



Storage with Amazon S3

At the core of the lesson

You will learn how to do the following:

- Define Amazon Simple Storage Service (Amazon S3).
- Identify Amazon S3 concepts.
- Define S3 Intelligent-Tiering.
- Identify Amazon S3 access and security features.
- Identify how to store, retrieve, and archive S3 objects by using the AWS Command Line Interface (AWS CLI).



Amazon S3

What is Amazon S3?



Amazon S3

Amazon S3 is an object storage service that provides secure, durable, and highly available data storage in the AWS Cloud.

You can use Amazon S3 to store and retrieve any amount of data (objects) at any time from anywhere on the web.

Amazon S3 features

- Storage classes
- Storage management
- Access management and security
- Data processing
- Storage logging and monitoring
- Analytics and insights
- Strong consistency



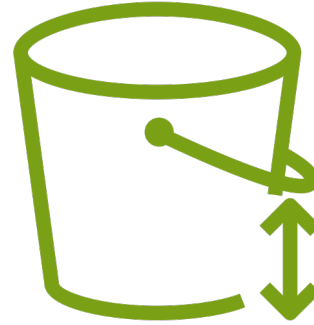
Amazon S3 storage classes



S3 Standard



S3 Intelligent-Tiering



S3 Standard-IA



S3 One Zone-IA



S3 Glacier Instant
Retrieval



S3 Glacier Flexible
Retrieval



S3 Glacier Deep Archive



S3 on Outposts



Amazon S3 basic concepts

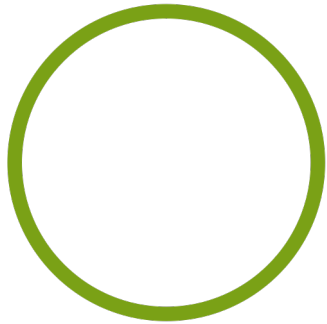
Buckets and objects



Bucket

Buckets

A bucket is a container for objects that are stored in Amazon S3. Every object is contained in a bucket.



Object

Objects

Objects are the fundamental entities that are stored in Amazon S3. Objects consist of object data and metadata.

Keys and Regions



Object keys

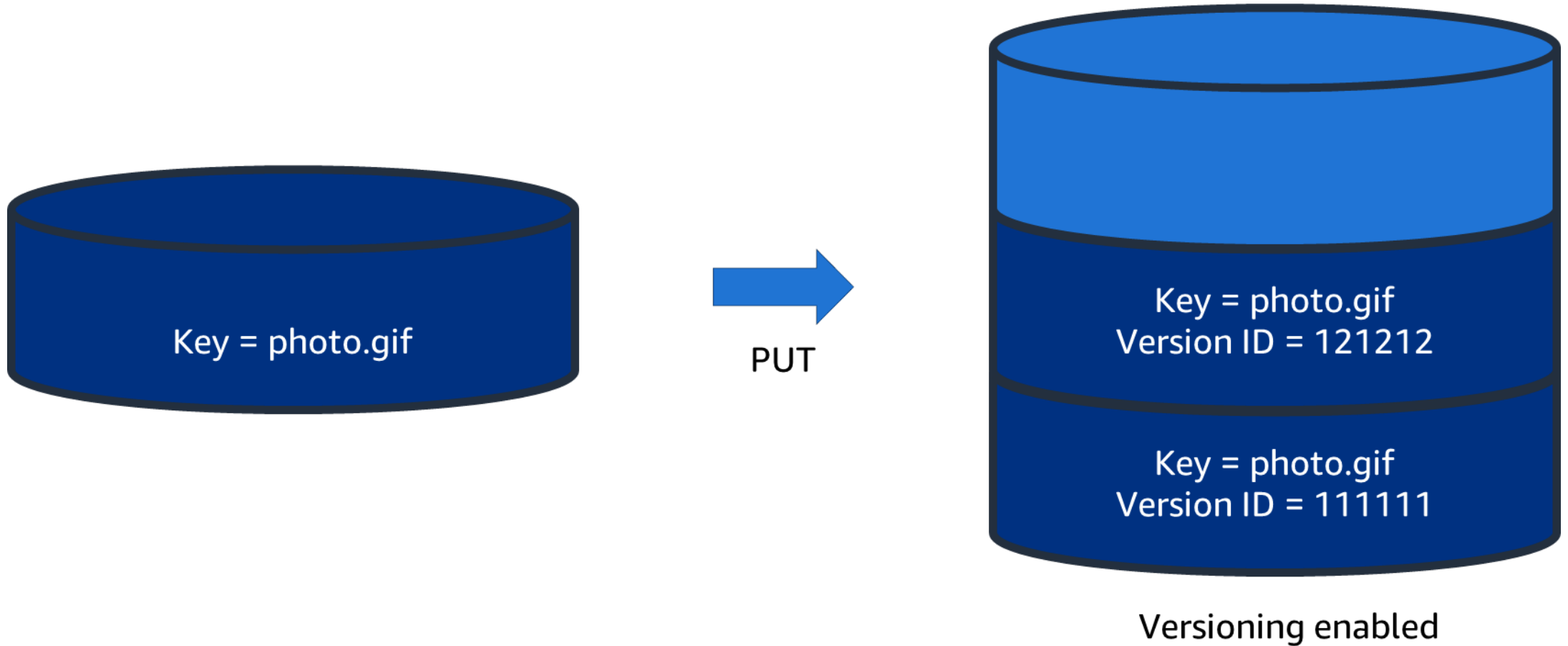
The unique identifier for an object within a bucket



Regions

The geographical area where Amazon S3 will store the buckets that you create

Versioning



Additional Amazon S3 features

| Feature | Purpose or Benefit | How to Use It |
|--------------------------------------|---|---|
| Object lifecycle management | Manage your objects so that they are stored cost-effectively throughout their lifecycle. | Create a lifecycle configuration with rules that define when objects should transition to another storage class and when objects should be deleted. |
| Presigned object URL | Share a private object with a user who does not have AWS security credentials or permissions. | Generate a presigned object URL programmatically and provide it to the recipient to access the object. |
| Cross-origin resource sharing (CORS) | Allow an S3 bucket that hosts a static website to support CORS. Support many origins to one bucket. | Create a CORS configuration on the bucket with rules that identify the authorized origins and HTTP operations. |



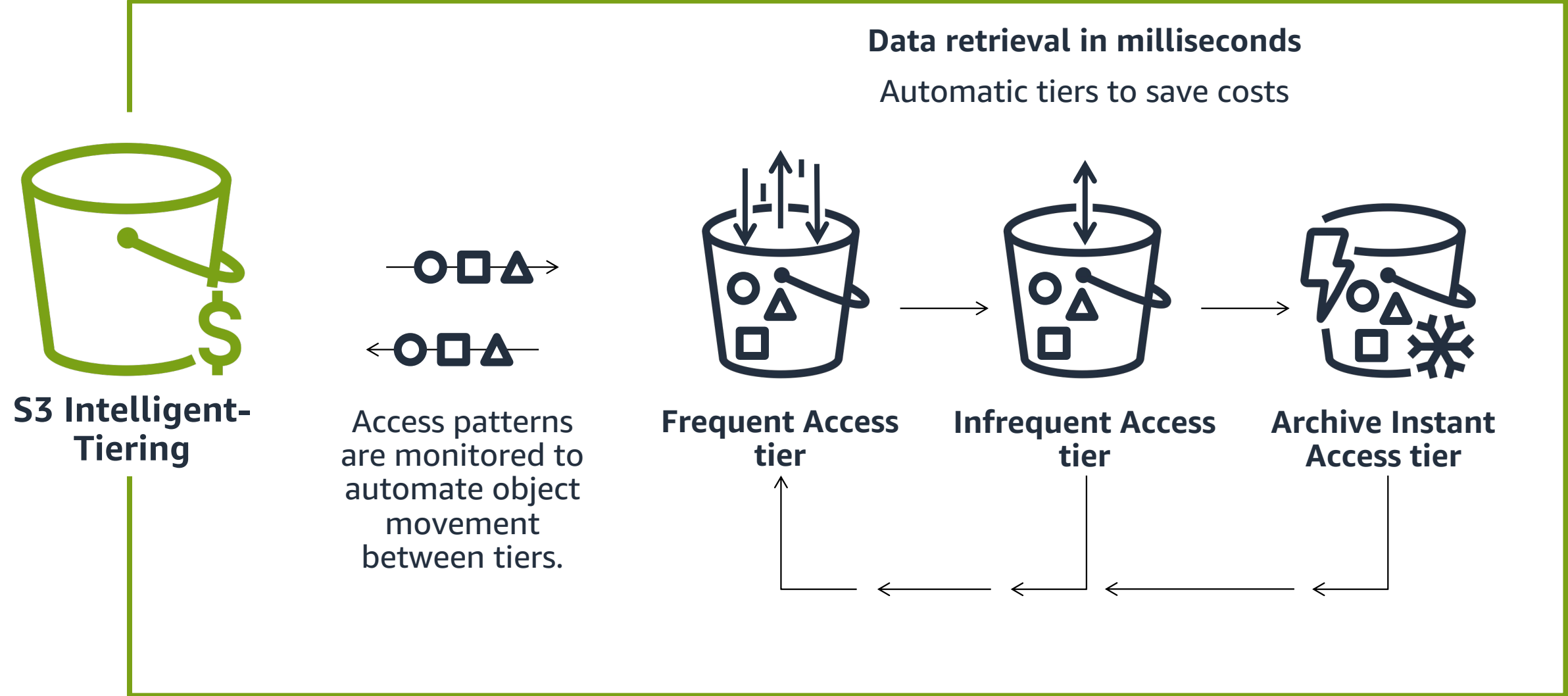
S3 Intelligent-Tiering

What is S3 Intelligent-Tiering?

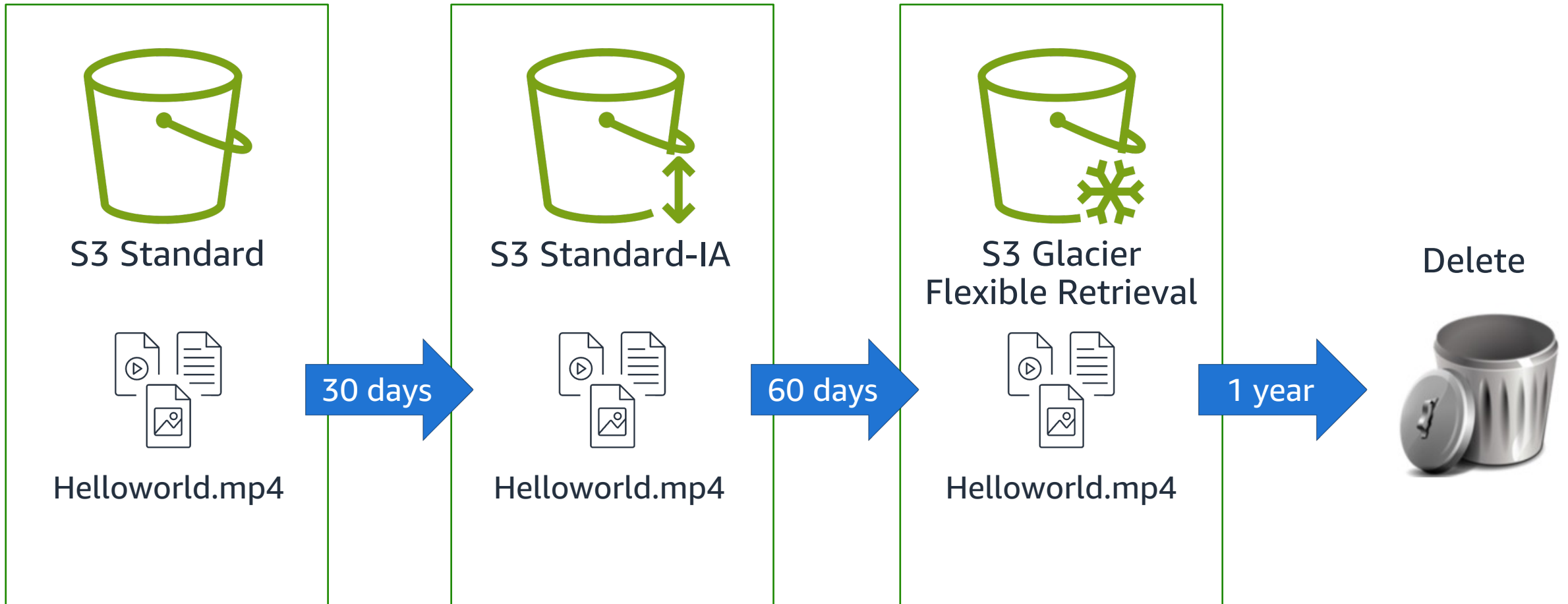
- S3 Intelligent-Tiering is designed to optimize cost by automatically storing objects in three access tiers:
 - Frequent Access
 - Infrequent Access
 - Archive Instant Access
- Optional tiers include the following:
 - Archive Access
 - Deep Archive Access



How it works



Amazon S3 Lifecycle policies





Access and security

Amazon S3 public access settings

Amazon S3 Block Public Access provides four public access settings:

- Block new public access control lists (ACLs) and uploading public objects
- Remove public access granted through public ACLs.
- Block new public bucket policies.
- Block public and cross-account access to buckets that have public policies.

Amazon S3 Object Lock

With S3 Object Lock, you can prevent an object from being deleted or overwritten for a fixed amount of time or indefinitely.

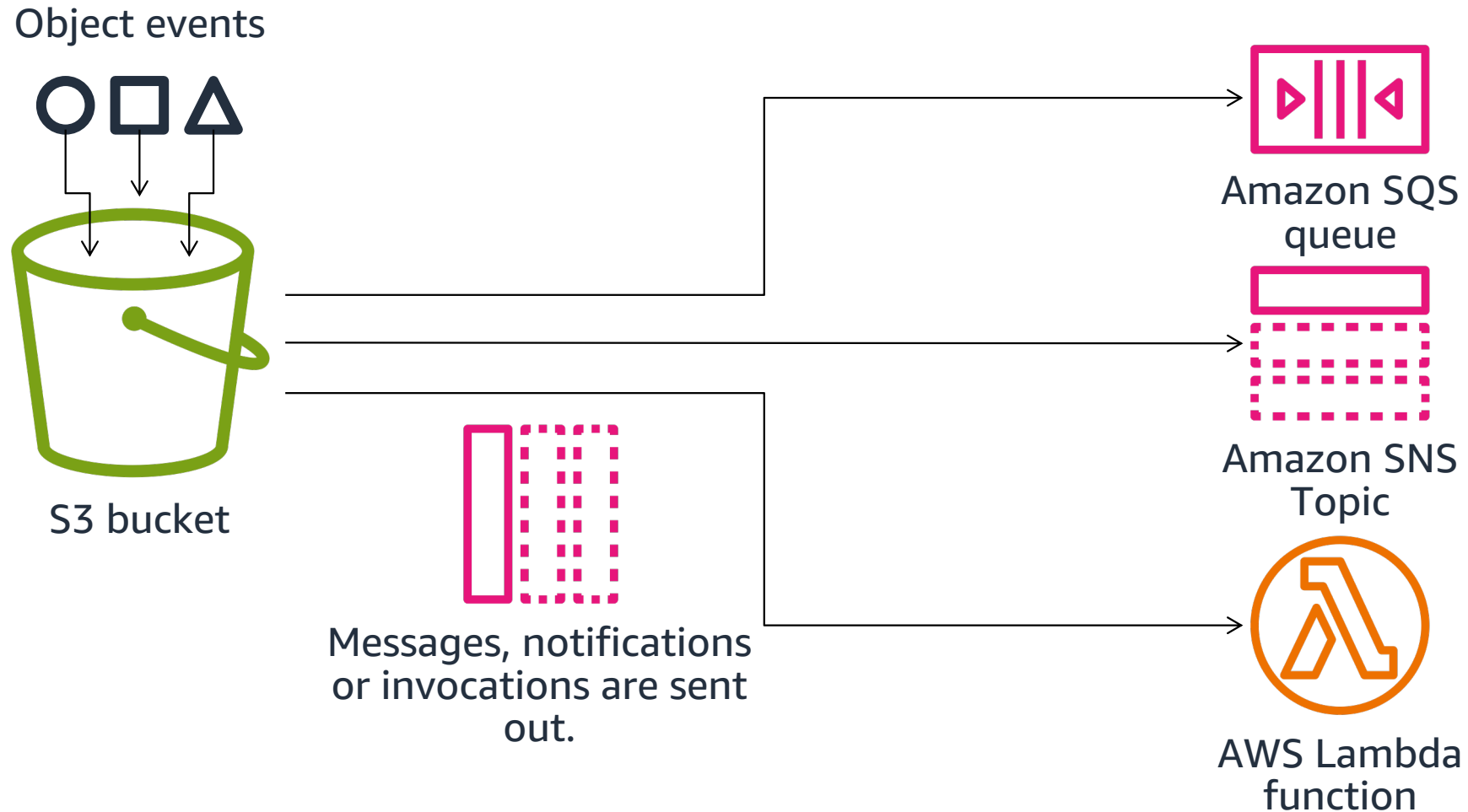
You can manage object retention in two ways:

- Retention periods
- Legal holds

The following are the two retention modes:

- Compliance
- Governance

Event notification for Amazon S3

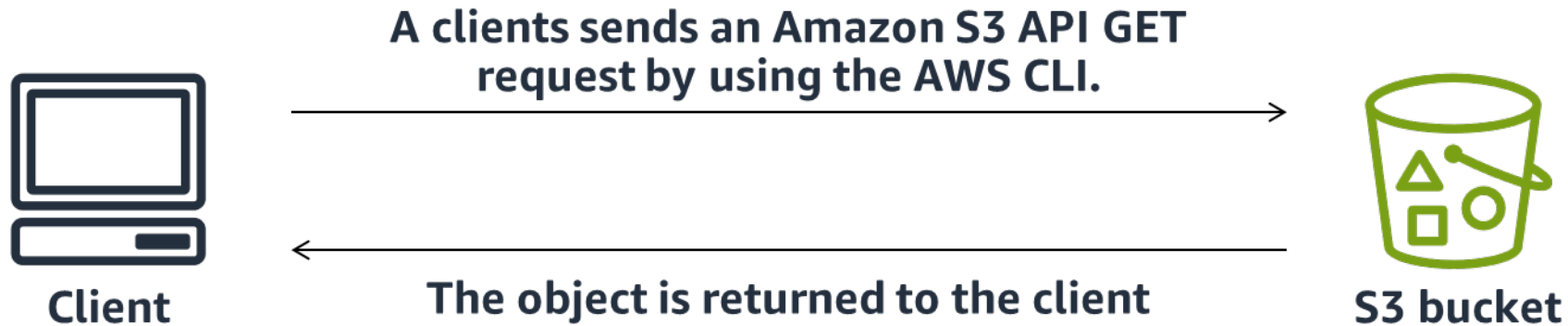




Using Amazon S3 with the AWS CLI

Accessing an object in Amazon S3

Use the Amazon S3 API to access an object in Amazon S3.



Common Amazon S3 AWS CLI commands

| Action | AWS CLI Command |
|--|---|
| Create a new bucket. | <code>aws s3 mb s3://mybucket</code> |
| List all the buckets in the AWS account. | <code>aws s3 ls</code> |
| Copy a local file to Amazon S3. | <code>aws s3 cp file.txt s3://mybucket/myprefix/file.txt</code> |
| Synchronize objects under a specific bucket and prefix to the current local directory. | <code>aws s3 sync . s3://mybucket/myprefix/</code> |
| Remove an object from a bucket. | <code>aws s3 rm s3://mybucket/myprefix/file.txt</code> |
| Use the <code>--storage-class</code> parameter with the copy command to specify the storage class. | <code>aws s3 cp file.txt s3://mybucket/myprefix/file.txt --storage-class INTELLIGENT_TIERING</code> |

Common s3api commands

| Action | AWS CLI Command |
|--|---|
| Create a new bucket. | <code>aws s3api create-bucket \</code> <code>--bucket my-bucket \</code> <code>--region us-east-1</code> |
| List all the buckets in the AWS account. | <code>aws s3api list-buckets \</code> <code>--query "Buckets[].Name"</code> |
| Copy a file from bucket 1 to bucket 2. | <code>aws s3api copy-object \</code> <code>--copy-source bucket-1/test.txt \</code> <code>--key test.txt \</code> <code>--bucket bucket-2</code> |
| Remove an object from a bucket. | <code>aws s3api delete-object \</code> <code>--bucket my-bucket \</code> <code>--key test.txt</code> |

Checkpoint questions

1. Which Amazon S3 storage class is best for archive data that needs immediate access?
2. What are the three versioning states of an S3 bucket?
3. Which feature can a developer use to prevent an object from being deleted or overwritten either for a fixed amount of time or indefinitely in Amazon S3?

Key ideas



- Amazon S3 is a Regionally provisioned object storage service.
- Use Amazon S3 for secure, durable, and highly available storage.
- Buckets store objects and use a key as the unique identifier for an object in the bucket.
- Amazon S3 offers multiple storage classes, versioning, object locking, and event notification features.



Thank you

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