# Hosting Static Website on AWS S3

*A Project Based Learning Report Submitted in partial fulfilment of the requirements for the award of the degree*

*of*

**Bachelor of Technology**

**in The Department of AI&DS**

**CLOUD & SERVERLESS COMPUTING 22CEC3305A**

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Under the guidance of

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Department of Artificial Intelligence and Data Science

Koneru Lakshmaiah Education Foundation, Aziz Nagar

APR -2025.

## DECLARATION

We hereby declare that the project entitled **“Hosting Static Website on AWS S3”** is a bonafide record of work carried out by us under the guidance of **Ms. Saritha**, Department of Computer Science and Engineering, **KL University**, as a part of our coursework in the **Department of Electronics and Communication Engineering**.

This project has not been submitted to any other institution or university for the award of any degree or diploma.

**Place:** Hyderabad<br>
**Date:** 30/04/2025

**Submitted by:**
**Rakesh** – 2210080005
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# Abstract

This project showcases a basic yet practical approach to web hosting using Amazon S3, one of the most accessible and scalable services offered by AWS. The goal is to host a static website consisting of HTML and CSS files without relying on any server-side technologies. This method is ideal for personal portfolios, documentation pages, or simple business landing pages.

To achieve this, a static website was developed using basic front-end technologies and uploaded to an S3 bucket. Static website hosting was enabled on the bucket, and a bucket policy was configured to allow public access to the web content. This ensures that users can view the site from any location via the auto-generated S3 website endpoint.

The entire solution is serverless, eliminating the need for backend infrastructure, thereby reducing complexity and cost. It also leverages the high availability and global reach of AWS infrastructure to deliver content efficiently.

By using only essential AWS features, this project emphasizes simplicity, reliability, and security in hosting static web applications. It serves as an introduction to cloud-based web deployment and lays the foundation for more advanced integrations in the future, such as custom domains, HTTPS via CloudFront, or CI/CD pipelines using AWS Amplify.

# K L Deemed to be UNIVERSITY

## Department of Artificial Intelligence and Data Science

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### Certificate

This is to certify that the project entitled **“Hosting Static Website on AWS S3”**, which is an **experimental and simulation** work carried out by **Rakesh, Abhay, Abhinav, Satyalokesh** is submitted in partial fulfilment of the course requirements for the award of grades in the subject of **CLOUD AND SERVERLESS COMPUTING**, during the year **2024–2025**. The project has been approved as it satisfies the academic requirements.

**Ms. Saritha**
*Course Coordinator*

**Dr. Sandeep Chitreddy**
*Head of the Department*

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# Introduction

With the increasing demand for fast, reliable, and cost-effective web hosting solutions, cloud platforms like Amazon Web Services (AWS) offer developers powerful tools to deploy websites without managing servers. Among these, Amazon S3 (Simple Storage Service) provides a lightweight and scalable way to host static websites.

This project explores the process of hosting a static website on AWS S3 using only essential features. A simple front-end webpage was created using HTML and CSS and uploaded to an S3 bucket configured for static website hosting. By enabling the static hosting feature and setting a bucket policy that allows public read access, the website becomes accessible globally via an auto-generated endpoint.

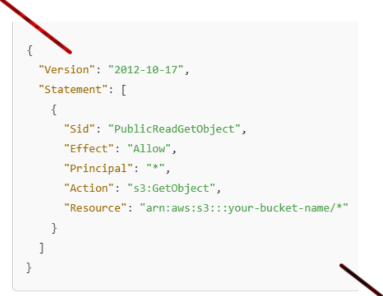
The project emphasizes the simplicity and practicality of deploying static content directly to the cloud without involving complex backend infrastructure. This serverless approach is particularly useful for projects such as personal portfolios, static landing pages, product documentation, and educational websites.

Using Amazon S3 not only reduces deployment time and operational overhead but also ensures high availability, scalability, and durability. It introduces students to cloud-based hosting concepts and serves as a stepping stone toward more advanced AWS services and DevOps workflows.

# System Architecture

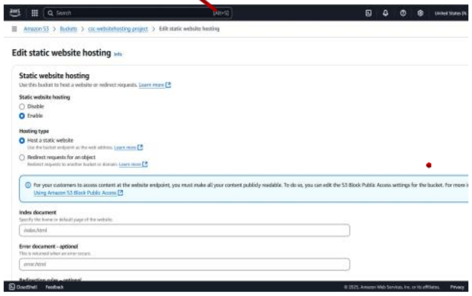
The architecture consists of a single AWS S3 bucket with the following components:

1. Amazon S3 Bucket: Stores and serves the HTML files.
2. Bucket Policy: Grants public read access to allow users to view the website.
3. Static Website Hosting Configuration: Enables website hosting and defines index and error documents.



```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::your-bucket-name/*"
    }
  ]
}
```

**Bucket Policy**


aws
Search
[Alt+S]
United States (N
Amazon S3 > Buckets > cic-websitehosting-project > Edit static website hosting
Info
Learn more
CloudShell
Feedback
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Privacy

Edit static website hosting

Static website hosting

Use this bucket to host a website or redirect requests.

Static website hosting

○ Disable
● Enable

Hosting type

● Host a static website
Use the bucket endpoint as the web address.

○ Redirect requests for an object
Redirect requests to another bucket or domain.

For your customers to access content at the website endpoint, you must make all your content publicly readable. To do so, you can edit the S3 Block Public Access settings for the bucket. For more i
Using Amazon S3 Block Public Access

Index document
Specify the home or default page of the website.
index.html

Error document - optional
This is returned when an error occurs.
error.html

Redirection rules – optional

**Enable Website Hosting**

# Implementation Details

**1. HTML Code Development**

- A basic website was developed using HTML and CSS, consisting of a homepage (index.html).

**2. S3 Bucket Creation**

- A new S3 bucket was created with a globally unique name.
- Static website hosting was enabled in the bucket settings.
- index.html was set as the default home page.

**3. Bucket Policy Configuration**

- A JSON bucket policy was added to allow public read access to all objects in the bucket.

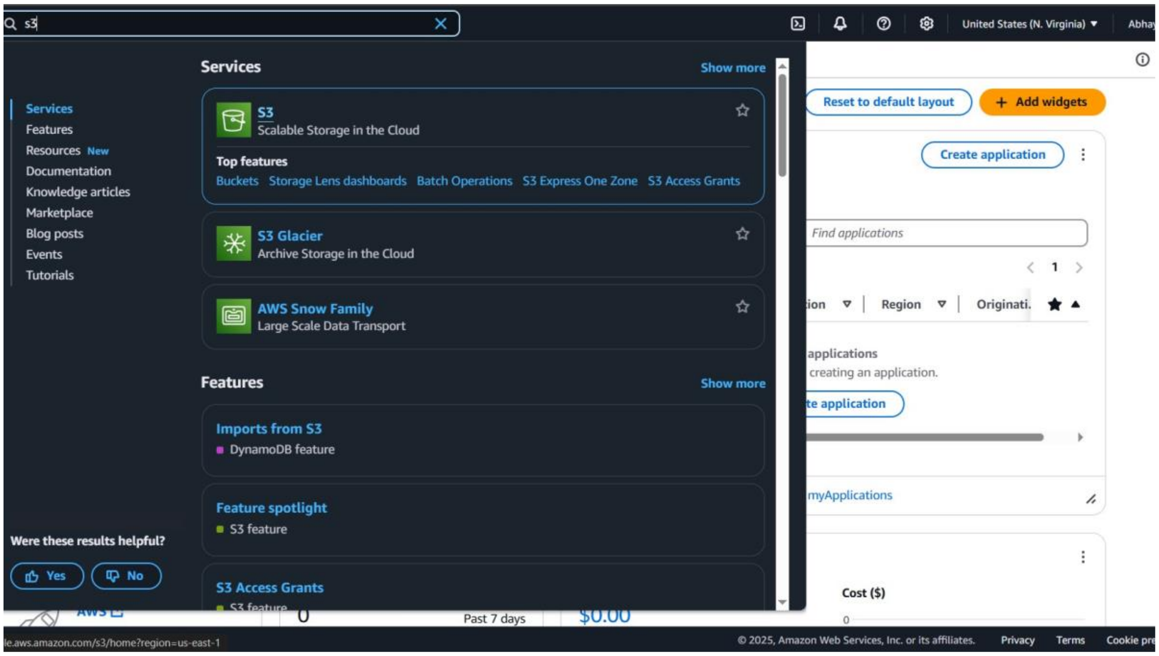
**4. Uploading Website Files**

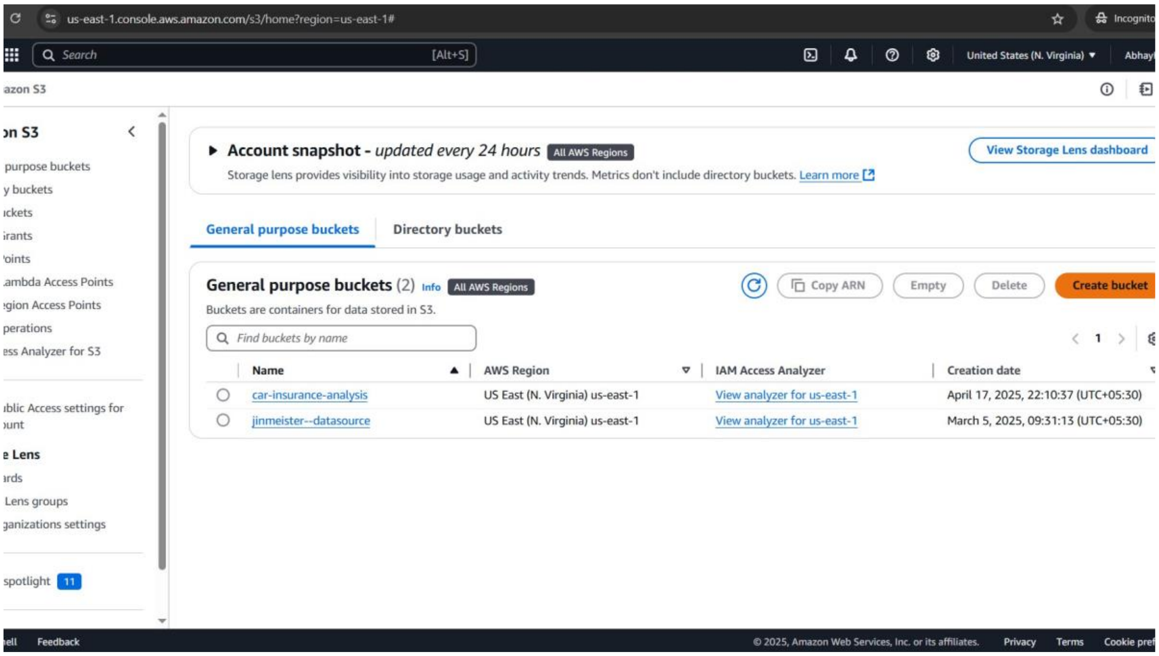
- HTML and CSS files were uploaded to the bucket.

**5. Accessing the Website**

- The static website was accessed via the automatically generated S3 website endpoint.

# Screenshots of Implementation





▶ **Account snapshot -** *updated every 24 hours* All AWS Regions

Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. Learn more

View Storage Lens dashboard

General purpose buckets | Directory buckets

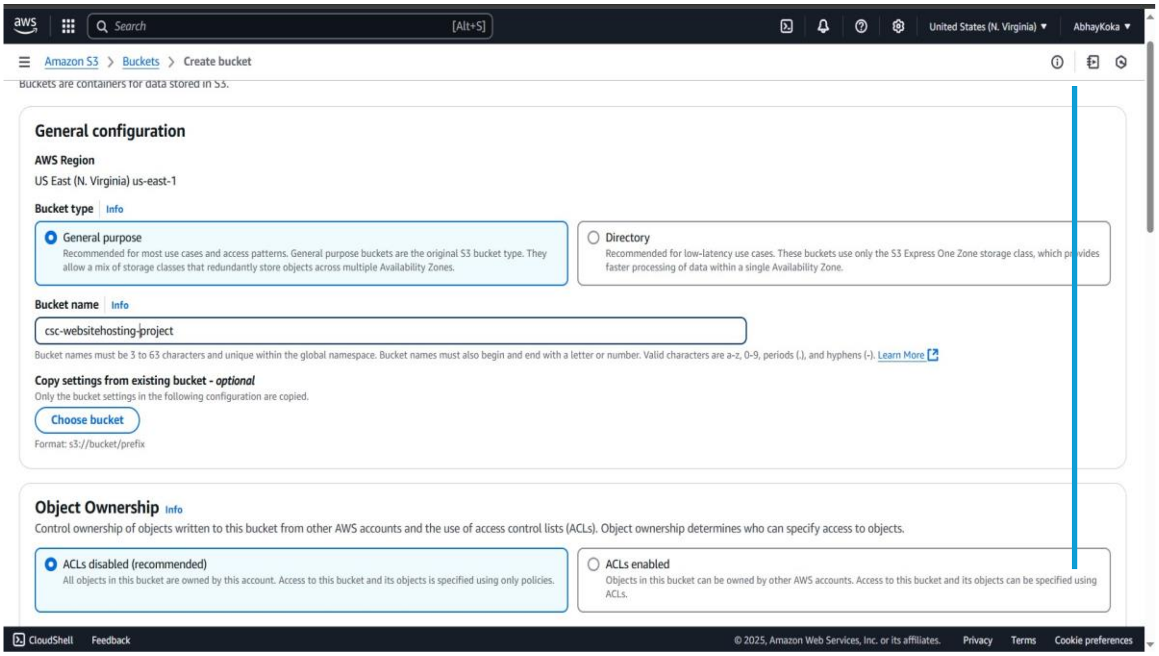
**General purpose buckets** (2) Info All AWS Regions

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 |
|---|---|---|---|---|
| ○ | car-insurance-analysis | US East (N. Virginia) us-east-1 | View analyzer for us-east-1 | April 17, 2025, 22:10:37 (UTC+05:30) |
| ○ | jinmeister--datasource | US East (N. Virginia) us-east-1 | View analyzer for us-east-1 | March 5, 2025, 09:31:13 (UTC+05:30) |



aws
Search [Alt+S]
United States (N. Virginia) ▼
AbhayKoka ▼
Amazon S3 > Buckets > Create bucket

Buckets are containers for data stored in S3.

General configuration

AWS Region

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

Bucket type Info

● General purpose
Recommended for most use cases and access patterns. General purpose buckets are the original S3 bucket type. They allow a mix of storage classes that redundantly store objects across multiple Availability Zones.

○ Directory
Recommended for low-latency use cases. These buckets use only the S3 Express One Zone storage class, which provides faster processing of data within a single Availability Zone.

Bucket name Info

csc-websitehosting-project

Bucket names must be 3 to 63 characters and unique within the global namespace. Bucket names must also begin and end with a letter or number. Valid characters are a-z, 0-9, periods (.), and hyphens (-). Learn More

Copy settings from existing bucket - *optional*

Only the bucket settings in the following configuration are copied.

Format: s3://bucket/prefix

Object Ownership Info

Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.

● ACLs disabled (recommended)
All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.

○ ACLs enabled
Objects in this bucket can be owned by other AWS accounts. Access to this bucket and its objects can be specified using ACLs.

CloudShell
Feedback
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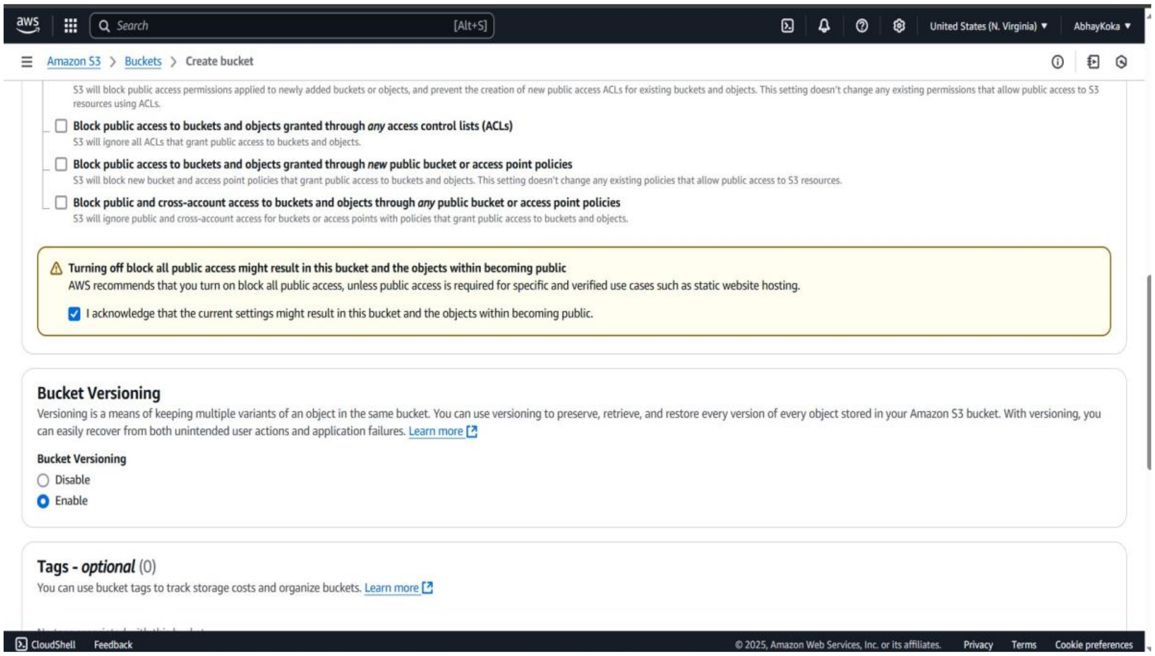


aws
Search [Alt+S]
United States (N. Virginia) ▼
AbhayKoka ▼
Amazon S3 > Buckets > Create bucket

S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.

□ **Block public access to buckets and objects granted through *any* access control lists (ACLs)**
S3 will ignore all ACLs that grant public access to buckets and objects.

□ **Block public access to buckets and objects granted through *new* public bucket or access point policies**
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.

□ **Block public and cross-account access to buckets and objects through *any* public bucket or access point policies**
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

⚠ **Turning off block all public access might result in this bucket and the objects within becoming public**
AWS recommends that you turn on block all public access, unless public access is required for specific and verified use cases such as static website hosting.

☑ I acknowledge that the current settings might result in this bucket and the objects within becoming public.

Bucket Versioning

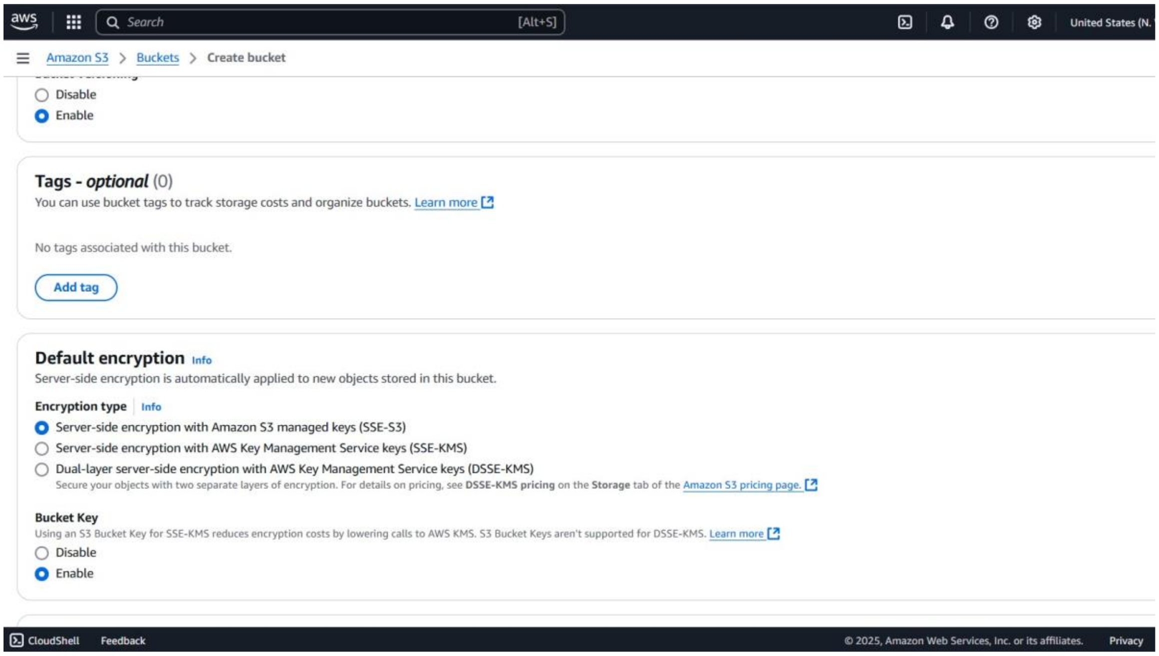
Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. Learn more

Bucket Versioning

○ Disable
● Enable

Tags - *optional* (0)

You can use bucket tags to track storage costs and organize buckets. Learn more



Amazon S3 > Buckets > Create bucket

○ Disable
● Enable

## Tags - *optional* (0)

You can use bucket tags to track storage costs and organize buckets. Learn more

No tags associated with this bucket.

Add tag

## Default encryption Info

Server-side encryption is automatically applied to new objects stored in this bucket.

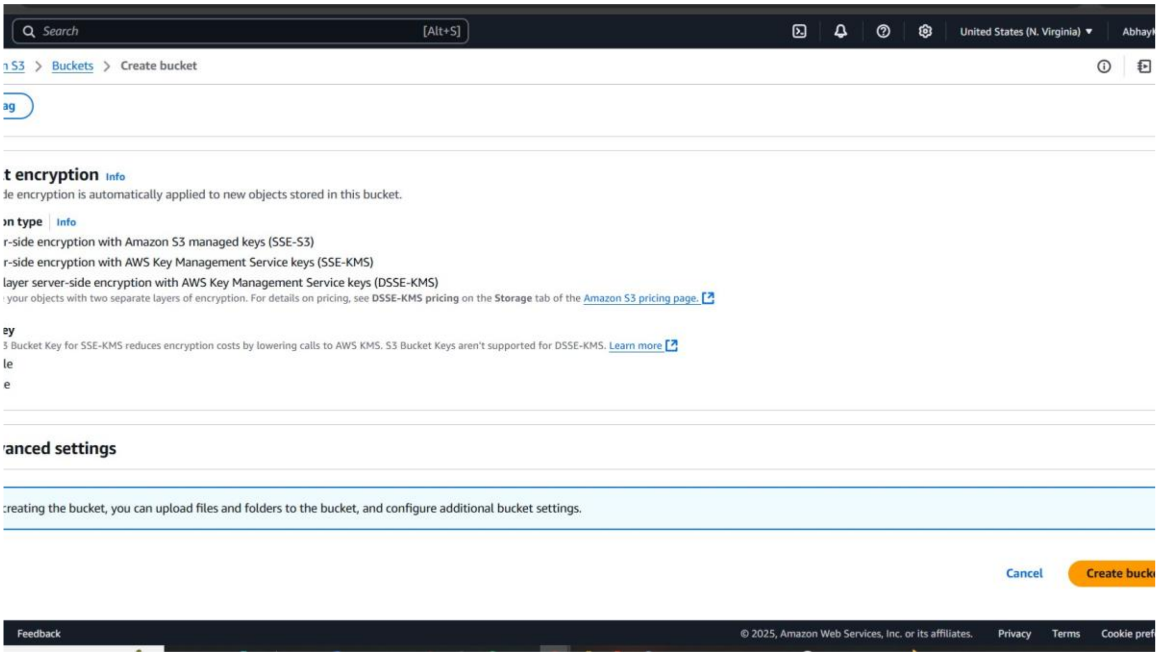
**Encryption type** Info

● Server-side encryption with Amazon S3 managed keys (SSE-S3)
○ Server-side encryption with AWS Key Management Service keys (SSE-KMS)
○ Dual-layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)
Secure your objects with two separate layers of encryption. For details on pricing, see **DSSE-KMS pricing** on the **Storage** tab of the Amazon S3 pricing page.

**Bucket Key**

Using an S3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. S3 Bucket Keys aren't supported for DSSE-KMS. Learn more

○ Disable
● Enable


Search [Alt+S]
United States (N. Virginia) ▼
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Privacy
Terms
Cookie pref

n S3 > Buckets > Create bucket

ag

## t encryption Info

de encryption is automatically applied to new objects stored in this bucket.

**on type** Info

r-side encryption with Amazon S3 managed keys (SSE-S3)
r-side encryption with AWS Key Management Service keys (SSE-KMS)
layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)
your objects with two separate layers of encryption. For details on pricing, see **DSSE-KMS pricing** on the **Storage** tab of the Amazon S3 pricing page.

**ey**

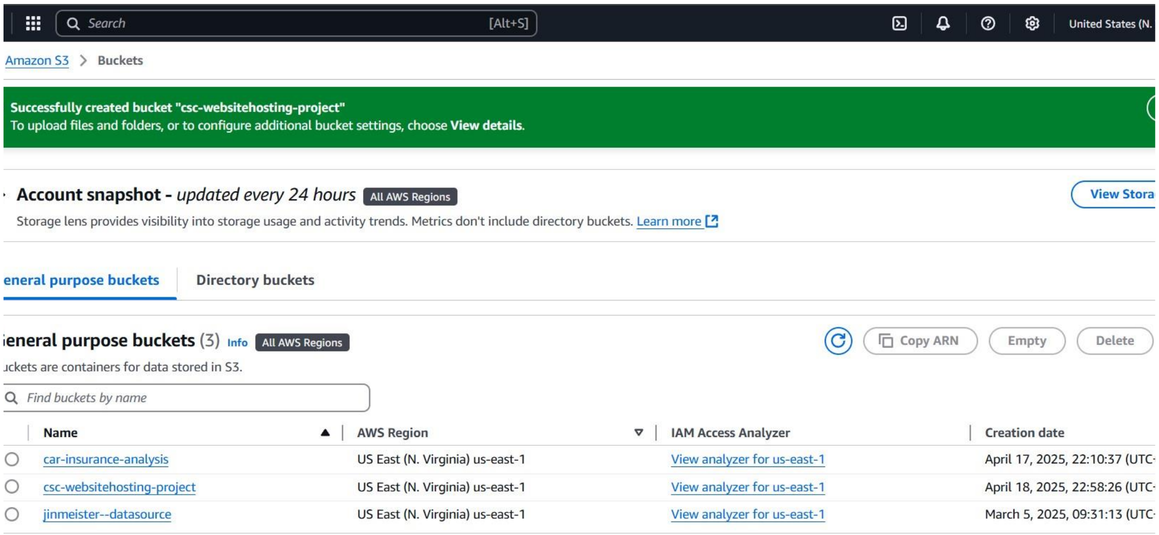
3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. S3 Bucket Keys aren't supported for DSSE-KMS. Learn more

le
e

## 'anced settings

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

Cancel Create buck



Amazon S3 > Buckets

**Successfully created bucket "csc-websitehosting-project"**
To upload files and folders, or to configure additional bucket settings, choose **View details**.

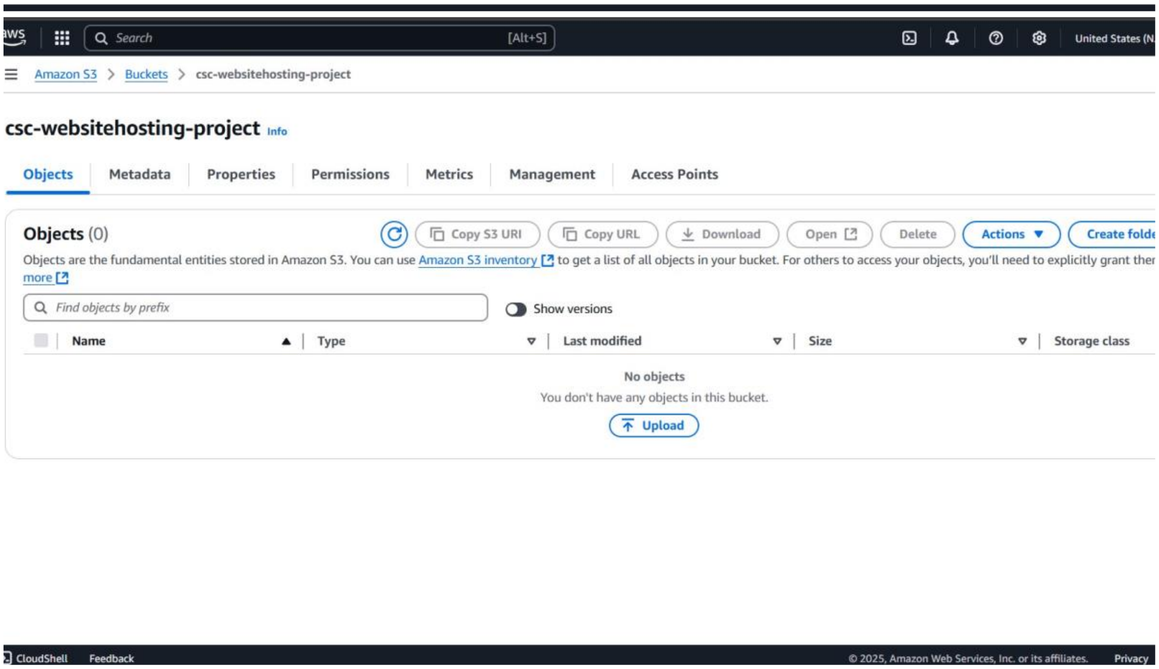
**Account snapshot -** *updated every 24 hours* All AWS Regions

Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. Learn more

**ieneral purpose buckets** (3) Info All AWS Regions

ickets are containers for data stored in S3.

|  | Name | AWS Region | IAM Access Analyzer | Creation date |
|---|---|---|---|---|
| ○ | car-insurance-analysis | US East (N. Virginia) us-east-1 | View analyzer for us-east-1 | April 17, 2025, 22:10:37 (UTC- |
| ○ | csc-websitehosting-project | US East (N. Virginia) us-east-1 | View analyzer for us-east-1 | April 18, 2025, 22:58:26 (UTC- |
| ○ | jinmeister--datasource | US East (N. Virginia) us-east-1 | View analyzer for us-east-1 | March 5, 2025, 09:31:13 (UTC- |



Amazon S3 > Buckets > csc-websitehosting-project

**csc-websitehosting-project** Info

**Objects** (0)

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 ther more

| □ | Name | Type | Last modified | Size | Storage class |
|---|---|---|---|---|---|

**No objects**
You don't have any objects in this bucket.

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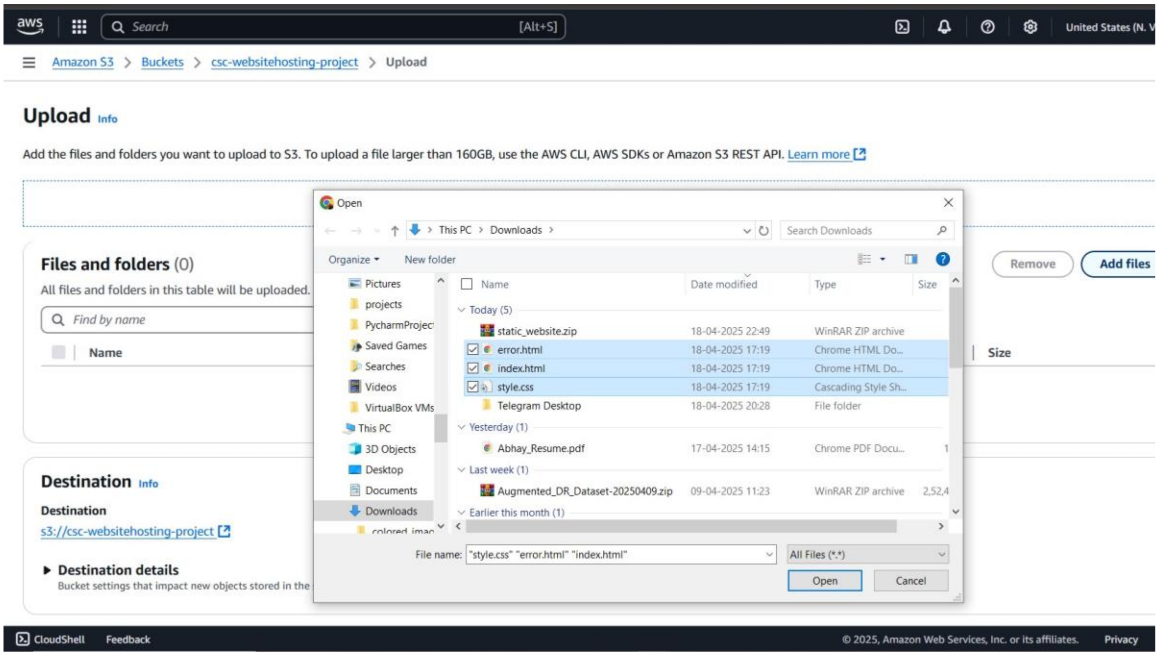


Amazon S3 > Buckets > csc-websitehosting-project > Upload

## Upload Info

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDKs or Amazon S3 REST API. Learn more

**Files and folders** (0)

All files and folders in this table will be uploaded.

Open — This PC > Downloads

| ☐ Name | Date modified | Type | Size |
|---|---|---|---|
| Today (5) | | | |
| static_website.zip | 18-04-2025 22:49 | WinRAR ZIP archive | |
| ☑ error.html | 18-04-2025 17:19 | Chrome HTML Do... | |
| ☑ index.html | 18-04-2025 17:19 | Chrome HTML Do... | |
| ☑ style.css | 18-04-2025 17:19 | Cascading Style Sh... | |
| Telegram Desktop | 18-04-2025 20:28 | File folder | |
| Yesterday (1) | | | |
| Abhay_Resume.pdf | 17-04-2025 14:15 | Chrome PDF Docu... | 1 |
| Last week (1) | | | |
| Augmented_DR_Dataset-20250409.zip | 09-04-2025 11:23 | WinRAR ZIP archive | 2,52,4 |
| Earlier this month (1) | | | |

File name: "style.css" "error.html" "index.html"

All Files (*.*)

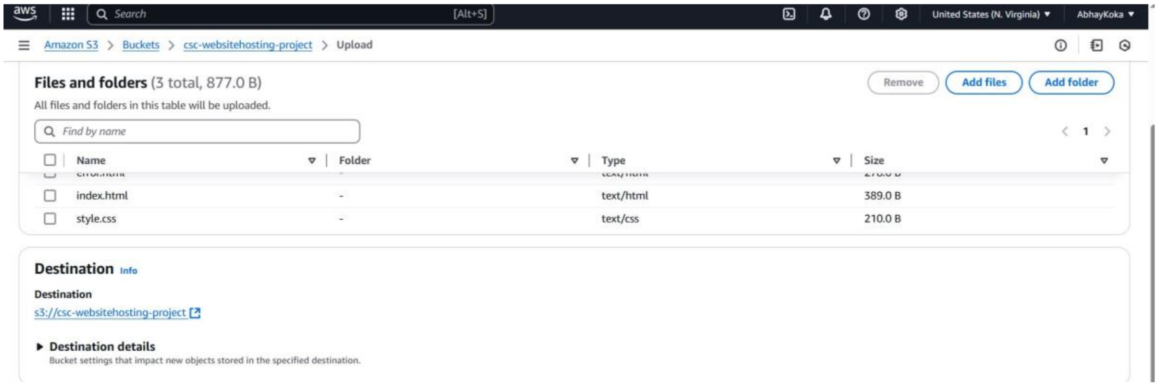
**Destination** Info

Destination

s3://csc-websitehosting-project

**Destination details**

Bucket settings that impact new objects stored in the



Amazon S3 > Buckets > csc-websitehosting-project > Upload

**Files and folders** (3 total, 877.0 B)

All files and folders in this table will be uploaded.

| Name | Folder | Type | Size |
|---|---|---|---|
| index.html | - | text/html | 389.0 B |
| style.css | - | text/css | 210.0 B |

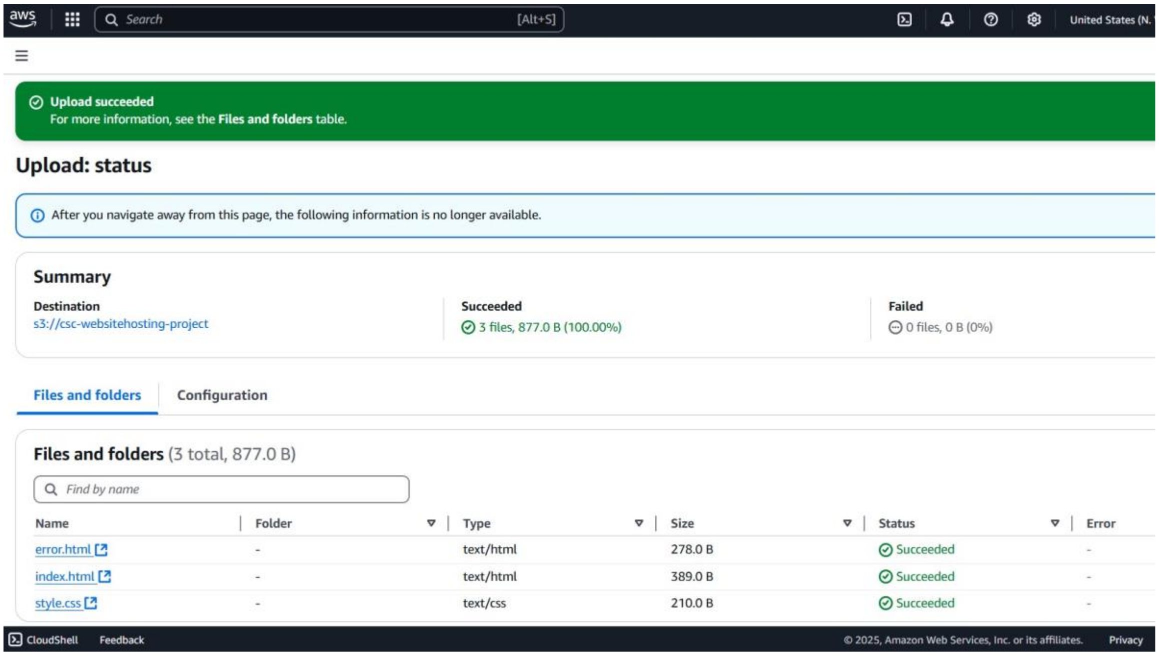
**Destination** Info

Destination

s3://csc-websitehosting-project

**Destination details**

Bucket settings that impact new objects stored in the specified destination.



Upload succeeded
For more information, see the **Files and folders** table.

## Upload: status

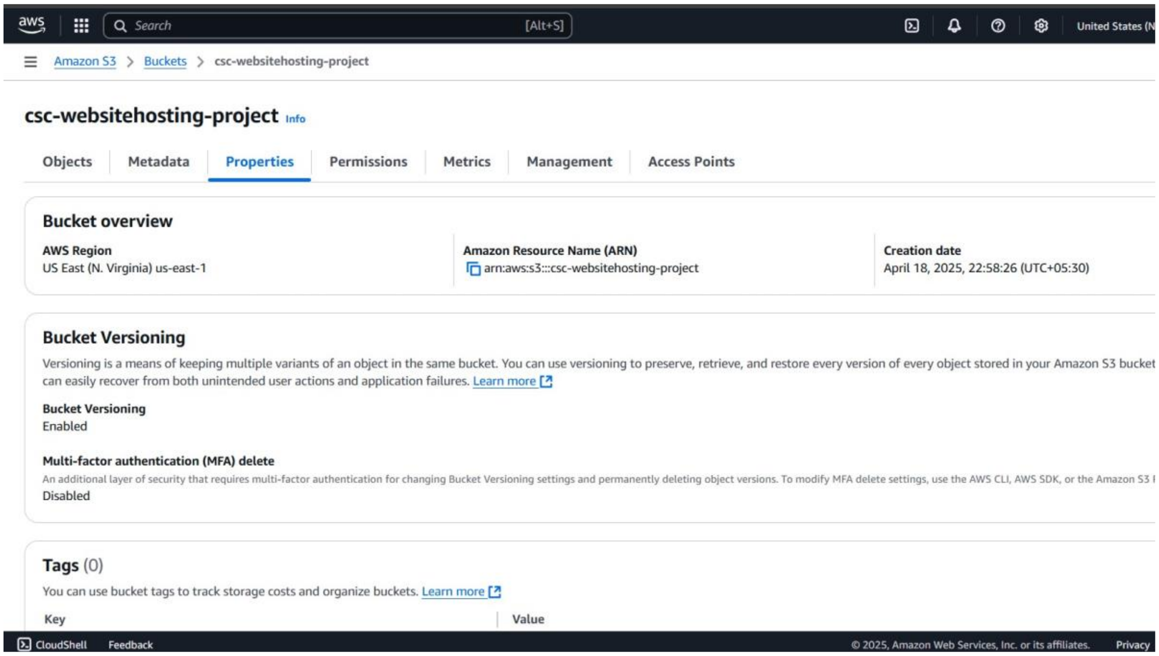
ⓘ After you navigate away from this page, the following information is no longer available.

### Summary

| Destination | Succeeded | Failed |
|---|---|---|
| s3://csc-websitehosting-project | ✓ 3 files, 877.0 B (100.00%) | ⊖ 0 files, 0 B (0%) |

### Files and folders (3 total, 877.0 B)

| Name | Folder | Type | Size | Status | Error |
|---|---|---|---|---|---|
| error.html | - | text/html | 278.0 B | ✓ Succeeded | - |
| index.html | - | text/html | 389.0 B | ✓ Succeeded | - |
| style.css | - | text/css | 210.0 B | ✓ Succeeded | - |



## csc-websitehosting-project

### Bucket overview

| AWS Region | Amazon Resource Name (ARN) | Creation date |
|---|---|---|
| US East (N. Virginia) us-east-1 | arn:aws:s3:::csc-websitehosting-project | April 18, 2025, 22:58:26 (UTC+05:30) |

### Bucket Versioning

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket can easily recover from both unintended user actions and application failures. Learn more

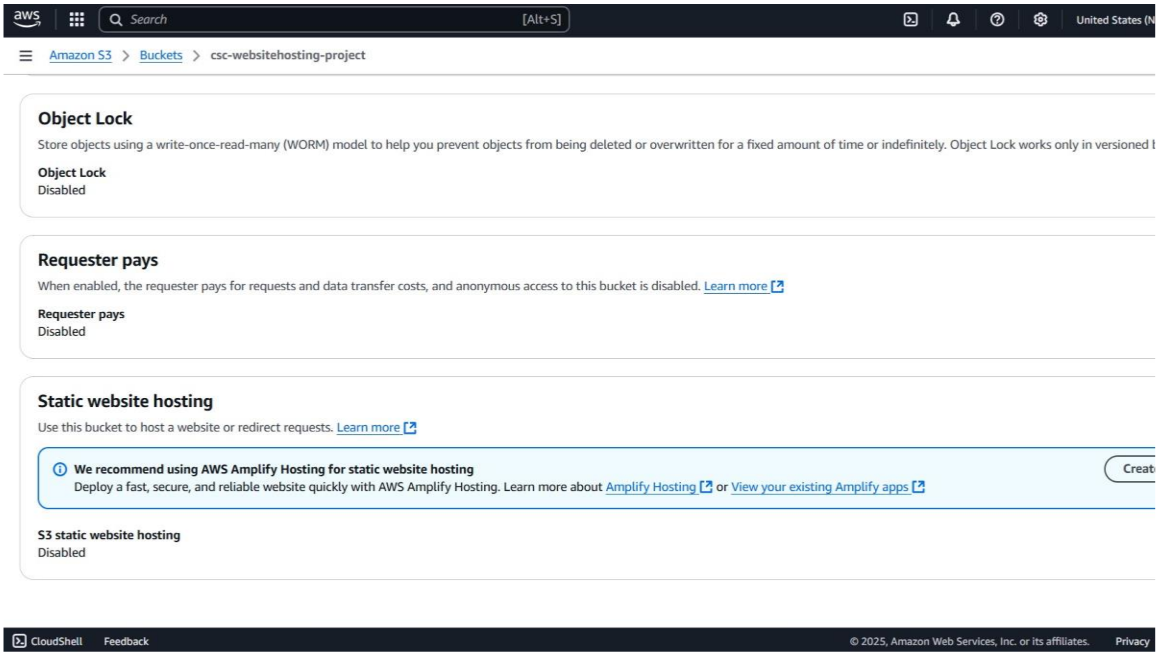
**Bucket Versioning**
Enabled

**Multi-factor authentication (MFA) delete**
An additional layer of security that requires multi-factor authentication for changing Bucket Versioning settings and permanently deleting object versions. To modify MFA delete settings, use the AWS CLI, AWS SDK, or the Amazon S3 I
Disabled

### Tags (0)

You can use bucket tags to track storage costs and organize buckets. Learn more

| Key | Value |
|---|---|



Amazon S3 > Buckets > csc-websitehosting-project

### 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 b

**Object Lock**
Disabled

### Requester pays

When enabled, the requester pays for requests and data transfer costs, and anonymous access to this bucket is disabled. Learn more

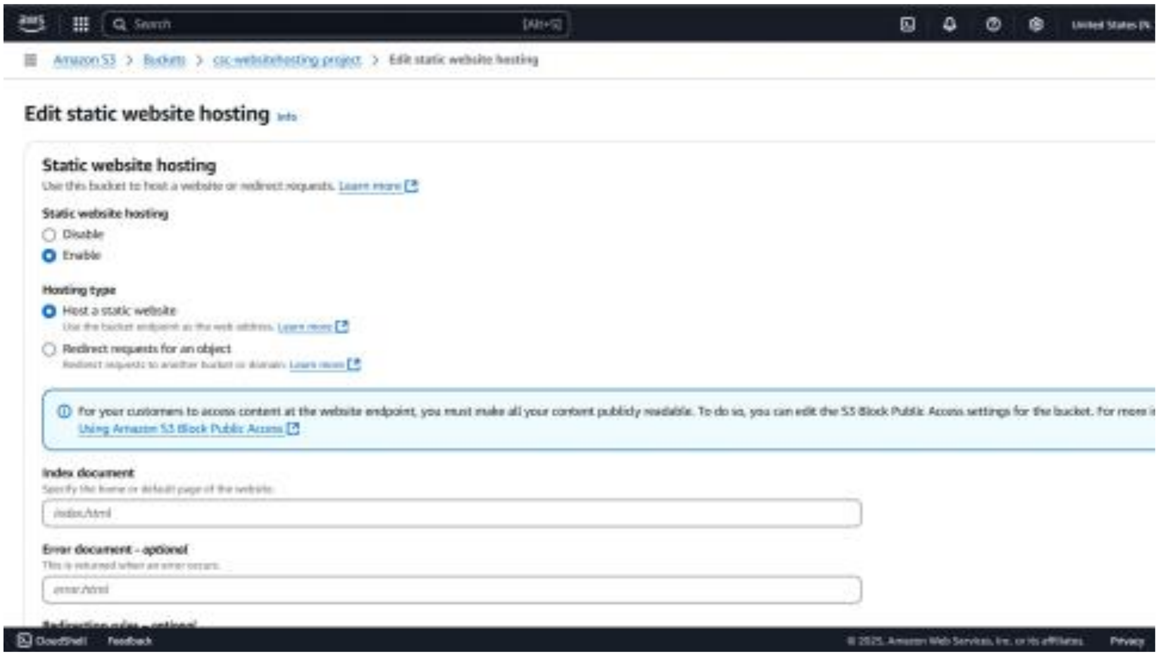
**Requester pays**
Disabled

### Static website hosting

Use this bucket to host a website or redirect requests. Learn more

**We recommend using AWS Amplify Hosting for static website hosting**
Deploy a fast, secure, and reliable website quickly with AWS Amplify Hosting. Learn more about Amplify Hosting or View your existing Amplify apps

**S3 static website hosting**
Disabled



Amazon S3 > Buckets > csc-websitehosting-project > Edit static website hosting

## Edit static website hosting

### Static website hosting

Use this bucket to host a website or redirect requests. Learn more

**Static website hosting**
○ Disable
● Enable

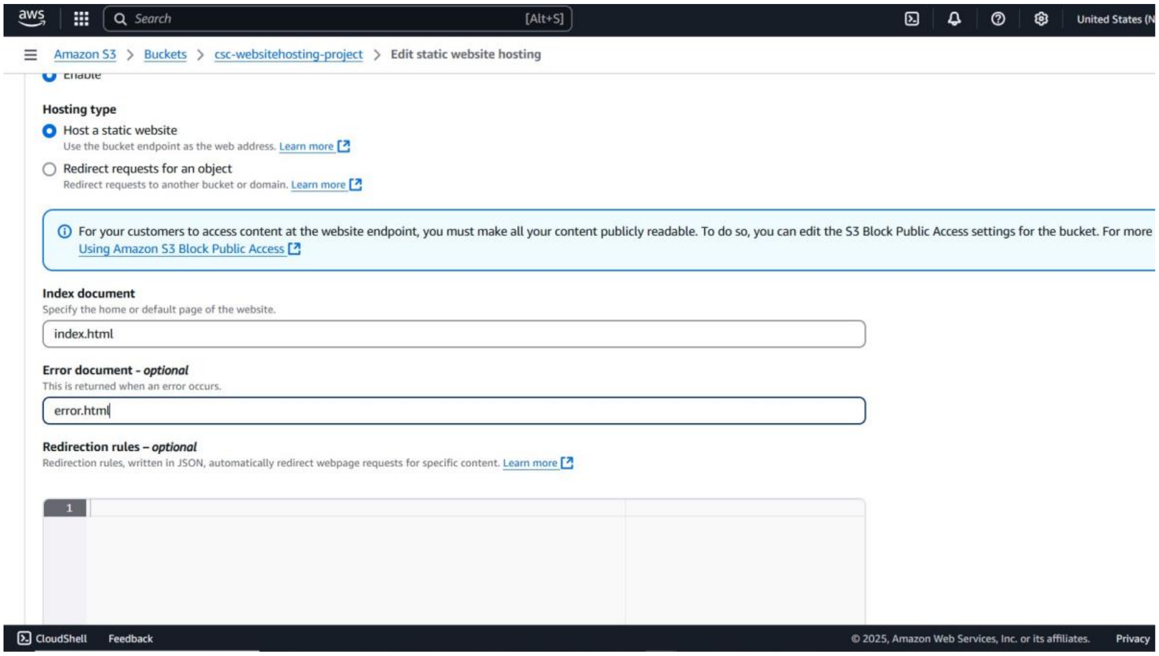
**Hosting type**
● Host a static website
Use the bucket endpoint as the web address. Learn more
○ Redirect requests for an object
Redirect requests to another bucket or domain. Learn more

For your customers to access content at the website endpoint, you must make all your content publicly readable. To do so, you can edit the S3 Block Public Access settings for the bucket. For more i
Using Amazon S3 Block Public Access

**Index document**
Specify the home or default page of the website.
index.html

**Error document - optional**
This is returned when an error occurs.
error.html

**Redirection rules – optional**


aws
Search [Alt+S]
United States (N
Amazon S3 > Buckets > csc-websitehosting-project > Edit static website hosting
CloudShell
Feedback
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Privacy

● Enable

**Hosting type**

● Host a static website
Use the bucket endpoint as the web address. Learn more

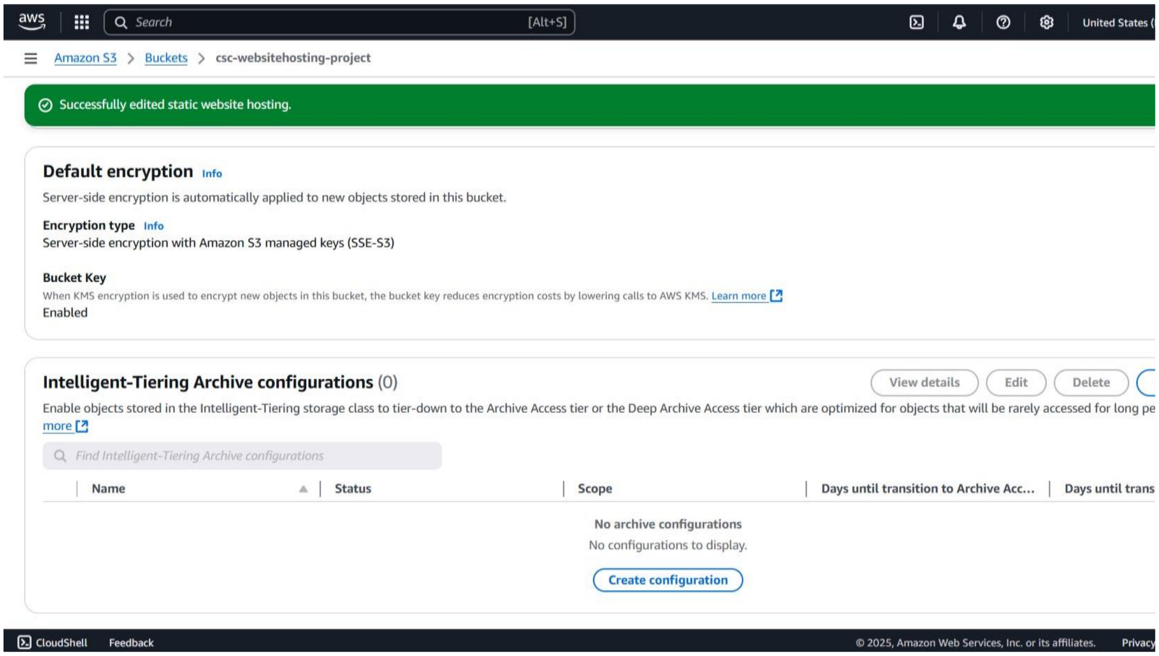
○ Redirect requests for an object
Redirect requests to another bucket or domain. Learn more

ⓘ For your customers to access content at the website endpoint, you must make all your content publicly readable. To do so, you can edit the S3 Block Public Access settings for the bucket. For more
Using Amazon S3 Block Public Access

**Index document**
Specify the home or default page of the website.
index.html

**Error document - *optional***
This is returned when an error occurs.
error.html

**Redirection rules – *optional***
Redirection rules, written in JSON, automatically redirect webpage requests for specific content. Learn more


aws
Search [Alt+S]
United States (
Amazon S3 > Buckets > csc-websitehosting-project
View details
Edit
Delete
Create configuration
CloudShell
Feedback
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Privacy

Successfully edited static website hosting.

**Default encryption** Info

Server-side encryption is automatically applied to new objects stored in this bucket.

**Encryption type** Info
Server-side encryption with Amazon S3 managed keys (SSE-S3)

**Bucket Key**
When KMS encryption is used to encrypt new objects in this bucket, the bucket key reduces encryption costs by lowering calls to AWS KMS. Learn more
Enabled

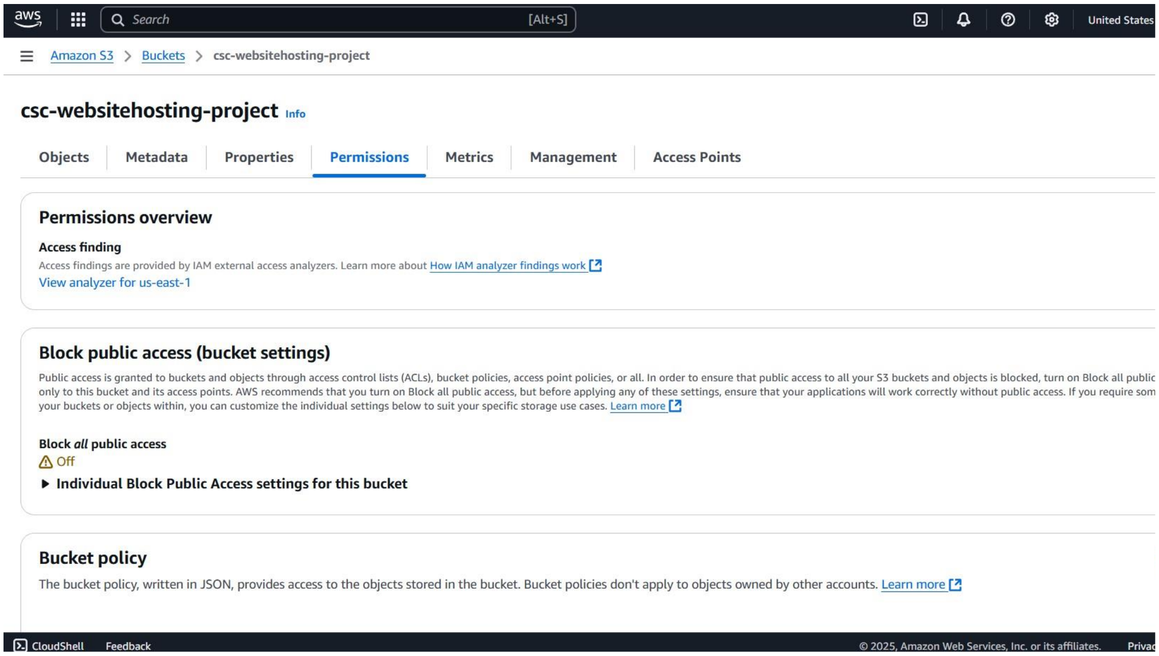
**Intelligent-Tiering Archive configurations** (0)

Enable objects stored in the Intelligent-Tiering storage class to tier-down to the Archive Access tier or the Deep Archive Access tier which are optimized for objects that will be rarely accessed for long pe
more

Find Intelligent-Tiering Archive configurations

| Name | Status | Scope | Days until transition to Archive Acc... | Days until trans |
|---|---|---|---|---|

No archive configurations
No configurations to display.



## csc-websitehosting-project Info

### Permissions overview

**Access finding**

Access findings are provided by IAM external access analyzers. Learn more about How IAM analyzer findings work

View analyzer for us-east-1

### Block public access (bucket settings)

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to all your S3 buckets and objects is blocked, turn on Block all public only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require som your buckets or objects within, you can customize the individual settings below to suit your specific storage use cases. Learn more

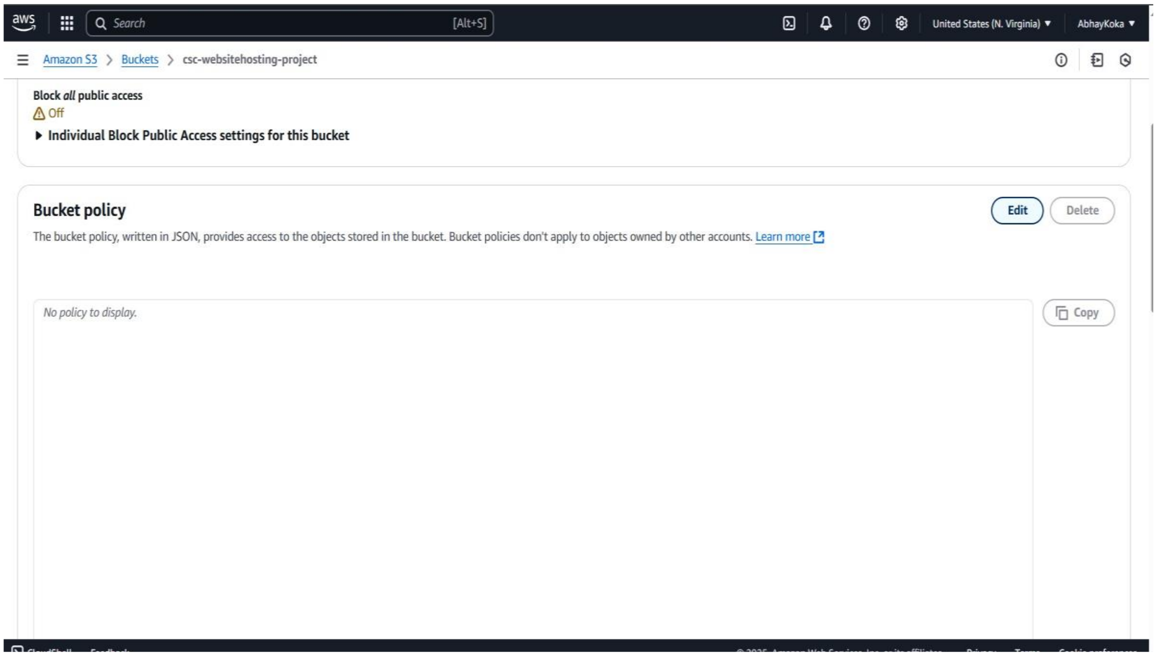
**Block *all* public access**

⚠ Off

▶ **Individual Block Public Access settings for this bucket**

### Bucket policy

The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. Learn more


aws
Search [Alt+S]
United States (N. Virginia) ▼
AbhayKoka ▼
Amazon S3 > Buckets > csc-websitehosting-project
Edit
Delete
Copy

**Block *all* public access**

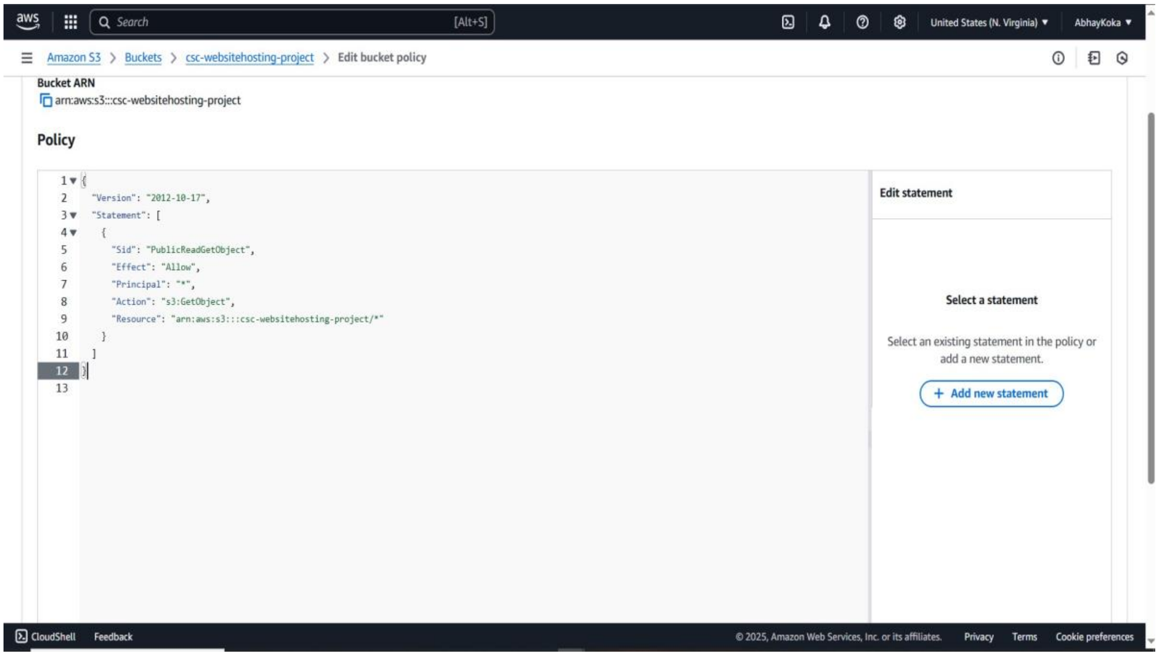
⚠ Off

▶ **Individual Block Public Access settings for this bucket**

### Bucket policy

The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. Learn more

*No policy to display.*


aws
Search [Alt+S]
United States (N. Virginia) ▾
AbhayKoka ▾
Amazon S3 > Buckets > csc-websitehosting-project > Edit bucket policy

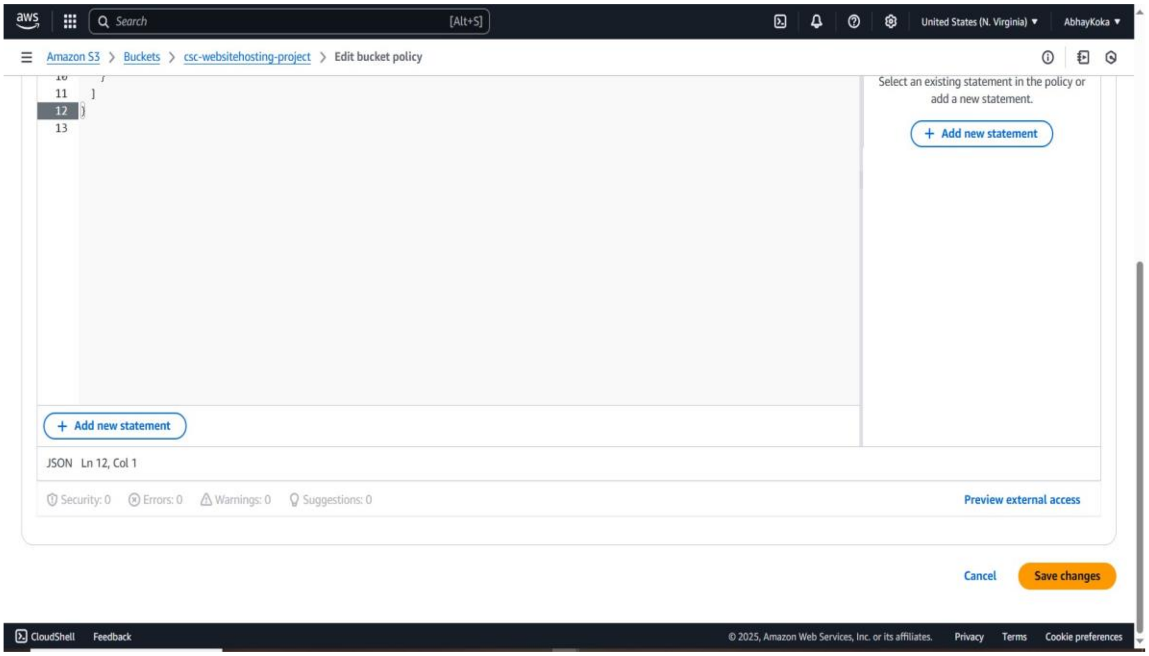
**Bucket ARN**

arn:aws:s3:::csc-websitehosting-project

**Policy**

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::csc-websitehosting-project/*"
    }
  ]
}
```

Edit statement
Select a statement
Select an existing statement in the policy or add a new statement.
+ Add new statement
CloudShell
Feedback
© 2025, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


aws
Search [Alt+S]
United States (N. Virginia) ▾
AbhayKoka ▾
Amazon S3 > Buckets > csc-websitehosting-project > Edit bucket policy

```
    }
  ]
}
```

Select an existing statement in the policy or add a new statement.
+ Add new statement
+ Add new statement

JSON Ln 12, Col 1

Security: 0 Errors: 0 Warnings: 0 Suggestions: 0

Preview external access
Cancel
Save changes
CloudShell
Feedback
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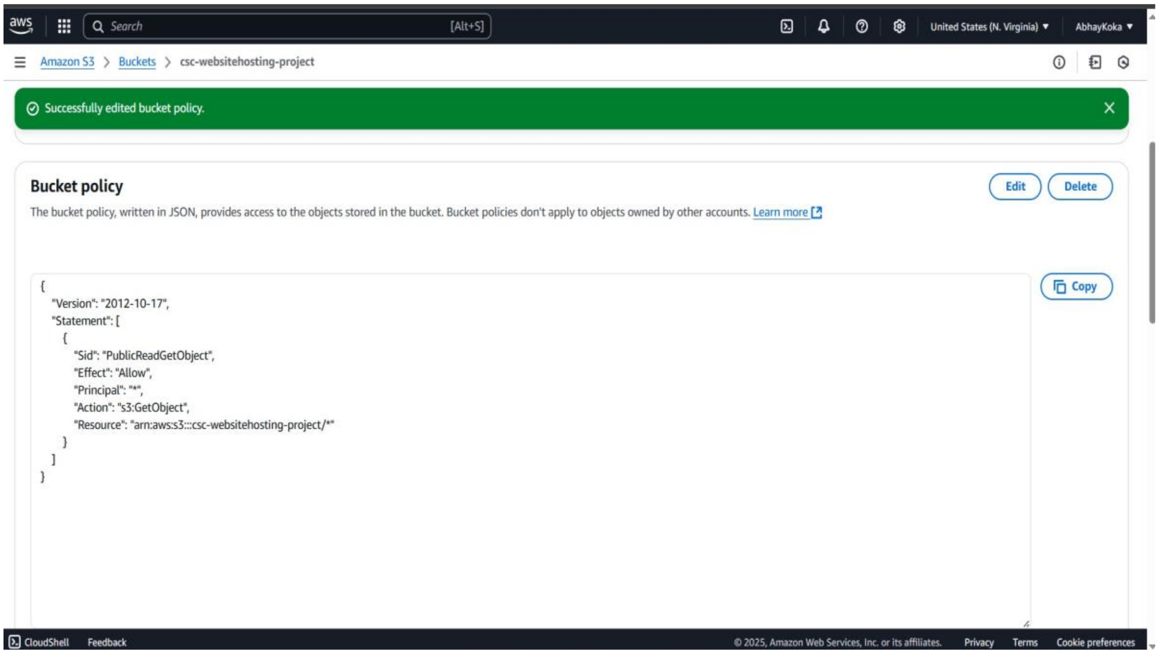
Privacy
Terms
Cookie preferences


aws
Search [Alt+S]
United States (N. Virginia) ▼
AbhayKoka ▼
Amazon S3 > Buckets > csc-websitehosting-project
Edit
Delete
Copy
CloudShell
Feedback
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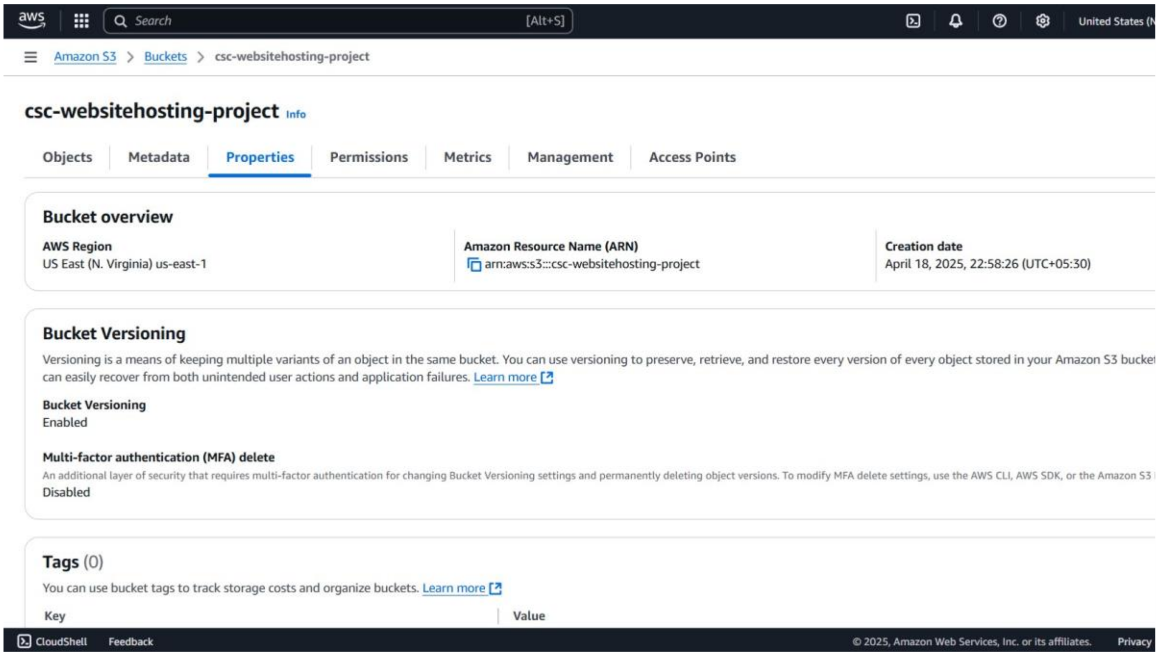
Successfully edited bucket policy.

**Bucket policy**

The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. Learn more

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::csc-websitehosting-project/*"
    }
  ]
}
```



**csc-websitehosting-project**

**Bucket overview**

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

Amazon Resource Name (ARN): arn:aws:s3:::csc-websitehosting-project

Creation date: April 18, 2025, 22:58:26 (UTC+05:30)

**Bucket Versioning**

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucke can easily recover from both unintended user actions and application failures. Learn more

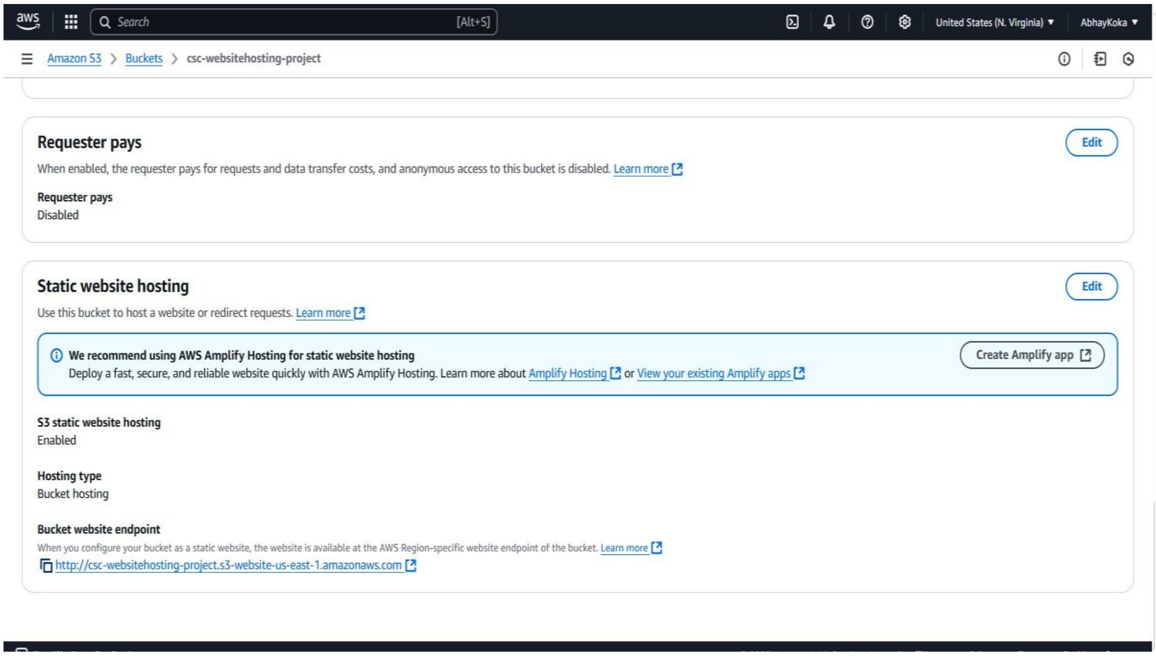
Bucket Versioning
Enabled

Multi-factor authentication (MFA) delete
An additional layer of security that requires multi-factor authentication for changing Bucket Versioning settings and permanently deleting object versions. To modify MFA delete settings, use the AWS CLI, AWS SDK, or the Amazon S3
Disabled

**Tags** (0)

You can use bucket tags to track storage costs and organize buckets. Learn more

| Key | Value |
|---|---|



Amazon S3 > Buckets > csc-websitehosting-project

**Requester pays**

When enabled, the requester pays for requests and data transfer costs, and anonymous access to this bucket is disabled. Learn more

Requester pays
Disabled

**Static website hosting**

Use this bucket to host a website or redirect requests. Learn more

We recommend using AWS Amplify Hosting for static website hosting
Deploy a fast, secure, and reliable website quickly with AWS Amplify Hosting. Learn more about Amplify Hosting or View your existing Amplify apps

S3 static website hosting
Enabled

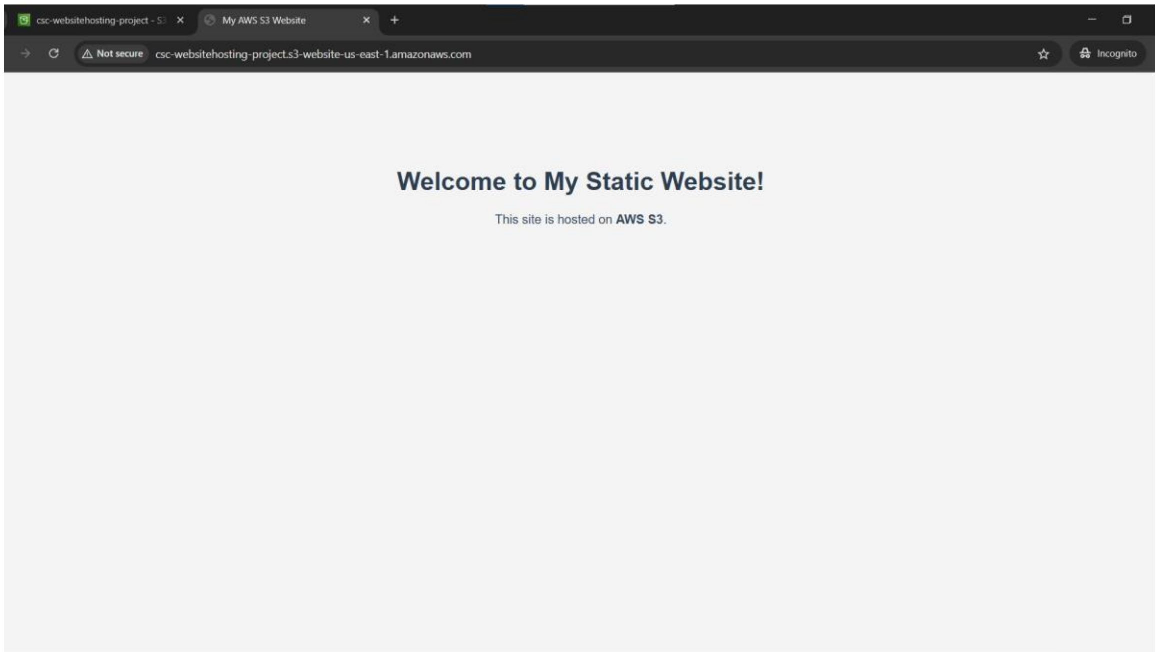
Hosting type
Bucket hosting

Bucket website endpoint
When you configure your bucket as a static website, the website is available at the AWS Region-specific website endpoint of the bucket. Learn more
http://csc-websitehosting-project.s3-website-us-east-1.amazonaws.com

# Bucket website endpoint URL:

http://csc-websitehosting-project.s3-website-us-east-1.amazonaws.com/

Output


csc-websitehosting-project - S3
My AWS S3 Website
Not secure
csc-websitehosting-project.s3-website-us-east-1.amazonaws.com
Incognito

Welcome to My Static Website!

This site is hosted on **AWS S3**.

Implementation ppt Link: https://github.com/abhaykoka/CSC-Project-Website-hosting-using-AWS-S3/blob/main/aws%20s3%20website%20hosting.pptx

# Security Considerations

Security is a critical aspect even when hosting static content. The following measures were implemented or considered to ensure the integrity and availability of the static website hosted on Amazon S3:

1. **Minimal Public Access via Bucket Policy**
   Public access is restricted strictly to s3:GetObject actions using a minimal bucket policy. This allows users to only read (view) the website content while preventing other actions like uploading, modifying, or deleting files.

2. **No Sensitive or Executable Content**
   The website consists only of static HTML and CSS files. There are no forms, scripts, or backend integrations, which means no sensitive user data is collected or processed. This reduces the attack surface significantly.

3. **Static Website Hosting Enabled on a Separate Bucket**
   A dedicated S3 bucket is used solely for website content, isolating it from other AWS resources and minimizing risk exposure.

4. **Block Public Access Setting Reviewed**
   The "Block all public access" setting in S3 was selectively disabled to allow controlled public access through the bucket policy. All other public access settings remain enabled unless explicitly needed.

5. **HTTPS Availability**
   While the S3 website endpoint does not support HTTPS directly, content can be securely delivered by integrating with Amazon CloudFront (not used in this project). This approach is recommended for production-grade deployments requiring secure data transmission.

6. **Object Locking and Versioning (Optional)**
   Though not applied in this basic setup, enabling S3 versioning and object lock can protect against accidental overwrites or deletions of website content.

7. **Access Logs (Optional for Monitoring)**
   Server access logging can be enabled for the S3 bucket to monitor and audit who is accessing the website content and from where, which helps in detecting unauthorized access patterns.

8. **Principle of Least Privilege for IAM Users**
   Developers uploading content to the bucket were granted only the necessary permissions using IAM policies, avoiding full administrative access.

9. **Content Integrity**
   Only verified and safe HTML/CSS files are uploaded to prevent content tampering. Any updates to the website go through a manual review process before deployment.

## Functional Workflow

1. User opens the S3 website endpoint in a browser.
   2. S3 serves the requested HTML page from the bucket.
   3. The content is rendered in the user's browser as a static web page.
2. The requested content (HTML, CSS, images, etc.) is served from the bucket based on the user's request.
3. The content is rendered in the user's browser as a fully loaded static web page.
4. If an incorrect URL is accessed, the configured error document (e.g., error.html) is displayed.

## Technology Stack Utilized

| **Component** | **Service / Technology** |
|---|---|
| **Frontend** | HTML, CSS |
| **Cloud Service** | Amazon S3 |
| **Hosting Type** | Static Website Hosting |
| **Access Control** | S3 Bucket Policy |
| **Deployment Method** | Manual Upload to S3 |
| **Security** | Public Read via Bucket Policy (GetObject only) |
| **Website Access** | S3 Static Website Endpoint |

# Performance and Scalability

1. **Built-in Scalability with Amazon S3**
   Amazon S3 is inherently designed to handle massive amounts of traffic without any configuration or infrastructure management. It can serve thousands of concurrent requests seamlessly, making it ideal for hosting static websites that may experience unpredictable or spiky traffic patterns.
2. **Global Availability with Low Latency**
   AWS's global network ensures that content hosted on S3 is delivered with minimal latency, regardless of user location. Although CloudFront was not used in this project, S3 still benefits from AWS's robust regional infrastructure, providing reliable access across continents.
3. **Zero Infrastructure Overhead**
   Hosting static sites on S3 eliminates the need for managing servers, load balancers, or auto-scaling groups. The entire hosting process is serverless and self-sustaining, reducing operational complexity and allowing developers to focus purely on content.
4. **Highly Durable and Available Storage**
   Amazon S3 offers 99.999999999% (11 9's) durability and 99.99% availability for objects, ensuring that website content is persistently stored and reliably served even in the face of hardware failures.
5. **Instant Content Updates**
   Website updates can be instantly reflected by replacing files in the bucket. There is no downtime or restart required, which allows for a fast and efficient content delivery lifecycle.

## Limitations

1. No dynamic content or backend processing (e.g., forms, user authentication).
2. Public access requires careful policy configuration to avoid exposing sensitive files.
3. No custom domain or HTTPS setup unless integrated with CloudFront (not used here).

## Conclusion

The project successfully demonstrates how to deploy a basic static website using Amazon S3. It validates the practicality of using AWS cloud infrastructure for hosting lightweight applications without the complexity of servers. This method is ideal for portfolios, documentation, or small business pages, and can be scaled or extended with additional AWS services in the future.

## Future Enhancements

1. Link a custom domain using Amazon Route 53.
2. Add HTTPS support through AWS CloudFront.
3. Expand the site with interactive features using JavaScript
4. Integrate contact forms using services like AWS Lambda or third-party APIs
5. Automate deployment using GitHub Actions or AWS Amplify.

**GitHub Repo**: https://github.com/abhaykoka/CSC-Project-Website-hosting-using-AWS-S3

# References

1. Amazon Web Services. *Editorial*. *Journal of Cloud Computing*, vol. 33, pp. 148–149, 2022. DOI: 10.3109/17453054.2022.525439.

2. Jeff Barr and James Hamilton. *The Structure and Function of S3*. 3rd ed., AWS Press, a subsidiary of Amazon Web Services, 2023.

3. David Miller, Sarah Johnson, Michael Chen, James Wilson, and Andrew Peterson. *An Update on Static Website Hosting Technologies*. *Cloud Computing Journal*, vol. 6, ISSN 2045-0893, 2023.

4. Werner Vogels, Martin Jones, Steven Clark, and Brett Anderson. *Incidence Estimate of Static Website Hosting (S3 Solutions) in the Global Market, 2022*. *JAMA Technology*, vol. 151, pp. 1081–1086, 2022.