

AWS S3

What is Amazon S3?

Amazon S3 is an **object storage service** that lets you store and retrieve **any amount of data**, at **any time**, from anywhere on the web.

Key Components of S3

Component	Description
Bucket	A container for storing objects. Every object is stored in a bucket. (Think of it like a folder in the cloud.)
Object	The actual data you upload — includes the file + metadata + a unique key.
Key	The unique name assigned to each object within a bucket.
Metadata	Info about the object (e.g., content type, encoding, custom tags).
Versioning	Allows you to keep multiple versions of the same object.
Access Control	Permissions to control who can access your data (via IAM, bucket policies, ACLs).
Storage Class	Defines the cost , availability , and performance of stored data. (See below 📌)
Lifecycle Rules	Automate data movement between storage classes or delete old files.
Replication	Automatically copy objects across regions for durability or compliance.

S3 Events Trigger AWS services (like Lambda) when something changes in the bucket.

S3 Storage Classes

Each class is optimized for **different access patterns** and **costs**.

Storage Class	Use Case	Durability	Availability	Min Storage Duration	Key Benefit
S3 Standard	Frequently accessed data	11 9's	99.99%	None	Default, fast access
S3 Intelligent-Tiering	Unknown or changing access patterns	11 9's	99.9%+	30 days	Auto-moves data between tiers
S3 Standard-IA (Infrequent Access)	Infrequently accessed, but needs fast access	11 9's	99.9%	30 days	Lower cost than Standard
S3 One Zone-IA	Infrequent data in a single AZ	11 9's	99.5%	30 days	Cheaper, but less resilient
S3 Glacier	Archival data, retrieval in minutes/hours	11 9's	Variable	90 days	Low-cost archive
S3 Glacier Deep Archive	Rarely accessed data (retrieval in hours)	11 9's	Variable	180 days	Cheapest storage option
S3 Reduced Redundancy (Legacy)	Lower durability (deprecated)	99.99%	Deprecated	N/A	Not recommended anymore

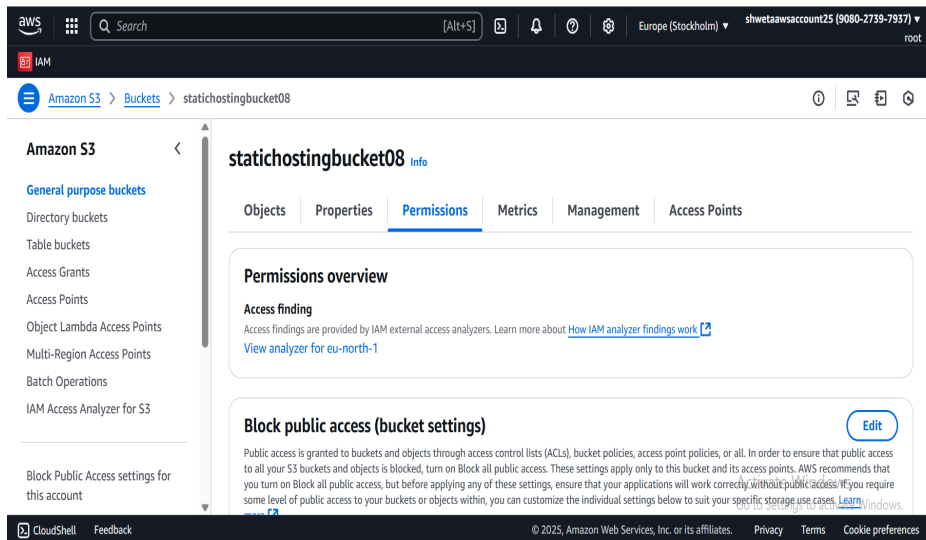
Difference Between AWS S3 and AWS EBS

Feature	S3 (Google Drive)	EBS (Hard Drive)
Stores	Files (object storage)	Data blocks (like a disk)
Access	Over the internet	Mounted to EC2 instance
Use for	Backups, media, logs	OS, databases, fast apps
Cost	Cheaper	More expensive
Speed	Slower	Very fast (low latency)

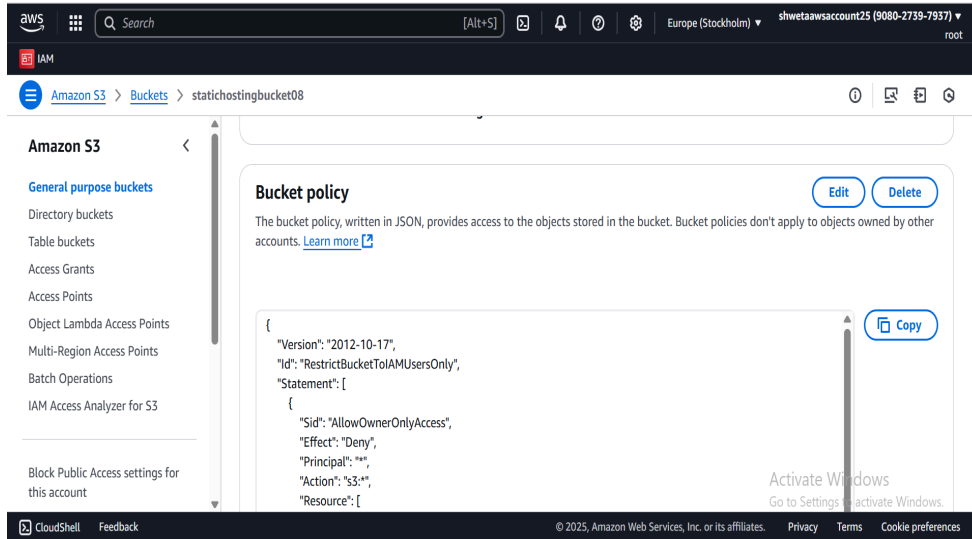
Bucket Policies

Restricting IAM User to access specific bucket

1. Create a S3 Bucket
2. Go to that bucket and select permission in it



3. Go to bucket policy and click on Edit



4. Edit Policy according to your Requirement

****Policy to restrict IAM user to access the S3 bucket****

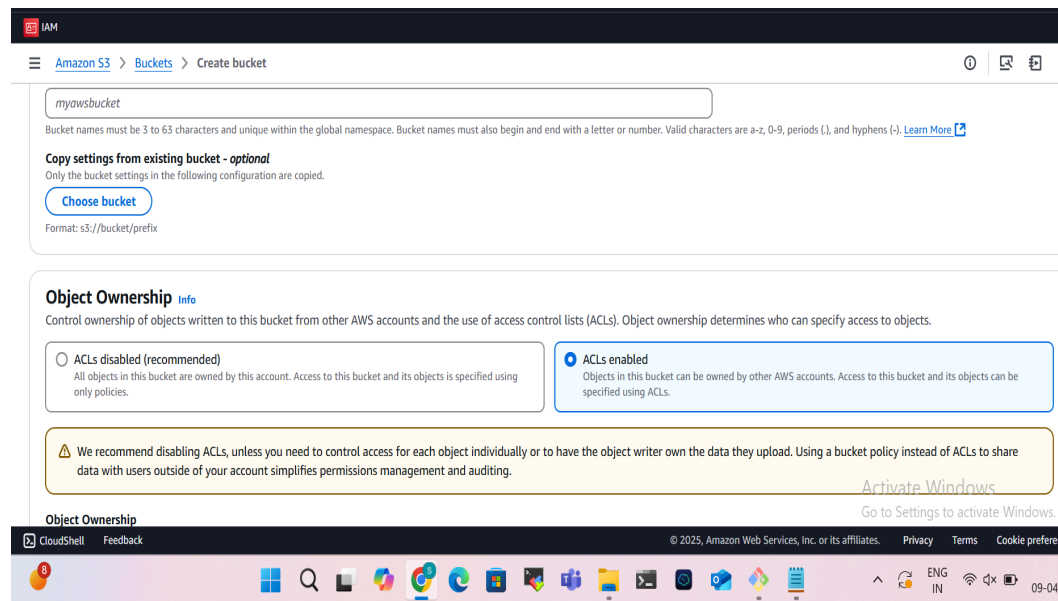
```
{
  "Version": "2012-10-17",
  "Id": "RestrictBucketToIAMUsersOnly",
  "Statement": [
    {
      "Sid": "AllowOwnerOnlyAccess",
      "Effect": "Deny",
      "Principal": "*",
      "Action": "s3:*", -----> "The resource which you want to restrict"
      "Resource": [
        "arn:aws:s3:::statichostingbucket08/*", -----> "Name of your
s3 bucket"
        "arn:aws:s3:::statichostingbucket08" -----> "Name of your s3
bucket"
      ],
      "Condition": {
        "StringNotEquals": {
          "aws:PrincipalArn": "arn:aws:iam::908027397937:root" -----> "AWS
Account number"
        }
      }
    }
  ]
}
```

```
]
}
```

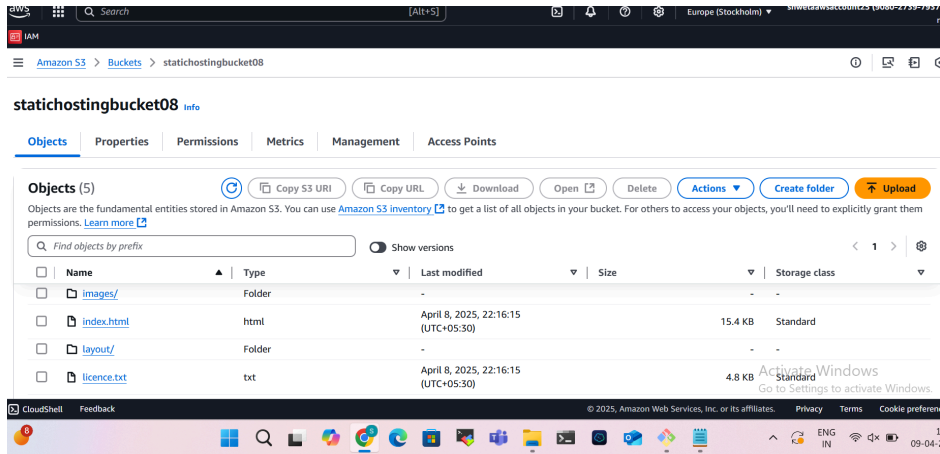
5. Then check it by creating IAM user and accessing that specific bucket y
6. The user cannot Access the Bucket.

Hosting Static Website on S3

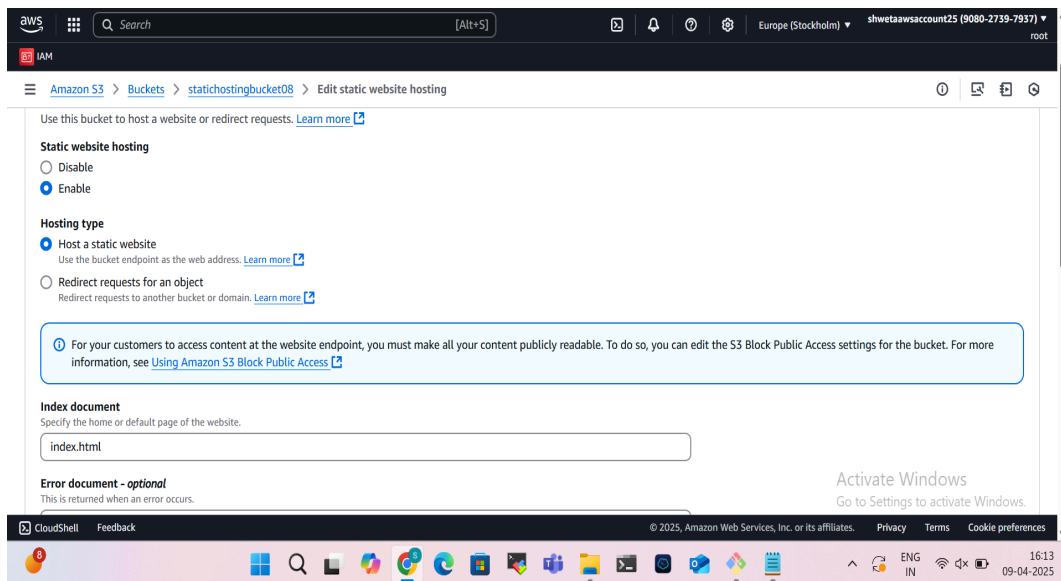
1. Create a S3 bucket .
 - ☐ While creating a bucket make sure your public access is not blocked and ACL is enabled.



2. Locate your website in your local machine
3. Drag and drop or upload your files in s3 bucket



4. Make all the files public
5. Then go to properties scroll down and edit static website hosting setting
6. Make static website hosting enable
7. Add your website main file(like index.html)



8. Save the settings and copy the url and check it on browser
9. You can access your website