



# AWS S3





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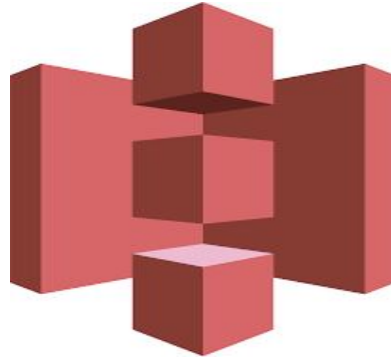
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# Introduction to S3



# Introduction to S3

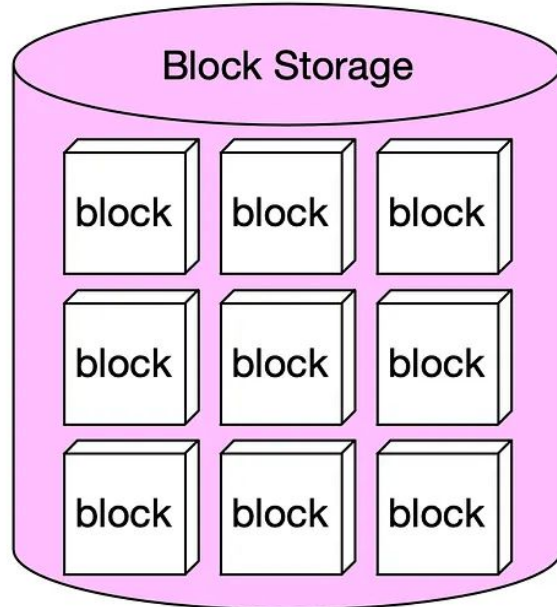
## What is S3?



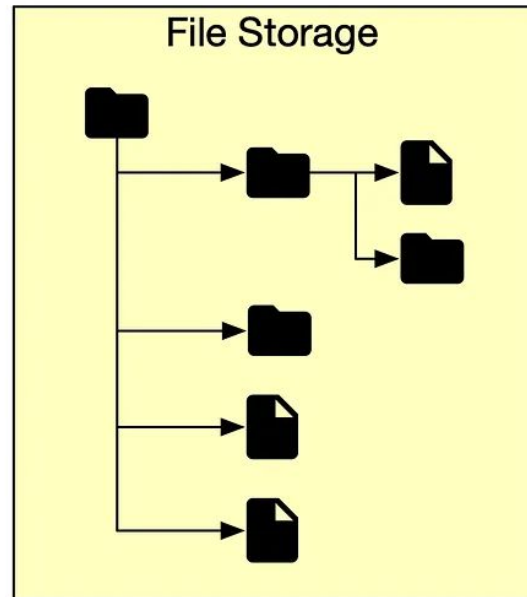
- S3 stands for **Simple Storage Service**.
- One of AWS's oldest services, Amazon S3 could be defined as AWS **object-based file storage** service.

# Introduction to S3

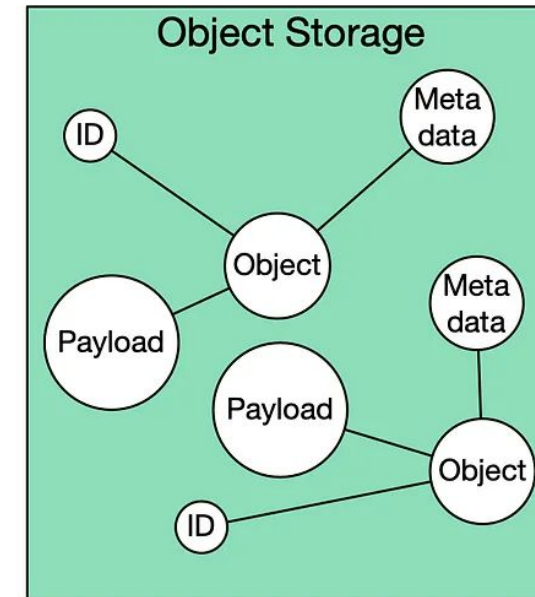
## Types of Storage Services



**Block storage** is technology that controls data storage and storage devices. It takes any data, like a file or database entry, and divides it into blocks of equal sizes. The block storage system then stores the data block on underlying physical storage in a manner that is optimized for fast access and retrieval.



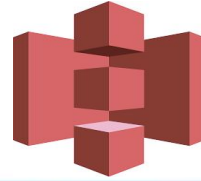
**File storage** (aka file-based storage or file-level storage) is the type of data storage where data is stored in a hierarchical file and folder structure.



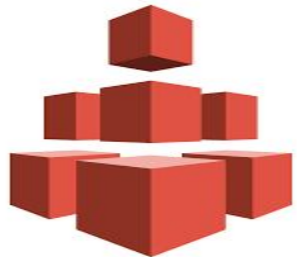
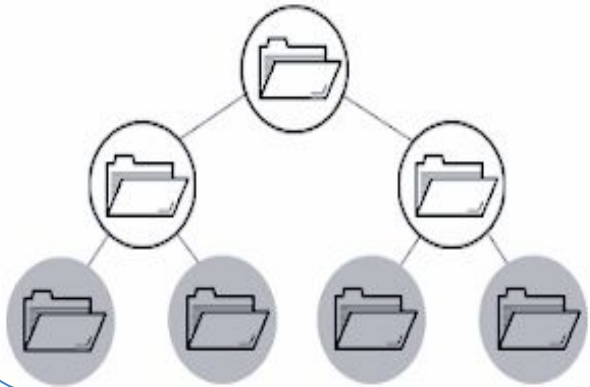
**Object storage** (aka object-based storage) is a type of data storage used to handle large volumes of unstructured data where data is bundled along with metadata tags and a unique identifier.

# Introduction to S3

## Storage Options



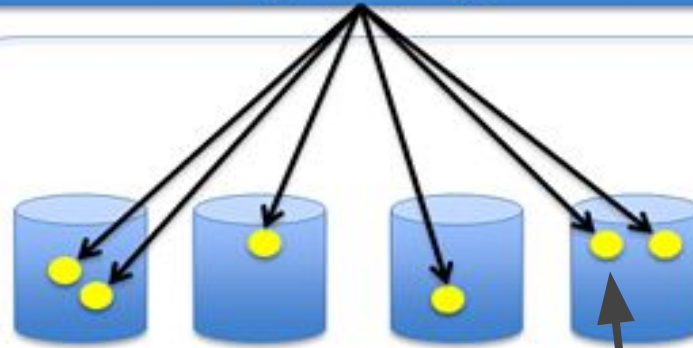
### File Storage



Amazon EFS

### HTTP(S) Interface

### Object Storage

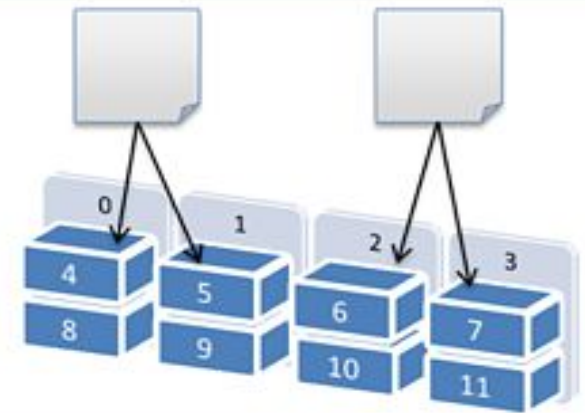


- Store virtually unlimited files.
- Maintain file revisions.
- HTTP(S) based interface.
- Files are distributed in different physical nodes.

**Object=**  
**File+**  
**Unique ID+**  
**Metadata+**



### Block Storage



- File is split and stored in fixed sized blocks.
- Capacity can be increased by adding more nodes.
- Suitable for applications which require high IOPS, database, transactional data.

# Introduction to S3

## What is S3 Bucket?

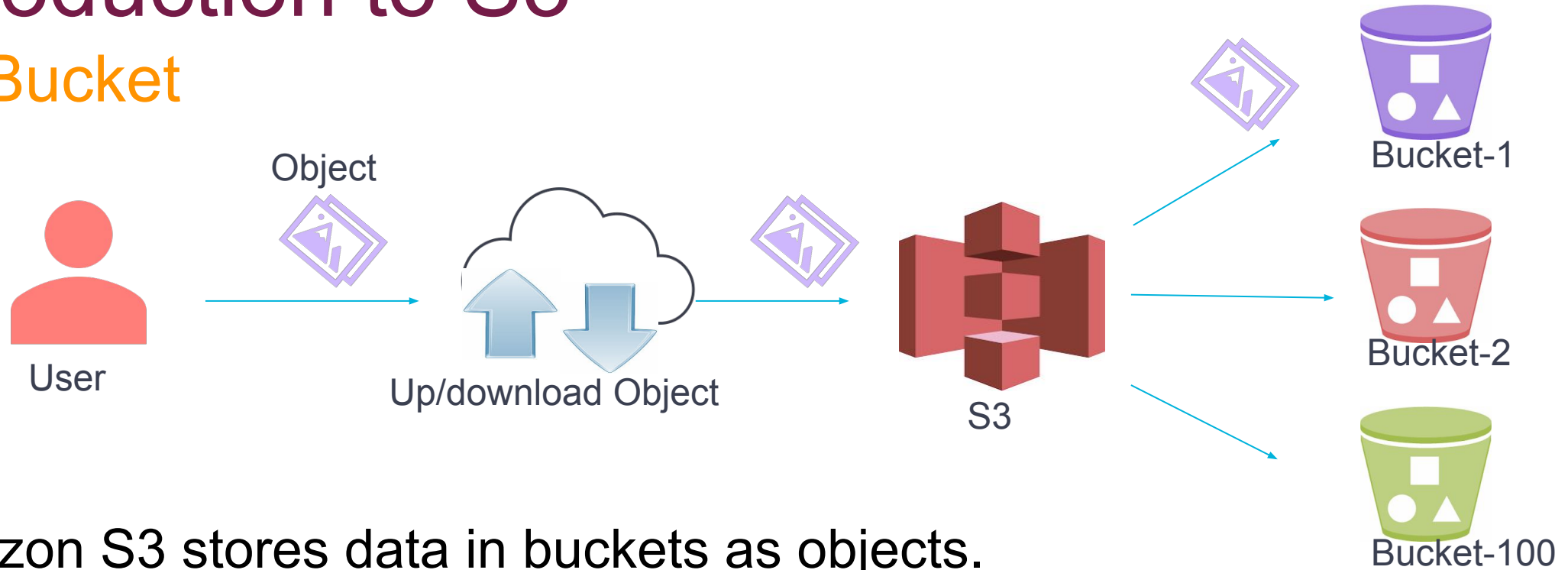


S3 Bucket

- A bucket is a logical storage unit used to store objects in AWS.
- A bucket can also be considered as a container.

# Introduction to S3

## S3 Bucket



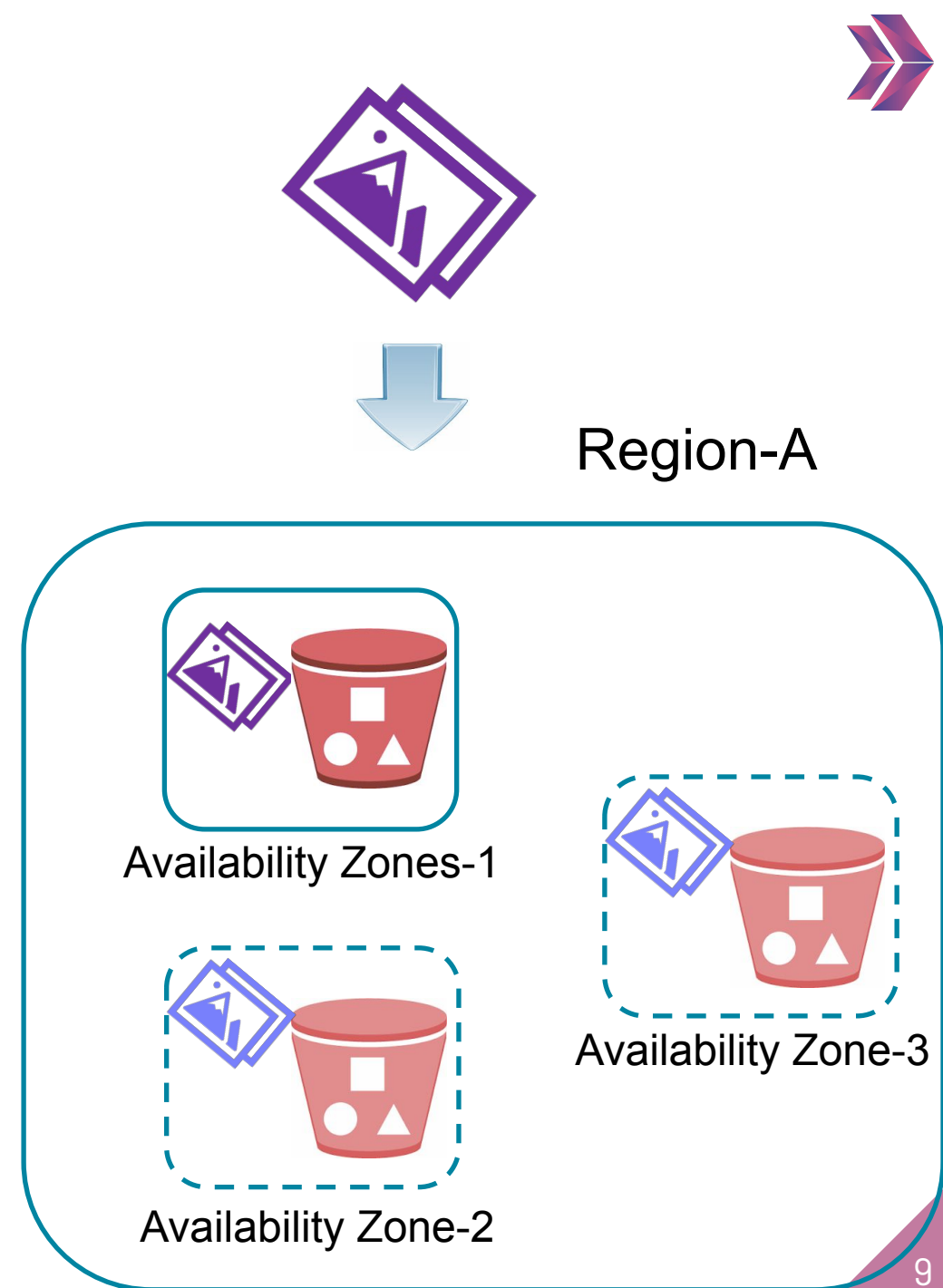
- Amazon S3 stores data in buckets as objects.
- The number of **objects** that can be stored in a bucket is **not limited**, but each AWS account can only have **100 buckets** at once.



# Introduction to S3

## S3 Bucket

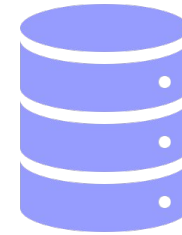
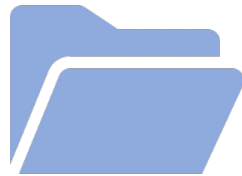
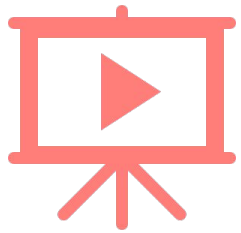
- S3 is a global service, but a **region** must be selected
- **Bucket's name** must be **unique**
- Objects is stored in a minimum of **3 Availability Zones** (AZs) in an Amazon S3 Region.





# Introduction to S3

## What is an Object in S3?



**5 TB Limit**



*S3 is limitless but the max size of a single file can be put in an s3 bucket is 5TB*

# Introduction to S3

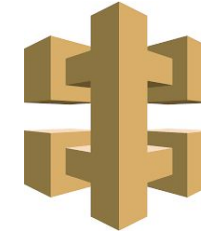
## Object in S3-Upload



**Up to 160 GB**



CLI



API



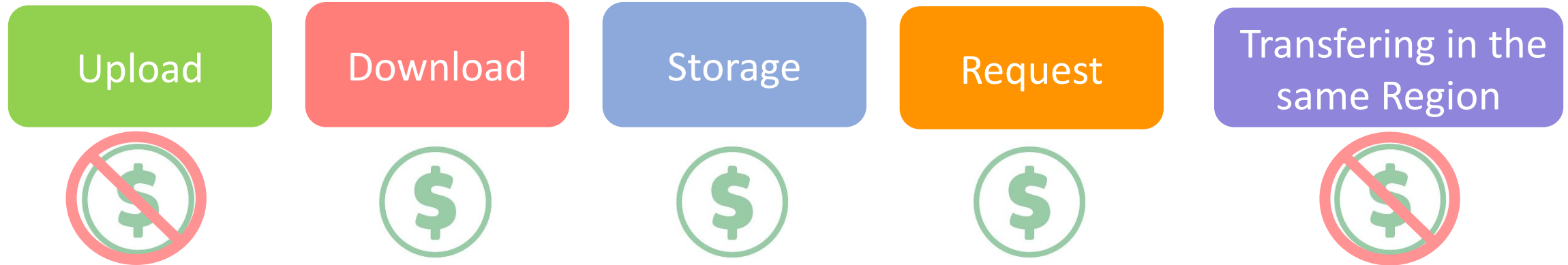
SDK

**Over 160 GB**

- The max. size of an object you can upload via **AWS Management Console** is **160 GB**.
- For uploading a file **greater than 160 GB**, the AWS CLI, AWS SDK, or API is needed to be used.

# Introduction to S3

## S3 Object Pricing



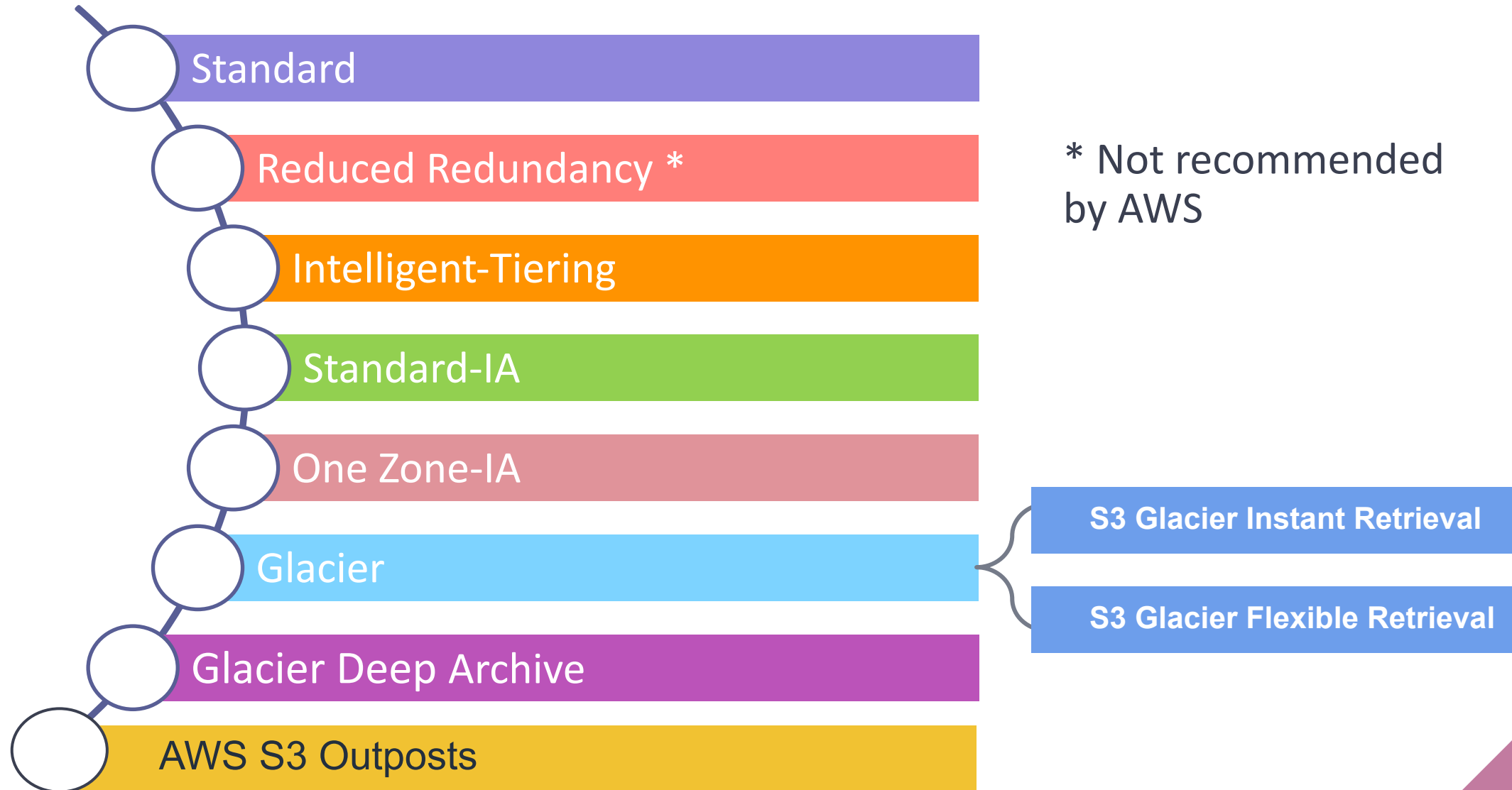




# 2 Storage Classes

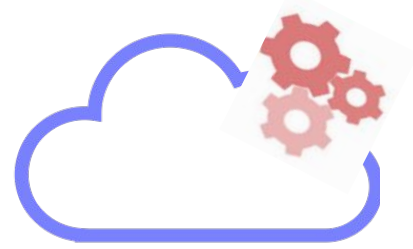
# Storage Classes

## Types of Storage Classes



# Storage Classes

## Standard Class



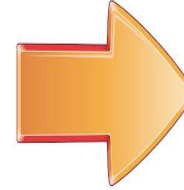
Cloud Applications



Mobile Games



Website Hosting



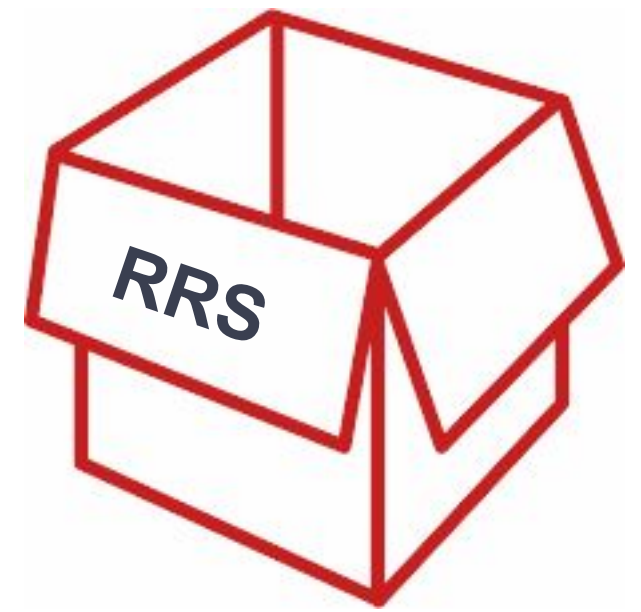
- Standard is the **default** storage class unless you change
- This is the basic storage solution for **frequently accessed** data
- Reliability at **99.999999999%**
- Availability at **99.99%**
- Cloud applications and web-services, mobile games and website hosting are some example of use case



# Storage Classes

## Reduced Redundancy (RRS)

Non critical Data



- RRS class offering **less redundancy** is a **modified version of Standard** storage class
- It is designed for **non critical** and reproducible data
- The main difference between RRS and Standard class is **reliability**
- While reliability of **Standard** storage class is **99.999999999%**, reliability of **RRS** class is **99.99 %**
- It provides **cost saving** compare to Standard class **for the non critical data**.

# Storage Classes

## Standard IA (Infrequent Access)

Infrequently  
Accessed Data



- Standard IA (Infrequent Access) is a convenient for **infrequently accessed files**
- But in case of access, it provides you to reach the file **quickly**.
- In fact, it designed for the data which requires less frequent access, but with **longer storage time than the Standard class**
- It is **cheaper than Standard class as long as** you access **infrequently**.

# Storage Classes

## One Zone IA (Infrequent Access)

Infrequently Accessed  
& Non Critical Data

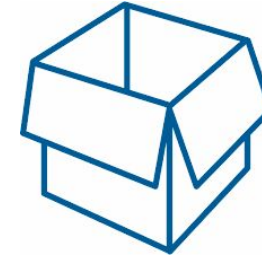


- One Zone IA class is a **modified version of Standard IA**.
- It is **20 percent cheaper** than Standard IA due to less availability.
- Unlike others, One Zone IA **stores data only in one availability zone**, instead of three availability zones
- One-Zone IA can be preferred when you have infrequently accessed and noncritical files

# Storage Classes

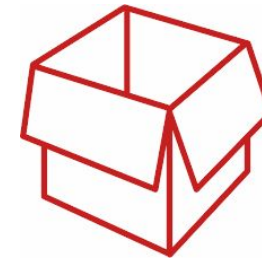
## Intelligent Tier

Unpredictable  
Access Patterns



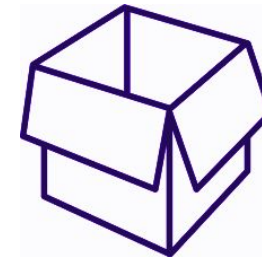
**Frequent  
Access Tier**

30 consecutive days after last access



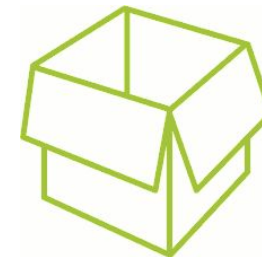
**Infrequent  
Access Tier**

90 consecutive days after the last access



**Archive  
Access tier**

180 consecutive days after the last access



**Deep Archive  
Access tier**

- It is designed to optimize storage costs by automatically moving data to the most cost-effective storage access tier.
- There are 4 access tiers.
- It is ideal, if your access patterns are unknown or unpredictable.

# Storage Classes

## Amazon Glacier

### S3 Glacier **Instant** Retrieval

- It is used for archiving data that is rarely accessed and requires **milliseconds retrieval**.
- It offers a cost savings **compared to the S3 Standard-IA** storage class, with the same latency and throughput performance
- S3 Glacier Instant Retrieval has **higher data access costs** than S3 Standard-IA.

### Archives & Backup Copies of Databases

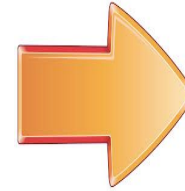
### S3 Glacier **Flexible** Retrieval

- It is a perfect solution for **long-term storage** and data archiving that doesn't require instant access.
- Minimum storage duration period is **90 days** and can be accessed at least within **1-5 minutes**
- If you have deleted, overwritten, or transitioned to a different **storage class an object before the 90-day minimum**, you are charged for 90 days.

# Storage Classes

## Amazon Glacier Deep Archive

Infrequently Accessed  
& Non Critical Data

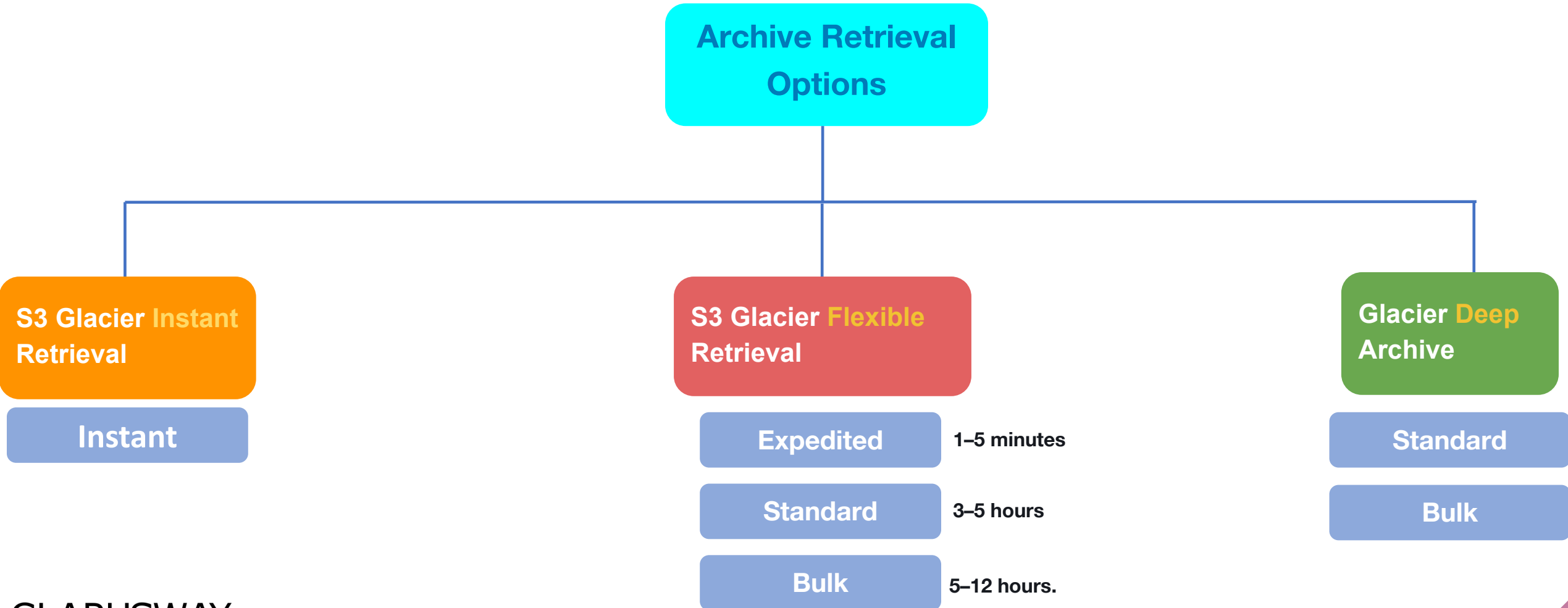


- It is used for archiving data that rarely need to be accessed / 7-10 years
- It is the lowest cost storage option in AWS.
- Minimum storage duration period is 180 days and a default retrieval time of 12 hours. If you interact with the object in 180 you'll be charged for 180 days.



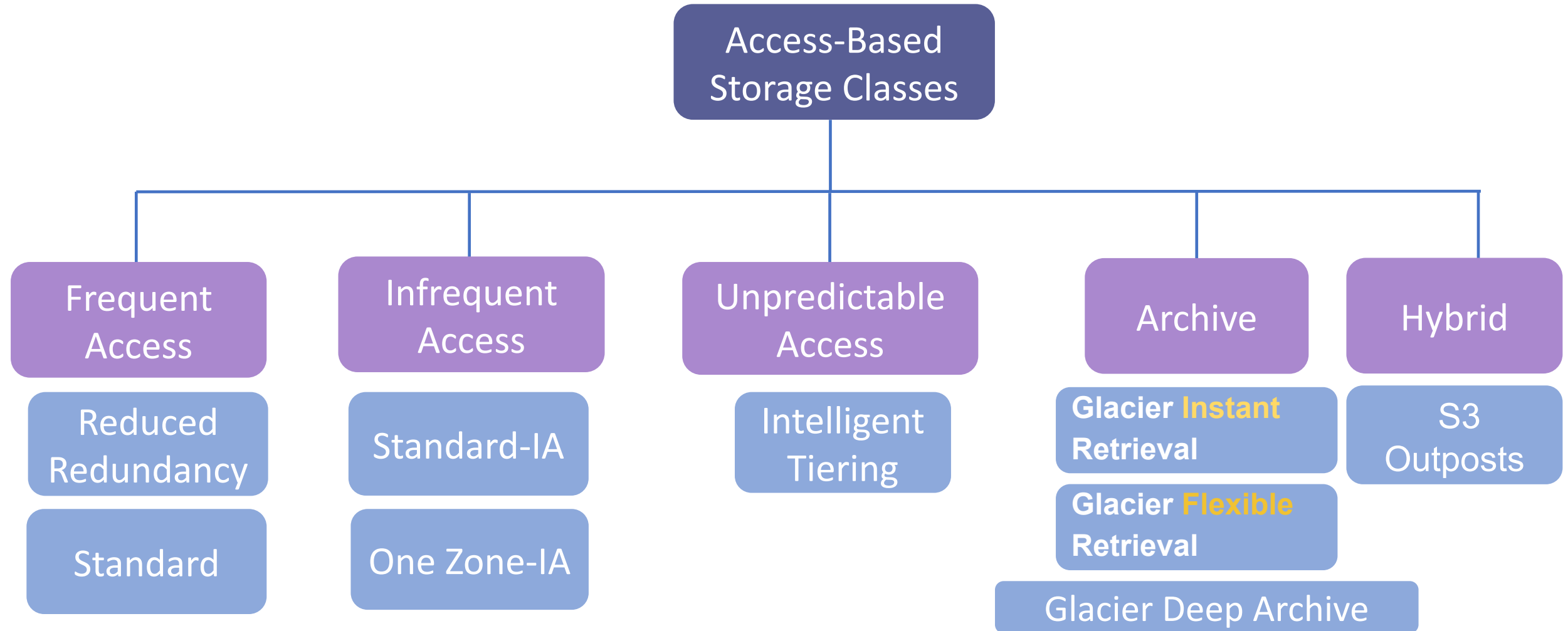
# Storage Classes

## Archive Retrieval Options



# Storage Classes

## Summary of Storage Classes









# 3 Versioning

# Versioning

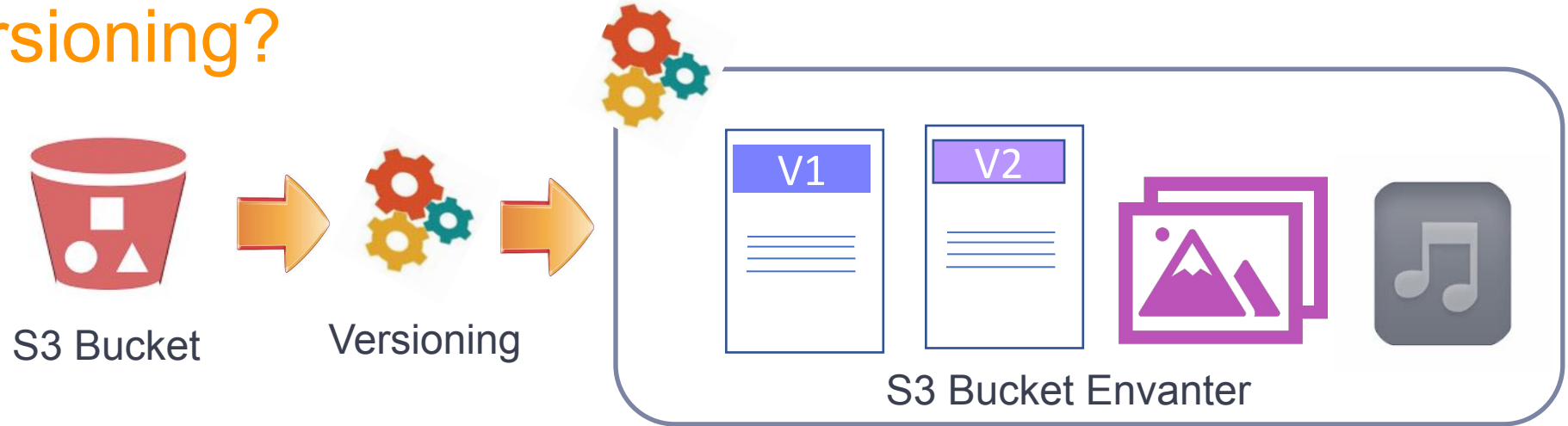
## What is Versioning?



- Versioning is a way to **keep multiple versions** (deleted and changed versions) of an object in a bucket.
- By using versioning, all **unwanted user behavior and program errors** can be quickly recovered.

# Versioning

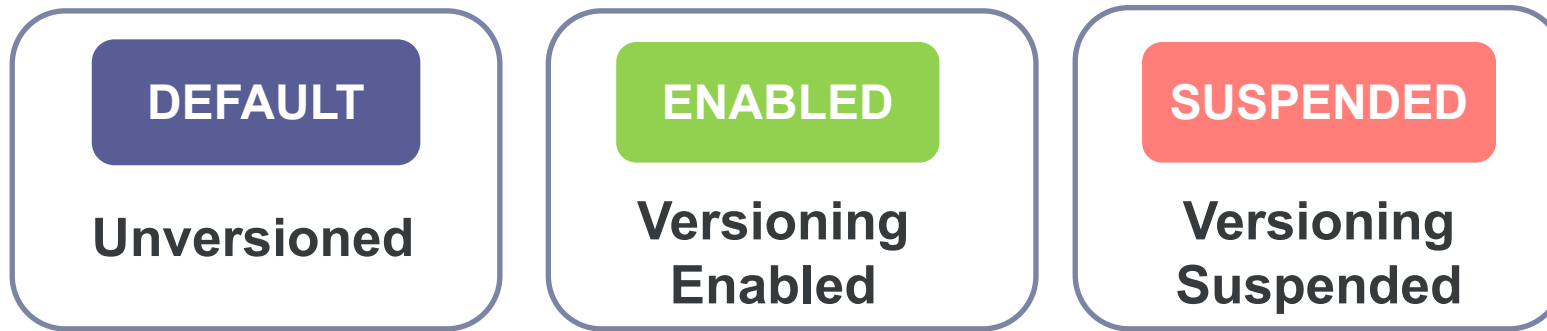
## What is Versioning?



- Versioning is **bucket-based** feature
- Versioning can only be applied to buckets and not to objects
- If enabled for S3 bucket, it interact all objects in the bucket

# Versioning

## States of Versioning



It is not possible to return to an unversioned state, however, you can make suspend versioning on that bucket.



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# S3 Static Website Hosting

# S3 Static Website Hosting

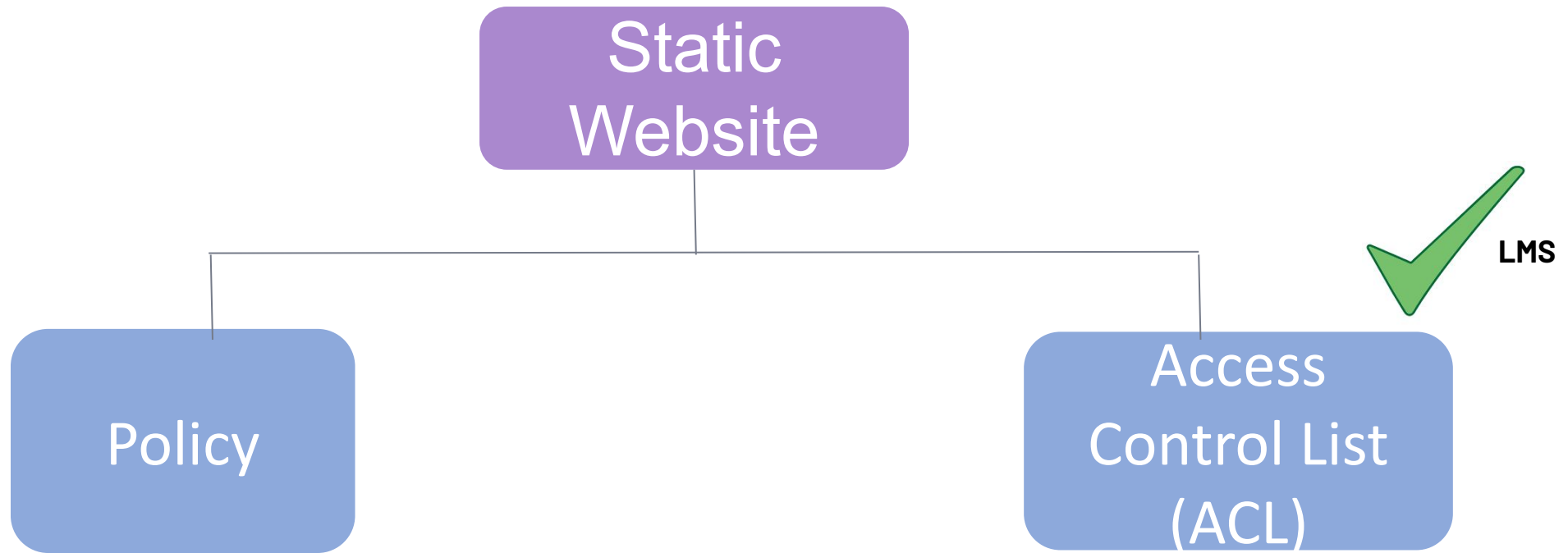
## What is Static Website Hosting?



- Static Website Hosting is a website that contains **simple web components**.
- Uses HTML, CSS, images, etc.
- No **server, database** or any **application code**.

# S3 Static Website Hosting

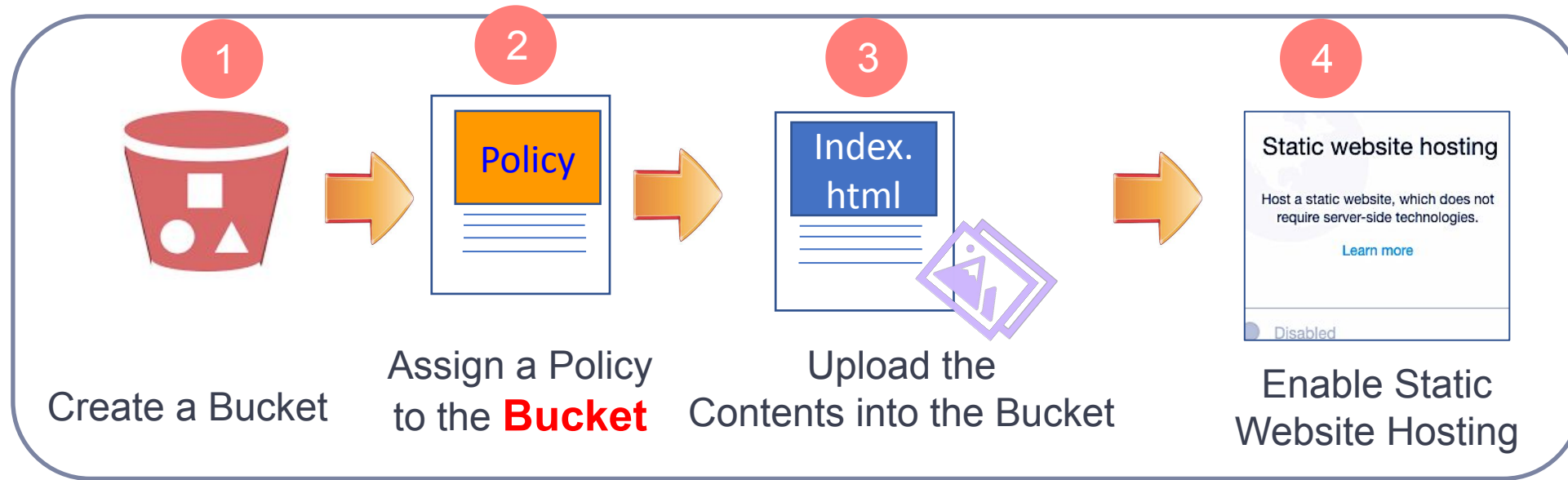
## Static Website Permission Options





# S3 Static Website Hosting

## Static Website Hosting - With Policy







# THANKS!

## Any questions?

You can find me at:

- ▶ @sumod
- ▶ sumod@clarusway.com

