	-	-	Per-GB fees apply
<input type="radio"/>	Reduced redundancy	Noncritical, frequently accessed data with milliseconds access (not recommended as S3 Standard is more cost effective)	≥ 3	-	-	-	-	Per-GB fees

# S3 Storage classes

	<b>S3 Standard</b>	<b>S3 RRS</b>	<b>S3 Standard IA</b>	<b>S3 Z-IA</b>	<b>Glacier</b>	<b>Glacier Deep Archive</b>
<b>Redundancy</b>	99,999999999 %	99,99 %	99,999999999 %	99,999999999 %	99,999999999 %	99,999999999 %
<b>Availability</b>	99,99 %	99,99 %	99,9 %	99,5	N/A	N/A
<b>The minimum period of storage</b>	Unlimited	Unlimited	30 days	30 days	90 days	180 days
<b>The minimum size of the object</b>	Unlimited	>Unlimited	128KB (for less you are charged as for 128KB)	>128KB (for less you are charged as for 128KB)	Unlimited	Unlimited
<b>Access to the object</b>	Milliseconds	Milliseconds	Milliseconds	Milliseconds	1 minute - 12 hours, depending on the retrieval options	12 hours-48 hours, depending on the retrieval options
<b>Charge for data retrieval</b>	None	None	Per GB of the data retrieved	Per GB of the data retrieved	10 GB per month free, then per GB of the data retrieved	Per GB fees apply

# S3 Pricing for Oregon Region

Region: Asia Pacific (Mumbai) ▾

## Storage pricing

**S3 Standard** - General purpose storage for any type of data, typically used for frequently accessed data

First 50 TB / Month	\$0.025 per GB
Next 450 TB / Month	\$0.024 per GB
Over 500 TB / Month	\$0.023 per GB

**S3 Intelligent - Tiering\*** - Automatic cost savings for data with unknown or changing access patterns

Monitoring and Automation, All Storage / Month (Objects > 128 KB)	\$0.0025 per 1,000 objects
Frequent Access Tier, First 50 TB / Month	\$0.025 per GB
Frequent Access Tier, Next 450 TB / Month	\$0.024 per GB
Frequent Access Tier, Over 500 TB / Month	\$0.023 per GB
Infrequent Access Tier, All Storage / Month	\$0.0138 per GB
Archive Instant Access Tier, All Storage / Month	\$0.005 per GB



# S3 Pricing for Oregon Region

## **S3 Intelligent - Tiering\*** - Optional asynchronous Archive Access tiers

Archive Access Tier, All Storage / Month	\$0.0045 per GB
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Deep Archive Access Tier, All Storage / Month	\$0.002 per GB
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## **S3 Standard - Infrequent Access\*\*** - For long lived but infrequently accessed data that needs millisecond access

All Storage / Month	\$0.0138 per GB
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## **S3 One Zone - Infrequent Access\*\*** - For re-createable infrequently accessed data that needs millisecond access

All Storage / Month	\$0.011 per GB
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## **S3 Glacier Instant Retrieval\*\*\*** - For long-lived archive data accessed once a quarter with instant retrieval in milliseconds

All Storage / Month	\$0.005 per GB
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## **S3 Glacier Flexible Retrieval (Formerly S3 Glacier)\*\*\*** - For long-term backups and archives with retrieval option from 1 minute to 12 hours

All Storage / Month	\$0.0045 per GB
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## **S3 Glacier Deep Archive\*\*\*** - For long-term data archiving that is accessed once or twice in a year and can be restored within 12 hours

All Storage / Month	\$0.002 per GB
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# **Check for Understanding**

# Closing



What did we learn today?