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PRACTICAL 2

Storage as a service using AWS.

1. **Storage as a service:**

Storage as a Service (STaaS) is a cloud-based model that enables organizations to store and manage data without needing to invest in or maintain physical storage infrastructure. With STaaS, a third-party provider supplies scalable, secure storage resources that can be accessed on demand, allowing companies to store as much or as little data as needed and only pay for the capacity they use. This model turns storage expenses into operational costs, reducing capital expenditure and supporting more predictable budgeting. STaaS also enhances data accessibility, making it easier for distributed teams to collaborate and access critical information from any location with an internet connection. Moreover, the service provider manages all aspects of storage maintenance, including security patches, updates, and hardware upkeep, enabling businesses to focus on core operations while ensuring data remains safe and compliant with industry standards.

2. **Key features of STaaS:**

Key Components and Features

1. **Scalability: STaaS allows businesses to scale storage up or down based on demand. This flexibility supports business growth and fluctuating storage needs, avoiding the limitations of fixed storage capacities.**
2. **Cost-Efficiency: Rather than investing in expensive on-site storage hardware, businesses can access STaaS on a subscription or pay-as-you-go basis, reducing capital expenditures and converting storage costs into operational expenses.**

3. **Accessibility and Collaboration: With cloud-based storage, data can be accessed from anywhere with an internet connection, promoting collaboration across distributed teams and ensuring that critical data is available remotely.**
4. **Data Security and Compliance: Providers typically offer high standards for data encryption, backups, and disaster recovery options. STaaS solutions also often include compliance features for industries with strict regulatory requirements, like healthcare or finance.**
5. **Automated Maintenance and Upgrades: The STaaS provider is responsible for hardware maintenance, upgrades, and security patches, allowing businesses to avoid the complexity and cost associated with these tasks.**

3. Amazon S3 use cases:

Amazon S3 (Simple Storage Service) is a widely used cloud storage service by AWS, known for its scalability, durability, and data security. Here are some common use cases for Amazon S3:

1. **Data Backup and Disaster Recovery: Amazon S3 provides a secure and reliable solution for backing up critical data, allowing businesses to quickly recover from data loss events. With cross-region replication and high durability, S3 ensures that backups are protected and available when needed.**

2. **Data Archiving: For long-term data storage, Amazon S3 Glacier offers a low-cost, secure solution for archival needs. Companies can archive large volumes of data that may not be frequently accessed but still need to be preserved for compliance or historical purposes.**

3. **Big Data and Analytics: Amazon S3 is used as a data lake to store massive datasets for big data analytics, machine learning, and AI applications. S3 integrates with AWS analytics tools (such as Amazon Redshift and Athena), making it ideal for managing and analyzing large volumes of unstructured data.**

4. **Content Storage and Distribution: S3 is popular for storing media files, images, videos, and other digital content. When paired with Amazon CloudFront (a content delivery network), S3 enables fast, global distribution of content, improving performance and scalability for applications and websites.**

5. **Application Hosting: Developers use Amazon S3 to host static websites, including HTML, CSS, and JavaScript files. S3's static website hosting features make it easy to deploy simple websites with high availability and scalability, often as part of serverless application architectures.**

6. **Data Transfer and Sharing: S3's robust security and access management options make it useful for sharing data among teams, partners, or customers. With features like presigned URLs, S3 allows for secure, temporary access to files without exposing the whole bucket.**

7. **IoT Data Storage: For IoT applications, Amazon S3 provides a scalable storage solution for data generated by connected devices, making it easier to analyze and process real-time data streams for insights.**

These use cases demonstrate Amazon S3's versatility in handling everything from simple backups to complex big data storage needs, all while maintaining security, scalability, and cost efficiency.

4. Steps of S3:

Here are the basic steps to get started with Amazon S3:

1. **Create an S3 Bucket**

- Sign in to the AWS Management Console and navigate to the Amazon S3 service.

- Choose "Create bucket" and specify a unique name for your bucket.

- Select a region where the bucket will reside (usually close to your users for better performance).

- Configure settings like versioning, encryption, and access permissions as needed.

- Complete the setup to create the bucket.

2. **Upload Objects to the Bucket**

- Go to your created bucket and click "Upload" to add files.

- Drag and drop files or use the file picker to select data you want to upload.

- Set permissions for your objects (public or private) and choose any additional settings like encryption.

- Start the upload to store the files in S3.

3. **Manage Access Permissions**

- Configure access control policies for your bucket or objects using AWS Identity and Access Management (IAM) or bucket policies.

- You can grant specific users or groups permissions to read, write, or delete objects.

- Use pre-signed URLs to provide temporary access to specific files without changing bucket permissions.

4. **Enable Security and Compliance Features**

- Enable bucket versioning to keep multiple versions of an object for recovery.

- Set up server-side encryption for data security at rest.

- Configure logging and monitoring with AWS CloudTrail or S3 Access Logs to track activity and ensure compliance.

5. **Set Up Lifecycle Policies (Optional)**

- Use lifecycle rules to manage data by automatically transitioning objects to lower-cost storage tiers (like S3 Glacier) or deleting them after a certain time.

- Define rules to automate data archiving or deletion to save on storage costs.

6. **Access Data**

- Retrieve data via the AWS Management Console, AWS CLI, or SDKs.

- Integrate S3 with other AWS services like Lambda, Redshift, or Athena for data processing and analytics.

7. **Monitor and Optimize (Optional)**

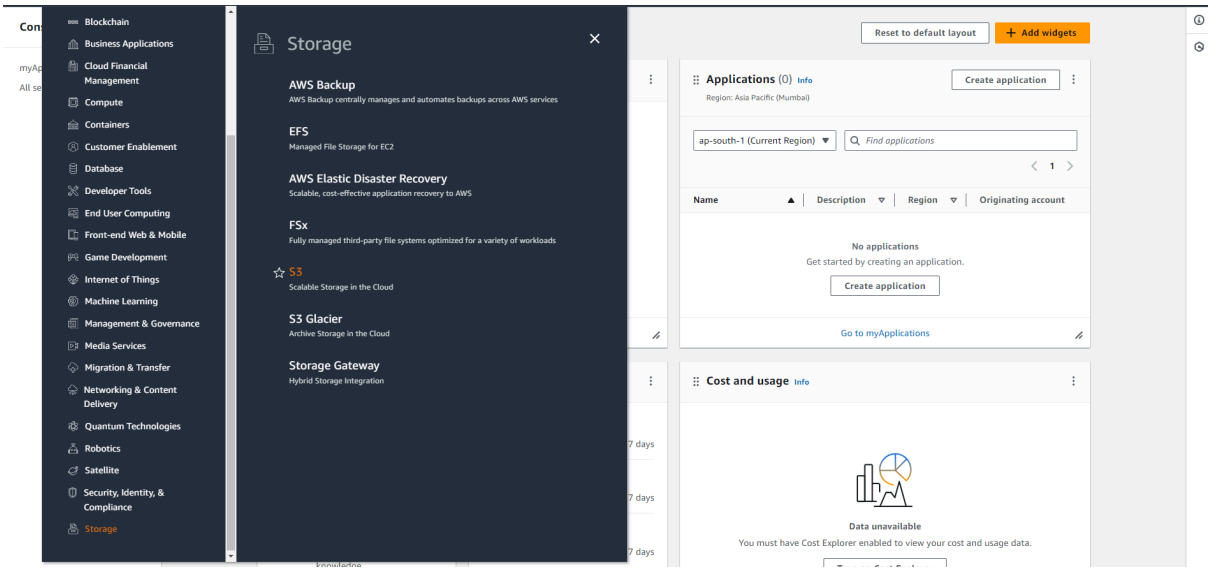
- Use Amazon S3 analytics to monitor access patterns and optimize storage costs by moving data to lower-cost tiers.

- Set up billing alerts or use AWS Cost Explorer to manage storage expenses.

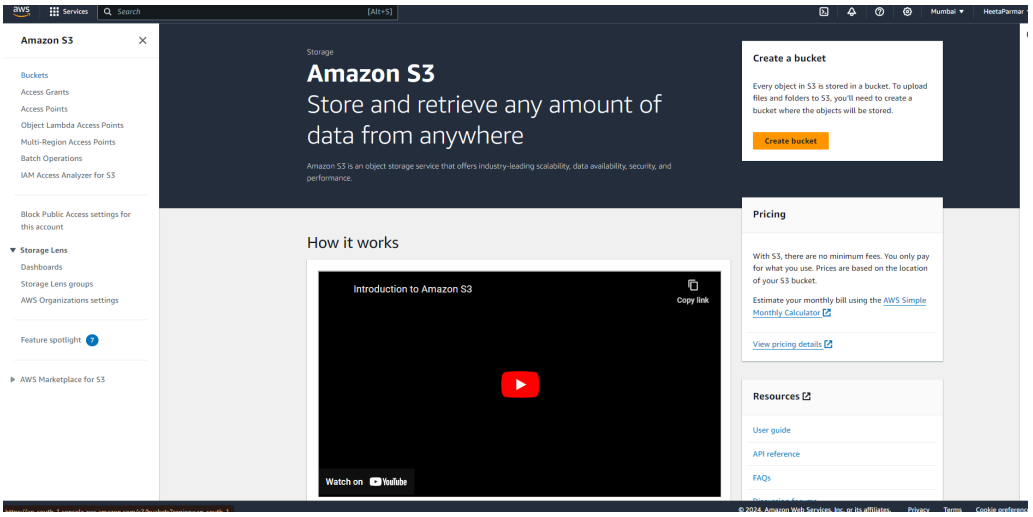
These steps will get you started with Amazon S3 and help you manage your data effectively.

A: uploading photo

1:Go to storage then select s3



STEP 2: Create bucket



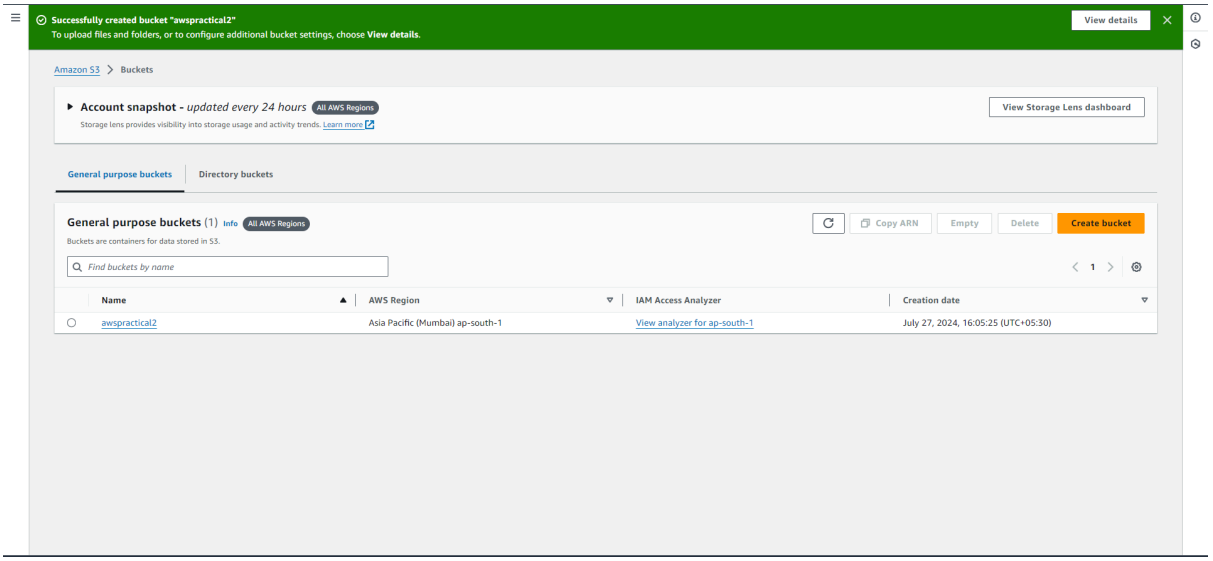
Enter bucket name my aws bucket

ACL –user and credentials disabled

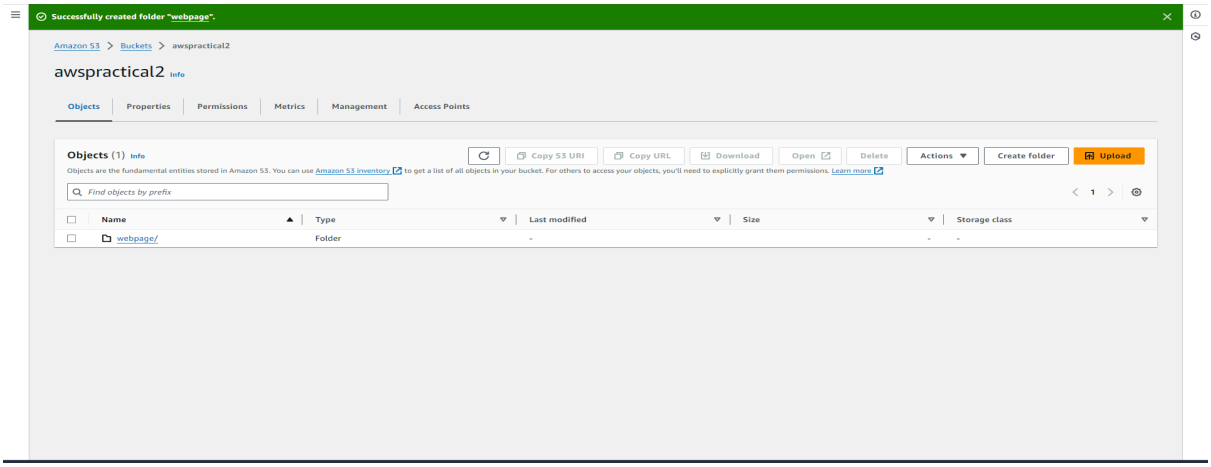
Click block all public access

Disable bucket keys

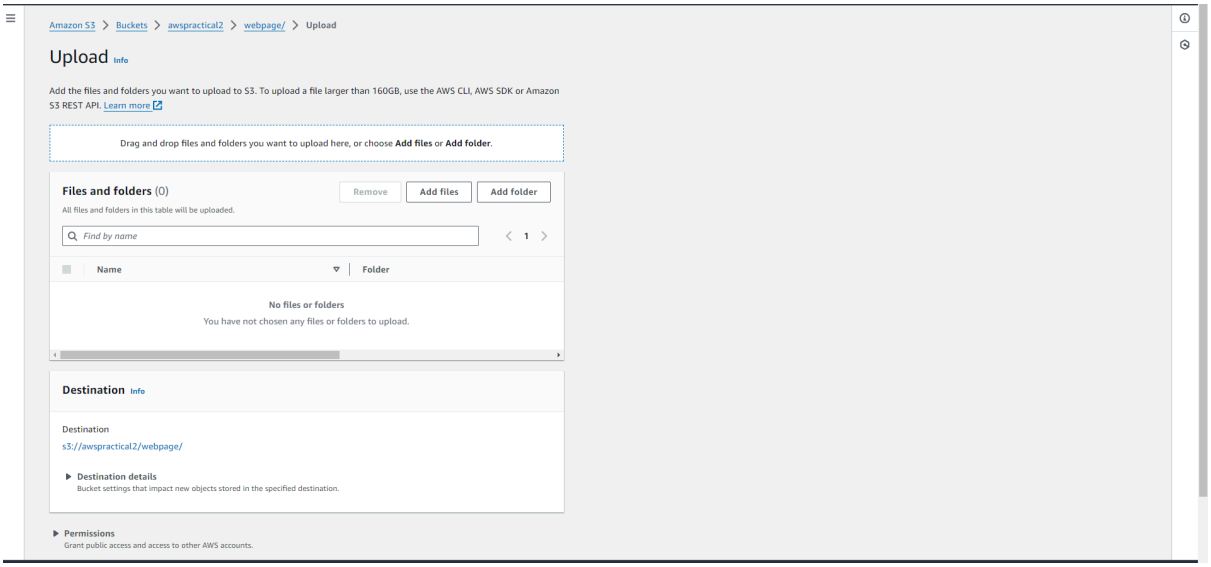
3: Create bucket



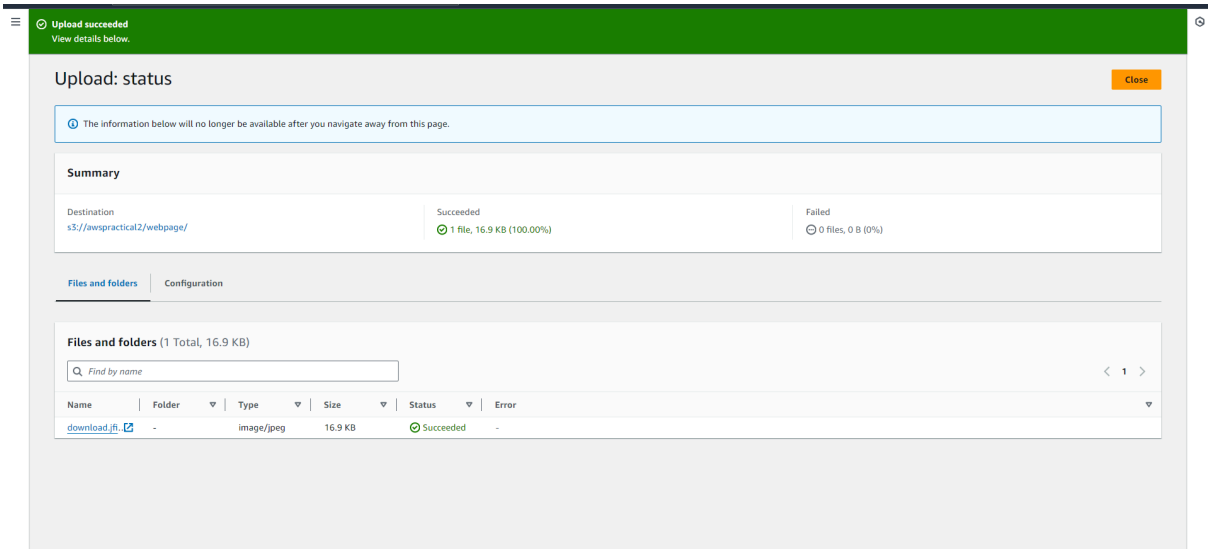
4:Create folder server encryption create folder



5:Upload add files

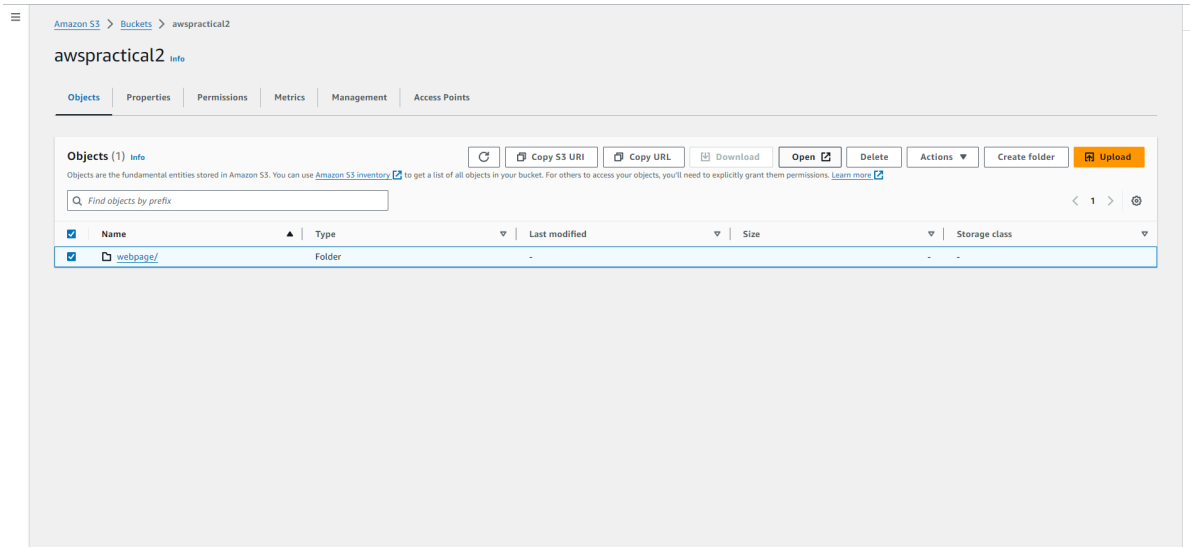


6: Uploading the image



#this is showing error cause we have block the access

#in order to open or view the image



B)website upload

(Rest all steps are same)

In order to upload a webpage which has images / videos the image and the video should be uploaded in the same folder or else it will not display the image .