How I Hosted A Website on S3

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Introducing Amazon S3!

What it does & how it's useful

Amazon S3 is Amazon Simple Storage Service.
Developers and teams use Amazon S3 because of its cost-effectiveness, scalability, reliability, and simplicity, eliminating server management while providing high performance and easy integration with other AWS services.

How I'm using it in today's project

I'm using Amazon S3 in this project to:
1. Host a static website.
2. Implement secure object sharing using presigned URLs.
3. Secure the bucket with a custom bucket policy.
4. Enable easy website updates by re-uploading edited HTML files.
5. Implement and manage bucket versioning for content control.

This setup allows for efficient hosting, enhanced security, and streamlined content management of my static website.

This project took me...

I took a hour to complete this project along with documentation.

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Create an S3 bucket

- Creating an Amazon S3 bucket took me less than 10 minutes since the steps were very cleary mentioned by NextWork team in their instruction steps.
- Some of the configuration steps include:
  - The bucket's Region: It is the location where the servers is located. I selected "US East (Ohio) us-east-2".
  - Access Control Lists: Is a set of rules that control who can access specific files or folders in your cloud storage, like a gatekeeper for your data.
  - Bucket versioning: I choose "Enable"
  - Public Access: Means the bucket and its objects are public.
- S3 bucket names have to be globally unique, which means after you create a bucket, no other AWS account in the world can use your bucket's name, unless you delete it.

My created bucket!

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Upload website files to S3

- Next, I uploaded my website's files into my S3 bucket.

- There were two files to upload: I uploaded html file named "index.html" and a folder named "NextWork - Everyone should be in a job they love_files". The HTML files provide the website's structure, while the folder contains the styling, design elements, and necessary resources, making both components crucial for the website's complete functionality and appearance.

Objects successfully uploaded!

Amazon S3 > **Buckets** > megha-website-project

megha-website-project Info

| Objects | Properties | Permissions | Metrics | Management | Access Points |

Objects (2) Info

[C] [Copy S3 URI] [Copy URL] [Download] [Open] [Delete] [Actions ▼]

[**Create folder**] [**Upload**]

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

🔍 Find objects by prefix   ⬤ Show versions   < 1 >

	Name ▲	Type ▽	Last modified ▽	Size ▽	Storage class
☐	📄 index.html	html	June 27, 2024, 19:35:26 (UTC-05:00)	4.4 KB	Standard
☐	📁 NextWork - Everyone should be in a job they love_files/	Folder	-	-	-

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Static web hosting on S3

- Website hosting means providing a space for your website on the internet so people can find and visit it.
- To enable website hosting, I enabled the Static website hosting option. Selected "Host a static website" as a hosting type. Also, specified "index.html" as an index document for my website.
- Once a static website is enabled, S3 produces a bucket endpoint URL which is the direct link for the static website.

Setting up 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

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An error!

- When I visited the bucket endpoint URL, I see an error message "403 forbidden"

- The reason for this error was that your static website is being hosted by S3, but that the actual HTML/image files are still private.

- To solve this error, I set the permission of the objects to public – this is why we enabled ACLs earlier.

The error!

403 Forbidden

- Code: AccessDenied
- Message: Access Denied
- RequestId: 1T93FR6QK2GRHWS9
- HostId: HiHl8Ch/YMKUxaDVMjyhX2ZYmZVJVVwME+FGyaM6e6RyG36UL3MCcdZQwydw1H0gc21AG6BsLrI=

Voila! My website was up and running after resolving those errors

![Megha Naik profile photo]

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Securely share objects with presigned URLs

- Presigned URLs allow you to grant temporary access to S3 objects without requiring users to have AWS credentials or permissions.
- By default, all S3 objects are private. Presigned URLs enable object owners to share objects for a limited time
- I uploaded a new file in the bucket names "secret extra mission.pdf". Then clicked "Action -> Share with presigned url".
- Next, a popup comes which asks for the duration. I selected the duration as 2 minutes. After 2 minutes, the object will not be accessible to the user whom I shared the Url.

URL accessed by the user for limited duration

Good on you for doing this extra challenge! Not many people get to this stage, but you did it. Sending you good vibes for your AWS learning journey 🧡

With love, NEXTWORK

After the specified duration, Access is denied

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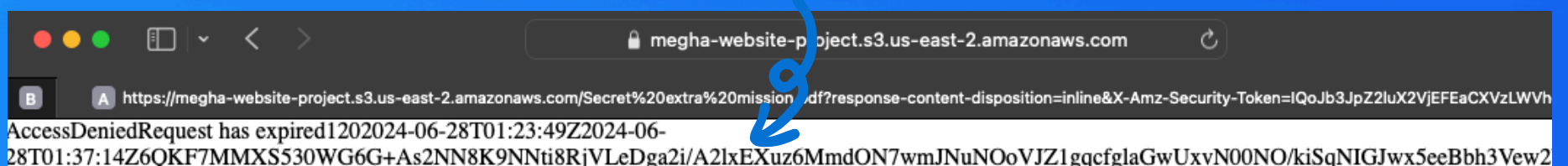
Secure the bucket with a custom bucket policy

- You want to secure your HTML file and make sure no one should delete them. To do this, we will write a bucket policy.
- This policy will deny the delete privileges on your website files.
- In Amazon S3 console, choose the "Permissions" tab. Once you've navigated to your bucket. Under Bucket policy, choose Edit. Write the policy as shown in the screenshot below. Save the changes.
- Now, try to delete any HTML object and see whats happens.

Bucket Policy

Bucket policy   Edit   Delete

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

                                                                    Copy

```
{
    "Version": "2012-10-17",
    "Id": "MyBucketPolicy",
    "Statement": [
        {
            "Sid": "BucketPutDelete",
            "Effect": "Deny",
            "Principal": "*",
            "Action": "s3:DeleteObject",
            "Resource": "arn:aws:s3:::megha-website-project/index.html"
        }
    ]
}
```

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Secure the bucket with a custom bucket policy

- After updating the bucket policy, no one can delete the HTML objects.

Access denied for delete

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Update the Website

- Made a few changes to the website by editing the HTML file.
- Uploaded the file with the same name "index.html" and I didn't delete the earlier file. It automatically considers the new edited file.
- Choose "index.html", and in the "Actions" menu, choose the "Make public using ACL" option again.

Changes made in index.html file

Voila! My website was up and running after resolving those errors

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Bucket Versioning

- When bucket versioning is turned off, changes to objects can't be undone. For example, if you upload a new version of a file, the old file is replaced with the new one. The original file is lost. If you delete a file, it is permanently deleted, and you can't get it back.

- Bucket versioning is turned off by default. However, when versioning is turned on, changed and deleted versions of files are saved. It's also important to remember that once you turn on bucket versioning, you cannot turn it off.

- Notice that each file has a Version ID. These IDs are automatically generated by Amazon S3 when versioning is turned on.

- You should find two versions of the index.html file because you uploaded a new version of the file! The newer version is the file that you uploaded when you updated your website

Versions of the objects

Objects (6) Info

[C] [Copy S3 URI] [Copy URL] [Download] [Open] [Delete] [Actions ▼] [Create folder]

[Upload]

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Find objects by prefix   Show versions   < 1 >   ⚙

	Name ▲	Type	Version ID	Last modified	Size	Storage class
☐	index.html	html	mAboqFN2o_4Lb6.LMIh PIVfehvEE1 Bg6	June 27, 2024, 23:39:21 (UTC-05:00)	58.7 KB	Standard
☐	└ index.html	html	POzKsETmc JXzotlL1bO mO0fFx_jXa 3bj	June 27, 2024, 20:06:39 (UTC-05:00)	58.8 KB	Standard

My Key Learnings

1 Static website hosting means the process of hosting a website made up of static web pages and also makes your website public on the internet.

2 The settings I used to make my website available to the public were I choose the "Properties" tab, scrolling to the "Static website hosting" section, choosing "Edit", and configure the following settings:
Static web hosting: choose "Enable"
Hosting type: Choose "Host a static website"
Index document: Enter "index.html"

3 My bucket endpoint URL initially still returned an error because the actual HTML/image files are still private.
I had to resolve this by setting the permission of the objects to public - this is why we enabled ACLs in Task 1.

4 I learned to securely share objects with presigned URLs, secure buckets using policies, update websites by re-uploading HTML files, and manage content versions in Amazon S3.
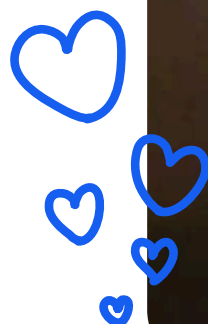
5 One thing I didn't expect was it is an easy peasy lemon squeezy task. Anyone can host a static website using AWS.

NEXTWORK

Everyone should be in a job they love. *yes!*

Check out community.nextwork.org for more free projects

Ask me about it