

**Project in AWS
Practice Lab**

Set Up Cross-Region S3 Bucket Replication

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ABOUT THIS LAB

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. In this lab, we explore how to use Amazon S3 to automatically replicate any object stored in our S3 bucket to a different region on the other side of the country. This process ensures our files remain accessible in any extreme scenario where data loss could possibly occur. By the end of this lab, you will understand how to create S3 buckets and enable automatic replication to back up files in a different physical location. This lab uses the us-east-1 (N. Virginia) and the us-west-2 (Oregon) regions.

LEARNING OBJECTIVES

- Create an S3 Bucket and Enable Replication
- Test Replication and Observe Results

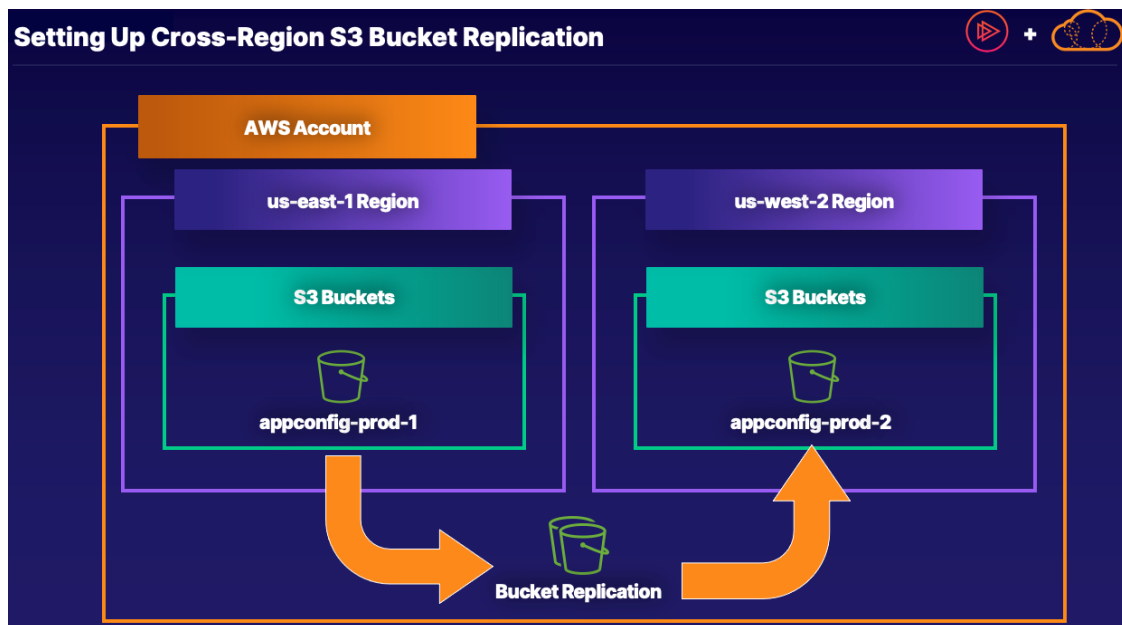
AWS Documentation about S3: https://aws.amazon.com/s3/faqs/#Storage_Classes

Source: <https://learn.acloud.guru/course/certified-solutions-architect-associate/>

Table of Contents

Lab Diagram	4
Log in to your AWS account	5
1. Create an S3 Bucket and Enable Replication.....	5
1.1. Create an S3 Bucket.....	5
1.2. Enable Replication	7
2. Test Replication and Observe Results	10
2.1. Test Replication	10
2.2. Observe Results	11

Lab Diagram



We have the AWS account in **us-east-1** Region, we have an S3 bucket that's called **appconfig-prod-1**. Our scenario is that our company has been using this **appconfig-prod-1** S3 bucket to host critical manufacturing files that must remain available even in the case of catastrophic disasters.

Due to compliance requirements, the files must remain stored in the USA. To ensure that your files remain accessible even in extreme scenarios, you're going to set up cross-region replication to the **us-west-2** Oregon Region (on the other side of the country). Inside that region, we'll create our S3 bucket and then we'll set up bucket replication from our **appconfig-prod-1** to **appconfig-prod-2**.

Log in to your AWS account



Sign in as IAM user

Account ID (12 digits) or account alias

Type Account ID

IAM user name

Type IAM user name

Password

☐ Remember this account

Sign in

Sign in using root user email

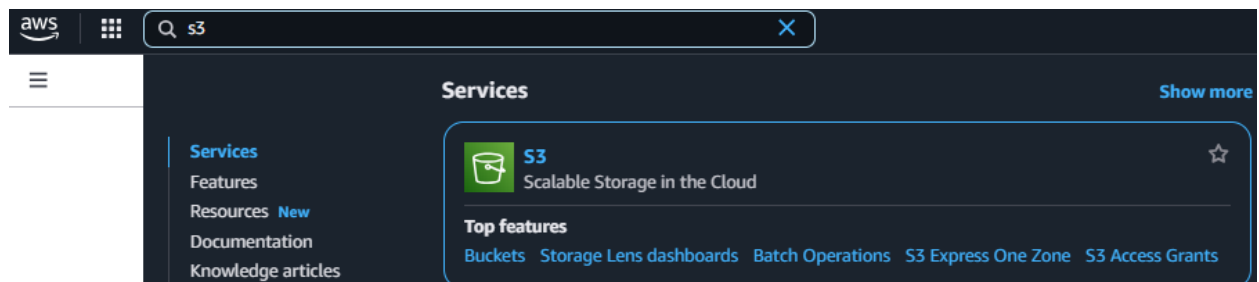
[Forgot password?](#)



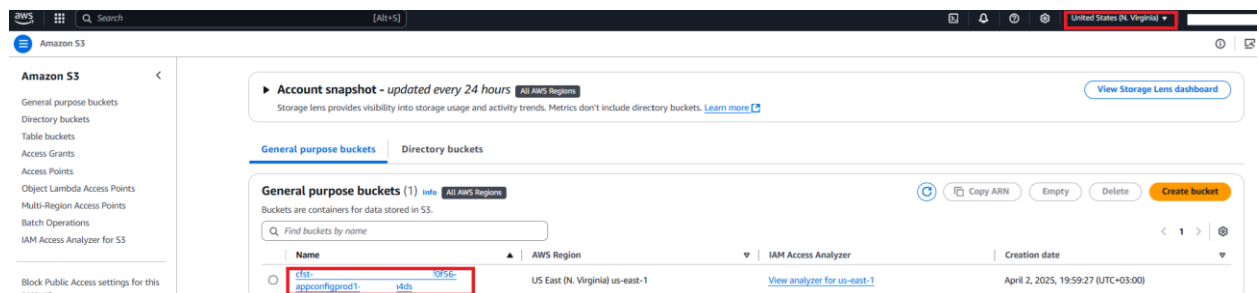
1. Create an S3 Bucket and Enable Replication

1.1. Create an S3 Bucket

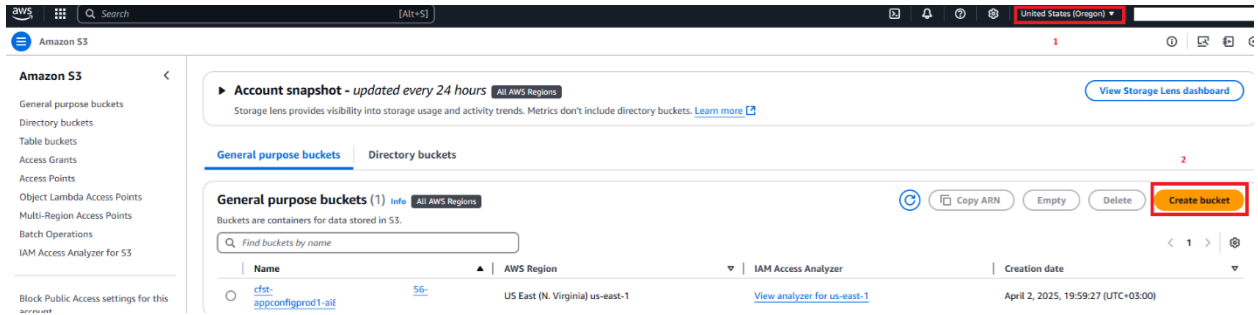
1. Once you are logged in to the AWS Management Console, navigate to S3.



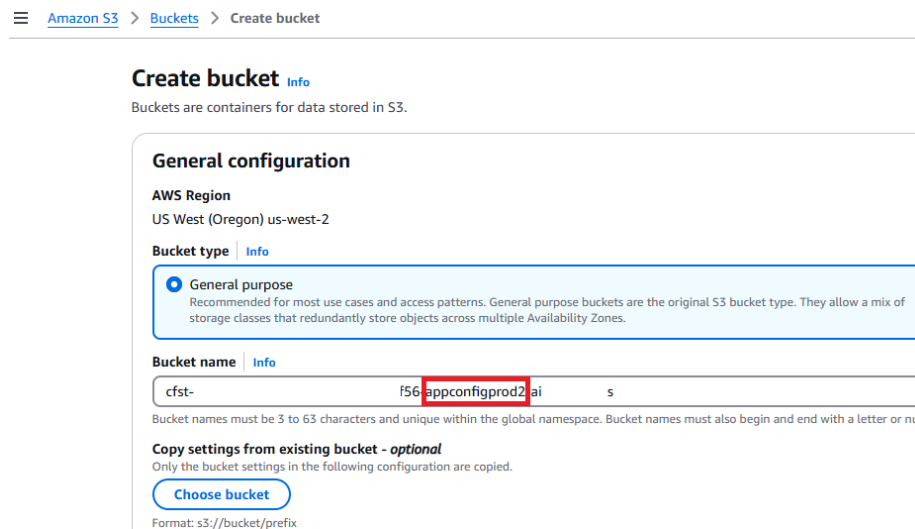
2. Copy the name of the bucket of **appconfigprod1** bucket and change the region to US West (Oregon) **us-west-2**.



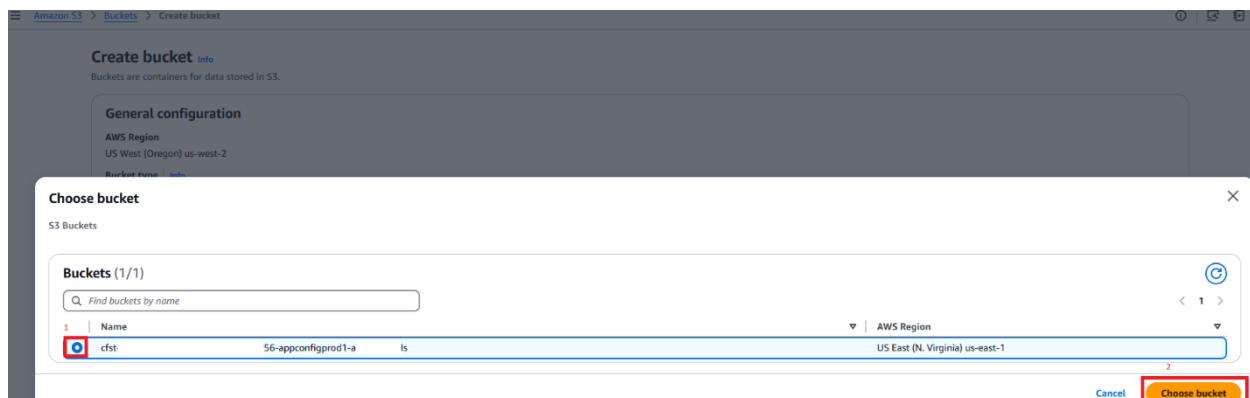
3. After you change the region to Oregon, click **Create Bucket**.



4. In the **Bucket name** field, paste the name you copied, but replace **appconfigprod1** with **appconfigprod2**.
5. Under Copy settings from existing bucket, click **Choose bucket**.



6. Select the **appconfigprod1** bucket and click **Choose bucket**.



7. Leave the rest of the settings as the defaults and click **Create bucket**. If you receive a warning about system tags, you can safely ignore it.

▼ Advanced settings

Object Lock
Store objects using a write-once-read-many (WORM) model to help you prevent objects from being deleted or overwritten for a fixed amount of time or indefinitely. Object Lock works only in versioned buckets. [Learn more](#)

☒ **Disable**
☐ **Enable**
Permanently allows objects in this bucket to be locked. Additional Object Lock configuration is required in bucket details after bucket creation to protect objects in this bucket from being deleted or overwritten.

Object Lock works only in versioned buckets. Enabling Object Lock automatically enables Versioning.

After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.

[Cancel](#) [Create bucket](#)

1.2. Enable Replication

- Now, we need to set up our replication. Click the **appconfigprod1** bucket to open it.

Successfully created bucket "cfst-56-appconfigprod2-..."
To upload files and folders, or to configure additional bucket settings, choose [View details](#).

Unknown Error
System tags cannot be added/updated by requester [Diagnose with Amazon Q](#)

Account snapshot - updated every 24 hours [View Storage Lens dashboard](#)

General purpose buckets | Directory buckets

General purpose buckets (2) [Info](#) [All AWS Regions](#)

Buckets are containers for data stored in S3.

Find buckets by name

Name	AWS Region	IAM Access Analyzer	Creation date
cfst-appconfigprod1-...	US East (N. Virginia) us-east-1	View analyzer for us-east-1	April 2, 2025, 19:59:27 (UTC+03:00)
cfst-appconfigprod2-a...	US West (Oregon) us-west-2	View analyzer for us-west-2	April 2, 2025, 22:27:54 (UTC+03:00)

- Click the **Management** tab.
- In the **Replication rules** section, click **Create replication rule**.

Amazon S3 > Buckets > cfst-56-appconfigprod1-...

General purpose buckets
Directory buckets
Table buckets
Access Grants
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3

Block Public Access settings for this account

Storage Lens
Dashboards
Storage Lens groups
AWS Organizations settings

Feature spotlight

AWS Marketplace for S3

cfst-56-appconfigprod1-... Management Access Points

Objects Metadata Properties Permissions Metrics **Management** Access Points

Lifecycle configuration
To manage your objects so that they are stored cost effectively throughout their lifecycle, configure their lifecycle. A lifecycle configuration is a set of rules that define actions that Amazon S3 applies to a group of objects. Lifecycle rules run once per day.

Lifecycle rules
Use lifecycle rules to define actions you want Amazon S3 to take during an object's lifetime such as transitioning objects to another storage class, archiving them, or deleting them after a specified period of time. [Learn more](#)

[View details](#) [Edit](#) [Delete](#) [Actions](#) [Create lifecycle rule](#)

Lifecycle rule name	Status	Scope	Current version actions	Noncurrent versions actions	Expired object delete mar...	Incomplete multipart upl...
No lifecycle rules There are no lifecycle rules for this bucket.						

[Create lifecycle rule](#)

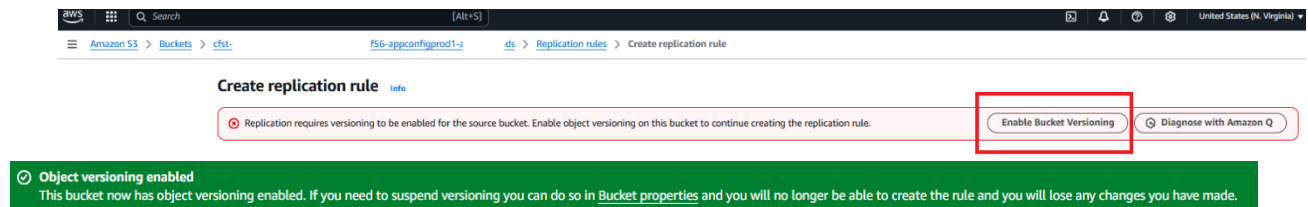
Replication rules (0) [View details](#) [Edit rule](#) [Delete](#) [Actions](#) [Create replication rule](#)

Use replication rules to define options you want Amazon S3 to apply during replication such as server-side encryption, replica ownership, transitioning replicas to another storage class, and more. [Learn more](#)

Replication rule name	Status	Destination bucket	Destination Region	Priority	Scope	Storage class	Replica owner	Replication Time Control	KMS-encrypted objects (SSE-KMS or DSSE-KMS)	Replica modification sync
No replication rules You don't have any rules in the replication configuration.										

[Create replication rule](#)

4. Click **Enable Bucket Versioning**. You will see the object versioning is enabled.



5. Under **Replication rule configuration**, in **Replication rule name**, enter *CrossRegion*.

Create replication rule [info](#)

Replication rule configuration

Replication rule name

CrossRegion

Up to 255 characters. In order to be able to use CloudWatch metrics to monitor the progress of your replication rule, the replication rule name must only contain English characters.

Status

Choose whether the rule will be enabled or disabled when created.

☒ Enabled

☐ Disabled

Priority

The priority value resolves conflicts that occur when an object is eligible for replication under multiple rules to the same destination. The rule is added to the configuration at the highest priority and the priority can be changed on the replication rules table.

0

6. Under **Source bucket**, in **Choose a rule scope**, select **Apply to all objects in the bucket**.

Source bucket

Source bucket name

cfst-56-appconfigprod1-a

Source Region

US East (N. Virginia) us-east-1

Choose a rule scope

☐ Limit the scope of this rule using one or more filters

☒ Apply to all objects in the bucket

7. Under **Destination**, leave **Choose a bucket in this account selected**. Click **Browse S3**.

Destination

Destination

You can replicate objects across buckets in different AWS Regions (Cross-Region Replication) or you can replicate objects across buckets in the same AWS Region (Same-Region Replication). You can also specify a different bucket for each [Amazon S3 pricing](#).

☒ Choose a bucket in this account

☐ Specify a bucket in another account

Bucket name

Choose the bucket that will receive replicated objects.

Enter bucket name

[Browse S3](#)

8. Select the **appconfigprod2** bucket and click **Choose path**.

Choose a bucket

S3 Buckets

Buckets (1/2)

Find buckets by name

Name	Prefix	Storage Class	AWS Region
<input type="radio"/> cfst-6-appconfigprod1-a	/	Standard	US East (N. Virginia) us-east-1
<input checked="" type="radio"/> cfst- <i>6-appconfigprod2-a</i>	/	Standard	US West (Oregon) us-west-2

Cancel Choose path

9. Click **Enable bucket versioning**.

Destination

Destination

You can replicate objects across buckets in different AWS Regions (Cross-Region Replication) or you can replicate objects across buckets in the same AWS Region (Same-Region Replication). You can also specify a different bucket for each rule in the configuration. [Learn more](#) or see [Amazon S3 pricing](#)

☒ Choose a bucket in this account

☐ Specify a bucket in another account

Bucket name

Choose the bucket that will receive replicated objects.

cfst- appconfigprod2- Browse S3

☒ Replication requires Versioning to be enabled for the destination bucket

Enable Versioning on this bucket to continue creating the replication rule or select a different bucket.

Enable Versioning Diagnose with Amazon Q

Destination Region

US West (Oregon) us-west-2

✔ Object versioning enabled

This bucket now has object versioning enabled. If you need to suspend versioning you can do so in [Bucket properties](#) and you will no longer be able to use it as a destination bucket for this rule.

10. Under **IAM role**, click the dropdown menu under **IAM role**, and select **Create new role**.

IAM role

Permission to access the specified resources

☒ Create new role

☐ Choose from existing IAM roles

☐ Enter IAM role ARN

11. Click **Save**.

12. When prompted with the **Replicate existing objects?** popup, choose **No, do not replicate existing objects** (because you are not in a production environment, where you might want to replicate objects when you first create your replication rule) and click **Submit**.

Replicate existing objects?

You can enable a one-time Batch Operations job from this replication configuration to replicate objects that already exist in the bucket and to synchronize the source and destination buckets. [Learn more](#) or [see pricing](#)

Existing objects

☒ No, do not replicate existing objects.

☐ Yes, replicate existing objects.

Cancel Submit

13. Now we have a replication rule created and the status is enabled.

aws [Alt+S] United States (N. Virginia)

Amazon S3 > Buckets > cfst 56-appconfigprod1-1 > Replication rules

Replication configuration successfully updated
If changes to the configuration aren't displayed, choose the refresh button. Changes apply only to new objects. To replicate existing objects with this configuration, choose **Create replication job**.

Replication rules

Replication enables automatic and asynchronous copying of objects across buckets in the same or different AWS Regions. A replication configuration is a set of rules that define what options should be applied to a group of objects during replication.

Replication configuration settings

Configuration settings affect all replication rules in the bucket.

Source bucket
cfst- 56-appconfigprod1-1 js

Source Region
US East (N. Virginia) us-east-1

IAM role
[s3err_role_for_cfst-](#) [6-appconfigprod1](#)

Replication rules (1) View details Edit rule Delete Actions Create replication rule

Use replication rules to define options you want Amazon S3 to apply during replication such as server-side encryption, replica ownership, transitioning replicas to another storage class, and more. [Learn more](#)

Replication rule name	Status	Destination bucket	Destination Region	Priority	Scope	Storage class	Replica owner	Replication Time Control	KMS-encrypted objects (SSE-KMS or DSSE-KMS)	Replica modification sync
CrossRegion	Enabled	s3://cfst-appconfigprod2-a	US West (Oregon) us-west-2	0	Entire bucket	Same as source	Same as source	Disabled	Do not replicate	Disabled

2. Test Replication and Observe Results

2.1. Test Replication

1. Click the **appconfigprod1** bucket link in the breadcrumb trail navigation at the top of the screen.

aws [Alt+S] United States (N. Virginia)

Amazon S3 > Buckets > cfst 56-appconfigprod1-1 > Replication rules

Replication configuration successfully updated
If changes to the configuration aren't displayed, choose the refresh button. Changes apply only to new objects. To replicate existing objects with this configuration, choose **Create replication job**.

Replication rules

Replication enables automatic and asynchronous copying of objects across buckets in the same or different AWS Regions. A replication configuration is a set of rules that define what options should be applied to a group of objects during replication.

Replication configuration settings

Configuration settings affect all replication rules in the bucket.

Source bucket
cfst- 56-appconfigprod1-1 js

Source Region
US East (N. Virginia) us-east-1

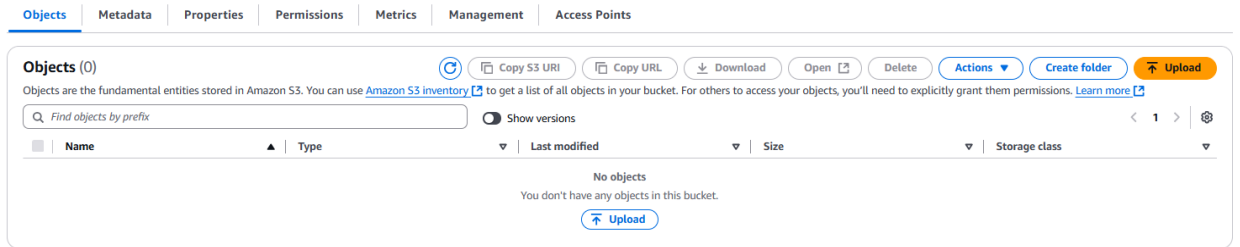
IAM role
[s3err_role_for_cfst-](#) [6-appconfigprod1](#)

Replication rules (1) View details Edit rule Delete Actions Create replication rule

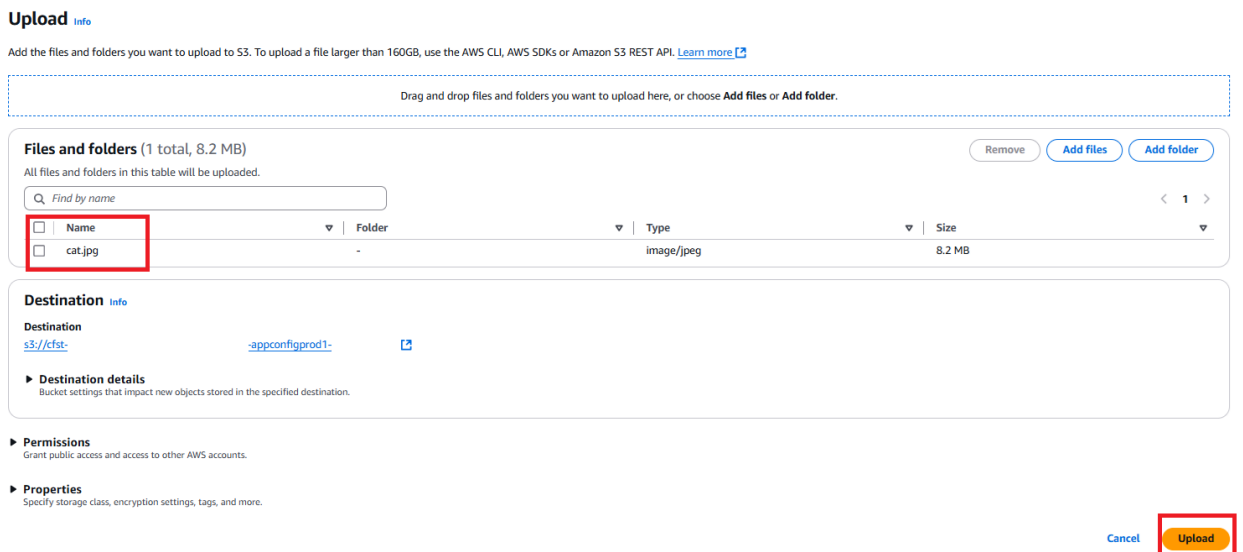
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Replication rule name	Status	Destination bucket	Destination Region	Priority	Scope	Storage class	Replica owner	Replication Time Control	KMS-encrypted objects (SSE-KMS or DSSE-KMS)	Replica modification sync
CrossRegion	Enabled	s3://cfst-appconfigprod2-a	US West (Oregon) us-west-2	0	Entire bucket	Same as source	Same as source	Disabled	Do not replicate	Disabled

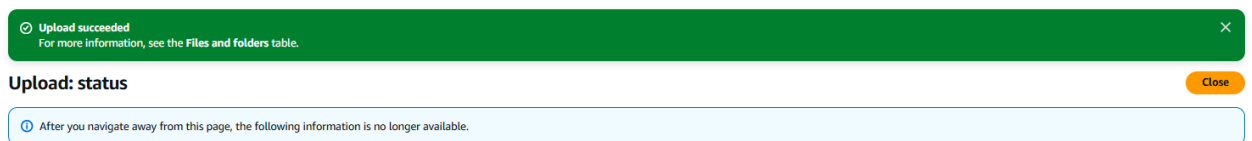
2. Now we can upload a file and test our replication. Click **Upload**.



3. Add a picture or a folder. In this case, we will use a picture of a cat. Either drag a file to the window or click Add file to upload a file of your choice (the larger the file, the longer it will take).
4. Click **Upload**.

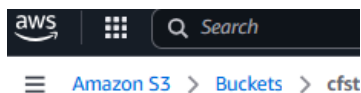


5. Once the upload has succeeded, click **Close** in the top-right corner.



2.2. Observe Results

1. Click the **Buckets** link in the breadcrumb trail navigation at the top of the page.



2. Click the **appconfigprod2** bucket to open it.

General purpose buckets (2) Info All AWS Regions					Copy ARN	Empty	Delete	Create bucket
Buckets are containers for data stored in S3.								
Find buckets by name								
Name	AWS Region	IAM Access Analyzer	Creation date					
cfst-appconfigprod1-	US East (N. Virginia) us-east-1	View analyzer for us-east-1	April 3, 2025, 16:57:03 (UTC+03:00)					
cfst-appconfigprod2-	US West (Oregon) us-west-2	View analyzer for us-west-2	April 3, 2025, 17:57:04 (UTC+03:00)					

- You should see the file you uploaded to **appconfigprod1**. If it isn't there yet, refresh and wait a minute or two for it to appear. Now you can see it in **appconfigprod2**, so the replication rule is working as expected.

cfst- -appconfigprod2- Info								
Objects	Metadata	Properties	Permissions	Metrics	Management	Access Points		
Objects (1)					Copy S3 URI	Copy URL	Download	Open
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more					Delete	Actions	Create folder	Upload
Find objects by prefix								
Show versions								
Name	Type	Last modified	Size	Storage class				
cat.jpg	jpg	April 3, 2025, 18:11:19 (UTC+03:00)	8.2 MB	Standard				