Placement Empowerment Program

Cloud Computing and DevOps Centre

Use Cloud Storage Create a storage bucket on your cloud platform and upload/download files. Configure access permissions for the bucket.

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Introduction

This Proof of Concept (PoC) explores the use of AWS S3 (Simple Storage Service) for cloud storage management. It covers the creation of an S3 bucket, file uploads and downloads, and configuring access permissions for secure file sharing. AWS S3 offers scalable, durable, and highly available storage, making it ideal for managing large datasets with minimal latency. This PoC provides hands-on experience with essential S3 operations, demonstrating key functionalities for effective cloud storage management.

Overview

AWS S3 (Simple Storage Service) is a scalable and highly available cloud storage solution provided by Amazon Web Services, designed for storing, managing, and retrieving data objects efficiently. S3 organizes data within **buckets**, where each object represents a stored file.

This Proof of Concept (PoC) focuses on key S3 operations, including:

1. **Creating an S3 bucket** – Setting up a storage container for organizing and managing data objects.
2. **Uploading files** – Storing various file types (e.g., documents, images, and binary data) within the S3 bucket.
3. **Downloading files** – Retrieving stored data from S3 to local environments.
4. **Configuring access permissions** – Implementing security policies to manage data access, including public availability and restricted private access.

Objectives

The main objectives of this PoC are:

1. **Create and manage S3 buckets** – Learn how to set up and organize cloud storage efficiently.

2. **Upload and download files** – Gain hands-on experience in transferring data to and from S3.

3. **Configure access permissions** – Understand how to manage security by setting public or private access levels.

4. **Explore key AWS S3 features** – Familiarize yourself with core concepts such as durability, scalability, and security.

Importance

- **Scalable Storage** – AWS S3 provides virtually unlimited storage capacity, allowing seamless data expansion without infrastructure concerns.

- **Cost-Effective** – Its pay-as-you-go pricing model ensures affordability, charging only for the storage and bandwidth used.
- **High Durability** – S3 guarantees 99.999999999% durability, making it a reliable choice for backups and disaster recovery.
- **Robust Security** – Advanced security features, including IAM roles, bucket policies, and encryption, ensure data protection and controlled access.
- **Global Accessibility** – Enables seamless access to data from anywhere, supporting remote work and worldwide operations.
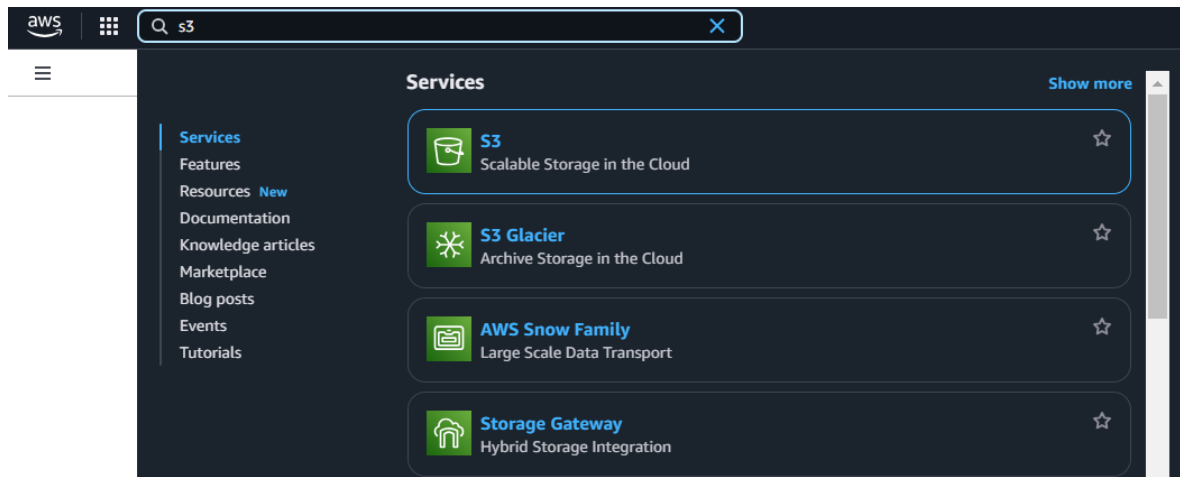

Step-by-Step Overview

Step 1:

- Open the **AWS Management Console**.
- Enter your username and password to log in.
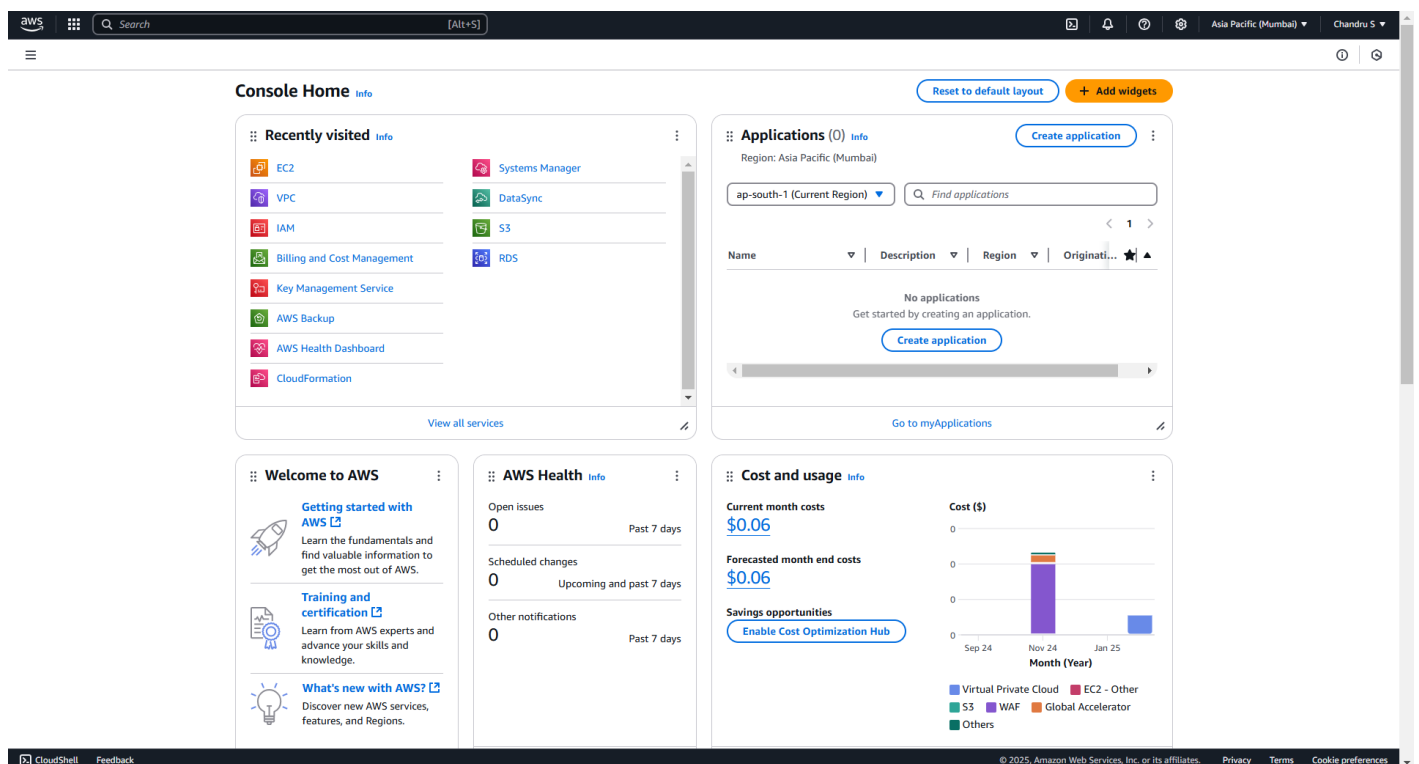
Step 2:
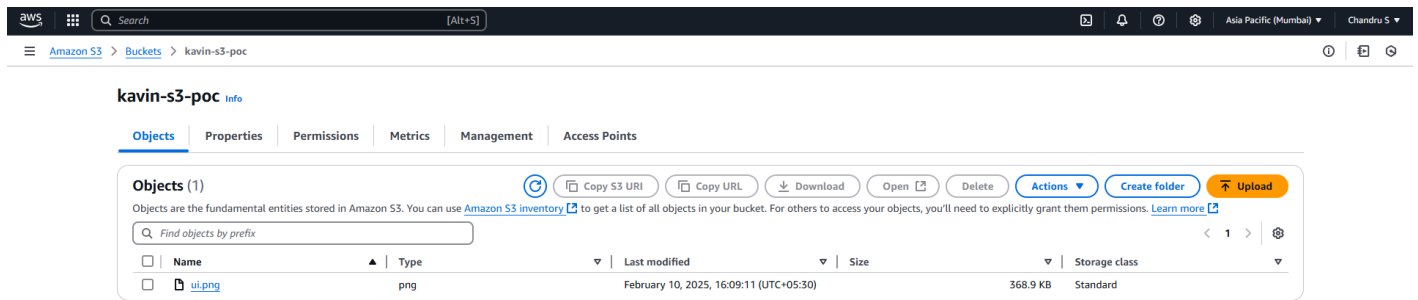In the **top search bar**, type **S3** and select it from the search results.

Step 3:

- Click Create bucket.
- Enter a unique Bucket Name (e.g., *kavin-s3-poc*).
- Leave other settings as default (modifiable later).
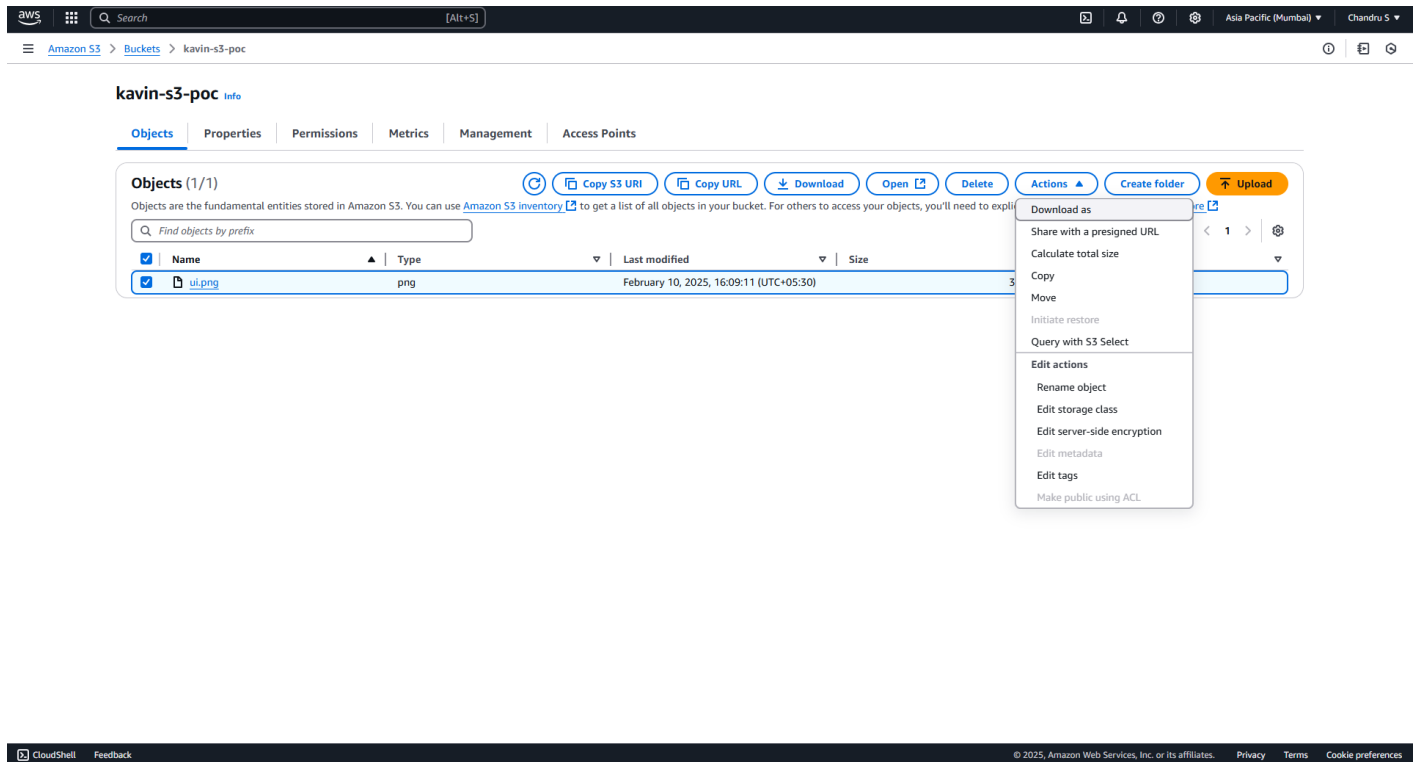- Click Create Bucket.

Step 4:

- Select your bucket from the list.
- Click Upload → Add files.
- Choose the file(s) from your local machine.
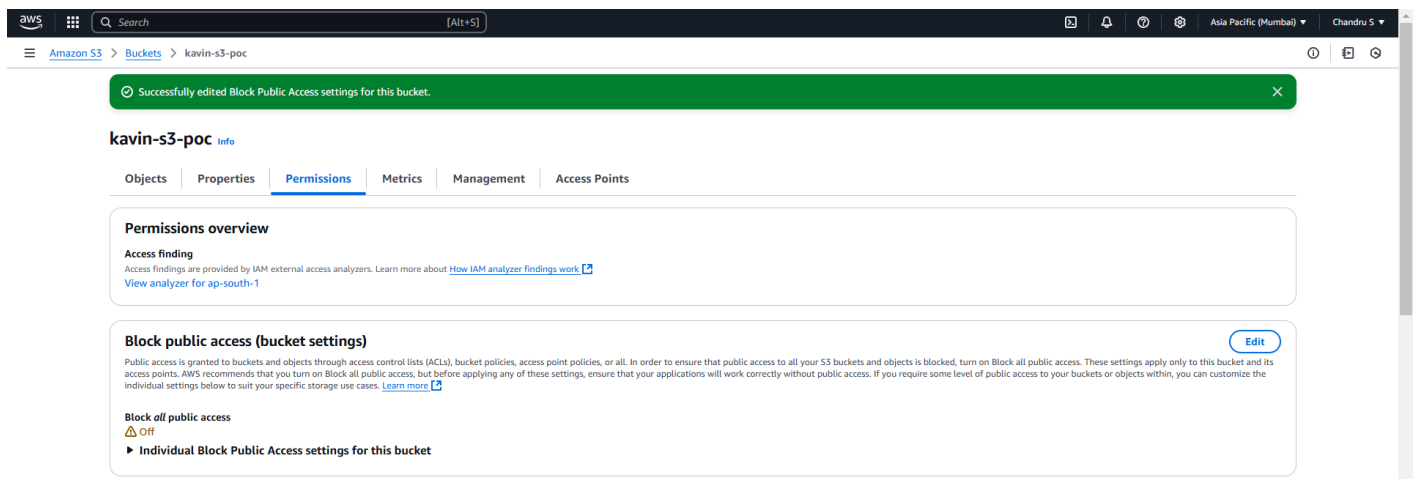- Click Upload to complete the process.

Step 5:

- Navigate to the uploaded file inside your bucket.
- Select the file and click Download from the Actions menu.
- Alternatively, click the file name to download it directly.

Step 6:

- Navigate to the uploaded file and click its name.
- Go to the Permissions tab.
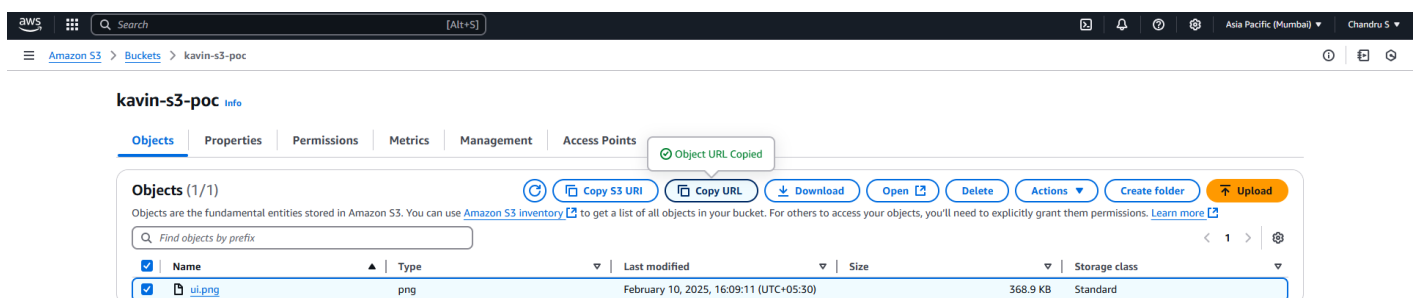- Under Public access, click Edit → Enable public access → Save changes.

Step 7:

- Go to the Permissions tab of your bucket.
- Scroll down to Bucket Policy and click Edit.
- Add the following example policy (replace YOUR_BUCKET_NAME with your actual bucket name):
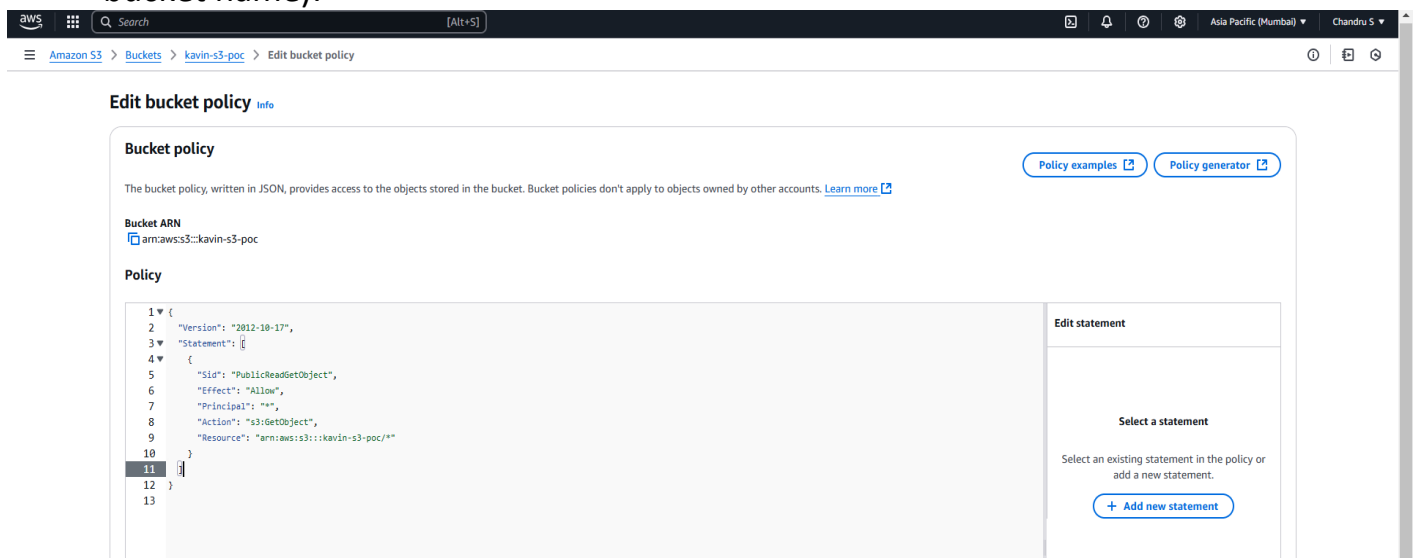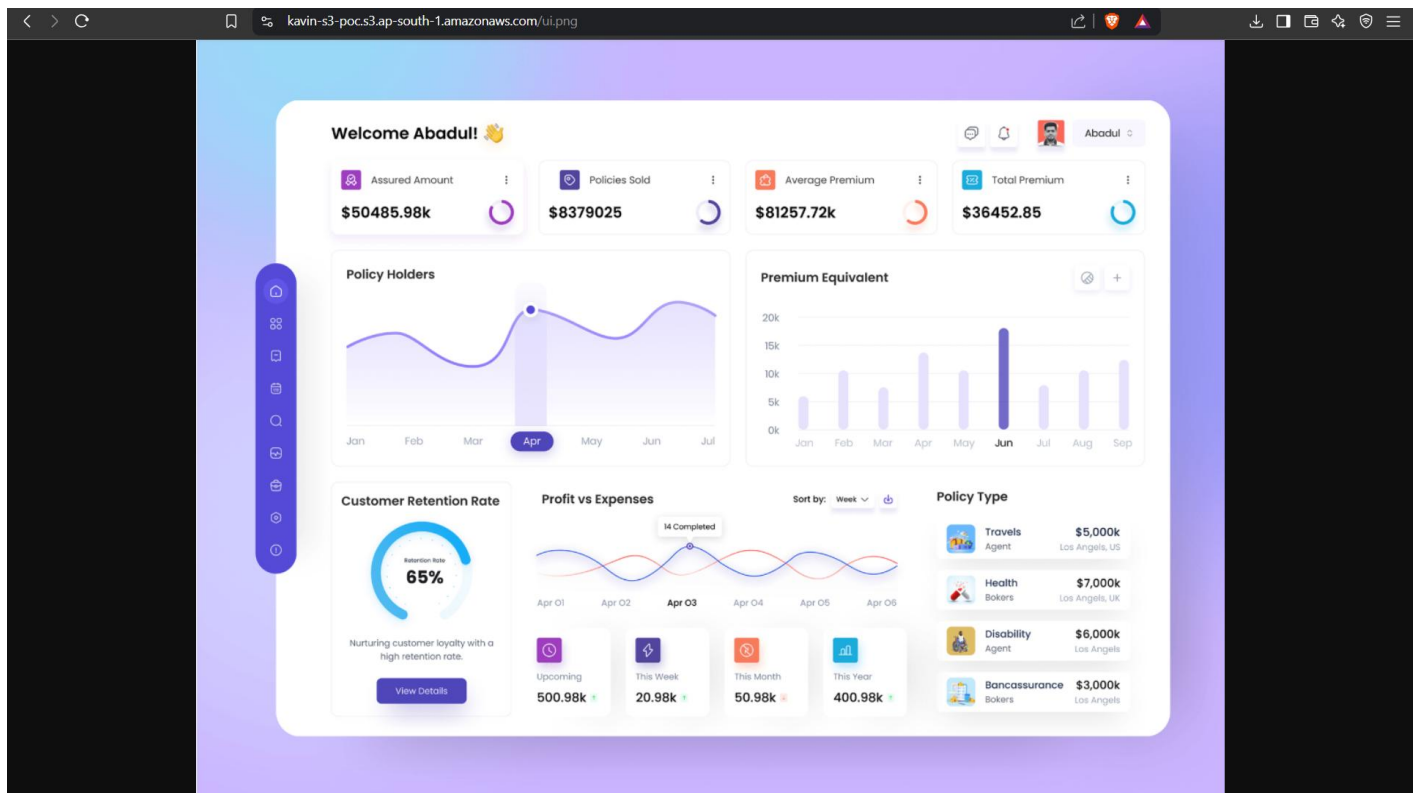

- Click Save changes.

Step 8:

Select the uploaded file and click Copy URL.

Step 9:

- Paste the copied URL in a new browser tab.
- You should see the uploaded file displayed or downloaded based on its type.

Outcome

By completing this PoC, you will:

1. **Create and Manage an S3 Bucket** – Learn how to set up and organize cloud storage for efficient data management.

2. **Upload and Download Files** – Gain practical experience in securely transferring files to and from AWS S3.

3. **Configure Access Permissions** – Understand how to apply bucket policies and control data access effectively.

4. **Enhance Data Security** – Implement best practices for securing stored data using AWS S3's encryption and access control features.

5. **Explore AWS S3 Capabilities** – Familiarize yourself with key features like scalability, durability, and accessibility for real-world applications.

This PoC provides a strong foundation for working with AWS S3 and integrating it into modern cloud architectures.