Problem Statement:

Assignment:

Title : Transferring Files Across AWS S3 Buckets in Different AWS Accounts Using

Scripting

Introduction:

This assignment focuses on demonstrating your understanding and practical implementation of transferring files from one Amazon S3 bucket to another, but with a twist - the buckets reside in different AWS accounts. The objective is to achieve this file transfer using scripting techniques without resorting to the traditional method of downloading and uploading files. This assignment will test your knowledge of AWS IAM roles, Lambda functions, and AWS SDK/APIs.

Task:

● Your task is to set up two distinct AWS accounts.

● You'll have to demonstrate on how you will move files from the S3 bucket of one AWS account to the S3 bucket of other AWS using scripting (without downloading and uploading)

● Your solution should showcase your ability to utilise AWS services effectively, adhere to security best practices, and demonstrate proficiency in scripting with the AWS SDK or API calls.

Solution:

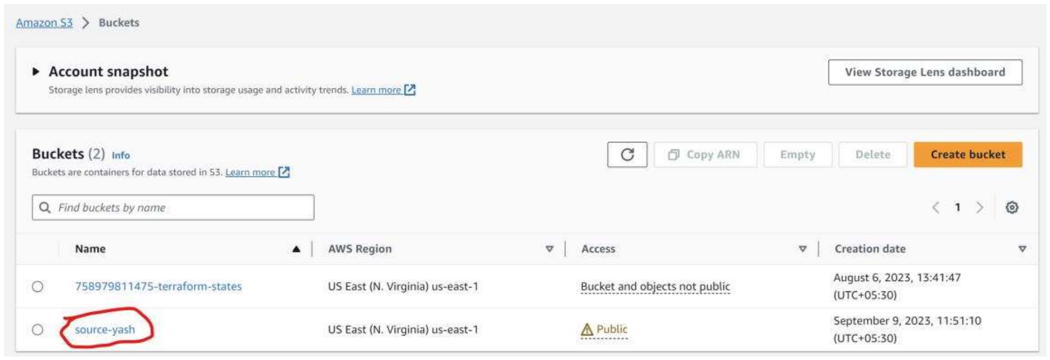
In this Assignment, we will implement how to copy data from one Amazon Web Services (AWS) S3 bucket to another S3 bucket in a different AWS account.

Prerequisites

Before we begin, ensure you have the following prerequisites in place:

- Access to two AWS accounts.

  I have Two AWS accounts with me.
- An S3 bucket in the source AWS account from which you want to copy data.


Amazon S3 > Buckets

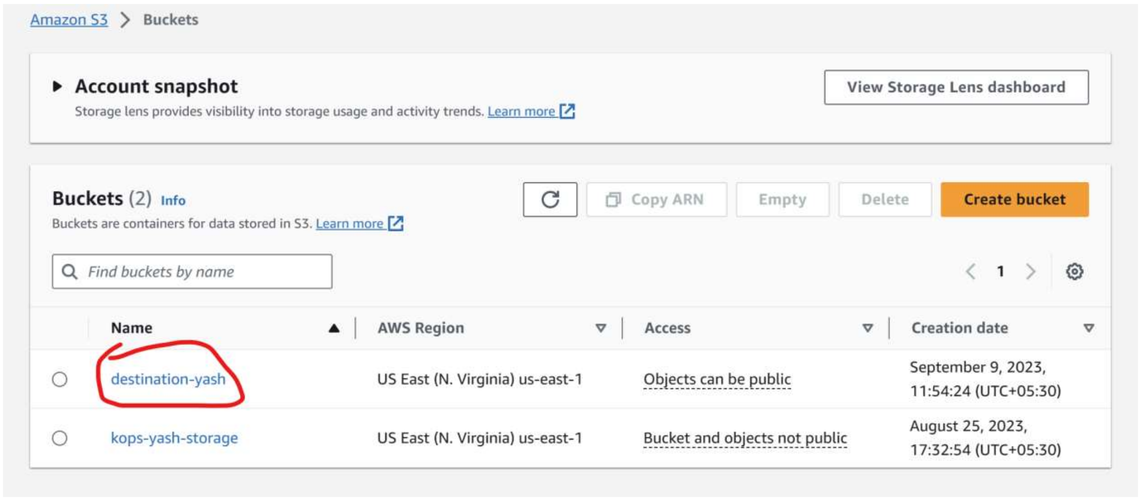
Account snapshot
Storage lens provides visibility into storage usage and activity trends. Learn more

Buckets (2) Info
Buckets are containers for data stored in S3. Learn more

Name	AWS Region	Access	Creation date
758979811475-terraform-states	US East (N. Virginia) us-east-1	Bucket and objects not public	August 6, 2023, 13:41:47 (UTC+05:30)
source-yash	US East (N. Virginia) us-east-1	⚠ Public	September 9, 2023, 11:51:10 (UTC+05:30)

Fig-1 Created a S3 bucket named Source-yash and made its access to public

- An S3 bucket in the destination AWS account where you want to transfer the data.


Amazon S3 > Buckets

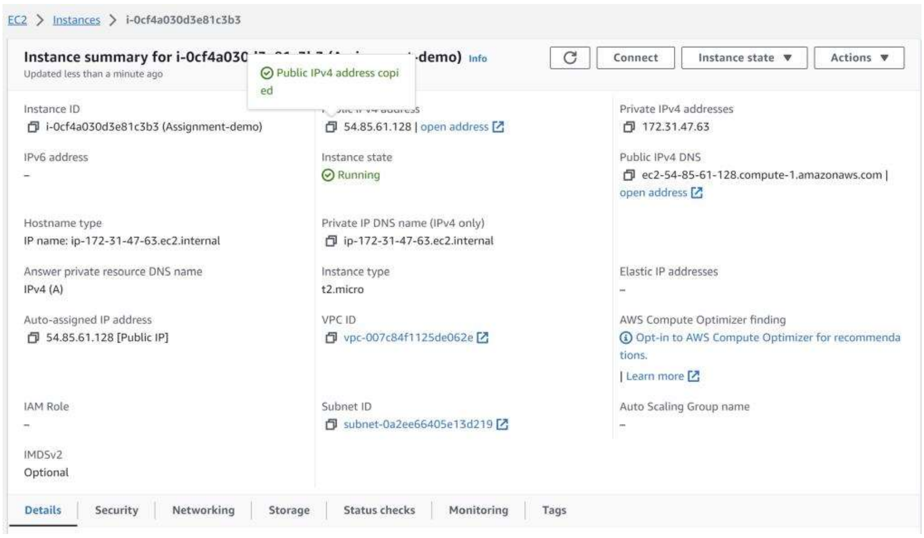
Account snapshot
Storage lens provides visibility into storage usage and activity trends. Learn more

Buckets (2) Info
Buckets are containers for data stored in S3. Learn more

Name	AWS Region	Access	Creation date
destination-yash	US East (N. Virginia) us-east-1	Objects can be public	September 9, 2023, 11:54:24 (UTC+05:30)
kops-yash-storage	US East (N. Virginia) us-east-1	Bucket and objects not public	August 25, 2023, 17:32:54 (UTC+05:30)

Fig-2 Created Destination S3 bucket in another AWS Account

- AWS Command Line Interface (CLI) installed on your system. I have installed it on My EC2 Ubuntu Instance here using

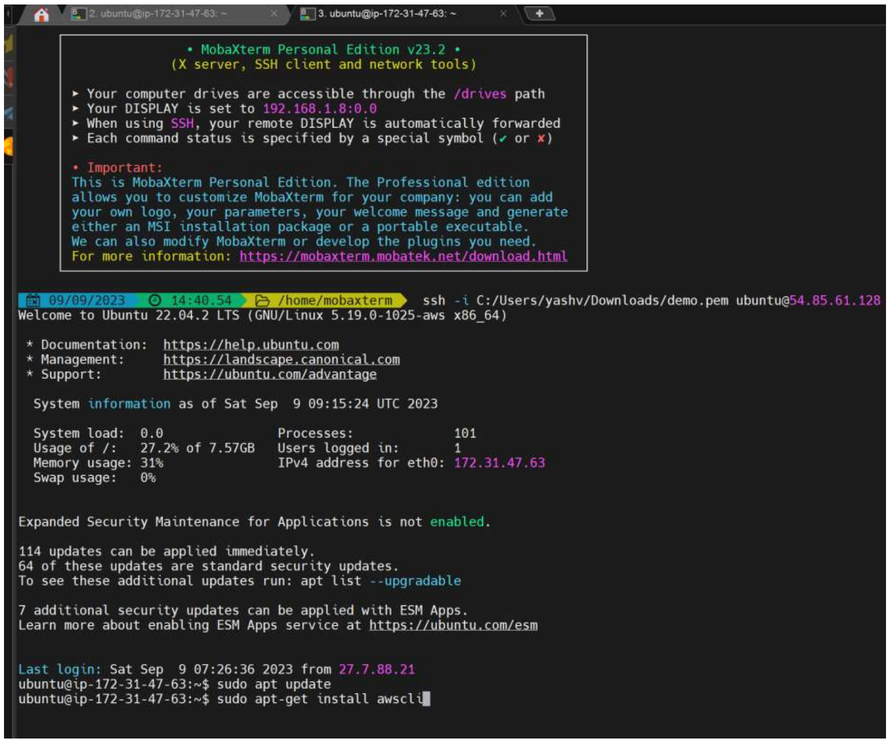

EC2 > Instances > i-0cf4a030d3e81c3b3

Instance summary for i-0cf4a030 -demo) Info
Updated less than a minute ago

Public IPv4 address copied

Instance ID i-0cf4a030d3e81c3b3 (Assignment-demo)	Public IPv4 address 54.85.61.128 | open address	Private IPv4 addresses 172.31.47.63
IPv6 address –	Instance state Running	Public IPv4 DNS ec2-54-85-61-128.compute-1.amazonaws.com | open address
Hostname type IP name: ip-172-31-47-63.ec2.internal	Private IP DNS name (IPv4 only) ip-172-31-47-63.ec2.internal	
Answer private resource DNS name IPv4 (A)	Instance type t2.micro	Elastic IP addresses –
Auto-assigned IP address 54.85.61.128 [Public IP]	VPC ID vpc-007c84f1125de062e	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. | Learn more
IAM Role –	Subnet ID subnet-0a2ee66405e13d219	Auto Scaling Group name –
IMDSv2 Optional		

Fig-3 Created EC-2 instance for aws cli installation



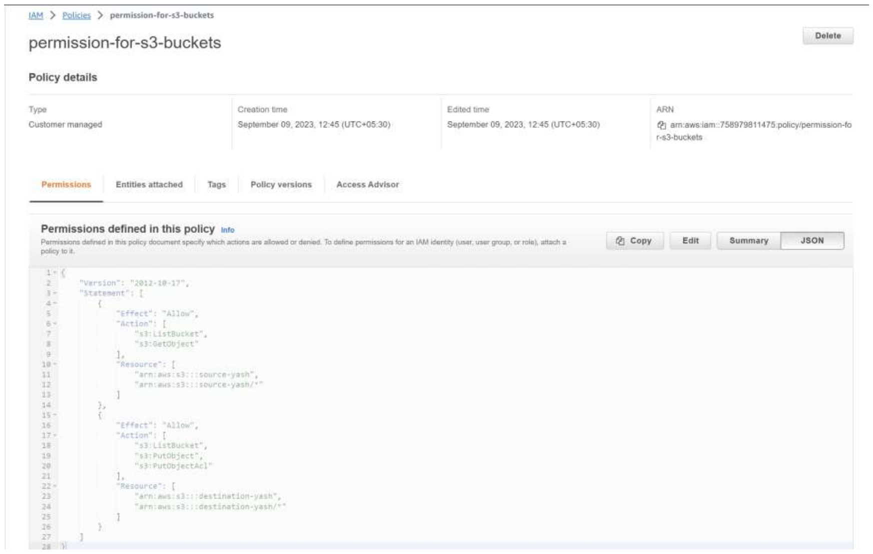
```
                • MobaXterm Personal Edition v23.2 •
              (X server, SSH client and network tools)

 ➤ Your computer drives are accessible through the /drives path
 ➤ Your DISPLAY is set to 192.168.1.8:0.0
 ➤ When using SSH, your remote DISPLAY is automatically forwarded
 ➤ Each command status is specified by a special symbol (✓ or ✗)

 • Important:
 This is MobaXterm Personal Edition. The Professional edition
 allows you to customize MobaXterm for your company: you can add
 your own logo, your parameters, your welcome message and generate
 either an MSI installation package or a portable executable.
 We can also modify MobaXterm or develop the plugins you need.
 For more information: https://mobaxterm.mobatek.net/download.html

 09/09/2023  14:40.54  /home/mobaxterm  ssh -i C:/Users/yashv/Downloads/demo.pem ubuntu@54.85.61.128
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-1025-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Sat Sep  9 09:15:24 UTC 2023

  System load:  0.0               Processes:             101
  Usage of /:   27.2% of 7.57GB   Users logged in:       1
  Memory usage: 31%               IPv4 address for eth0: 172.31.47.63
  Swap usage:   0%


Expanded Security Maintenance for Applications is not enabled.

114 updates can be applied immediately.
64 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

7 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm


Last login: Sat Sep  9 07:26:36 2023 from 27.7.88.21
ubuntu@ip-172-31-47-63:~$ sudo apt update
ubuntu@ip-172-31-47-63:~$ sudo apt-get install awscli
```

Fig-4 SSH to our Instance and installed AWS CLI

Steps to Copy Data Between S3 Buckets

1. Create a IAM User in the Source AWS Account

- Log in to your source AWS account.
- Navigate to the Identity and Access Management (IAM) service.
- Create a new user (named S3 admin user) and attach a custom policy that allows copying S3 data.



permission-for-s3-buckets

Policy details

Type	Creation time	Edited time	ARN
Customer managed	September 09, 2023, 12:45 (UTC+05:30)	September 09, 2023, 12:45 (UTC+05:30)	arn:aws:iam::758979811475:policy/permission-for-s3-buckets

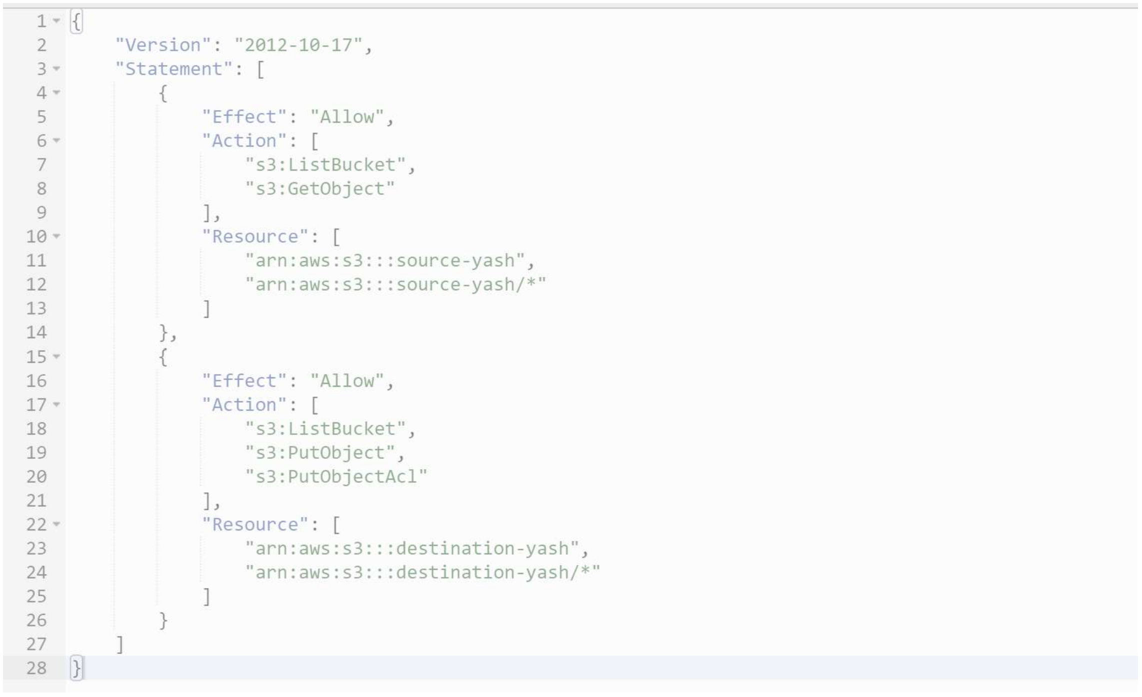
Permissions defined in this policy

Permissions defined in this policy document specify which actions are allowed or denied. To define permissions for an IAM identity (user, user group, or role), attach a policy to it.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "s3:ListBucket",
                "s3:GetObject"
            ],
            "Resource": [
                "arn:aws:s3:::source-yash",
                "arn:aws:s3:::source-yash/*"
            ]
        },
        {
            "Effect": "Allow",
            "Action": [
                "s3:ListBucket",
                "s3:PutObject",
                "s3:PutObjectAcl"
            ],
            "Resource": [
                "arn:aws:s3:::destination-yash",
                "arn:aws:s3:::destination-yash/*"
            ]
        }
    ]
}
```

Fig-5 Created a Custom Policy and attached that to our IAM user

A Custom Policy that grants an IAM identity (user or role) proper permissions. The IAM user must have access to retrieve objects from the source bucket and put objects back into the destination bucket.



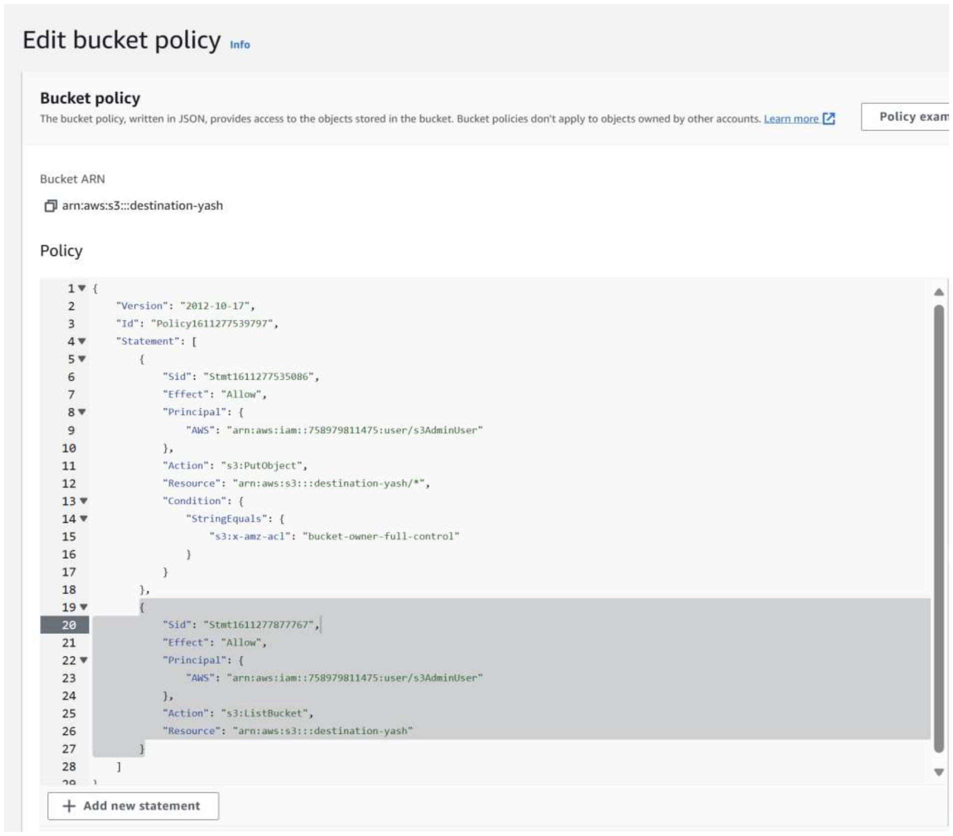
```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": [
                "s3:ListBucket",
                "s3:GetObject"
            ],
            "Resource": [
                "arn:aws:s3:::source-yash",
                "arn:aws:s3:::source-yash/*"
            ]
        },
        {
            "Effect": "Allow",
            "Action": [
                "s3:ListBucket",
                "s3:PutObject",
                "s3:PutObjectAcl"
            ],
            "Resource": [
                "arn:aws:s3:::destination-yash",
                "arn:aws:s3:::destination-yash/*"
            ]
        }
    ]
}
```

Fig-6 Custom Policy

- Make sure to replace the source bucket and destination bucket names in the policy.

2. Give Permissions to the Destination Bucket

- Log in to your destination AWS account.
- Access the permissions of the destination S3 bucket.
- Add a bucket policy that allows the source AWS account to write data to this bucket. You can use the policy provided in this



Edit bucket policy Info

Bucket policy

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

Policy exam

Bucket ARN

arn:aws:s3:::destination-yash

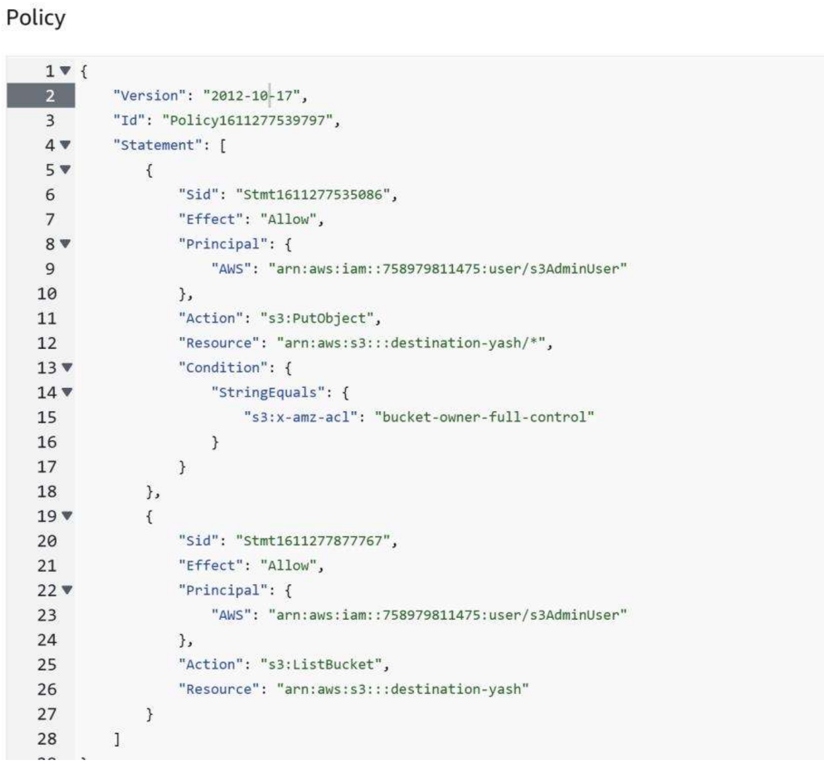
Policy

```
{
    "Version": "2012-10-17",
    "Id": "Policy1611277539797",
    "Statement": [
        {
            "Sid": "Stmt1611277535086",
            "Effect": "Allow",
            "Principal": {
                "AWS": "arn:aws:iam::758979811475:user/s3AdminUser"
            },
            "Action": "s3:PutObject",
            "Resource": "arn:aws:s3:::destination-yash/*",
            "Condition": {
                "StringEquals": {
                    "s3:x-amz-acl": "bucket-owner-full-control"
                }
            }
        },
        {
            "Sid": "Stmt1611277877767",
            "Effect": "Allow",
            "Principal": {
                "AWS": "arn:aws:iam::758979811475:user/s3AdminUser"
            },
            "Action": "s3:ListBucket",
            "Resource": "arn:aws:s3:::destination-yash"
        }
    ]
```

Add new statement

Fig-7 Destination Bucket Policy

- Replace the destination bucket name and the user ARN in the policy.



Policy

```
{
    "Version": "2012-10-17",
    "Id": "Policy1611277539797",
    "Statement": [
        {
            "Sid": "Stmt1611277535086",
            "Effect": "Allow",
            "Principal": {
                "AWS": "arn:aws:iam::758979811475:user/s3AdminUser"
            },
            "Action": "s3:PutObject",
            "Resource": "arn:aws:s3:::destination-yash/*",
            "Condition": {
                "StringEquals": {
                    "s3:x-amz-acl": "bucket-owner-full-control"
                }
            }
        },
        {
            "Sid": "Stmt1611277877767",
            "Effect": "Allow",
            "Principal": {
                "AWS": "arn:aws:iam::758979811475:user/s3AdminUser"
            },
            "Action": "s3:ListBucket",
            "Resource": "arn:aws:s3:::destination-yash"
        }
    ]
```

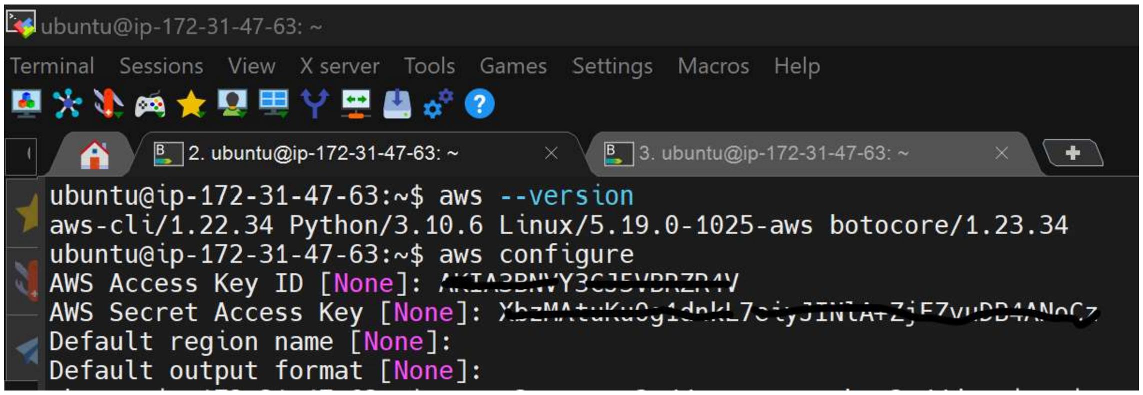
Fig-8 Closer Look on Policy

3. Obtain Access Keys

- In the source AWS account, create access keys for the user you created in step 1. These keys will be used to configure the AWS CLI.
- Store the access key ID and secret access key securely.

4. Configure AWS CLI

- Open your terminal window.
- Configure the AWS CLI by running the command aws configure.


ubuntu@ip-172-31-47-63: ~
Terminal
Sessions
View
X server
Tools
Games
Settings
Macros
Help
2. ubuntu@ip-172-31-47-63: ~
3. ubuntu@ip-172-31-47-63: ~

```
ubuntu@ip-172-31-47-63:~$ aws --version
aws-cli/1.22.34 Python/3.10.6 Linux/5.19.0-1025-aws botocore/1.23.34
ubuntu@ip-172-31-47-63:~$ aws configure
AWS Access Key ID [None]: [redacted]
AWS Secret Access Key [None]: [redacted]
Default region name [None]:
Default output format [None]:
```

Fig-9 AWS Configure

- Enter the access key ID, secret access key, and set the default region (if needed).

5. Copy Data Between S3 Buckets

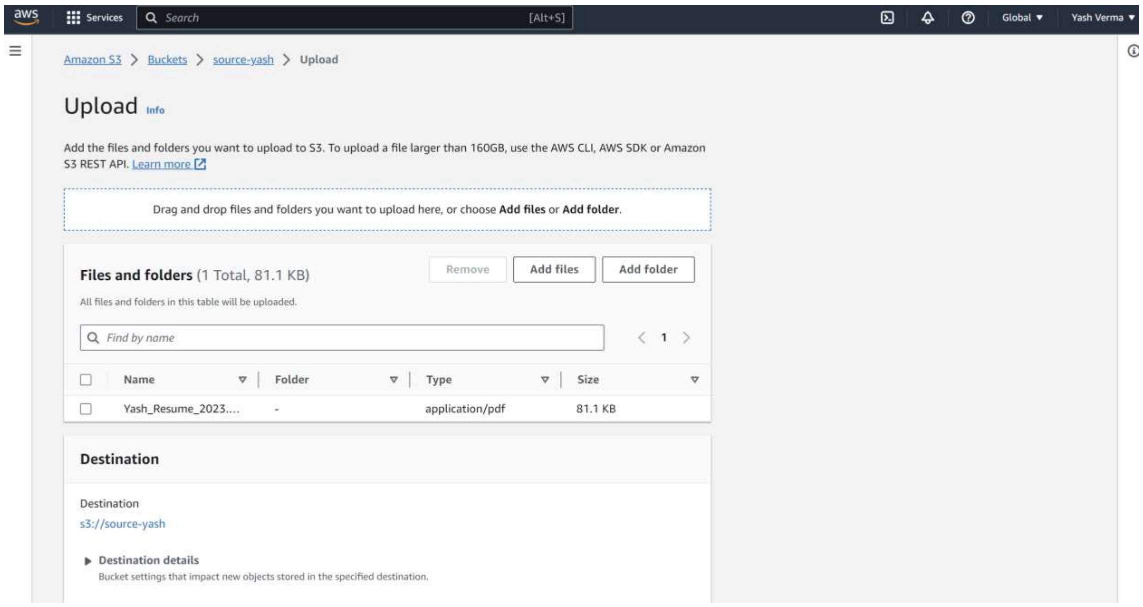
- Use the AWS CLI to synchronize the data between the source and destination buckets with the following command:

aws s3 sync s3://source-yash s3://destination-yash --acl bucket-owner-full-control

- Replace source-bucket-name with the name of your source bucket and destination-bucket-name with the name of your destination bucket.

6. Verify Data Transfer

- Check the destination S3 bucket to ensure that the data has been successfully copied.



Upload Info

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. Learn more

Drag and drop files and folders you want to upload here, or choose **Add files** or **Add folder**.

Files and folders (1 Total, 81.1 KB)

All files and folders in this table will be uploaded.

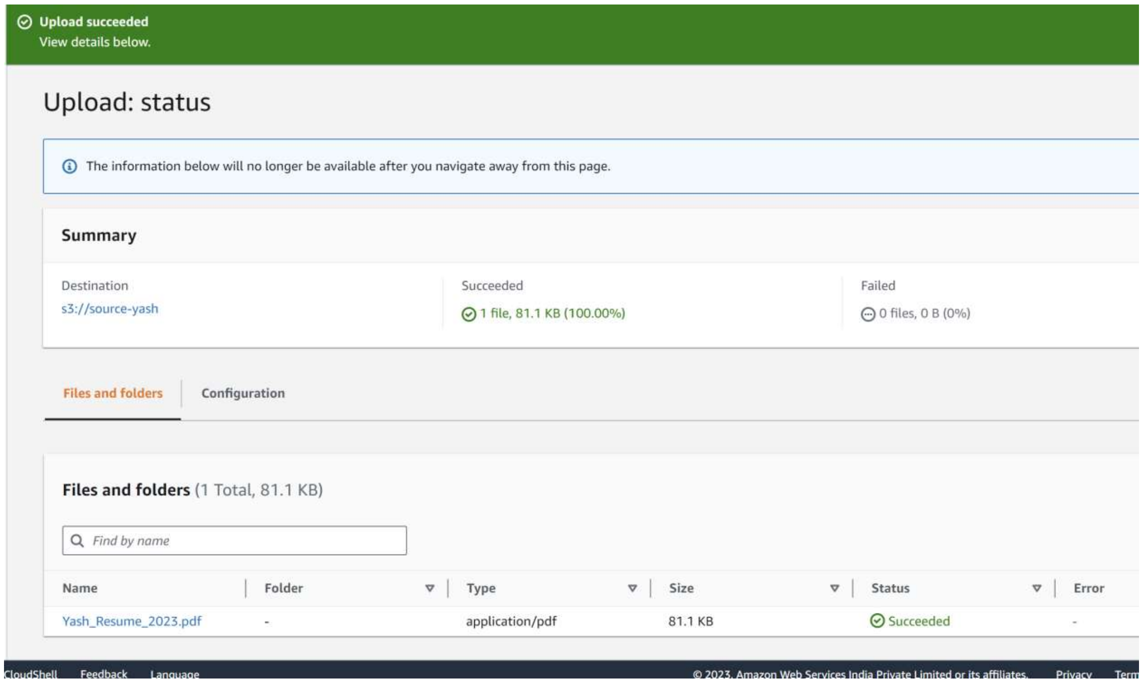
Name	Folder	Type	Size
Yash_Resume_2023....	-	application/pdf	81.1 KB

Destination

Destination
s3://source-yash

Destination details
Bucket settings that impact new objects stored in the specified destination.

Fig-10 Inserting File on Source Destination



Upload succeeded
View details below.

Upload: status

The information below will no longer be available after you navigate away from this page.

Summary

Destination	Succeeded	Failed
s3://source-yash	1 file, 81.1 KB (100.00%)	0 files, 0 B (0%)

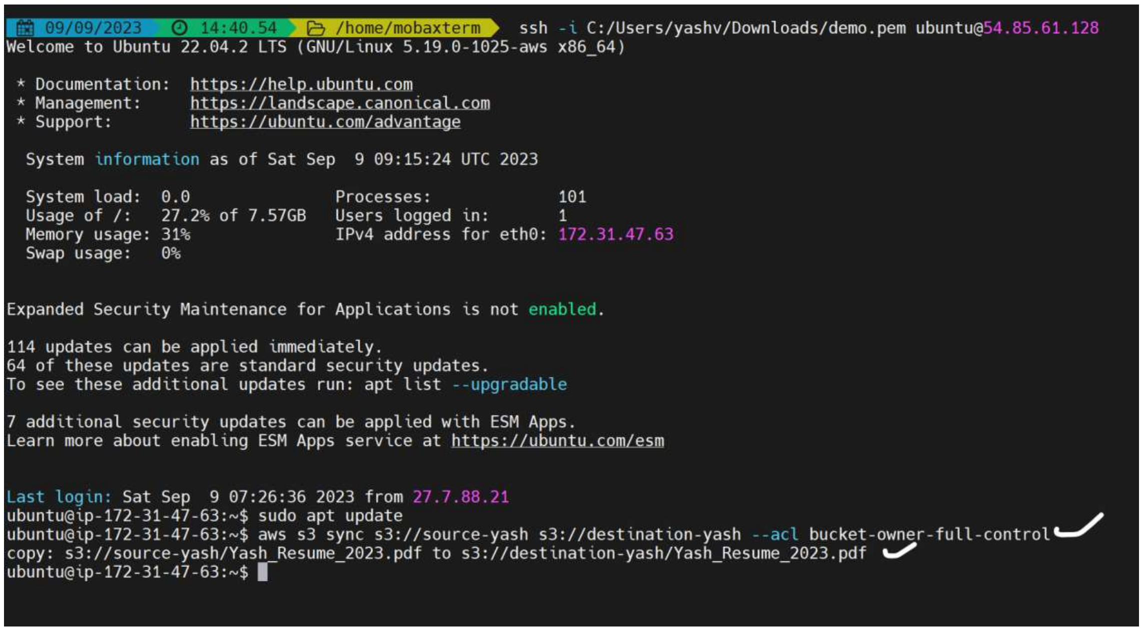
Files and folders
Configuration

Files and folders (1 Total, 81.1 KB)

Name	Folder	Type	Size	Status	Error
Yash_Resume_2023.pdf	-	application/pdf	81.1 KB	Succeeded	-

CloudShell
Feedback
Language
© 2023, Amazon Web Services India Private Limited or its affiliates.
Privacy

Fig-11 File Uploaded



```
 09/09/2023  14:40.54  /home/mobaxterm  ssh -i C:/Users/yashv/Downloads/demo.pem ubuntu@54.85.61.128
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-1025-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Sat Sep  9 09:15:24 UTC 2023

  System load:  0.0               Processes:             101
  Usage of /:   27.2% of 7.57GB   Users logged in:       1
  Memory usage: 31%               IPv4 address for eth0: 172.31.47.63
  Swap usage:   0%


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Learn more about enabling ESM Apps service at https://ubuntu.com/esm


Last login: Sat Sep  9 07:26:36 2023 from 27.7.88.21
ubuntu@ip-172-31-47-63:~$ sudo apt update
ubuntu@ip-172-31-47-63:~$ aws s3 sync s3://source-yash s3://destination-yash --acl bucket-owner-full-control
copy: s3://source-yash/Yash_Resume_2023.pdf to s3://destination-yash/Yash_Resume_2023.pdf
ubuntu@ip-172-31-47-63:~$
```
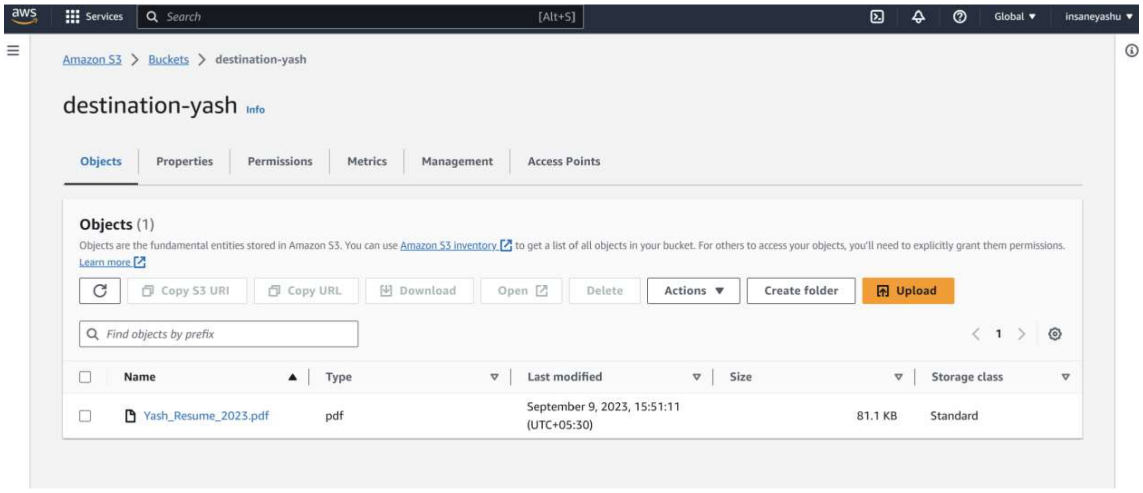

Fig-12 Executed AWS CLI commands



destination-yash

Objects (1)

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

Name	Type	Last modified	Size	Storage class
Yash_Resume_2023.pdf	pdf	September 9, 2023, 15:51:11 (UTC+05:30)	81.1 KB	Standard

Fig-12 File Automatically Received To Our Source S3 Bucket

Conclusion

In this Assignment, we implemented how to copy data from one AWS S3 bucket to another in a different AWS account. This process involves creating IAM users, setting up policies, configuring the AWS CLI, and using the **aws s3 sync** command to transfer data seamlessly. By following these steps, you can efficiently share data between AWS accounts and organizations.

MADE BY- YASH VERMA