**Enable Bucket Versioning**

**Objective:**

Enable versioning on an S3 bucket to maintain multiple versions of objects.

**Steps:**

**a) Create an S3 Bucket**

1. Log in to the AWS Management Console.
2. Navigate to **S3**.
3. Click on **Create Bucket**.
   * **Bucket Name**: Enter a globally unique name (e.g., my-versioning-bucket).
   * **Region**: Choose your preferred AWS region.
   * Leave other settings as default for now.
4. Click **Create Bucket**.

**b) Enable Versioning**

1. Select the newly created bucket.
2. Go to the **Properties** tab.
3. Under **Bucket Versioning**, click **Edit**.
4. Select **Enable** and click **Save Changes**.

**c) Test Versioning**

1. Upload a file (e.g., test.txt) to the bucket.
2. Re-upload a modified version of the same file.
3. Go to the **Objects** tab, select the file, and click **Show Versions**.
4. Observe multiple versions of the file.

**2. Set Up Cross-Region Replication**

**Objective:**

Configure replication of objects from one bucket to another in a different AWS region.

**Steps:**

**a) Prerequisites**

1. Versioning must be enabled on both the source and destination buckets.
2. Create another bucket in a different AWS region (e.g., my-replication-bucket).
3. Set up an IAM role with the required replication permissions.

**b) Configure Replication Rule**

1. Select the source bucket (e.g., my-versioning-bucket).
2. Go to the **Management** tab.
3. Under **Replication rules**, click **Create replication rule**.
4. Configure the rule:
   * **Rule name**: Enter a name (e.g., CrossRegionReplication).
   * **Status**: Enabled.
   * **Source bucket**: Ensure the correct bucket is selected.
   * **Destination bucket**:
     + Select **Choose a bucket from this account**.
     + Specify the destination bucket (e.g., my-replication-bucket).
   * **IAM role**: Create a new role or use an existing role.
5. Click **Save**.

**c) Test Replication**

1. Upload a new object (e.g., replication-test.txt) to the source bucket.
2. Check the destination bucket to ensure the object is replicated.

**3. Configure Static Website Hosting**

**Objective:**

Host a static website using an S3 bucket.

**Steps:**

**a) Create and Configure an S3 Bucket**

1. Create a new bucket (e.g., my-static-website) in your preferred region.
2. Uncheck **Block all public access** to allow public access to the website content.
3. Upload your static website files (e.g., index.html and error.html).

**b) Enable Static Website Hosting**

1. Select the bucket.
2. Go to the **Properties** tab.
3. Under **Static website hosting**, click **Edit**.
4. Select **Enable** and configure:
   * **Hosting type**: Host a static website.
   * **Index document**: index.html
   * **Error document**: error.html
5. Click **Save Changes**.

**c) Update Bucket Policy**

1. Go to the **Permissions** tab.
2. Under **Bucket Policy**, click **Edit** and add the following policy:

{

"Version": "2012-10-17",

"Statement": [

{

"Effect": "Allow",

"Principal": "\*",

"Action": "s3:GetObject",

"Resource": "arn:aws:s3:::my-static-website/\*"

}

]

}

1. Replace my-static-website with your bucket name.
2. Click **Save Changes**.

**d) Access the Website**

1. Go to the **Properties** tab.
2. Under **Static website hosting**, note the **Endpoint URL**.
3. Open the URL in a browser to view your static website.