Experiment: 5

Automation and Optimization with Amazon S3

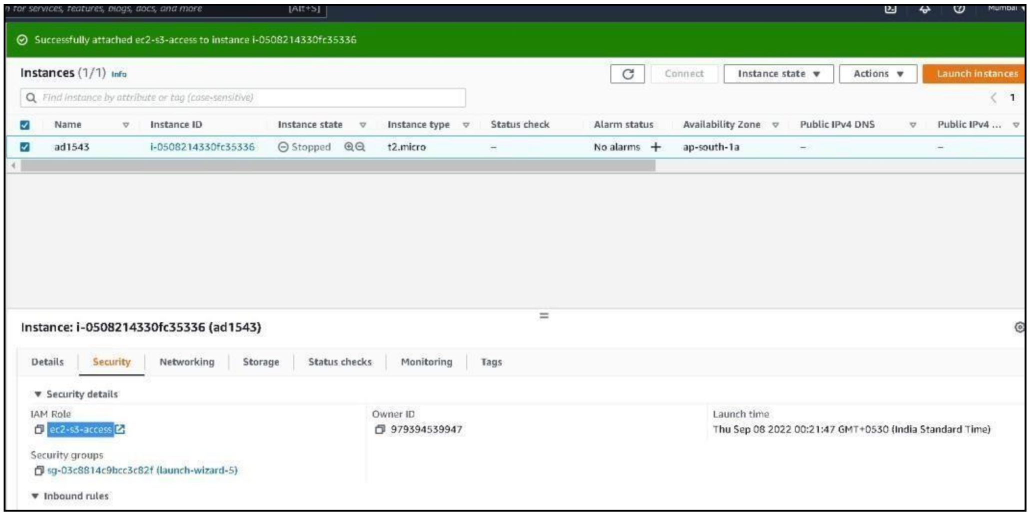
Aim : Automate Files backup to aws S3 bucket on Linux machine.

Pre-requisites : AWS Console, Amazon S3, crontab, aws cli

Procedure :

Steps:

1. Create a S3 bucket.
2. Create a EC2 instance.
3. Give EC2 instance Role to access S3.



Successfully attached ec2-s3-access to instance i-0508214330fc35336

Instances (1/1) Info

☑	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
☑	ad1543	i-0508214330fc35336	⊖ Stopped	t2.micro	–	No alarms	ap-south-1a	–	–

Instance: i-0508214330fc35336 (ad1543)

Security details

IAM Role: ec2-s3-access

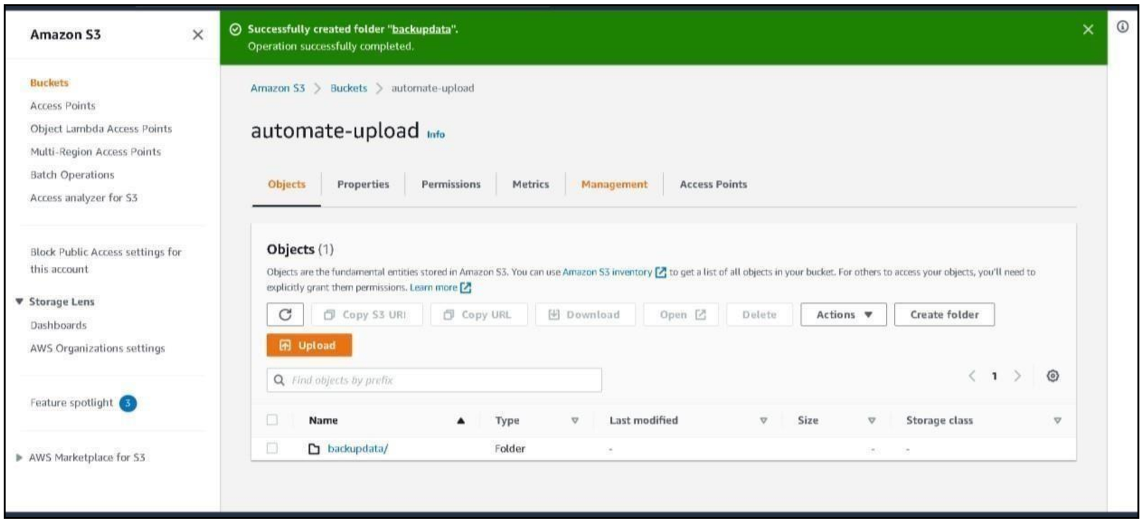
Owner ID: 979394539947

Launch time: Thu Sep 08 2022 00:21:47 GMT+0530 (India Standard Time)

Security groups: sg-03c8814c9bcc3c82f (launch-wizard-5)

(or you may also grant access to your local linux machine using aws configure cmd and entering your IAM user credentials over there)

4. Connect to your EC2 instance CLI.
5. Type “sudo su” to give access root directory.



Successfully created folder "backupdata".
Operation successfully completed.

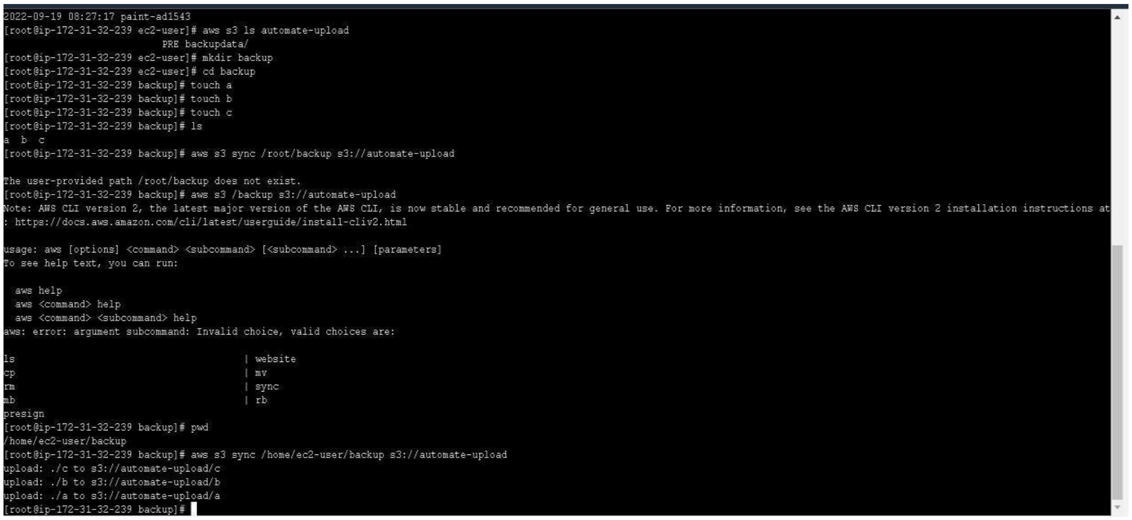
automate-upload

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

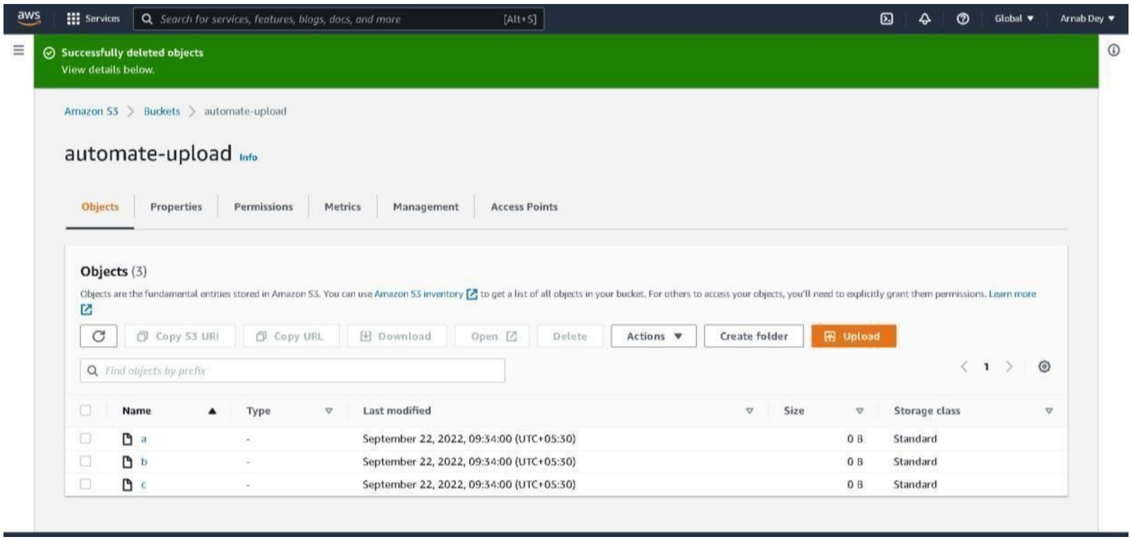
□	Name ▲	Type	Last modified	Size	Storage class
□	backupdata/	Folder	-	-	-

6. Create a directory
   "backup".Type: mkdir
   backup
7. Go inside the "backup" directory.
8. Make some test
   files. Type : touch a



```
2022-09-19 08:27:17 paint-ad1543
[root@ip-172-31-32-239 ec2-user]# aws s3 ls automate-upload
                           PRE backupdata/
[root@ip-172-31-32-239 ec2-user]# mkdir backup
[root@ip-172-31-32-239 ec2-user]# cd backup
[root@ip-172-31-32-239 backup]# touch a
[root@ip-172-31-32-239 backup]# touch b
[root@ip-172-31-32-239 backup]# touch c
[root@ip-172-31-32-239 backup]# ls
a  b  c
[root@ip-172-31-32-239 backup]# aws s3 sync /root/backup s3://automate-upload

The user-provided path /root/backup does not exist.
[root@ip-172-31-32-239 backup]# aws s3 /backup s3://automate-upload
Note: AWS CLI version 2, the latest major version of the AWS CLI, is now stable and recommended for general use. For more information, see the AWS CLI version 2 installation instructions at
: https://docs.aws.amazon.com/cli/latest/userguide/install-cliv2.html

usage: aws [options] <command> <subcommand> [<subcommand> ...] [parameters]
To see help text, you can run:

  aws help
  aws <command> help
  aws <command> <subcommand> help
aws: error: argument subcommand: Invalid choice, valid choices are:

ls                                       | website
cp                                       | mv
rm                                       | sync
mb                                       | rb
presign
[root@ip-172-31-32-239 backup]# pwd
/home/ec2-user/backup
[root@ip-172-31-32-239 backup]# aws s3 sync /home/ec2-user/backup s3://automate-upload
upload: ./c to s3://automate-upload/c
upload: ./b to s3://automate-upload/b
upload: ./a to s3://automate-upload/a
[root@ip-172-31-32-239 backup]#
```

9. List them by cmd – ls



Successfully deleted objects
View details below.

Amazon S3 > Buckets > automate-upload

automate-upload Info

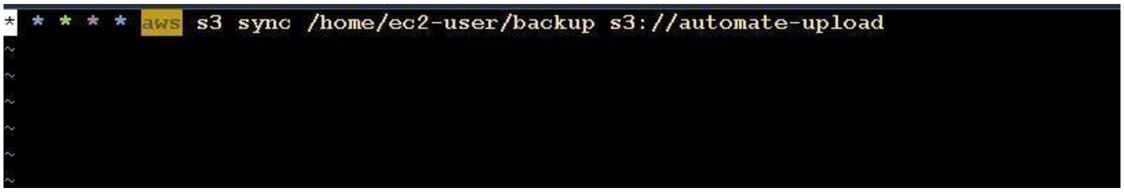
Objects (3)

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

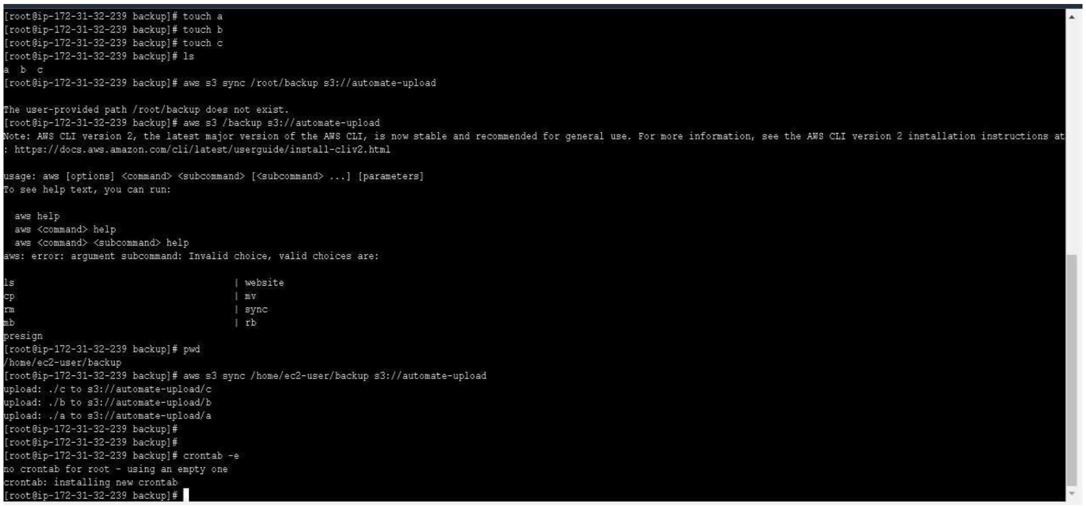
□	Name ▲	Type	Last modified	Size	Storage class
□	a	-	September 22, 2022, 09:34:00 (UTC+05:30)	0 B	Standard
□	b	-	September 22, 2022, 09:34:00 (UTC+05:30)	0 B	Standard
□	c	-	September 22, 2022, 09:34:00 (UTC+05:30)	0 B	Standard

10. Now to sync these files of backup directory on the S3 bucket. Cmd : aws s3 sync localfilepath s3://bucketname
11. Now, we are going to create a cron job in order to automate this process. Cmd : crontab -e

Enter the cmd : cron code aws s3 sync /directory s3://bucketname For e.g. : cron code for 1 min is * * * * * (you may use crontab.guru to create your own job expression) URL : https://crontab.guru/



```
* * * * * aws s3 sync /home/ec2-user/backup s3://automate-upload
~
~
~
~
~
~
```



```
[root@ip-172-31-32-239 backup]# touch a
[root@ip-172-31-32-239 backup]# touch b
[root@ip-172-31-32-239 backup]# touch c
[root@ip-172-31-32-239 backup]# ls
a  b  c
[root@ip-172-31-32-239 backup]# aws s3 sync /root/backup s3://automate-upload

The user-provided path /root/backup does not exist.
[root@ip-172-31-32-239 backup]# aws s3 /backup s3://automate-upload
Note: AWS CLI version 2, the latest major version of the AWS CLI, is now stable and recommended for general use. For more information, see the AWS CLI version 2 installation instructions at
: https://docs.aws.amazon.com/cli/latest/userguide/install-cliv2.html

usage: aws [options] <command> <subcommand> [<subcommand> ...] [parameters]
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aws: error: argument subcommand: Invalid choice, valid choices are:

ls                                       | website
cp                                       | mv
rm                                       | sync
mb                                       | rb
presign
[root@ip-172-31-32-239 backup]# pwd
/home/ec2-user/backup
[root@ip-172-31-32-239 backup]# aws s3 sync /home/ec2-user/backup s3://automate-upload
upload: ./c to s3://automate-upload/c
upload: ./b to s3://automate-upload/b
upload: ./a to s3://automate-upload/a
[root@ip-172-31-32-239 backup]#
[root@ip-172-31-32-239 backup]#
[root@ip-172-31-32-239 backup]# crontab -e
no crontab for root - using an empty one
crontab: installing new crontab
[root@ip-172-31-32-239 backup]#
```
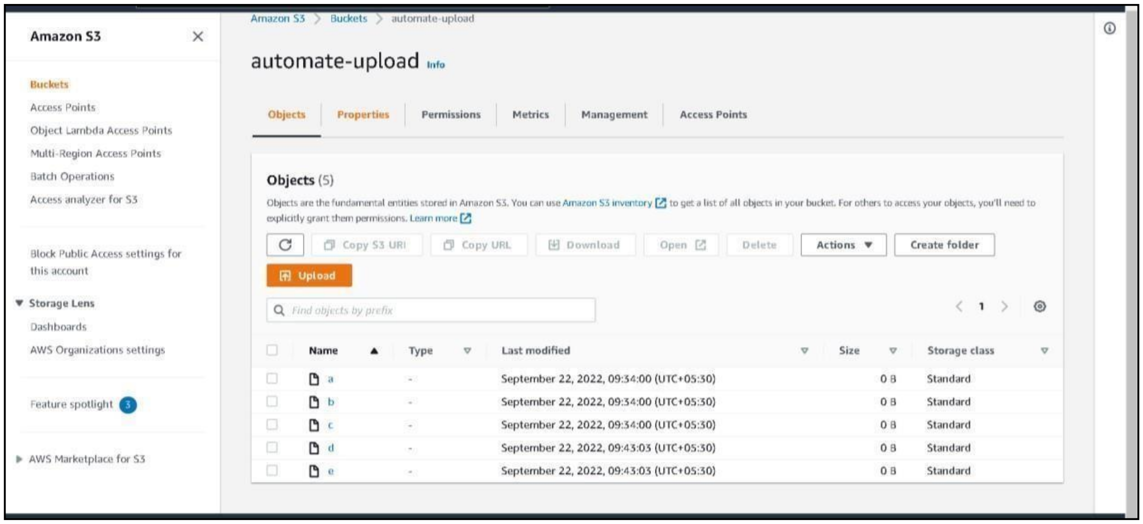

12. Restart the Crond service
    Run “systemctl restart/stop/start cornd.service” to restart/stop/start your cron jobs respectively.
13. Now, we are going to create some test files to check if they are uploaded every minute or not.
14. File d and file e have been updated.



Objects (5)

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

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□	b	-	September 22, 2022, 09:34:00 (UTC+05:30)	0 B	Standard
□	c	-	September 22, 2022, 09:34:00 (UTC+05:30)	0 B	Standard
□	d	-	September 22, 2022, 09:43:03 (UTC+05:30)	0 B	Standard
□	e	-	September 22, 2022, 09:43:03 (UTC+05:30)	0 B	Standard

Result:

We have successfully automated our local files/directory backup on Amazon S3 buckets using crontab.

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