

Simple Storage Service

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Amazon S3 or Simple Storage Service is a storage service offered by Amazon Web Services that provides object storage through a web service interface.

It offers industry-leading scalability, data availability, security and performance.

Lab to be followed for Amazon S3 :

- Creating Bucket
- Adding Object to the Bucket
- Versioning
- Static Website
- Cross-region Replication

Key Points:

1. Pure Object storage
2. Each file can range between 1 b to 5 TB.
3. Allows unlimited storage.
4. Files are stored in buckets.

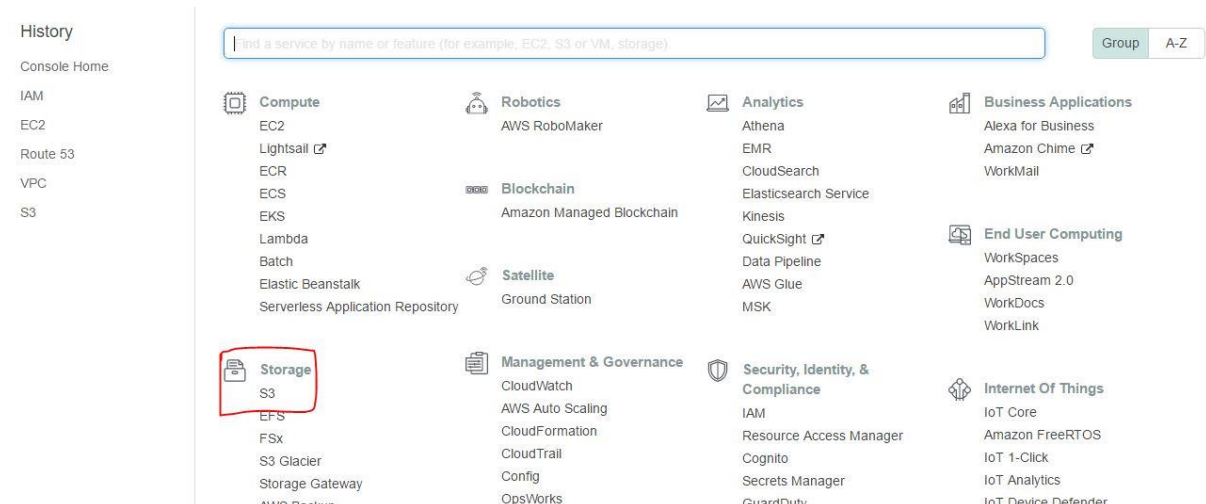
5. It is a key value store. (key: name, value: data)
6. Each object has a version ID.
7. Each object has a metadata associated with it.
8. AWS provides 99.99% availability and 99.999999999 % of durability.
9. Provides Life Cycle management for objects.
10. Provides versioning of objects.
11. Provides encryption of objects.
12. Provides security using ACL's and Bucket policies.
13. Amazon S3 Transfer Acceleration feature can be used to accelerate the speed of object creation and retrieval. In this scenario, you will be charged only if there is a performance improvement.

Bucket:

A logical separation to store data. A bucket should have a unique name as it has a universal namespace. Each bucket can be accessed globally using a unique URL.

Creating Bucket

- First you need to enter into AWS management console and click on S3 service in Storage to enter into S3 dashboard.



- Now click on **Create Bucket** > Enter Bucket Name and Region > In "configure options" keep default > Uncheck the Public Access Settings in Public Access Settings for the Bucket in "Set Permissions" page > In the "Review" page click on Create Bucket .

S3 buckets



Create bucket

1 Name and region

2 Configure options

3 Set permissions

4 Review

Name and region

Bucket name

tastetbucket

Region

Asia Pacific (Mumbai)

Copy settings from an existing bucket

Select bucket (optional)

1 Buckets

Create

Cancel

Next

Create bucket

1 Name and region

2 Configure options

3 Set permissions

4 Review

Versioning

☐ Keep all versions of an object in the same bucket. [Learn more](#)

Server access logging

☐ Log requests for access to your bucket. [Learn more](#)

Tags

You can use tags to track project costs. [Learn more](#)

Key

Value

+ Add another

Object-level logging

☐ Record object-level API activity using AWS CloudTrail for an additional cost. See [CloudTrail pricing](#) or [learn more](#)

Default encryption

☐ Automatically encrypt objects when they are stored in S3. [Learn more](#)

Previous

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Create bucket

✓ Name and region

✓ Configure options

3 Set permissions

4 Review

Public access settings for this bucket

Use the Amazon S3 block public access settings to enforce that buckets don't allow public access to data. You can also configure the Amazon S3 block public access settings at the account level. [Learn more](#)

Manage public access control lists (ACLs) for this bucket

☐ Block new public ACLs and uploading public objects (Recommended)
 ☐ Remove public access granted through public ACLs (Recommended)

Manage public bucket policies for this bucket

☐ Block new public bucket policies
 ☐ Block public and cross-account access if bucket has public policies

Manage system permissions

Do not grant Amazon S3 Job Delivery group write access to this bucket

Previous

Next

Create bucket

✓ Name and region

✓ Configure options

✓ Set permissions

4 Review

Name and region

Edit

Bucket name

tastetbuket

Region

Asia Pacific (Mumbai)

Options

Edit

Versioning	Disabled
Server access logging	Disabled
Tagging	0 Tags
Object-level logging	Disabled
Default encryption	None
CloudWatch request metrics	Disabled
Object lock	Disabled

Previous

Create bucket

☒

tastetbuket

Objects can be public:

Asia Pacific (Mumbai)

Feb 25, 2019 4:35:46 PM GMT+0530

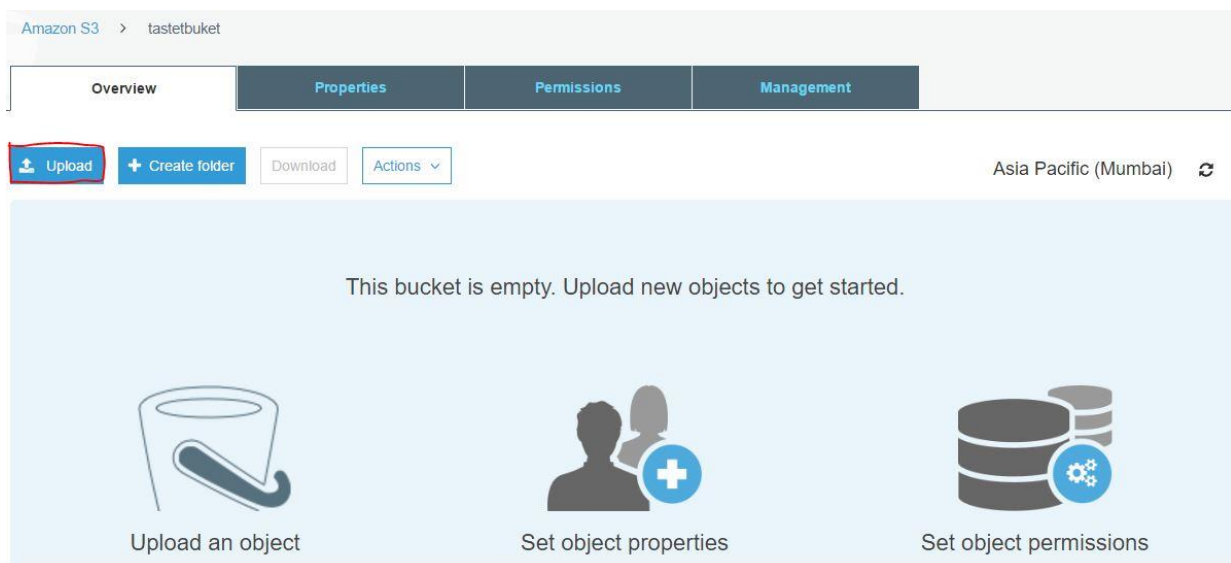
- Now click on the newly created Bucket to enter into the Bucket dashboard.

Object:

Each data stored is called an object. Can be accessed via unique URL globally.

Creating Object

- Here click on the Bucket Dashboard page click on **Upload > Add Files > Set Permissions** page **"Grant public read access to the object > Set properties** page **"keep Standard Storage Class" > Review** page click on **"Upload"**.



Upload

1 Select files

2 Set permissions

3 Set properties

4 Review

1 Files

Size: 3.3 KB

Target path: tastetbucket

+ Add more files

cloud-intro.txt

- 3.3 KB

Upload

Next

Upload

1 Select files

2 Set permissions

3 Set properties

4 Review

Manage users

User ID

Objects

Object permissions

francismohanty(Owner)

☒ Read

☒ Read ☒ Write

Access for other AWS account

+ Add account

Account

Objects

Object permissions

Manage public permissions

Do not grant public read access to this object(s) (Recommended)

Do not grant public read access to this object(s) (Recommended)

Grant public read access to this object(s)

Upload

Previous

Next

Upload

Select files

Set permissions

3 Set properties

4 Review

Storage class	Designed for	Availability Zones	Min storage duration	Min billable object size	Monitoring and automation fees	Retrieval fees
<input type="radio"/> Standard	Frequently accessed data	≥ 3	-	-	-	-
<input type="radio"/> Intelligent-Tiering	Long-lived data with changing or unknown access patterns	≥ 3	30 days	-	Per-object fees apply	-
<input type="radio"/> Standard-IA	Long-lived, infrequently accessed data	≥ 3	30 days	128KB	-	Per-GB fees apply
<input type="radio"/> One Zone-IA	Long-lived, infrequently accessed, non-critical data	≥ 1	30 days	128KB	-	Per-GB fees apply
<input type="radio"/> Glacier	Data archiving with retrieval times ranging from minutes to hours	≥ 3	90 days	-	-	Per-GB fees apply
<input type="radio"/> Reduced Redundancy (Not recommended)	Frequently accessed, non-critical data	≥ 3	-	-	-	-

Upload

PreviousNext

Upload

Select files

Set permissions

Set properties

4 Review

Files

Edit

1 FilesSize: 3.3 KB

Permissions

Edit

2 grantees

Properties

Edit

EncryptionNoStorage classStandard

Metadata

Tag

Previous

Upload

Amazon S3 > tastetbucket

Overview Properties Permissions Management

Q Type a prefix and press Enter to search. Press ESC to clear.

Upload + Create folder Download Actions Asia Pacific (Mumbai)

Viewing 1 to 1

<input type="checkbox"/> Name	Last modified	Size	Storage class
<input type="checkbox"/> cloud-intro.txt	Feb 25, 2019 6:20:31 PM GMT+0530	3.3 KB	Standard

Viewing 1 to 1

Versioning

1. Versioning is a means of keeping multiple variants of an object in the same bucket.
2. You can version the object you upload to s3 for to prevent accidental deletion.
3. Every time you update the object a new versioned object will be added to your bucket increasing the space as there is no mechanism for reduplication or incremental backup. So it is necessary to think in terms of cost you are opting for versioning.
4. Once you enable versioning, you cannot disable it. You can only suspend it.
5. Can be integrated with Life Cycle Rules for purging unwanted data.

Versioning Lab:

Go to the **S3 Bucket** > click on **Properties** > **Versioning** > **Enable versioning** > **Save**.

Amazon S3 > tastetbucket

Overview Properties Permissions Management

Q Type a prefix and press Enter to search. Press ESC to clear.

Upload Create folder Download Actions

Asia Pacific (Mumbai)

Viewing 1 to 1

Name	Last modified	Size	Storage class
cloud-intro.txt	Feb 25, 2019 6:20:31 PM GMT+0530	3.3 KB	Standard

Viewing 1 to 1

Amazon S3 > tastetbucket

Overview Properties Permissions Management

Versioning

Keep multiple versions of an object in the same bucket.

[Learn more](#)

Disabled

Server access logging

Set up access log records that provide details about access requests.

[Learn more](#)

Disabled

Static website hosting

Host a static website, which does not require server-side technologies.

[Learn more](#)

Disabled

Object-level logging

Record object-level API activity using the CloudTrail data events feature.

Default encryption

Automatically encrypt objects when stored in Amazon S3.

Versioning

☒ Enable versioning

☐ Suspend versioning
This suspends the creation of object versions for all operations but preserves any existing object versions.

Cancel

Save

To see a list of the versions of the objects in the bucket, choose **Show**. For each object version, the console shows a unique version ID, the date and time the object version was created, and other properties.

To list the objects without the versions, choose **Hide**.

Overview

Properties

Permissions

Management

Q

Type a prefix and press Enter to search. Press ESC to clear.

Upload

Create folder

Download

Actions

Versions

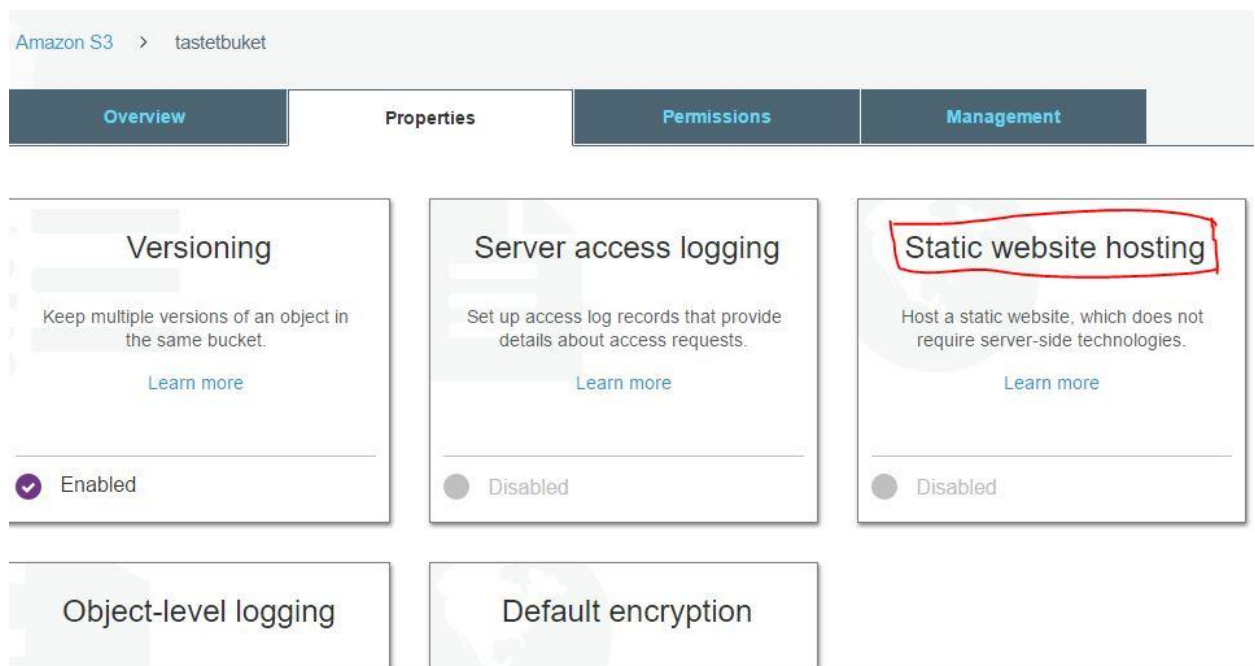
Hide

Show

<input type="checkbox"/>	Name	Version ID	Last modified	Size
<input type="checkbox"/>	cloud-intro.txt		Feb 26, 2019 3:54:37 PM	
<input type="checkbox"/>	<div>Feb 26, 2019 3:54:37 PM (Latest version)</div>	JdAUNeVEpQ6VfF9Jj0ZksUWKB...		3.3 KB
<input type="checkbox"/>	<div>Feb 25, 2019 6:20:31 PM</div>	null		3.3 KB

Host a Static Website on Amazon S3:

To create a **Static Website** for your lab go to your bucket > upload objects of index.html and error.html > Give public permissions to the Objects > Bucket Properties > Static Website Hosting > provide index.html and error.html files > Save.



Endpoint : <http://tastetbucket.s3-website.ap-south-1.amazonaws.com>

☒ Use this bucket to host a website [Learn more](#)

Index document [i](#)

index.html

Error document [i](#)

error.html

Redirection rules (optional) [i](#)

☐ Redirect requests [i](#) [Learn more](#)

☐ Disable website hosting

Cancel

Save

Now use the endpoint of Static Website to view your website.

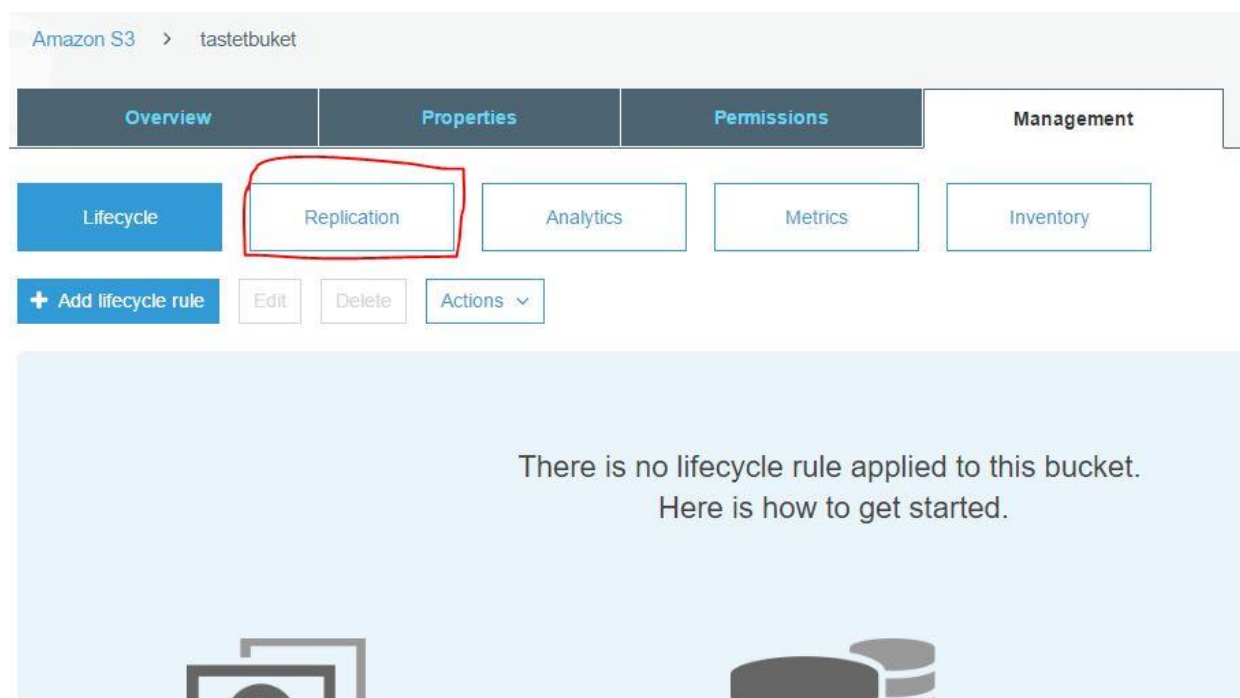
Cross Region Replication

To maintain high availability of your object, you can enable the cross region replication of bucket. The only catch here is, if you enabling this of an existing bucket with objects, it will not replication the already existing objects. It will only replicate the new objects being uploaded to the bucket.

Note: To enable cross region replication, your source and destination buckets should be versioned.

Replication Lab

To do Replication **Go to the Bucket > Management > Replication > Add Rule > Entire Bucket > Next > Create New Bucket and give different region > Next > Create New Role > Rule Name (provide anything) > Next > Review > Save.**



Replication rule



1 Set source

2 Set destination


3 Configure options

4 Review

Set source

- ☒ Entire bucket  tastetbucket
- ☐ Prefix or tags 

Replication criteria

- ☐ Replicate objects encrypted with AWS KMS 

Your CRR rule will be created using the new schema

Cross-region replication (CRR) now has a new schema that supports replication based on prefixes, one or more object tags or a combination of the two. As part of the new schema, you can set overlapping rules with priorities. The new schema does not support delete marker replication, which would prevent any delete actions from replicating. [Learn more](#) about cross-region replication.

Cancel

Next

Replication rule



Set source



Set destination



Configure options



Review

Destination bucket

Create new bucket



Bucket name 

tastesydneybucket

Region

Asia Pacific (Sydney)



Options



Change the storage class for the replicated object(s)



Change object ownership to destination bucket owner 

Previous

Next

Replication rule



Set source



Set destination



Configure options



Review

IAM role

Create new role



Rule name

myrule

Status



Enabled



Disabled

Previous

Next

Replication rule

Set source Set destination Configure options **4 Review**

Source [Edit](#)

Bucket tastetbucket

Scope Entire bucket

Region Asia Pacific (Mumbai)

Destination [Edit](#)

Bucket tastesydneybucket

Region Asia Pacific (Sydney)

Storage class Same as source

Options [Edit](#)

IAM role Create new role

Rule name myrule

[Previous](#) [Save](#)

As this thing is done now you can go ahead and upload anything in the source Bucket and it will be Replicated to the destination Region.

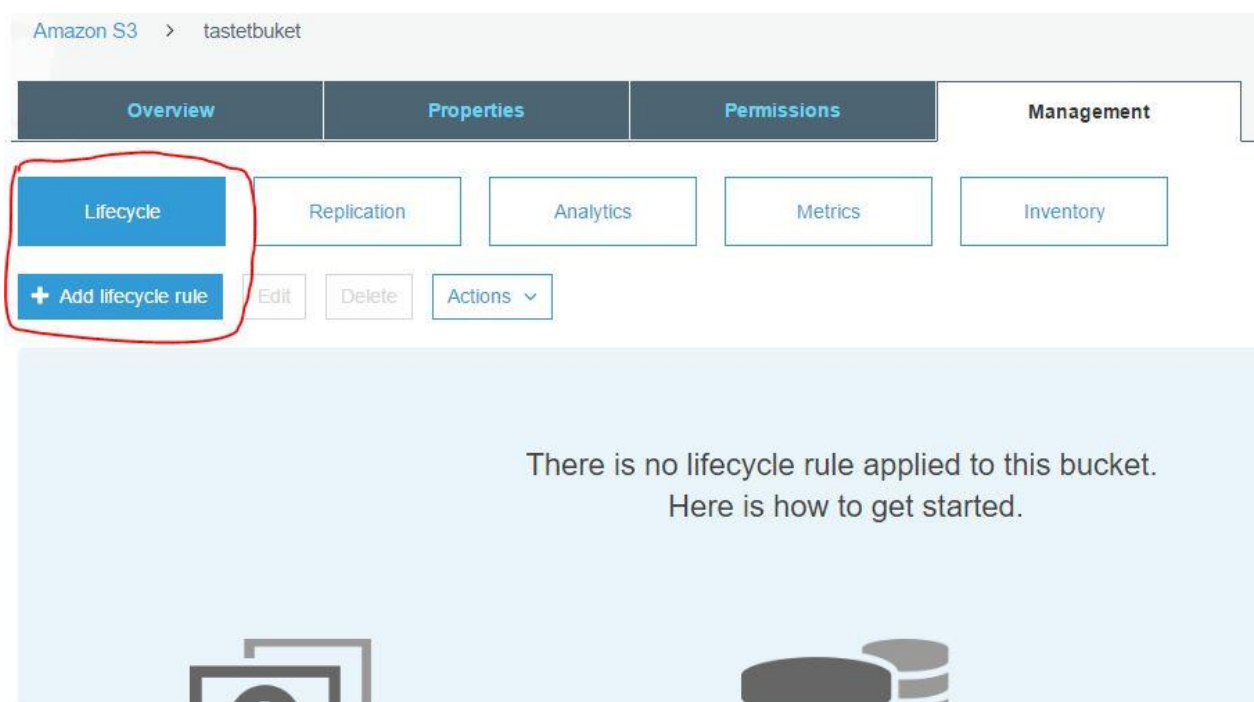
S3 Life Cycle Management

You can add rules to life cycle configuration in order to tell Amazon S3 to transit the data to another storage class according to your need.

1. The minimum days for moving standard data to infrequent access is 30 days and 128kb data.
2. However, you can move to glacier from standard in 1 day using lifecycle policies.
3. You cannot move objects to RR storage class using policies.

To Create Life Cycle rules:

Go to the Bucket > Management > Lifecycle > Add lifecycle rule > provide rule name(any name) > provide transitions for both versions of the object if needed > provide expiration for both versions > Review the configuration > Save.



Lifecycle rule

1

Name and scope

2

Transitions

3

Expiration

4

Review

Enter a rule name

myrule

Add filter to limit scope to prefix/tags

Type to add prefix/tag filter

CancelNext

Lifecycle rule

1

Name and scope

2

Transitions

3

Expiration

4

Review

Storage class transition

You can add rules in a lifecycle configuration to tell Amazon S3 to transition objects to another storage class. [Learn more](#)

☒ Current version ☒ Previous versions

For current versions of objects

+ Add transition

Object creation	Days after creation	
Transition to Standard-IA after	30	X
Transition to Intelligent-Tiering after	20	X
Transition to One Zone-IA after	30	X
Transition to Amazon Glacier after	30	X

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For previous versions of objects [+ Add transition](#)

Object becomes a previous version	Days after objects become noncurrent	
Transition to Standard-IA after ▼	30	X
Transition to Intelligent-Tiering after ▼	10	X
Transition to One Zone-IA after ▼	30	X
Transition to Amazon Glacier after ▼	20	X

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Lifecycle rule ✕

☒ Name and scope
 ☒ Transitions
 ☒ **3 Expiration**
☐ 4 Review

Configure expiration

☒ Current version
 ☒ Previous versions

☒ Expire current version of object ⓘ
 After days from object creation

☒ Permanently delete previous versions ⓘ
 After days from becoming a previous version

Clean up expired object delete markers and incomplete multipart uploads

☐ Clean up expired object delete markers ⓘ

You cannot enable clean up expired object delete markers if you enable

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This concludes the S3 lab.
Thank You.

