

## Project

### Hosting a Static Website on a Amazon S3

#### Business scenario

The web team wants a solution to improve the reliability of their beach wave conditions page.

#### Solution Request

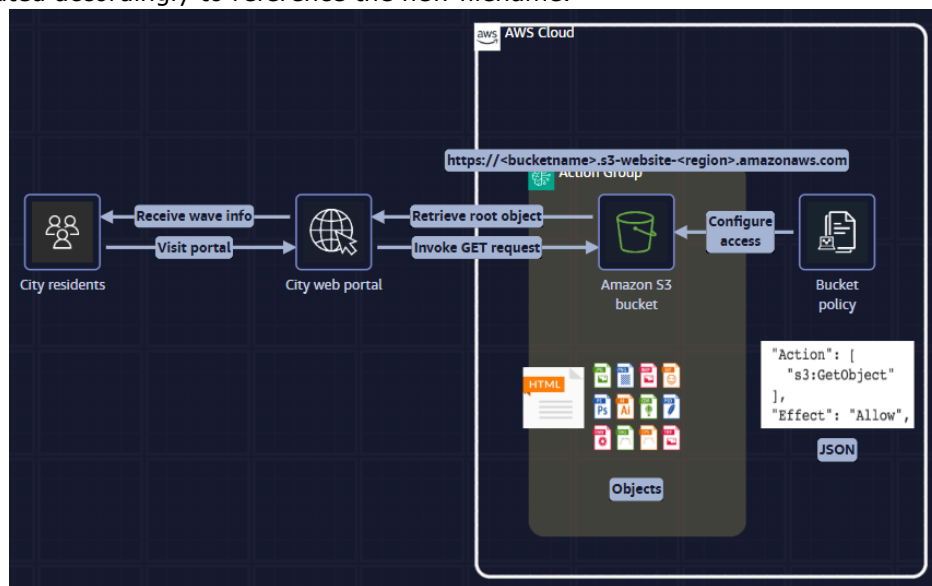
Improve website reliability by migrating to Amazon S3 static website hosting.

#### AWS Services Covered:

1. Amazon Simple Storage Service (Amazon S3)

#### Steps:

- Amazon S3 provides storage and retrieval of any amount of data from anywhere on the web.
- In Amazon S3, data is stored as objects (files and their associated metadata) within containers called buckets.
- This solution uses an S3 bucket to host a static website, capable of handling unlimited traffic volumes cost-effectively, removing the need for traditional web server management.
- The S3 bucket stores both the HTML file and supporting assets (such as client-side scripts and style sheets) required for website functionality. Any S3 bucket can be enabled for static website hosting.
- When configured for website hosting, the S3 bucket receives a dedicated URL. Requests to this URL prompt Amazon S3 to serve the bucket's designated root object (typically the main HTML file).
- Access to the S3 bucket and its contents is controlled through permissions, which are defined in a bucket policy.
- A bucket policy, written in JSON format, specifies who can access the bucket and what operations they can perform.
- JSON is a standardized data format that's both human-readable and machine-readable, widely used across AWS services and applications.
- When city residents access the web portal for beach wave information, their browsers send GET requests to the static webpage's URL, which serves the index.html root object.
- The root object can be renamed from index.html to waves.html, with S3 bucket settings updated accordingly to reference the new filename.

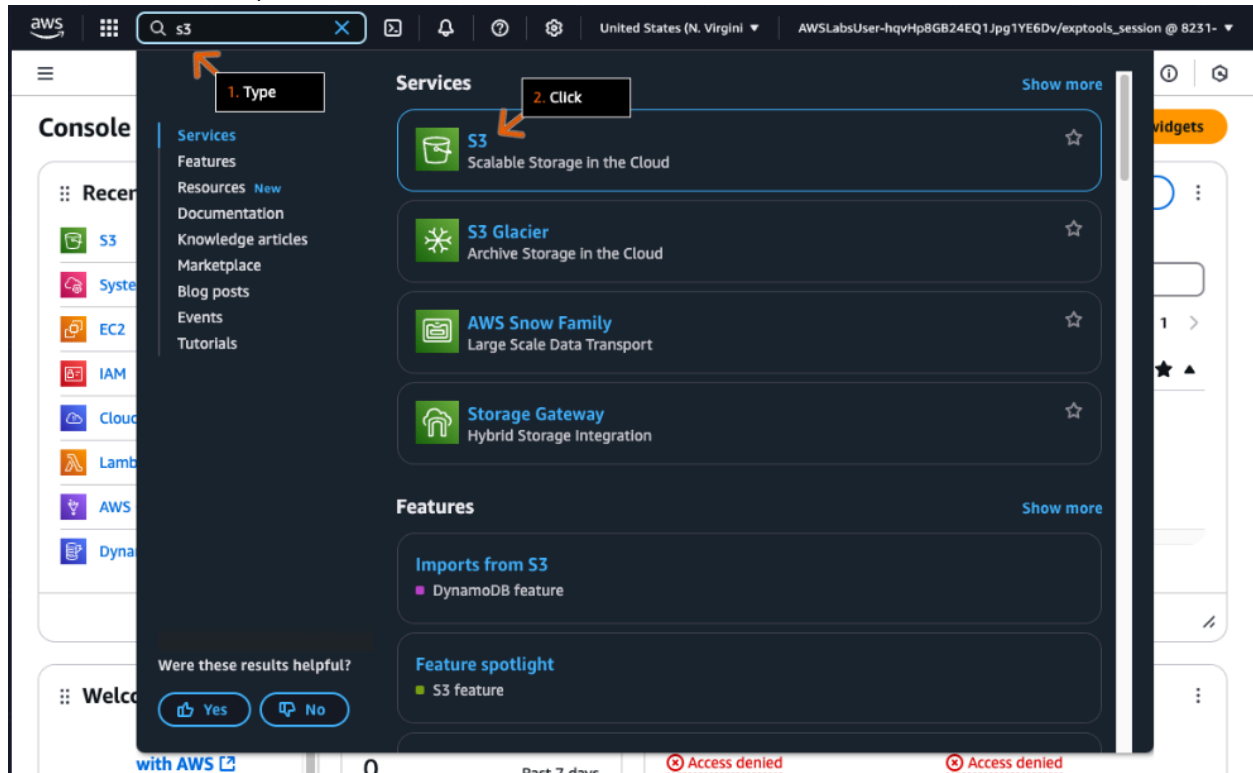


## Step-by-Step guide:

The AWS Management Console is a web interface to access and manage the broad collection of offerings provided by Amazon Web Services (AWS).

Step 1:

1. In the top navigation bar search box, type: s3
2. In the search results, under Services, click S3.
3. Go to the next step.



Amazon Simple Storage Service (Amazon S3) is an object storage service that stores and protects your data with high scalability, availability, security, and performance. Amazon S3 can store any amount of data for various uses—such as websites, mobile apps, backups, archives, data lakes, and analytics.

Steps:

1. On the General purpose buckets tab, click the bucket name that starts with website-bucket-.
- The bucket contains code required for this practice lab.
2. Go to the next step.

The screenshot shows the Amazon S3 console interface. On the left is a navigation sidebar with options like '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', 'Storage Lens', 'Dashboards', 'Storage Lens groups', 'AWS Organizations settings', and 'Feature spotlight'. The main content area is titled 'General purpose buckets (3)' and includes a search bar 'Find buckets by name'. Below the search bar is a table with columns 'Name', 'AWS Region', and 'IAM Access Ana'. Two buckets are listed: 'website-bucket-cdec98e0' and 'awslabs-resources-r5b3y6ojjszcap-us-east-1-823148526394'. A black box with the text '1. Click' and an orange arrow points to the first bucket's name. At the top of the console, there's an 'Account snapshot' section and a 'General purpose buckets' tab is selected.

Name	AWS Region	IAM Access Ana
<a href="#">website-bucket-cdec98e0</a>	US East (N. Virginia) us-east-1	<a href="#">View analyzer fo east-1</a>
<a href="#">awslabs-resources-r5b3y6ojjszcap-us-east-1-823148526394</a>	US East (N. Virginia) us-east-1	<a href="#">View analyzer fo east-1</a>

Amazon S3 stores objects in containers called buckets. Each storage object must be in a bucket. S3 offers different storage classes based on how often you need to access your data—from frequently accessed data to archived data that's rarely accessed.

Steps:

1. At the top of the page, select (highlight) and copy the bucket name, and then paste it in the text editor of your choice on your device.

- You must use this bucket name in the later DIY section of this solution.

2. On the Objects tab, review the objects in the S3 bucket.

- Five files should be displayed.
- These files contain the contents of the static website.
- You can click Upload to add local files to the bucket.

3. Choose the checkbox to select the text.html object.

4. Click Actions to expand the dropdown list.

5. Choose Rename object.

6. Go to the next step.

The screenshot shows the Amazon S3 console interface for a bucket named 'website-bucket-63754be0'. The 'Objects' tab is active, displaying a list of five objects: 'index.html', 'main.js', 'styles.css', 'target-file.csv', and 'text.html'. The 'text.html' object is selected with a checkbox. An arrow labeled '1. Copy' points to the bucket name. An arrow labeled '2. Review' points to the search bar. An arrow labeled '3. Choose' points to the checkbox for 'text.html'. An arrow labeled '4. Click' points to the 'Actions' button. An arrow labeled '5. Choose' points to the 'Rename object' option in the expanded Actions dropdown menu.

	Name	Type	Size	Storage
<input type="checkbox"/>	index.html	html	1.4 KB	Standard
<input type="checkbox"/>	main.js	js	1.1 KB	Standard
<input type="checkbox"/>	styles.css	css	1.6 KB	Standard
<input type="checkbox"/>	target-file.csv	csv	352.0 B	Standard
<input checked="" type="checkbox"/>	text.html	html	1.6 KB	Standard

You can choose which AWS Region will store your S3 buckets. Select a Region to reduce latency, lower costs, or meet regulatory requirements. Objects remain in their chosen Region unless you specifically move or copy them to another Region.

Step 6

1. For New object name, type:

error.html

- This file contains the code for the error page, which opens whenever something goes wrong for website users.

2. Click Save changes.

3. Go to the next step.

aws Search [Alt+S] United States (N. Virgi) AWSLabsUser-2R6GnYJ92YzUBDgbtQrveX/exptools\_session @ 823

Amazon S3 > Buckets > website-bucket-63754be0 > text.html > Rename object

### Rename object Info

This action creates a copy of the object with the specified object name and a new last-modified date. Depending on the bucket's versioning status, a delete marker will be inserted or the original object will be permanently deleted. [View copy restrictions and limitations](#)

**Rename object "text.html"**

**New object name**

error.html 1. Type

Object names can't contain "/". [See rules for naming](#)

**Additional copy settings**

☒ **Copy source settings**  
Source object settings are copied for storage class, object tags, metadata, server-side encryption, and additional checksums.

☐ **Don't specify settings**  
No settings are specified for storage class, ACLs, object tags, metadata, server-side encryption, and additional checksums.

☐ **Specify settings**  
Specify settings for storage class, ACLs, object tags, metadata, server-side encryption, and additional checksums. 2. Click

Cancel Save changes

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With S3, you can upload files up to 5 GB in a single operation. For larger files up to 5 TB, you'll need to use multipart upload.

Steps:

1. In the success alert, review the message.
2. Click the Permissions tab.
3. Go to the next step.

The screenshot shows the Amazon S3 console interface. At the top, a green success alert states: "Successfully renamed object 'text.html' was renamed to 'error.html'." An orange arrow labeled "1. Review" points to this alert. Below the alert, the breadcrumb navigation shows "Amazon S3 > Buckets > website-bucket-63754be0". The "Permissions" tab is highlighted in the top navigation bar, with an orange arrow labeled "2. Click" pointing to it. The main content area shows the "Objects (5)" tab, which includes a search bar and a table of objects. The table lists five objects: error.html, index.html, main.js, styles.css, and target-file.csv, each with its type, size, and storage class.

<input type="checkbox"/>	Name	Type	Size	Storage class
<input type="checkbox"/>	<a href="#">error.html</a>	html	1.6 KB	Standard
<input type="checkbox"/>	<a href="#">index.html</a>	html	1.4 KB	Standard
<input type="checkbox"/>	<a href="#">main.js</a>	js	1.1 KB	Standard
<input type="checkbox"/>	<a href="#">styles.css</a>	css	1.6 KB	Standard
<input type="checkbox"/>	<a href="#">target-file.csv</a>	csv	352.0 B	Standard

All S3 resources—buckets, objects, and related subresources—are private by default. Only you, as the resource owner, can access them unless you grant permissions to others through an access policy.

1. In the Block public access (bucket settings) section, review to confirm that Block all public access is turned off.

- Turning off "Block all public access" is necessary for static web hosting through your S3 bucket.

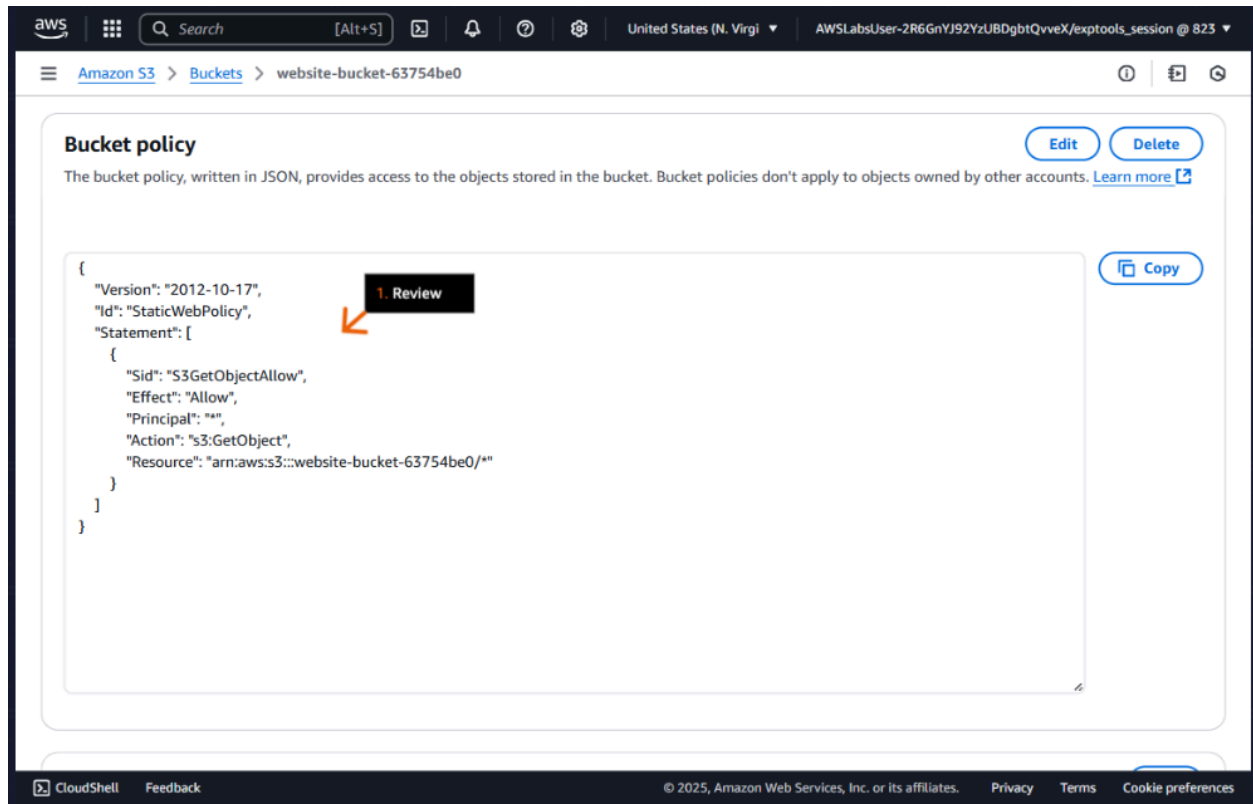
2. Go to the next step.

The screenshot shows the AWS Management Console interface for a bucket named 'website-bucket-63754be0'. The 'Permissions' tab is selected, showing the 'Block public access (bucket settings)' section. In this section, the 'Block all public access' toggle is set to 'Off', indicated by a yellow warning triangle. A red arrow points to a '1. Review' button. Below this, there is a link to 'Individual Block Public Access settings for this bucket'. The 'Bucket policy' section is also visible at the bottom, with 'Edit' and 'Delete' buttons. The top navigation bar shows the AWS logo, a search bar, and the user's account information.

You can grant permissions to S3 resources by using two types of policies: bucket policies and user policies. Both use JSON format. Each AWS resource has a unique identifier called an Amazon Resource Name (ARN).

Steps:

1. In the Bucket policy editor window, review the policy.
  - This S3 bucket policy allows public read-only access (GetObject) to anyone for all objects within the specified bucket. However, to prevent unintended data exposure, we recommend stricter permissions for production environments.
2. Go to the next step.

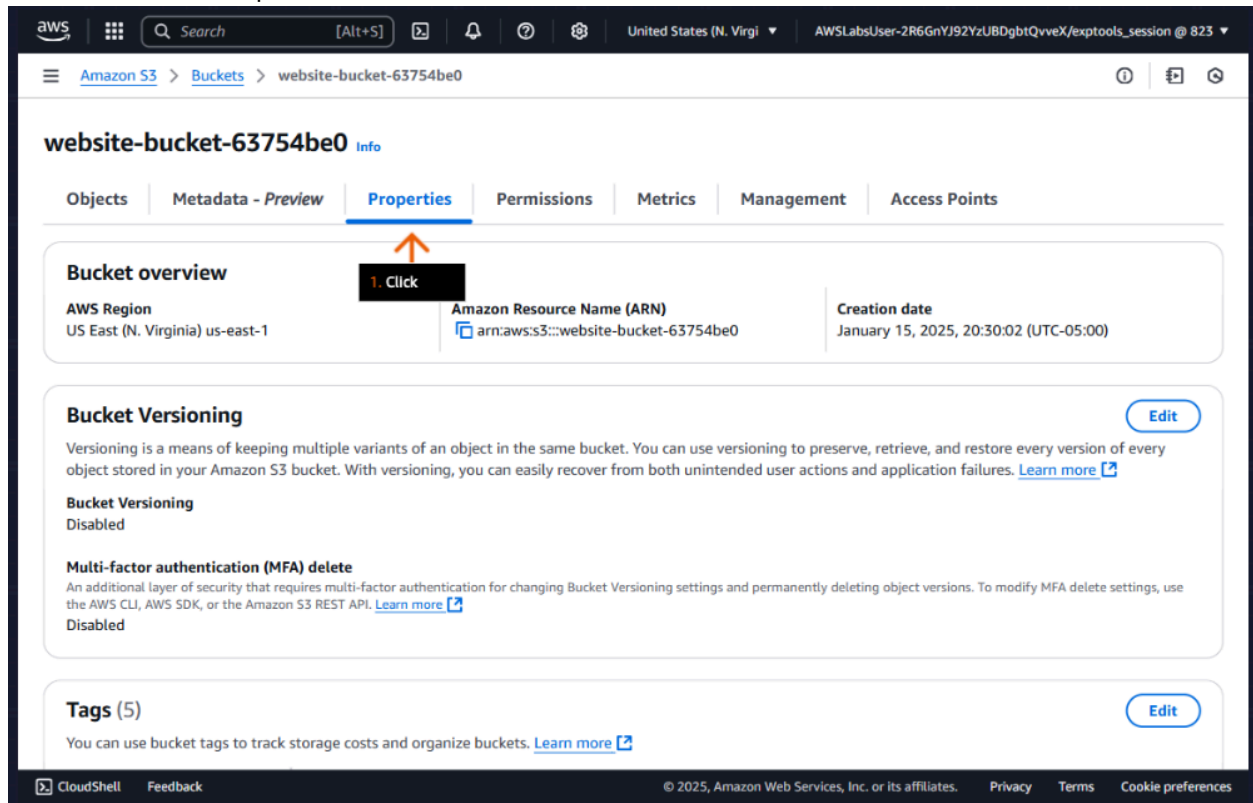




To host a static website on S3, you need to: configure your bucket for website hosting, set permissions, and add an index document. You can also set up redirects, logging, and custom error pages.

Steps:

1. At the top of the page, click the Properties tab.
2. Go to the next step.



Concept:

Server-side encryption protects your data where it's stored. When you upload data to S3, it automatically encrypts your data before saving it to AWS data centers. When you access your data, S3 automatically decrypts it for you.

Steps:

1. In the Default encryption section, review the encryption settings.
2. Go to the next step.

The screenshot displays the AWS S3 console for a bucket named 'website-bucket-cdec98e0'. The breadcrumb navigation shows 'Amazon S3 > Buckets > website-bucket-cdec98e0'. A metadata table at the top lists the following details:

aws:cloudformation:logical-id	websitebucket2A9B32AF
aws:cloudformation:stack-id	arn:aws:cloudformation:us-east-1:823148526394:stack/LabStack-f317f44b-e4bf-4f0a-b6c2-05d915764bab-hqvHp8GB24EQ1Jpg1YE6Dv-0/cdec98e0-d4ec-11ef-a2b0-0afffbcc4823
GblBucket	1.0.0

The 'Default encryption' section is highlighted with a red box and a '1. Review' label. It contains the following information:

- 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**: Disabled. 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](#)

The 'Intelligent-Tiering Archive configurations (0)' section is also visible, showing a search bar and a table with columns: Name, Status, Scope, Days until transition to ..., and Days until transition to... The table is currently empty, displaying 'No archive configurations' and 'No configurations to display.'

A static website contains fixed content that doesn't change, though it can include interactive features through client-side scripts.

Steps:

1. In the Static website hosting section, click Edit.
2. Go to the next step.

The screenshot shows the AWS Management Console interface for a bucket named 'website-bucket-63754be0'. The top navigation bar includes the AWS logo, a search bar, and user information. The breadcrumb trail indicates the path: Amazon S3 > Buckets > website-bucket-63754be0. The main content area displays three configuration sections: 'Object Lock' (disabled), 'Requester pays' (disabled), and 'Static website hosting' (disabled). The 'Static website hosting' section is highlighted with a blue border and a '1. Click' callout with an orange arrow pointing to the 'Edit' button. Below this section, there is a recommendation to use AWS Amplify Hosting for static website hosting, with a 'Create Amplify app' button. The footer of the console shows 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc. or its affiliates.

aws Search [Alt+S] United States (N. Virg) AWSLabUser-2R6GnYJ92YzUBDgbtQvveX/exptools\_session @ 823

Amazon S3 > Buckets > website-bucket-63754be0

**Object Lock** [Edit](#)

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](#)

**Object Lock**  
Disabled

**Requester pays** [Edit](#)

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** [1. Click](#) [Edit](#)

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](#) [Create Amplify app](#)

**S3 static website hosting**  
Disabled

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S3 provides two URL formats to access your data:

- Virtual-hosted style: <https://bucket-name.s3.Region.amazonaws.com/key>
- Path style: <https://s3.Region.amazonaws.com/bucket-name/keyname>

Steps:

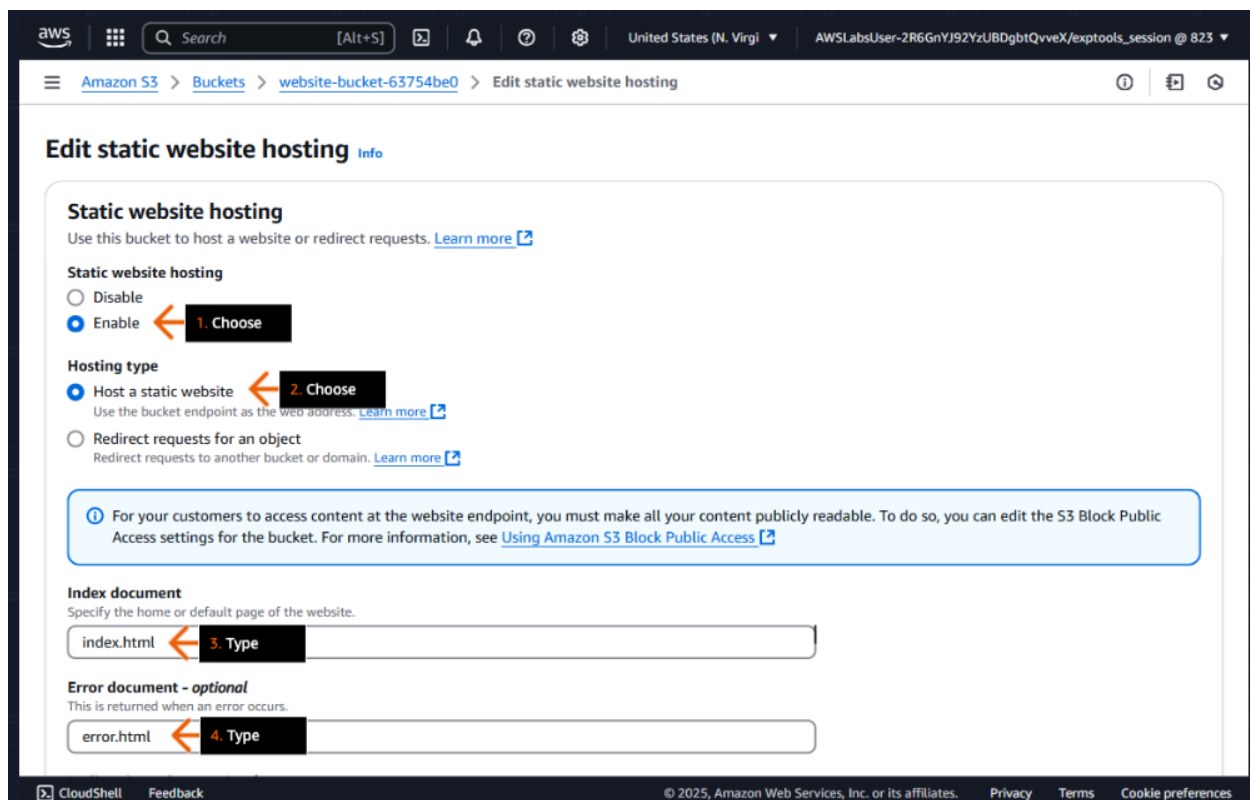
1. For Static website hosting, choose Enable.
2. For Hosting type, choose Host a static website.
3. For Index document, type:

index.html

4. For Error document, type:

error.html

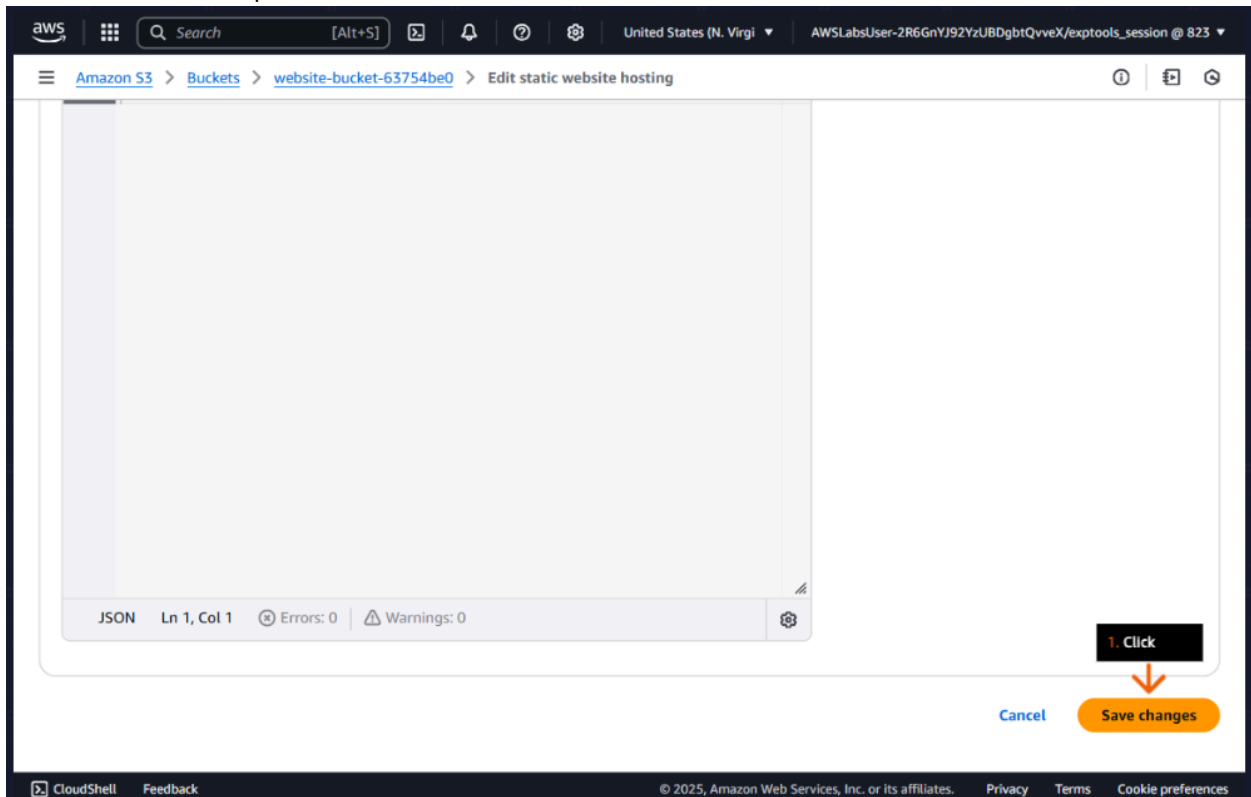
5. Go to the next step.



Steps:

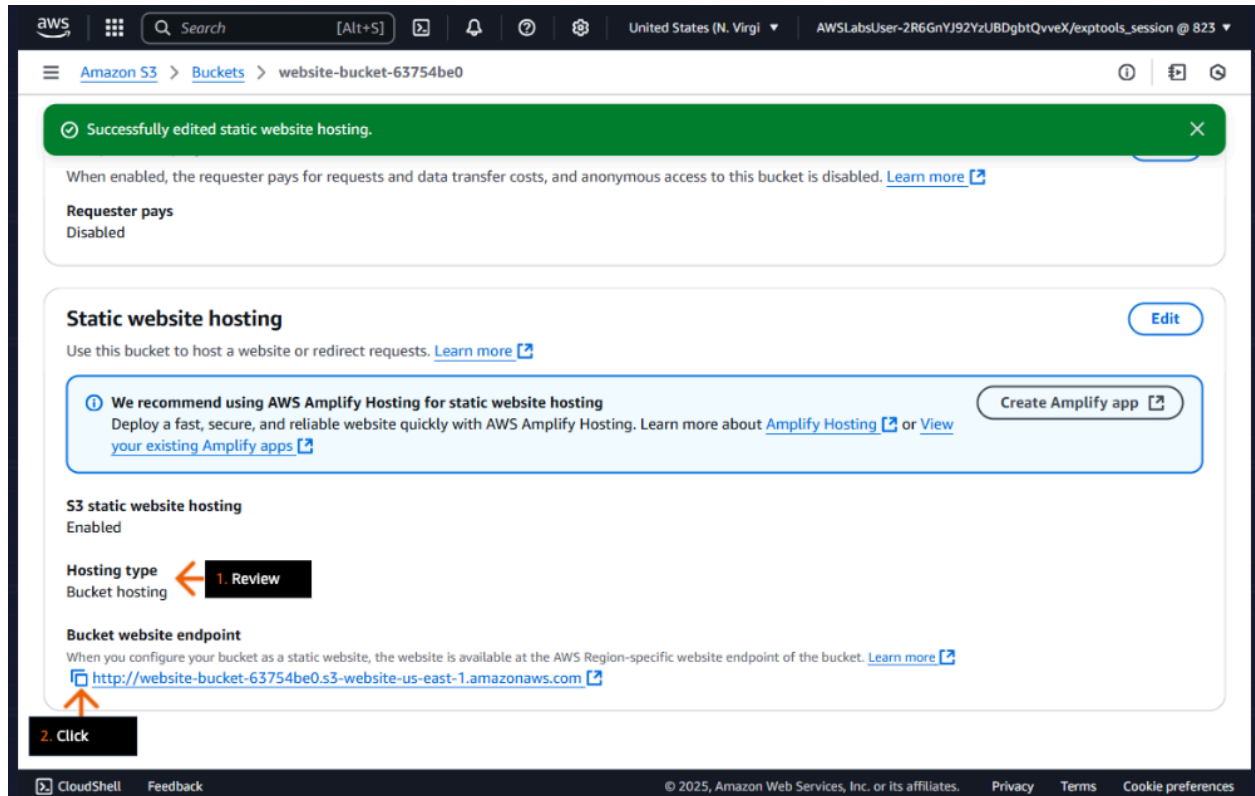
1. At the bottom of the page, click Save changes.

2. Go to the next step.



Steps:

1. In the Static website hosting section, review to confirm that Hosting type is set to Bucket hosting.
2. Under Bucket website endpoint, click the copy icon to copy the provided endpoint.
3. Go to the next step.



Steps:

1. To load the Beach Wave Conditions webpage, in a new browser tab (or window) address bar, paste the bucket website endpoint that you just copied, and then press Enter.
2. Go to the next step.

← → ↻

Not Secure website-bucket-9f8920a0.s3-website-us-east-1.amazonaws.com

☆

Incognito

⋮

1. Paste

Beach Wave Conditions

Hour of the Day	Wave Length
00:00 AM	1.2 meter(s)
01:00 AM	0.8 meter(s)
02:00 AM	0.9 meter(s)
03:00 AM	1.1 meter(s)
04:00 AM	1.8 meter(s)
05:00 AM	2.1 meter(s)
06:00 AM	2.3 meter(s)
07:00 AM	2.3 meter(s)
08:00 AM	2.2 meter(s)
09:00 AM	2.1 meter(s)
10:00 AM	1.9 meter(s)
11:00 AM	2.0 meter(s)
12:00 PM	1.8 meter(s)
13:00 PM	1.5 meter(s)
14:00 PM	1.4 meter(s)
15:00 PM	1.3 meter(s)
16:00 PM	1.1 meter(s)
17:00 PM	0.7 meter(s)
18:00 PM	1.5 meter(s)
19:00 PM	1.9 meter(s)
20:00 PM	2.1 meter(s)
21:00 PM	2.3 meter(s)
22:00 PM	2.4 meter(s)
23:00 PM	1.8 meter(s)