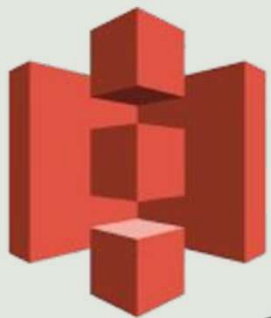




# S3 STATIC WEB HOSTING WITH CLOUDFRONT



Amazon S3

Presented by Tejas Bharambe

# INTRODUCTION

## What is Amazon S3?

- Amazon S3 is an object storage service that offers industry-leading scalability, data availability, security, and performance.
- Store and protect any amount of data for a range of use cases, such as data lakes, websites, cloud-native applications, backups, archive, machine learning, and analytics.
- Amazon S3 is designed for 99.999999999% (11 9's) of durability, and stores data for millions of customers all around the world.

## What is static web hosting?

- Static website hosting in Amazon S3 is a way to store and host a website without the need to maintain servers.
- It is a type of web hosting that delivers fixed web pages directly to the user's browser.

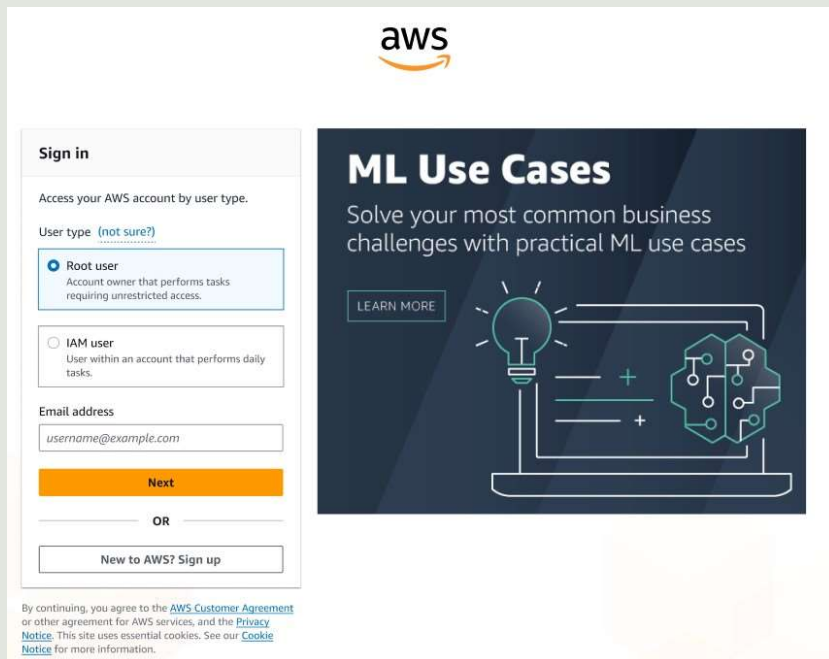
# OBJECTIVE

**S3 static web hosting** is a **cost-effective** and **scalable solution** to deploy static websites directly on Amazon S3. It eliminates the need for traditional web servers. Key objectives include:

- **Reduced Costs:** Lower storage and data transfer costs.
- **Enhanced Scalability:** Easily handles increased traffic without performance degradation.
- **High Availability and Durability:** Ensures website accessibility and data integrity.
- **Global Reach:** Delivers content to users worldwide with low latency.
- **Simplified Deployment:** Streamlined setup process.
- **Integration with AWS Services:** Seamlessly integrates with other AWS services for added functionality.

## Step 1: Sign In to AWS Console

- Open your web browser and navigate to the AWS Management Console.
- Enter your AWS account credentials (username and password) to log in.
- Search for S3 on AWS console



The image shows the AWS Sign In page. On the left, there is a 'Sign in' section with the AWS logo at the top. Below the logo, it says 'Access your AWS account by user type.' and 'User type (not sure?)'. There are two radio button options: 'Root user' (selected) and 'IAM user'. Below these is an 'Email address' field with the placeholder 'username@example.com'. There is a 'Next' button, an 'OR' separator, and a 'New to AWS? Sign up' button. At the bottom, there is a small disclaimer about the AWS Customer Agreement and Privacy Notice.

**Sign in**

Access your AWS account by user type.

User type (not sure?)

☒ **Root user**  
Account owner that performs tasks requiring unrestricted access.

☐ **IAM user**  
User within an account that performs daily tasks.

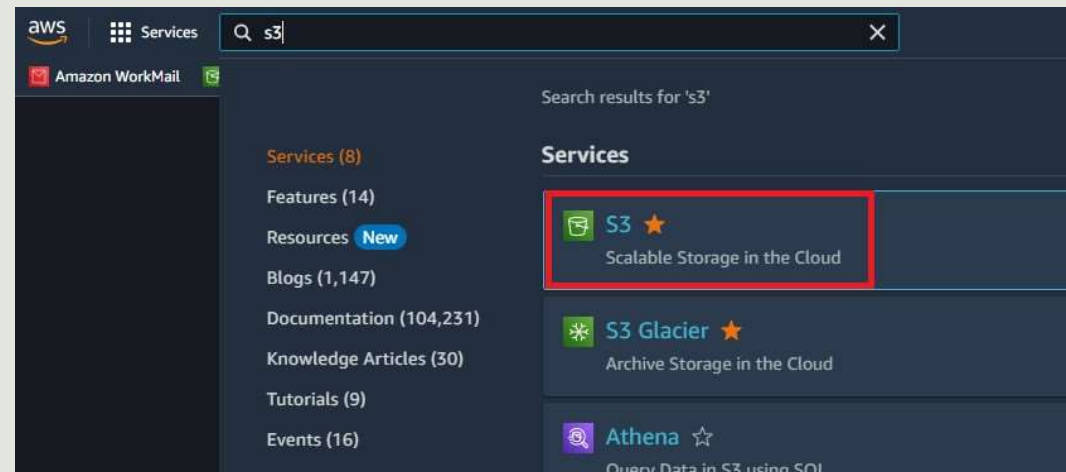
Email address  
username@example.com

**Next**

OR

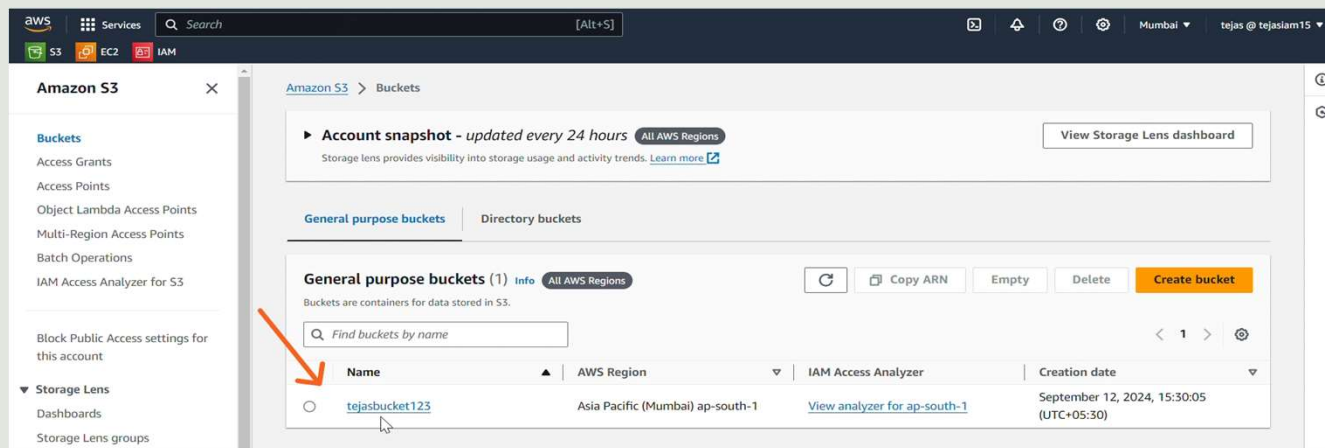
**New to AWS? Sign up**

By continuing, you agree to the [AWS Customer Agreement](#) or other agreement for AWS services, and the [Privacy Notice](#). This site uses essential cookies. See our [Cookie Notice](#) for more information.



## Step 2: Create S3 Bucket

- Choose Create bucket.
- Enter the globally unique name for Bucket (tejasbucket123).
- Choose the Region where you want to create the bucket.
- Choose a Region that is geographically close to you to minimize latency and costs, or to address regulatory requirements.
- The Region that you choose determines your Amazon S3 website endpoint.



## Step 3: Edit Block Public Access settings

- By default, Amazon S3 blocks public access to your account and buckets. Clear Block all public access.
- Amazon S3 turns off the Block Public Access settings for your bucket. To create a public static website
- Enable Bucket Versioning (Versioning is a means of keeping multiple variants of an object in the same bucket.)
- Leave the default settings for the rest of the options and click “Create bucket.”

Cancel

Create bucket


☐ **Block all public access**  
Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

☐ **Block public access to buckets and objects granted through new access control lists (ACLs)**  
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

### 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](#)

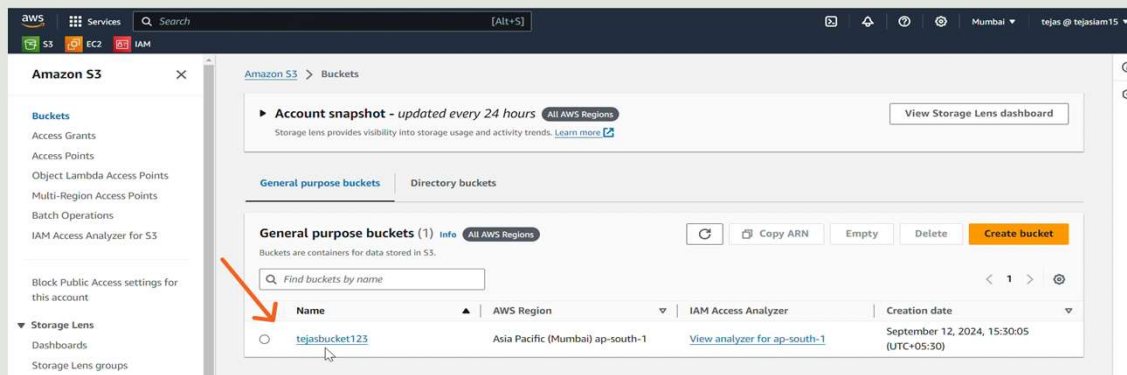
Bucket Versioning

☒ Disable

☐ Enable

## Step 4: Add a bucket policy that makes your bucket content publicly available

- Once the bucket has been created, select it from the list of buckets.
- Go to the “Permission” tab and Under Bucket Policy, choose Edit.
- To grant public read access for your website, copy the following bucket policy, and paste it in the Bucket policy editor and save changes



Bucket policy for public access [↗](#)

Bucket ARN

arn:aws:s3::tejasbucket123

Policy

```
1 {  
2   "Version": "2012-10-17",  
3   "Statement": [  
4     {  
5       "Sid": "Statement1",  
6       "Principal": "*",  
7       "Effect": "Allow",  
8       "Action": "s3:GetObject",  
9       "Resource": "arn:aws:s3::tejasbucket123/*"  
10    }  
11  ]  
12 }
```

## Step 5: Enable static website hosting

- After we create a bucket, we can enable static website hosting for our bucket.
- Choose **Properties**.
- Under **Static website hosting**, choose Edit.
- Choose Use this bucket to host a website.
- Provide **Index Document** as *index.html*
- Under **Static website hosting**, choose **Enable**.
- After this, save the changes.

Amazon S3 > Buckets > tejasbucket123 > Edit static website hosting

### Edit static website hosting [Info](#)

**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 information, see [Using Amazon S3 Block Public Access](#)

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

index.html



aws

Services

Search

[Alt+S]

S3

EC2

IAM

Mumbai

tejas @ tejasiam15

Successfully edited static website hosting.

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

Edit

Static website hosting

Use this bucket to host a website or redirect requests. [Learn more](#)

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://tejasbucket123.s3-website.ap-south-1.amazonaws.com>

Edit

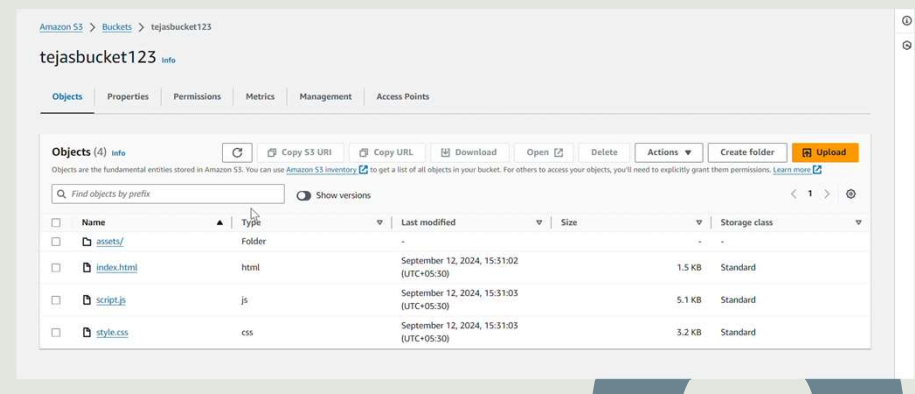
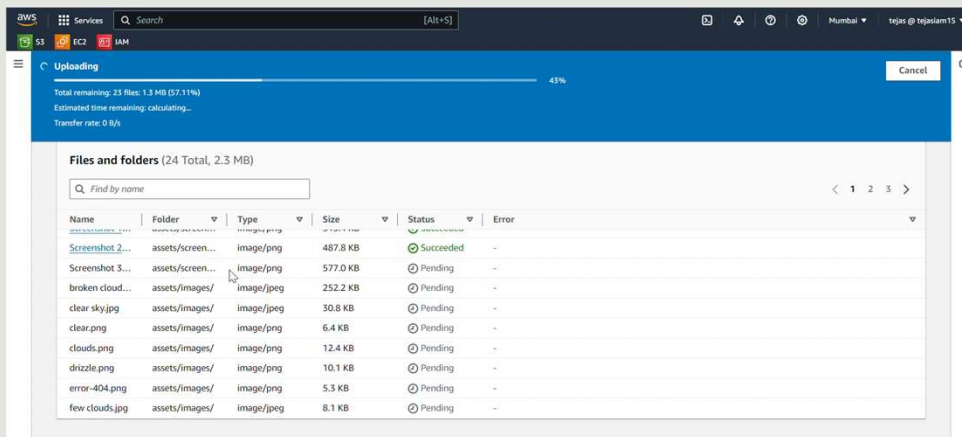
tejasbucket123.s3-website.ap-south-1.amazonaws.com

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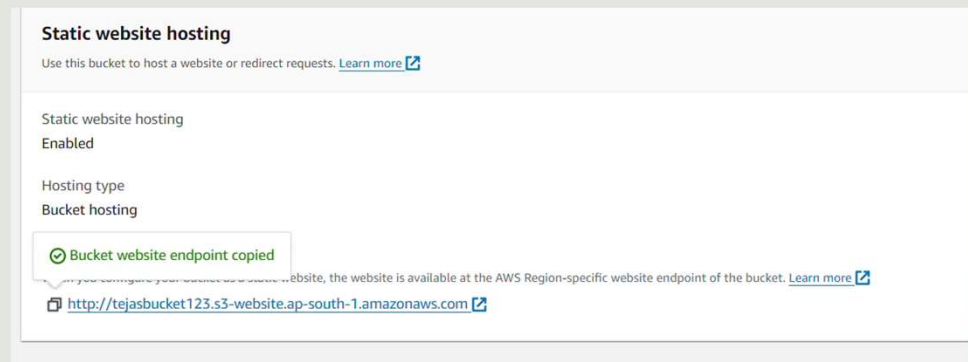
## Step 6: Configure an index document and upload website Files

- When we enable static website hosting for our bucket, We have to enter the name of the index document (for example, index.html).
- After we enable static website hosting for the bucket, we will upload an HTML file with this index document name to our bucket.
- To upload the index document to our bucket, do one of the following:
  1. Drag and drop the index file into the console bucket listing.
  2. Choose Upload, and follow the prompts to choose and upload the index file.
- In our case upload present Weather App website sitemap content to our bucket.

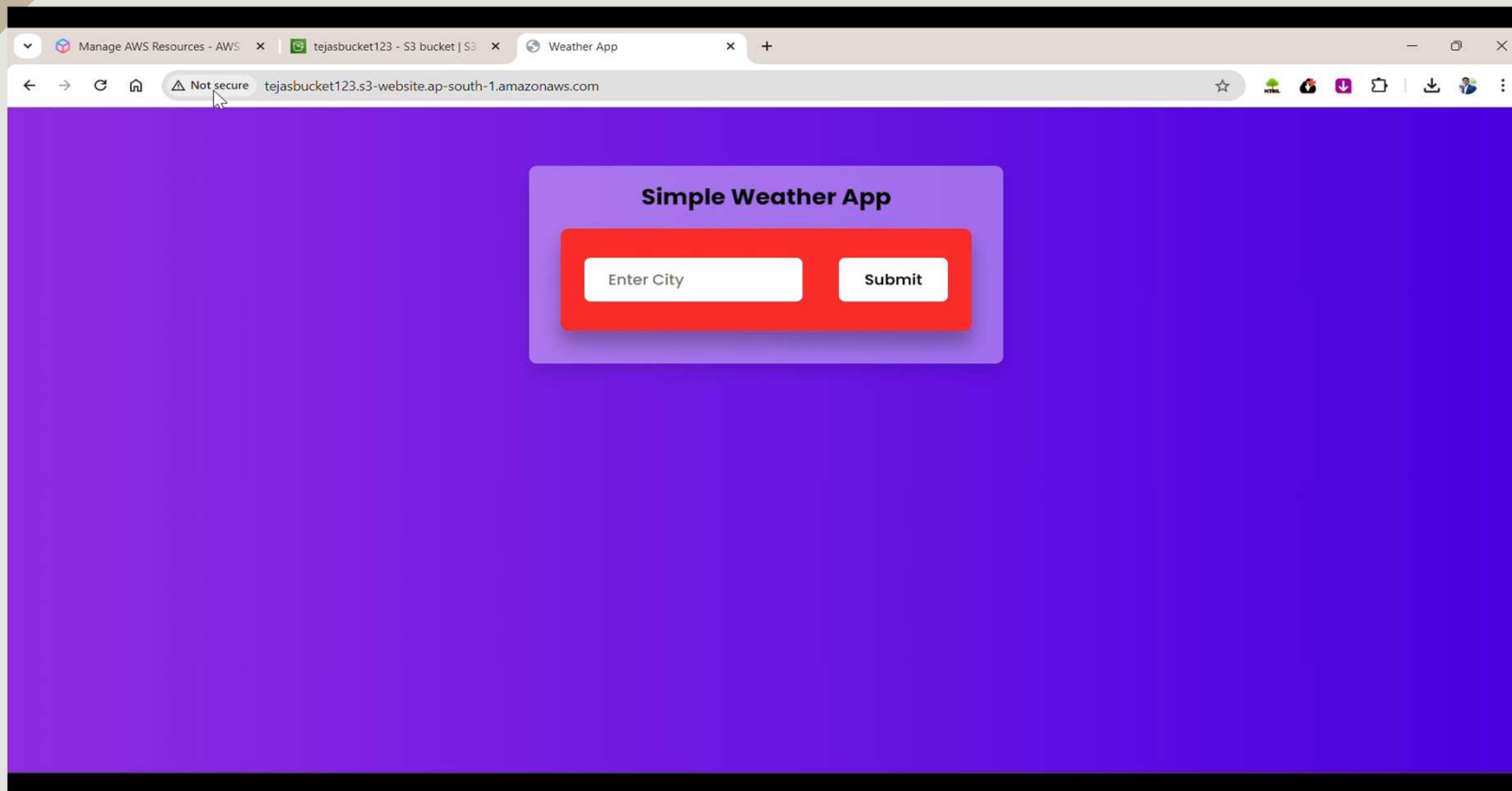


## Step 7: Test the website endpoint

- Under Buckets, choose the name of your bucket.
- Choose Properties.
- At the bottom of the page, under Static website hosting, choose your Bucket website endpoint.
- Your index document opens in a separate browser window.
- After making bucket public, Our static website should be accessible at the endpoint provided in the “Static website hosting” section of our bucket’s properties.
- It will look like this: **<http://tejasbucket123.s3-website.ap-south-1.amazonaws.com>**

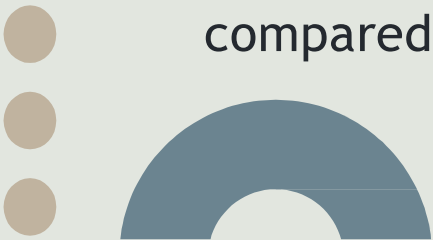


## Step 8: Access the S3 endpoint for the sitemap and Weather App website



# LIMITATIONS

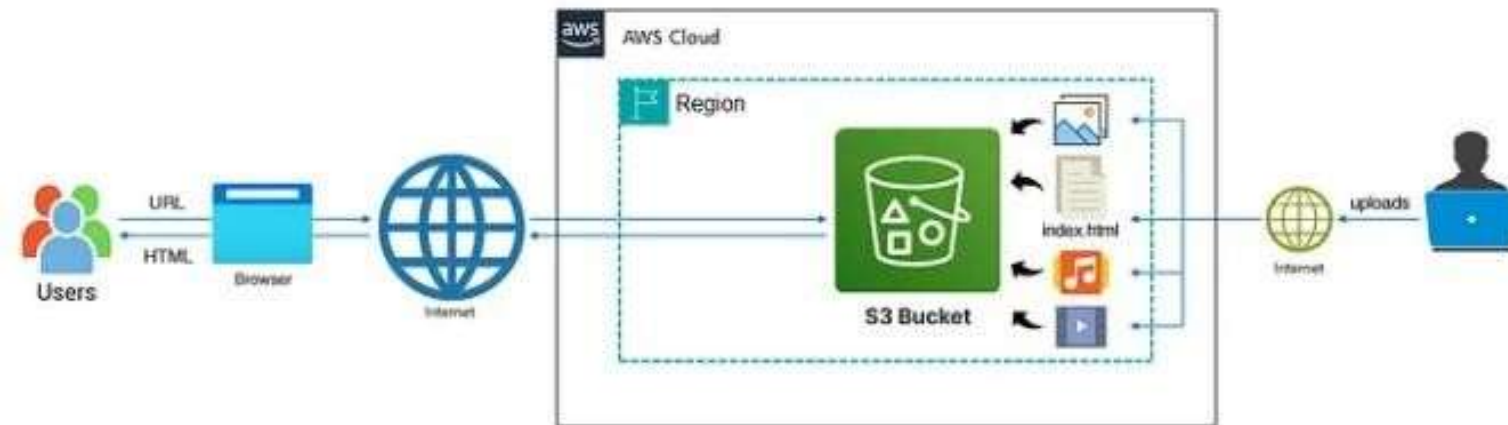
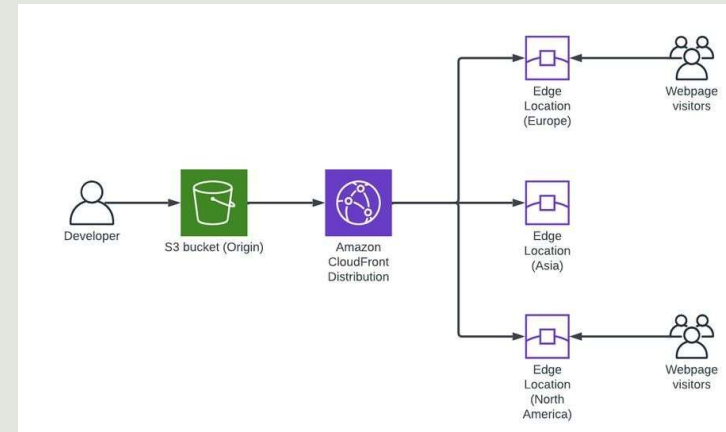
- **Limited Server-Side Processing:** Not suitable for complex dynamic applications.
- **Security:** Requires careful configuration to prevent unauthorized access.
- **Performance Optimization:** May require additional configuration for optimal performance.
- **Custom Error Pages:** Limited customization options compared to traditional web servers.
- **Scalability for Dynamic Content:** Less flexible for scaling dynamic content compared to traditional web servers.



# CONCLUSION

- S3 static web hosting is a powerful and cost-effective solution for deploying static websites.
- It leverages the scalability, durability, and global reach of AWS S3 to deliver high-performance websites.
- While it's ideal for static content, it's important to understand its limitations, especially when dealing with complex dynamic applications. By carefully considering your website's requirements and leveraging S3's capabilities,
- You can create robust and scalable web solutions.

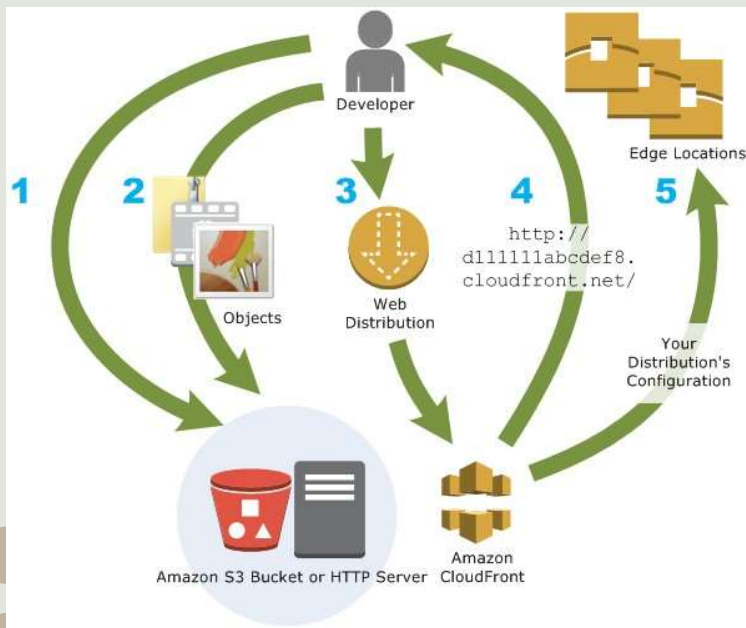
# ARCHITECTURE



# CLOUDFRONT (CDN)

## What is CloudFront?

- Amazon CloudFront is a web service that speeds up distribution of your static and dynamic web content, such as .html, .css, .js, and image files, to your users.
- It leverages AWS's global cloud infrastructure with a large number of edge locations worldwide.
- Offers consistent performance across regions due to its integration with AWS's network.

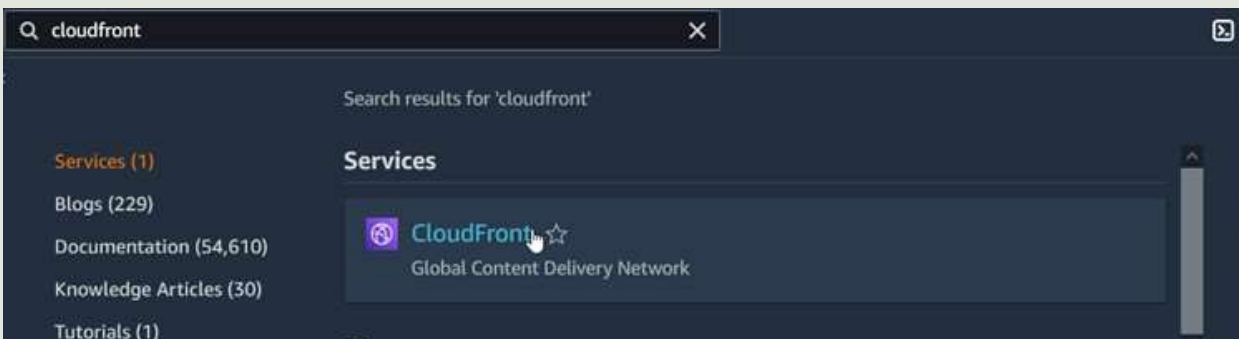




## Step 9: Create a CloudFront distribution

First, we need to create a CloudFront distribution. This makes our website available from data centers around the world.

- Search for Cloudfront on AWS console
- In the navigation pane, choose Distributions, then choose Create distribution.
- Specify settings for the distribution.
- Origin domain : Choose an AWS origin, or enter your origin's domain name (tejasbucket123.s3.ap-south-1.amazonaws.com)
- Origin access : Public (Bucket must allow public access.)
- Leave the default settings for the rest of the options and click “Create Distribution.”



## Step 9: Create a CloudFront distribution

[CloudFront](#) > [Distributions](#) > Create

### Create distribution

#### Origin

**Origin domain**  
Choose an AWS origin, or enter your origin's domain name.

**Origin path - optional**  
Enter a URL path to append to the origin domain name for origin requests.

**Name**  
Enter a name for this origin.

**Origin access** [Info](#)

☒ **Public**  
Bucket must allow public access.

☐ **Origin access control settings (recommended)**  
Bucket can restrict access to only CloudFront.

☐ **Legacy access identities**

**Path pattern** [Info](#)

**Compress objects automatically** [Info](#)

☐ No

☒ Yes

#### Viewer

**Viewer protocol policy**

☐ HTTP and HTTPS

☒ Redirect HTTP to HTTPS

☐ HTTPS only

**Allowed HTTP methods**

☒ GET, HEAD

☐ GET, HEAD, OPTIONS

☐ GET, HEAD, OPTIONS, PUT, POST, PATCH, DELETE

**Restrict viewer access**  
If you restrict viewer access, viewers must use CloudFront signed URLs or signed cookies to access your content.

☒ No

☐ Yes

**Viewer response**

**Origin request**

**Origin response**

#### Web Application Firewall (WAF) [Info](#)

☐ **Enable security protections**  
Keep your application secure from the most common web threats and security vulnerabilities using AWS WAF. Blocked requests are stopped before they reach your web servers.

☒ **Do not enable security protections**  
Select this option if your application does not need security protections from AWS WAF.

#### Settings

**Price class** [Info](#)

Choose the price class associated with the maximum price that you want to pay.

☒ **Use all edge locations (best performance)**

☐ Use only North America and Europe

☐ Use North America, Europe, Asia, Middle East, and Africa

**Supported HTTP versions**  
Add support for additional HTTP versions. HTTP/1.0 and HTTP/1.1 are supported by default.

☒ HTTP/2

☐ HTTP/3

**Default root object - optional**  
The object (file name) to return when a viewer requests the root URL (/) instead of a specific object.

**Standard logging**  
Get logs of viewer requests delivered to an Amazon S3 bucket.

☒ Off

☐ On

**IPv6**

☐ Off

☒ On

**Description - optional**


[Cancel](#) [Create distribution](#)

## Step 10 : Access the CloudFront Domain Name

- Once the cloudfront distribution has been created. It will generate publicly accessible domain name for us.
- We can access our website or S3 bucket content with this domain publicly.
- Domain will look like after SSL/TLS:  
`https://d1hahau9n3tqwm.cloudfront.net`

[CloudFront](#) > Distributions

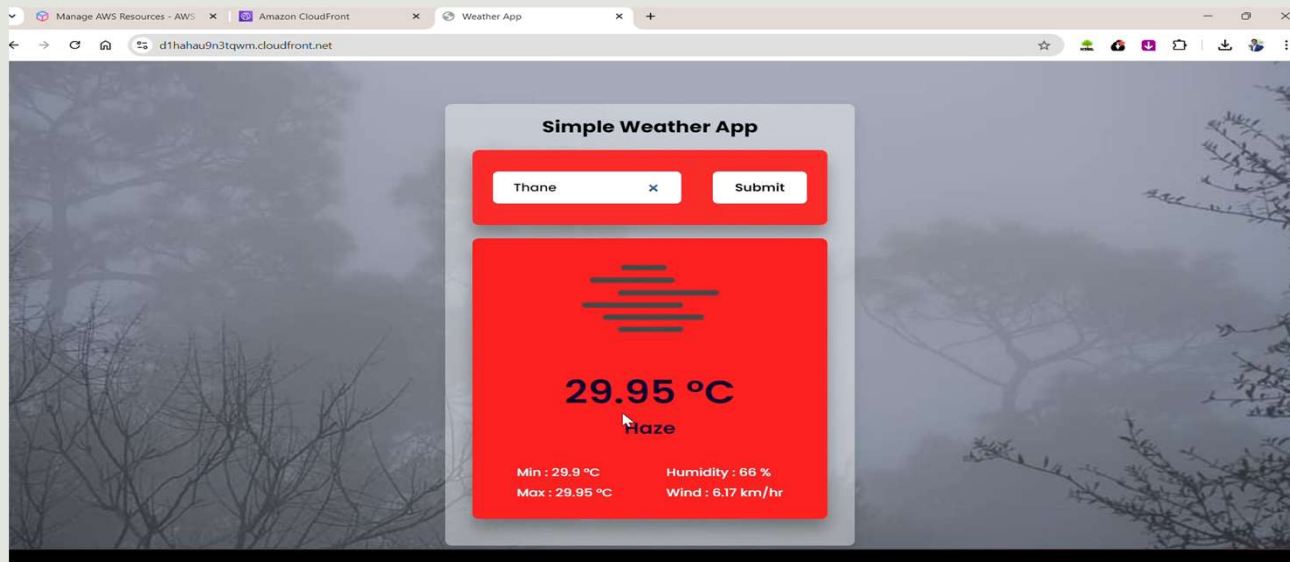
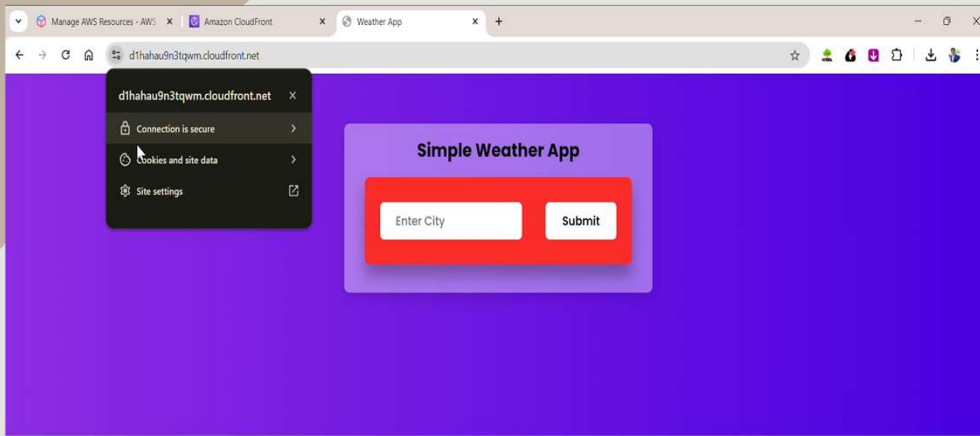
**Distributions (1)** [Info](#)

 [Enable](#) [Disable](#) [Delete](#) [Create distribution](#)

☐

ID	Descripti...	Type	Domain ...	Alternat...	Origins	Status	Last mo...
<input type="checkbox"/> <a href="#">E3SEDYRGZXYICA</a>	-	Production	d1hahau9n...	-	tejasbucket123.s	✓ Enabled	September ...

## Step 10: Access the S3 endpoint for the sitemap, CloudFront Domain and Weather App website



# ADVANTAGES OF CLOUDFRONT

Amazon CloudFront is a Content Delivery Network (CDN) that offers:

- **Faster content delivery:** By caching content closer to users, reducing latency.
- **Enhanced security:** Protects content with features like DDoS protection and SSL/TLS encryption.
- **Scalability:** Automatically adjusts to handle increased traffic.
- **Cost-effective:** Pay-as-you-go pricing and optimized cost structure.
- **Ease of use:** User-friendly interface and seamless integration with other AWS services.

# REFERENCE

[Documentation of Configuring a static website on Amazon S3](#)

[Get Started with a basic CloudFront distribution](#)





# Thank You

For your attention