

**DEPARTMENT OF NETWORKING AND
COMMUNICATIONS**

LAB RECORD

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**Course Title: DATA CENTRIC NETWORKING AND
SYSTEM DESIGN**

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Register Number: RA2011028010086

Branch with Specialization: CSE- CLOUD COMPUTING

Section: K2



**SCHOOL OF COMPUTING
FACULTY OF ENGINEERING AND TECHNOLOGY
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY**

SRM Nagar, Kattankulathur- 603203

DEPARTEMNT OF NETWORKING AND COMMUNICATIONS

ABOUT THE DEPARTMENT

Department of Networking and Communications under School of Computing intend to meet the expectations of the aspiring students and to add more value to the degrees offered. The Department ensures to provide quality and value-laden education for students in the traditional and contemporary areas of Cloud Computing, Computer Networks, Cyber Security, Information Technology, and Internet of Things. The programs are introduced in partnership with reputed IT companies like Amazon Web services, K7 Security, Virtusa etc. The department consists of a medley of faculty members with industrial and academic experience. The Department's keen focus is towards "networks" domain specific and specialization-based placement drives for its students. The department inculcates entrepreneurial skills in budding aspirants to pitch their innovative ideas through SRM Innovation and Incubation Center. Our International and alumni connect intrigue in bridging the gap between the trio: Academics-Industry -Research

Vision

To Nurture as globally recognizable department in imparting the student's high quality education and providing high confidence, unique knowledge and research experience in the field of networking, cyber security, forensics, information technology, cognitive computing and internet of things.

Mission

To provide world class IT professionals with appropriate industry and research-based curriculum

To train the students in such a way that leads to entrepreneurship and develop societal need-based industries

To nourish the students as a socially responsible professionals by providing them training in personality development, ethics and leadership program

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Name- **Mukund Maheshwari**

Year-3rd

Semester-5th

Branch-CSE-CLOUD COMPUTING

University Register No.- **RA2011028010086**

Certified that this is a Bonafide Record work done by the above student in the year 2022 - 2023

Signature of the Faculty

Signature of Head of the Department

DATE: _____

INTERNAL EXAMINER

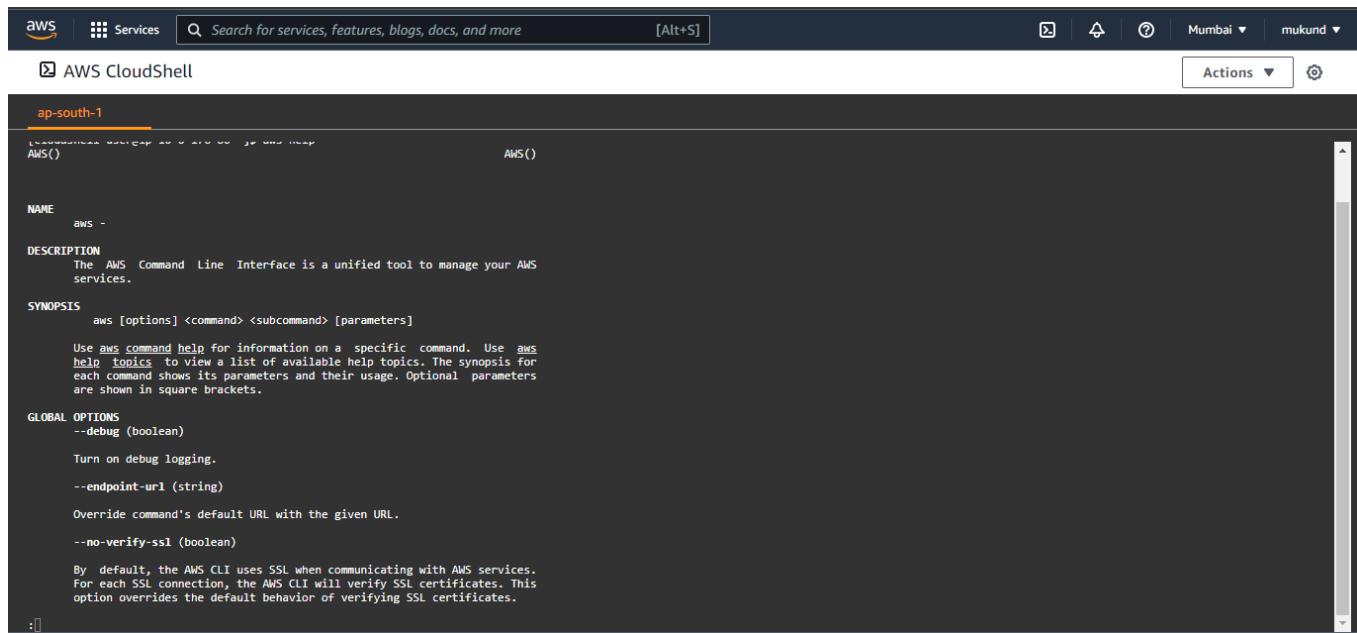
EXTERNAL EXAMINER

Table of Contents

Aim : Install and learn using AWS CLI

1] AWS Help

The built-in AWS CLI help command. You can get help with any command when using the AWS Command Line Interface (AWS CLI). To do so, simply type `help` at the end of a command name. For example, the following command displays help for the general AWS CLI options and the available top-level commands.

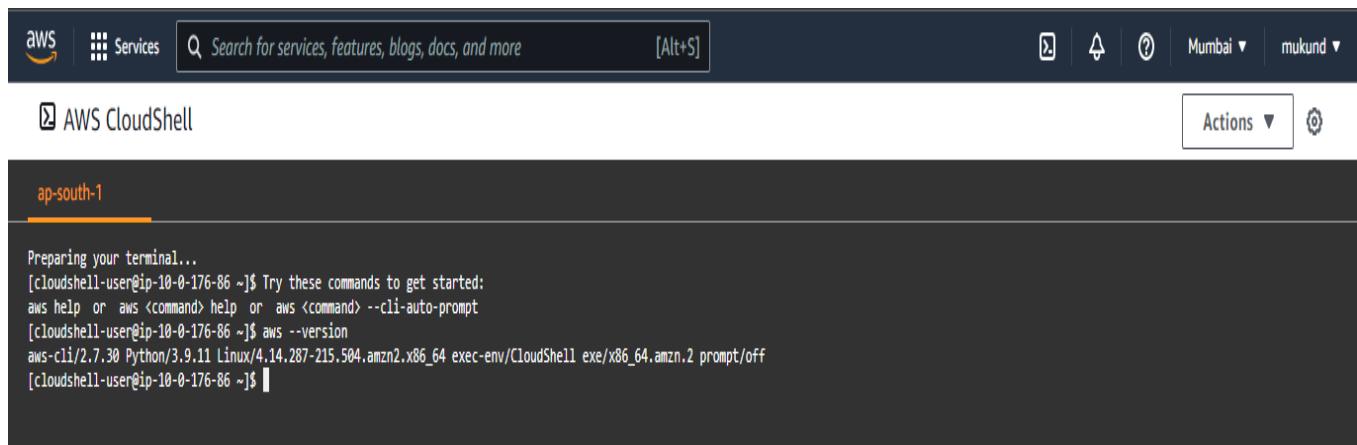


The screenshot shows the AWS CloudShell interface. The terminal window title is "aws CloudShell". The command entered is "aws --help". The output provides detailed information about the AWS CLI, including its NAME, DESCRIPTION, SYNOPSIS, GLOBAL OPTIONS, and a note about SSL verification.

```
aws
NAME
  aws -
DESCRIPTION
  The AWS Command Line Interface is a unified tool to manage your AWS services.
SYNOPSIS
  aws [options] <command> <subcommand> [parameters]
  Use aws command help for information on a specific command. Use aws help topics to view a list of available help topics. The synopsis for each command shows its parameters and their usage. Optional parameters are shown in square brackets.
GLOBAL OPTIONS
  --debug (boolean)
    Turn on debug logging.
  --endpoint-url (string)
    Override command's default URL with the given URL.
  --no-verify-ssl (boolean)
    By default, the AWS CLI uses SSL when communicating with AWS services. For each SSL connection, the AWS CLI will verify SSL certificates. This option overrides the default behavior of verifying SSL certificates.
```

2] AWS – version

The AWS CLI version 2 is the most recent major version of the AWS CLI and supports all of the latest features

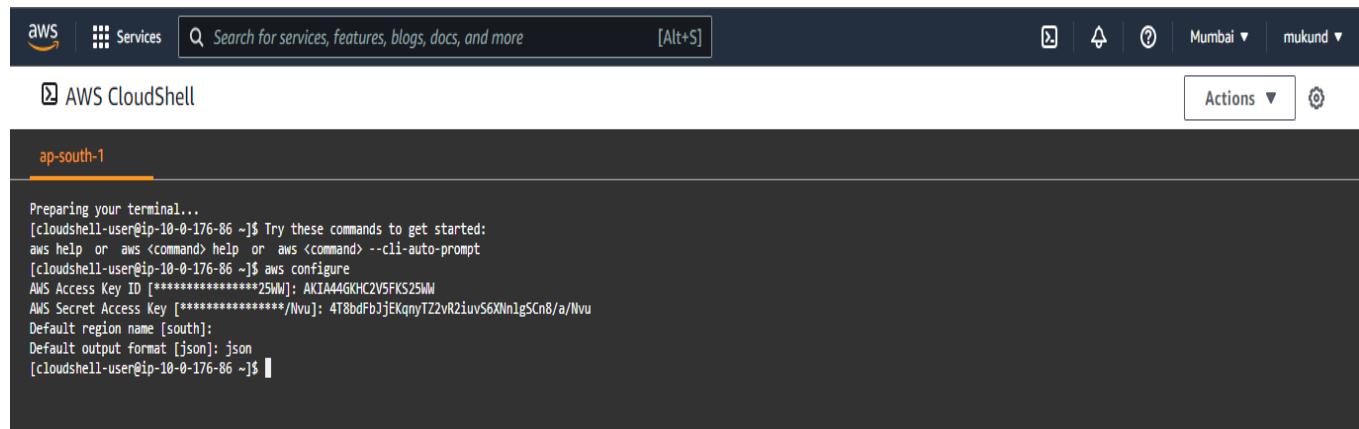


The screenshot shows the AWS CloudShell interface. The terminal window title is "aws CloudShell". The command entered is "aws --version". The output displays the AWS CLI version information, including the version number (2.7.30), Python version, and the AWS Lambda function name.

```
aws
Preparing your terminal...
[cloudshell-user@ip-10-0-176-86 ~]$ Try these commands to get started:
aws help or aws <command> help or aws <command> --cli-auto-prompt
[cloudshell-user@ip-10-0-176-86 ~]$ aws --version
aws-cli/2.7.30 Python/3.9.11 Linux/4.14.287-215.504.amzn2.x86_64 exec-env/CloudShell exe/x86_64.amzn.2 prompt/off
[cloudshell-user@ip-10-0-176-86 ~]$
```

3] AWS configure

AWS Config is a service that enables you to assess, audit, and evaluate the configurations of your AWS resources. Config continuously monitors and records your AWS resource configurations and allows you to automate the evaluation of recorded configurations against desired configurations.



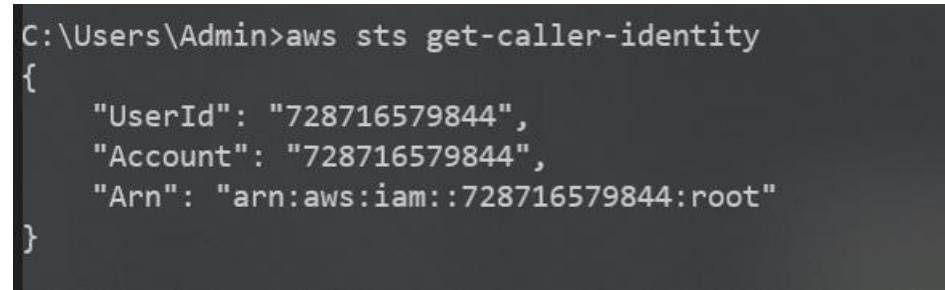
The screenshot shows the AWS CloudShell interface. At the top, there's a navigation bar with the AWS logo, 'Services' (selected), a search bar ('Search for services, features, blogs, docs, and more'), and a keyboard shortcut '[Alt+S]'. On the right, there are icons for user profile ('mukund'), location ('Mumbai'), and settings. Below the bar, the title 'AWS CloudShell' is displayed next to a gear icon. The main area is titled 'ap-south-1'. It contains terminal output for the AWS CLI configuration command:

```
Preparing your terminal...
[cloudshell-user@ip-10-0-176-86 ~]$ Try these commands to get started:
aws help or aws <command> help or aws <command> --cli-auto-prompt
[cloudshell-user@ip-10-0-176-86 ~]$ aws configure
AWS Access Key ID [*****25MW]: AKIA4GKHC2V5FKS25MW
AWS Secret Access Key [*****Nvu]: 4T8bdFbjjEKqnyTZ2vR2iuvS6Xn1gSCn8/a/Nvu
Default region name [south]:
Default output format [json]: json
[cloudshell-user@ip-10-0-176-86 ~]$
```

At the bottom right of the terminal window, there are 'Actions' and a gear icons.

4] sts get-caller-identity

To get your account id using AWS CLI, run the `sts get-caller-identity` command, setting the `--query` parameter to `Account` to filter the output. Copied! The `get-caller-identity` command returns the User Id, Account Id, and the ARN of the caller

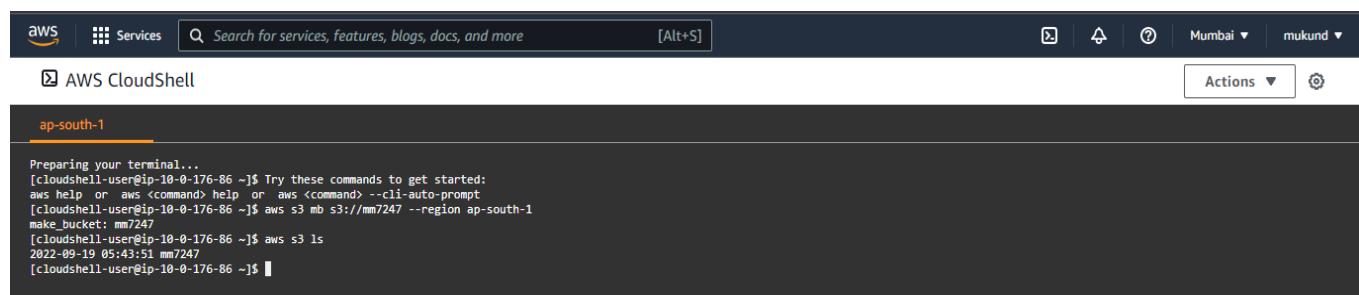


The screenshot shows a Windows Command Prompt window with the path 'C:\Users\Admin>'. The command `aws sts get-caller-identity` is run, and the output is a JSON object:

```
{
  "UserId": "728716579844",
  "Account": "728716579844",
  "Arn": "arn:aws:iam::728716579844:root"
}
```

5] aws s3 ls

To list your buckets, folders, or objects, use the `s3 ls` command. Using the command without a target or options lists all buckets.



The screenshot shows the AWS CloudShell interface. The title 'ap-south-1' is visible. The terminal output shows the execution of the `aws s3 ls` command:

```
Preparing your terminal...
[cloudshell-user@ip-10-0-176-86 ~]$ Try these commands to get started:
aws help or aws <command> help or aws <command> --cli-auto-prompt
[cloudshell-user@ip-10-0-176-86 ~]$ aws s3 mb s3://mm7247 --region ap-south-1
make_bucket: mm7247
[cloudshell-user@ip-10-0-176-86 ~]$ aws s3 ls
2022-09-19 05:43:51 mm7247
[cloudshell-user@ip-10-0-176-86 ~]$
```

6] aws s3 ls bucketName

The following `ls` command lists objects and common prefixes under a specified bucket and prefix. In this example, the user owns the bucket `mybucket` with the objects `test.txt` and `somePrefix/test.txt`. The `LastWriteTime` and `Length` are arbitrary. Note that since the `ls` command has no interaction with the local filesystem, the `s3://` URI scheme is not required to resolve ambiguity and may be omitted

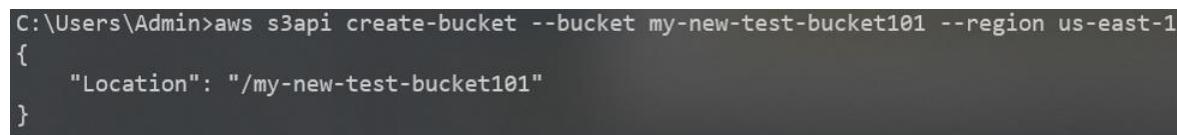


AWS CloudShell terminal window showing the output of the `aws s3 ls` command. The terminal prompt is `[cloudshell-user@ip-10-0-176-86 ~]$`. The output shows the creation date and time of the objects in the bucket.

```
Preparing your terminal...
[cloudshell-user@ip-10-0-176-86 ~]$ Try these commands to get started:
aws help or aws <command> help or aws <command> --cli-auto-prompt
[cloudshell-user@ip-10-0-176-86 ~]$ aws s3 ls
2022-09-19 05:43:51 mm/247
[cloudshell-user@ip-10-0-176-86 ~]$
```

7] create bucket

To create a bucket, you must register with Amazon S3 and have a valid Amazon Web Services Access Key ID to authenticate requests. Anonymous requests are never allowed to create buckets. By creating the bucket, you become the bucket owner. Not every string is an acceptable bucket name.

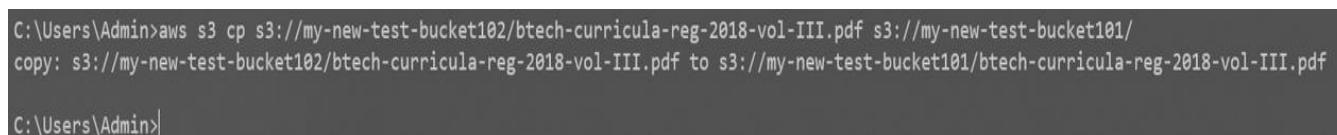


Windows command prompt showing the creation of a new S3 bucket named `my-new-test-bucket101` in the `us-east-1` region.

```
C:\Users\Admin>aws s3api create-bucket --bucket my-new-test-bucket101 --region us-east-1
{
    "Location": "/my-new-test-bucket101"
}
```

8] copy bucket

To download an entire bucket to your local file system, use the AWS CLI `sync` command, passing it the `s3` bucket as a source and a directory on your file system as a destination, e.g. `aws s3 sync s3://YOUR_BUCKET ..`

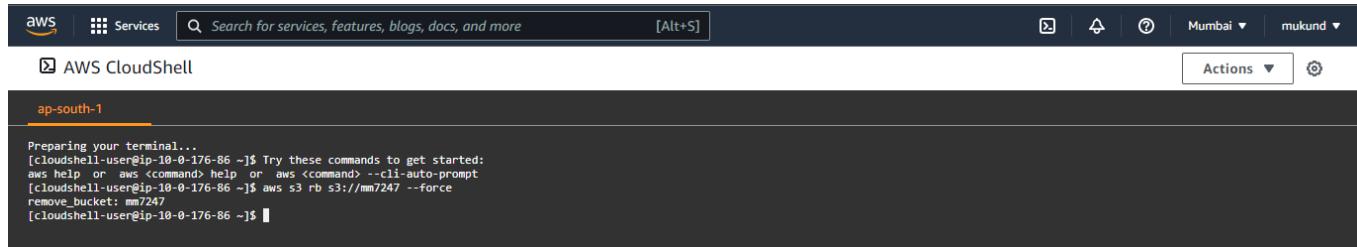


Windows command prompt showing the copying of a PDF file from `s3://my-new-test-bucket102` to `s3://my-new-test-bucket101`.

```
C:\Users\Admin>aws s3 cp s3://my-new-test-bucket102/btech-curricula-reg-2018-vol-III.pdf s3://my-new-test-bucket101/
copy: s3://my-new-test-bucket102/btech-curricula-reg-2018-vol-III.pdf to s3://my-new-test-bucket101/btech-curricula-reg-2018-vol-III.pdf
C:\Users\Admin>
```

9] delete bucket

If your bucket does not have versioning enabled, you can use the rb (remove bucket) AWS CLI command with the --force parameter to delete the bucket and all the objects in it. This command deletes all objects first and then deletes the bucket.



The screenshot shows the AWS CloudShell interface. At the top, there's a navigation bar with the AWS logo, 'Services' dropdown, search bar ('Search for services, features, blogs, docs, and more'), and a 'Mumbai' location indicator. Below the bar, the title 'AWS CloudShell' is displayed. The main area is a terminal window titled 'ap-south-1'. It shows the following command being run:

```
Preparing your terminal...
[cloudshell-user@ip-10-0-176-86 ~]$ Try these commands to get started:
aws help or aws <command> help or aws <command> --cli-auto-prompt
[cloudshell-user@ip-10-0-176-86 ~]$ aws s3 rb s3://mm7247 --force
remove_bucket: mm7247
[cloudshell-user@ip-10-0-176-86 ~]$
```

10] remove file from bucket

To delete objects in a bucket or your local directory, use the s3 rm command. For a few common options to use with this command, and examples, see Frequently used options for s3 commands. For a complete list of options, see s3 rm in the AWS CLI Command Reference. The following example deletes filename



The screenshot shows a Windows command prompt window. The command entered is:

```
C:\Users\Admin>aws s3 rm s3://my-new-test-bucket102 --recursive
delete: s3://my-new-test-bucket102/btech-curricula-reg-2018-vol-III.pdf
```

Experiment 2 - Creating Amazon EC2 Instances - Creating a LAMP Instance in the AWS CLI

AIM: To create a LAMP instance in the AWS CLI.

PROCEDURE:

1. Firstly, type sudo su to become the root user.
2. To update all the packages in your instance type “yum update -y”.

```
root@ip-172-31-32-239:~# Using username "ec2-user".
root@ip-172-31-32-239:~# Authenticating with public key "imported-ssh-key"
Last login: Sat Aug 27 04:29:33 2022 from 106.208.16.252
[ec2-user@ip-172-31-32-239 ~]$ [ec2-user@ip-172-31-32-239 ~]$ [ec2-user@ip-172-31-32-239 ~]$ [ec2-user@ip-172-31-32-239 ~]$ [ec2-user@ip-172-31-32-239 ~]$ sudo su
[root@ip-172-31-32-239 ec2-user]# yum update -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core                                         | 3.7 kB  00:00:00
Resolving Dependencies
--> Running transaction check
--> Package chrony.x86_64 0:4.0-3.amzn2.0.2 will be updated
--> Package chrony.x86_64 0:4.2.5-7.amzn2.0.2 will be an update
--> Package dhclient.x86_64 12:4.2.5-77.amzn2.1.6 will be updated
--> Package dhclient.x86_64 12:4.2.5-77.amzn2.1.1 will be an update
--> Package dhcp-common.x86_64 12:4.2.5-77.amzn2.1.6 will be updated
--> Package dhcp-common.x86_64 12:4.2.5-79.amzn2.1.1 will be an update
--> Package dhcp-libs.x86_64 12:4.2.5-77.amzn2.1.6 will be updated
--> Package dhcp-libs.x86_64 12:4.2.5-79.amzn2.1.1 will be an update
--> Package gnupg2.x86_64 0:2.0.22-5.amzn2.0.4 will be updated
--> Package gnupg2.x86_64 0:2.0.22-5.amzn2.0.5 will be an update
--> Package kernel.x86_64 0:5.10.135-122.509.amzn2 will be installed
--> Package kernel-tools.x86_64 0:5.10.130-118.517.amzn2 will be updated
--> Package kernel-tools.x86_64 0:5.10.135-122.509.amzn2 will be an update
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package           Arch      Version            Repository        Size
=====
Installing:
kernel           x86_64    5.10.135-122.509.amzn2   amzn2extra-kernel-5.10   32 M
Updating:
chrony           x86_64    4.2-5.amzn2.0.2       amzn2-core          302 k
dhclient         x86_64    12:4.2.5-79.amzn2.1.1   amzn2-core          287 k
dhcp-common      x86_64    12:4.2.5-79.amzn2.1.1   amzn2-core          177 k
dhcp-libs        x86_64    12:4.2.5-79.amzn2.1.1   amzn2-core          132 k
gnupg2           x86_64    2.0.22-5.amzn2.0.5     amzn2-core          1.5 M
kernel-tools     x86_64    5.10.135-122.509.amzn2  amzn2extra-kernel-5.10   176 k
```

3. To install Apache server in linux, type “yum install httpd”.

```
[root@ip-172-31-32-239 ec2-user]#
[root@ip-172-31-32-239 ec2-user]#
[root@ip-172-31-32-239 ec2-user]# yum install httpd
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.4.54-1.amzn2 will be installed
--> Processing Dependency: httpd-tools = 2.4.54-1.amzn2 for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: httpd-filesystem = 2.4.54-1.amzn2 for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: system-logos-httpd for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: mod_http2 for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: httpd-filesystem for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: /etc/mime.types for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: libaprutil-1.so.0()(64bit) for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: libapr-1.so.0()(64bit) for package: httpd-2.4.54-1.amzn2.x86_64
--> Running transaction check
--> Package apr.x86_64 0:1.7.0-9.amzn2 will be installed
--> Package apr-util.x86_64 0:1.6.1-5.amzn2.0.2 will be installed
--> Processing Dependency: apr-util-bdb(x86-64) = 1.6.1-5.amzn2.0.2 for package: apr-util-1.6.1-5.amzn2.0.2.x86_64
--> Package generic-logos-httpd.noarch 0:18.0.0-4.amzn2 will be installed
--> Package httpd-filesystem.noarch 0:2.4.54-1.amzn2 will be installed
--> Package httpd-tools.x86_64 0:2.4.54-1.amzn2 will be installed
--> Package mailcap.noarch 0:2.1.41-2.amzn2 will be installed
--> Package mod_http2.x86_64 0:1.15.19-1.amzn2.0.1 will be installed
--> Running transaction check
--> Package apr-util-bdb.x86_64 0:1.6.1-5.amzn2.0.2 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
  Package           Arch   Version        Repository      Size
=====
=====

```

4. To install mysql or mariadb type “yum install mariadb mariadb-server”.

```
[root@ip-172-31-32-239 ec2-user]#
[root@ip-172-31-32-239 ec2-user]#
[root@ip-172-31-32-239 ec2-user]#
[root@ip-172-31-32-239 ec2-user]# yum install mariadb mariadb-server
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
--> Package mariadb.x86_64 1:5.5.68-1.amzn2 will be installed
--> Package mariadb-server.x86_64 1:5.5.68-1.amzn2 will be installed
--> Processing Dependency: perl-DBI for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Processing Dependency: perl-DBD-MySQL for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Processing Dependency: perl(Data::Dumper) for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Processing Dependency: perl(DBI) for package: 1:mariadb-server-5.5.68-1.amzn2.x86_64
--> Running transaction check
--> Package perl-DBD-MySQL.x86_64 0:4.023-6.amzn2 will be installed
--> Package perl-DBI.x86_64 0:1.627-4.amzn2.0.2 will be installed
--> Processing Dependency: perl(RPC::PlServer) >= 0.2001 for package: perl-DBI-1.627-4.amzn2.0.2.x86_64
--> Processing Dependency: perl(RPC::PlClient) >= 0.2000 for package: perl-DBI-1.627-4.amzn2.0.2.x86_64
--> Package perl-Data-Dumper.x86_64 0:2.145-3.amzn2.0.2 will be installed
--> Running transaction check
--> Package perl-PlRPC.noarch 0:0.2020-14.amzn2 will be installed
--> Processing Dependency: perl(Net::Daemon) >= 0.13 for package: perl-PlRPC-0.2020-14.amzn2.noarch
```

5. To install php, type “`yum install php php-mysql`”.

```
[root@ip-172-31-32-239 ec2-user]# [root@ip-172-31-32-239 ec2-user]# yum install php php-mysql
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Package php-mysqlnd is obsoleted by php-mysqlnd, trying to install php-mysqlnd-5.4.16-46.amzn2.0.2.x86_64 instead
Resolving Dependencies
--> Running transaction check
--> Package php.x86_64 0:5.4.16-46.amzn2.0.2 will be installed
--> Processing Dependency: php-cli(x86-64) = 5.4.16-46.amzn2.0.2 for package: php-5.4.16-46.amzn2.0.2.x86_64
--> Processing Dependency: php-common(x86-64) = 5.4.16-46.amzn2.0.2 for package: php-5.4.16-46.amzn2.0.2.x86_64
--> Package php-mysqlnd.x86_64 0:5.4.16-46.amzn2.0.2 will be installed
--> Processing Dependency: php-pdo(x86-64) = 5.4.16-46.amzn2.0.2 for package: php-mysqlnd-5.4.16-46.amzn2.0.2.x86_64
--> Running transaction check
--> Package php-cli.x86_64 0:5.4.16-46.amzn2.0.2 will be installed
--> Package php-common.x86_64 0:5.4.16-46.amzn2.0.2 will be installed
--> Processing Dependency: libzip.so.2()(64bit) for package: php-common-5.4.16-46.amzn2.0.2.x86_64
```

6. Type “`yum search php`” to see all the packages installed in the server.

```
[root@ip-172-31-32-239 ec2-user]# [root@ip-172-31-32-239 ec2-user]# yum search php
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
=====
==== N/S matched: php =====
graphviz-php.x86_64 : PHP extension for graphviz
php.x86_64 : PHP scripting language for creating dynamic web sites
php-bcmath.x86_64 : A module for PHP applications for using the bcmath library
php-cli.x86_64 : Command-line interface for PHP
php-common.x86_64 : Common files for PHP
php-dba.x86_64 : A database abstraction layer module for PHP applications
php-devel.x86_64 : Files needed for building PHP extensions
php-embedded.x86_64 : PHP library for embedding in applications
php-enchant.x86_64 : Enchant spelling extension for PHP applications
php-fpm.x86_64 : PHP FastCGI Process Manager
php-gd.x86_64 : A module for PHP applications for using the gd graphics library
php-intl.x86_64 : Internationalization extension for PHP applications
php-ldap.x86_64 : A module for PHP applications that use LDAP
php-mbstring.x86_64 : A module for PHP applications which need multi-byte string handling
php-mysql.x86_64 : A module for PHP applications that use MySQL databases
php-mysqlnd.x86_64 : A module for PHP applications that use MySQL databases
php-odbc.x86_64 : A module for PHP applications that use ODBC databases
php-pdo.x86_64 : A database access abstraction module for PHP applications
php-pear.noarch : PHP Extension and Application Repository framework
php-pgsql.x86_64 : A PostgreSQL database module for PHP
php-process.x86_64 : Modules for PHP script using system process interfaces
php-pspell.x86_64 : A module for PHP applications for using pspell interfaces
php-recode.x86_64 : A module for PHP applications for using the recode library
php-snmp.x86_64 : A module for PHP applications that query SNMP-managed devices
php-soap.x86_64 : A module for PHP applications that use the SOAP protocol
php-xml.x86_64 : A module for PHP applications which use XML
php-xmlrpc.x86_64 : A module for PHP applications which use the XML-RPC protocol
rrdtool-php.x86_64 : PHP RRDtool bindings
uuid-php.x86_64 : PHP support for Universally Unique Identifier library
php-pecl-memcache.x86_64 : Extension to work with the Memcached caching daemon
```

7. Enabling the mariadb server.

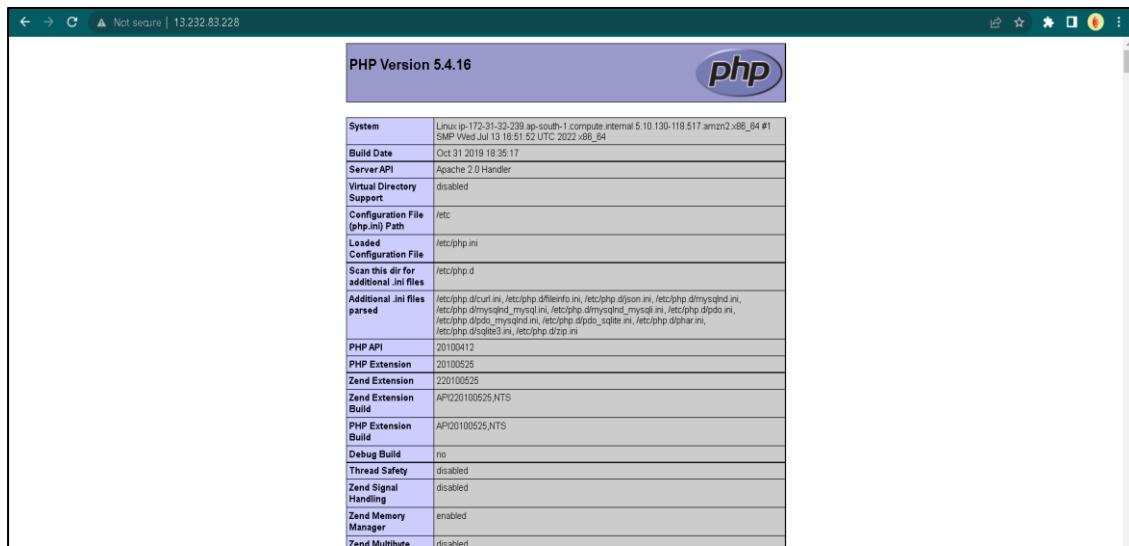
```
[root@ip-172-31-32-239 ec2-user]# [root@ip-172-31-32-239 ec2-user]# systemctl start mariadb
[root@ip-172-31-32-239 ec2-user]# systemctl enable mariadb
Created symlink from /etc/systemd/system/multi-user.target.wants/mariadb.service to /usr/lib/systemd/system/mariadb.service.
[root@ip-172-31-32-239 ec2-user]# [root@ip-172-31-32-239 ec2-user]# [root@ip-172-31-32-239 ec2-user]# [root@ip-172-31-32-239 ec2-user]#
```

8. After enabling httpd (apache server) , go to the directory where cd /var/www/html/
 9. Go to vim and type “<?php phpinfo(); ?>”.

```
[root@ip-172-31-32-239 ~]# cd /var/www/html
[root@ip-172-31-32-239 html]# ls
[root@ip-172-31-32-239 html]# pwd
/var/www/html
[root@ip-172-31-32-239 html]#
[root@ip-172-31-32-239 html]#
[root@ip-172-31-32-239 html]#
[root@ip-172-31-32-239 html]# vim index.php
```

Copy the public ip address or public domain name from the console and paste in the web browser.

OUTPUT:



RESULT:

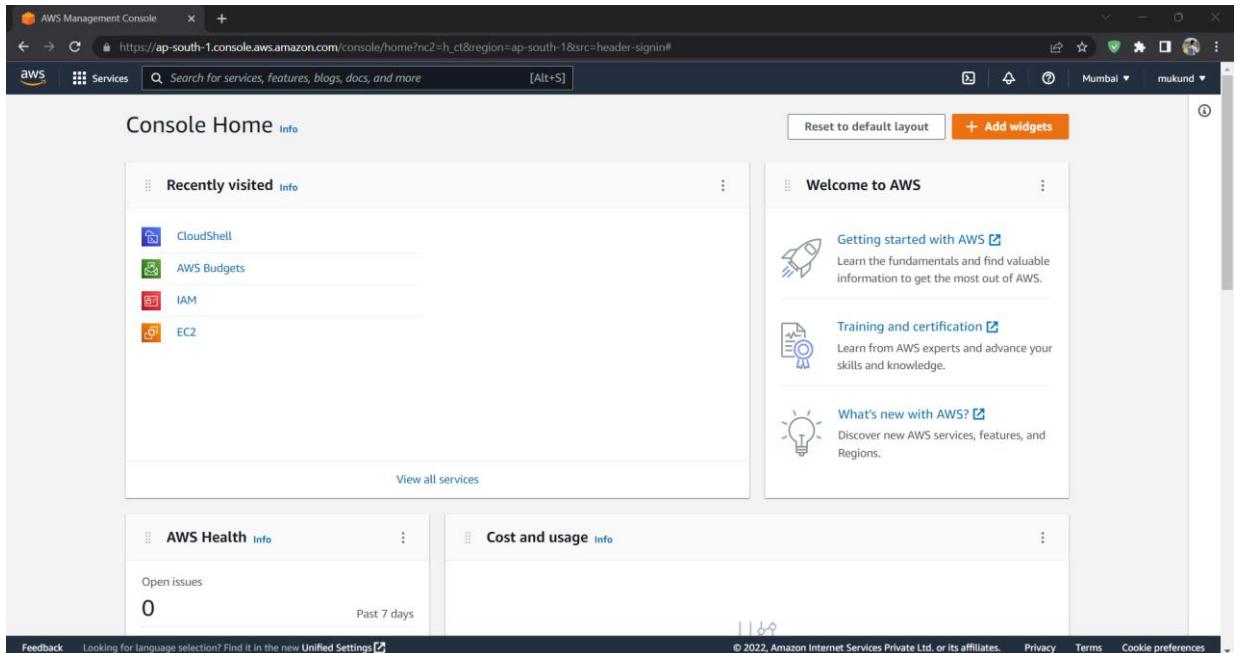
LAMP instance was successfully created and executed in AWS CLI.

Experiment 3 - Configuring Virtual Private Cloud VPC & Troubleshoot a VPC

AIM: To configure a Virtual Private Cloud VPC & Troubleshoot a VPC

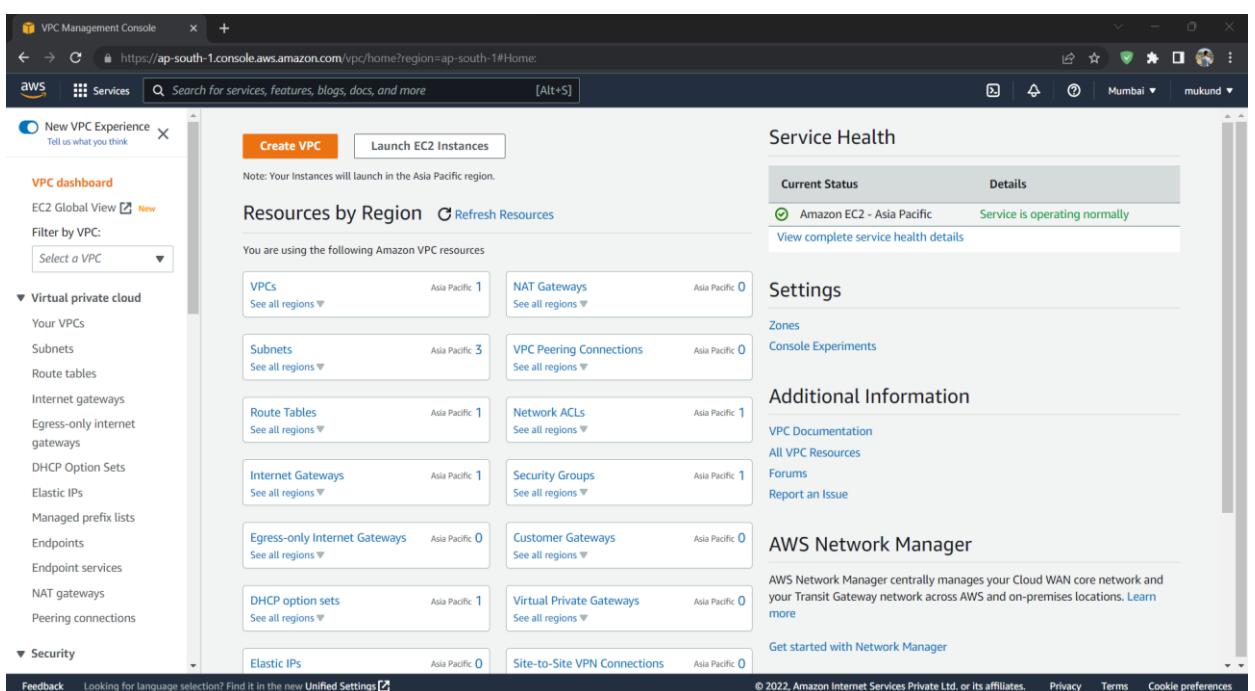
PROCEDURE:

1. Firstly, open the AWS console homepage on browser (<https://aws.amazon.com/console/>).



The screenshot shows the AWS Management Console homepage. At the top, there's a search bar and a navigation bar with 'Services' selected. Below the search bar, there are sections for 'Recently visited' (CloudShell, AWS Budgets, IAM, EC2), 'AWS Health' (Open issues: 0, Past 7 days), and 'Cost and usage'. On the right, there's a 'Welcome to AWS' section with links for 'Getting started with AWS', 'Training and certification', and 'What's new with AWS'. The bottom of the page includes a feedback link, language selection, and standard footer links.

2. Search for VPC in the search bar and open the VPC dashboard page.



The screenshot shows the VPC Management Console dashboard. It features a sidebar with options like 'New VPC Experience', 'VPC dashboard', 'Virtual private cloud', 'Security', and 'Feedback'. The main area has sections for 'Create VPC' and 'Launch EC2 Instances'. Below these are 'Resources by Region' (VPCs, Subnets, Route Tables, Internet Gateways, Egress-only Internet gateways, DHCP Option Sets, Elastic IPs, Managed prefix lists, Endpoints, Endpoint services, NAT gateways, Peering connections) and 'Service Health' (Amazon EC2 - Asia Pacific, Service is operating normally). There are also 'Settings' (Zones, Console Experiments), 'Additional Information' (VPC Documentation, All VPC Resources, Forums, Report an Issue), and 'AWS Network Manager' (description and 'Get started with Network Manager'). The bottom of the page includes a feedback link, language selection, and standard footer links.

- To create a new VPC, click “Create VPC” and go to the Create VPC page.

Create VPC Info

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances. Mouse over a resource to highlight the related resources.

Introducing the new create VPC experience

We've designed the new create VPC to make it easier to use. The changes include a new visualization of the resources that will be created.

Let us know what you think.

VPC settings

Resources to create Info
Create only the VPC resource or the VPC and other networking resources.

VPC only

VPC and more

Name tag auto-generation Info
Enter a value for the Name tag. This value will be used to auto-generate Name tags for all resources in the VPC.

Auto-generate
project-test-1

IPv4 CIDR block Info
Determine the starting IP and the size of your VPC using CIDR notation.

10.0.0.0/16 65,536 IPs

Preview

VPC Show details
Your AWS virtual network

Subnets (4)
Subnets within this VPC

Route tables (3)
Route network traffic to resources

Network connections (2)
Connections to other networks

Feedback Looking for language selection? Find it in the new [Unified Settings](#)

- Select the following configurations with appropriate VPC name.

Preview

VPC Show details
Your AWS virtual network

Subnets (2)
Subnets within this VPC

Route tables (1)
Route network traffic to resources

Network connections (2)
Connections to other networks

Feedback Looking for language selection? Find it in the new [Unified Settings](#)

5. Click on “Create VPC” button and wait for your VPC to be created.

The screenshot shows the AWS VPC Management Console with the URL <https://ap-south-1.console.aws.amazon.com/vpc/home?region=ap-south-1#CreateVpcWizard>. The page title is "Create VPC workflow". A "Success" message is displayed, indicating that the VPC creation process has completed successfully. The "Details" section lists the following steps:

- Create VPC: vpc-0d14b0c212d848936
- Enable DNS hostnames
- Enable DNS resolution
- Verifying VPC creation: vpc-0d14b0c212d848936
- Create S3 endpoint: vpce-02926aad518dca7af
- Create subnet: subnet-081c04f6227e20dbe
- Create subnet: subnet-0930bf60c33db53f9
- Create subnet: subnet-00579dd908fdcc6fd
- Create subnet: subnet-05e781c7351ccbd7
- Create internet gateway: igw-0c058c07118c33ca8
- Attach internet gateway to the VPC
- Create route table: rtb-097aafb25a85215fb
- Create route
- Associate route table
- Associate route table
- Create route table: rtb-0ecb36a00a858d18d
- Associate route table
- Create route table: rtb-00d997add161ee835
- Associate route table

Feedback: Looking for language selection? Find it in the new [Unified Settings](#).

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6. Click on “View VPC” to view your VPC details.

The screenshot shows the AWS VPC Management Console with the URL <https://ap-south-1.console.aws.amazon.com/vpc/home?region=ap-south-1#VpcDetails?VpcId=vpc-0d14b0c212d848936>. The page title is "vpc-0d14b0c212d848936 / project-test-1-vpc". The left sidebar shows the "Your VPCs" section selected. The main content area displays the "Details" tab for the VPC, showing the following information:

VPC ID	State	DNS hostnames	DNS resolution
vpc-0d14b0c212d848936	Available	Enabled	Enabled
Tenancy	DHCP option set	Main route table	Main network ACL
Default	dopt-010ddb94330dfa9d	rtb-0bf4074139352650b	acl-00e6f9eaedee70e0f
Default VPC	IPv4 CIDR	IPv6 pool	IPv6 CIDR
No	10.0.0/16	-	-
Route 53 Resolver DNS Firewall rule groups	Owner ID		
-	885187352235		

Actions: Actions ▾

Feedback: Looking for language selection? Find it in the new [Unified Settings](#).

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7. Click on “Subnets” in the left side menu to view subnets of your VPC.

The screenshot shows the AWS VPC Management Console with the URL <https://ap-south-1.console.aws.amazon.com/vpc/home?region=ap-south-1#subnets>. The left sidebar is open, showing the "Subnets" option under the "Virtual private cloud" section. The main content area displays a table titled "Subnets (7) Info" with columns: Name, Subnet ID, State, VPC, IPv4 CIDR, and IPv6 CIDR. The table lists seven subnets, each associated with a specific VPC and IP range. A search bar at the top of the table allows filtering by subnet name.

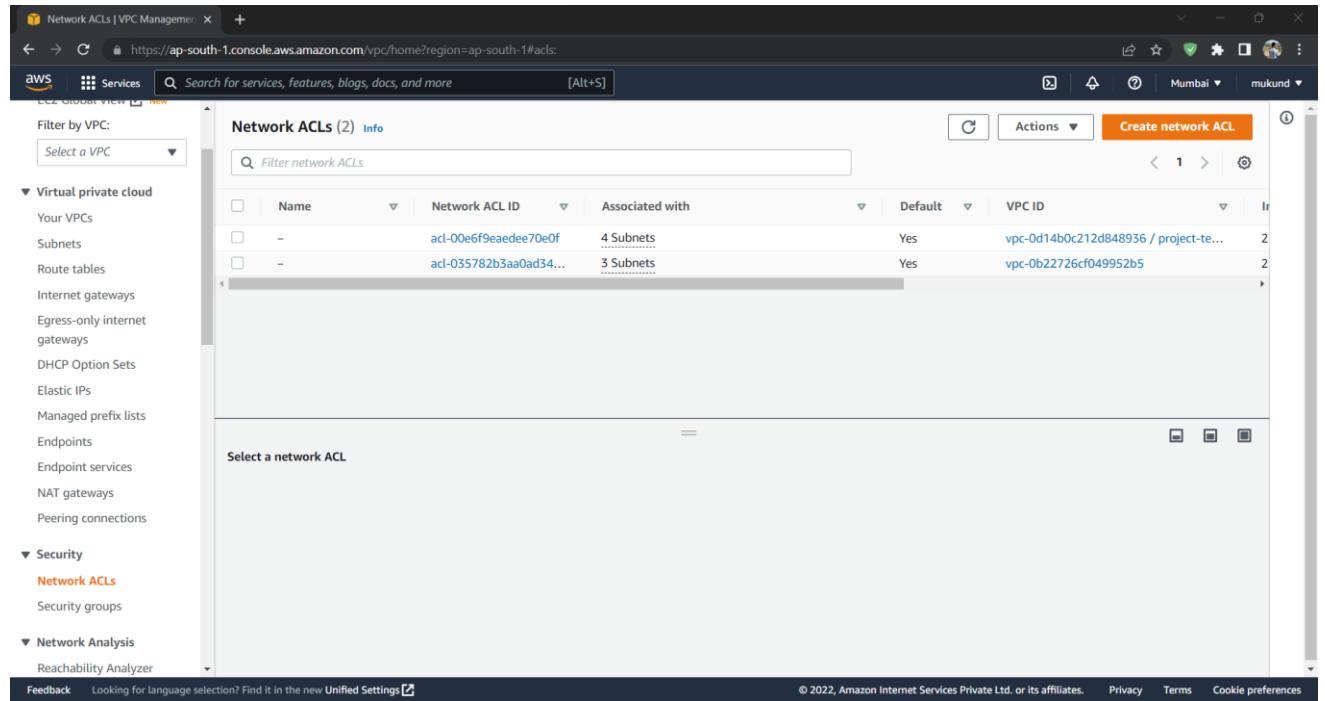
Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR
project-test-1-subn...	subnet-00579dd908ffdc6fd	Available	vpc-0d14b0c212d848936 pr...	10.0.128.0/20	-
project-test-1-subn...	subnet-05e781c7351ccdbd7	Available	vpc-0d14b0c212d848936 pr...	10.0.144.0/20	-
project-test-1-subn...	subnet-07b17ad9915816c9f	Available	vpc-0b22726cf049952b5	172.31.32.0/20	-
project-test-1-subn...	subnet-081c04f6227e20dbe	Available	vpc-0d14b0c212d848936 pr...	10.0.0.0/20	-
project-test-1-subn...	subnet-0c7e5af59970d8e3d	Available	vpc-0b22726cf049952b5	172.31.0.0/20	-
project-test-1-subn...	subnet-0930bf60c33db53f9	Available	vpc-0d14b0c212d848936 pr...	10.0.16.0/20	-

8. Click on “Route Tables” in the left side menu to view route tables of your VPC.

The screenshot shows the AWS VPC Management Console with the URL <https://ap-south-1.console.aws.amazon.com/vpc/home?region=ap-south-1#RouteTables>. The left sidebar is open, showing the "Route tables" option under the "Virtual private cloud" section. The main content area displays a table titled "Route tables (5) Info" with columns: Name, Route table ID, Explicit subnet associat..., Edge associations, Main, VPC, and Owner. The table lists five route tables, each associated with a specific VPC and edge association status. A search bar at the top of the table allows filtering by route table name.

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC	Owner
project-test-1-rtb-p...	rtb-0ecb36a00a858d18d	subnet-00579dd908ffdc...	-	No	vpc-0d14b0c212d848936 pr...	8851
project-test-1-rtb-p...	rtb-097a8fb25a85215fb	2 subnets	-	No	vpc-0d14b0c212d848936 pr...	8851
project-test-1-rtb-p...	rtb-0d0cd2bbfb4fcf31	-	-	Yes	vpc-0b22726cf049952b5	8851
project-test-1-rtb-p...	rtb-00d997add161ee835	subnet-05e781c7351cc...	-	No	vpc-0d14b0c212d848936 pr...	8851
project-test-1-rtb-p...	rtb-0bf4074139352650b	-	-	Yes	vpc-0d14b0c212d848936 pr...	8851

9. Click on “Network ACL’s” in the left side menu to view ACLs of your VPC.



The screenshot shows the AWS VPC Management console. The left sidebar is collapsed, and the main area displays the "Network ACLs" list. The table has columns: Name, Network ACL ID, Associated with, Default, and VPC ID. There are two entries:

Name	Network ACL ID	Associated with	Default	VPC ID
-	acl-00e6f9eaedee70e0f	4 Subnets	Yes	vpc-0d14b0c212d848936 / project-te...
-	acl-035782b3aa0ad34...	3 Subnets	Yes	vpc-0b22726cf049952b5

RESULT:

A Virtual Private Cloud (VPC) was successfully created and troubleshooted.

EXPERIMENT 4: CREATING A STATIC WEBSITE ON AMAZON S3-USING AWS SYSTEM MANAGER

AIM: To create a static website on Amazon S3 using AWS system manager.

PROCEDURE:

- 1) Sign in to the AWS Management Console and click on Amazon S3 Console at <https://console.aws.amazon.com/s3/> .
- 2) Click on create a bucket.
- 3) Enter the name of the bucket and the region you want to create it in
- 4) Accept the default settings and then click on create a bucket

The screenshot shows the AWS S3 Management Console interface. The left sidebar is collapsed, showing options like Buckets, Storage Lens, and Feature spotlight. The main content area has a green success message: "Successfully created bucket 'bucket1-mm7247'". Below it, there's a tutorial card for "S3 Intelligent-Tiering". The "Buckets" section shows a table with one item: "bucket1-mm7247" (Name), "Asia Pacific (Mumbai) ap-south-1" (AWS Region), "Bucket and objects not public" (Access), and "September 26, 2022, 10:33:07 (UTC+05:30)" (Creation date). At the bottom, there are links for Feedback, Unified Settings, Copyright notice, Privacy, Terms, and Cookie preferences.

- 5) In the buckets list, click on the bucket you just created and choose properties, then under static website hosting click the enable option.

bucket1-mm7247 - S3 bucket Mukund Maheshwari + https://s3.console.aws.amazon.com/s3/bucket/bucket1-mm7247/property/website/edit?region=ap-south-1

aws Services Search for services, features, blogs, docs, and more [Alt+S] Global mukund

Amazon S3

Buckets

- Access Points
- Object Lambda Access Points
- Multi-Region Access Points
- Batch Operations
- Access analyzer for S3

Block Public Access settings for this account

▼ Storage Lens

- Dashboards
- AWS Organizations settings

Feature spotlight 3

AWS Marketplace for S3

We're continuing to improve the S3 console to make it faster and easier to use. If you have feedback on the updated experience, choose Provide feedback.

Amazon S3 > Buckets > bucket1-mm7247 > Edit static website hosting

Edit static website hosting Info

Static website hosting

Use this bucket to host a website or redirect requests. [Learn more](#)

Static website hosting

Disable

Enable

Hosting type

Host a static website

Use the bucket endpoint as the web address. [Learn more](#)

Redirect requests for an object

Redirect requests to another bucket or domain. [Learn more](#)

For your customers to access content at the website endpoint, you must make all your content publicly readable. To do so, you can edit the S3 Block Public Access settings for the bucket. For more information, see [Using Amazon S3 Block Public Access](#).

Index document

Specify the home or default page of the website.

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bucket1-mm7247 - S3 bucket Mukund Maheshwari + https://s3.console.aws.amazon.com/s3/buckets/bucket1-mm7247?region=ap-south-1&tab=properties

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Amazon S3

Buckets

- Access Points
- Object Lambda Access Points
- Multi-Region Access Points
- Batch Operations
- Access analyzer for S3

Block Public Access settings for this account

▼ Storage Lens

- Dashboards
- AWS Organizations settings

Feature spotlight 3

AWS Marketplace for S3

We're continuing to improve the S3 console to make it faster and easier to use. If you have feedback on the updated experience, choose Provide feedback.

Successfully edited static website hosting.

Requester pays

When enabled, the requester pays for requests and data transfer costs, and anonymous access to this bucket is disabled. [Learn more](#)

Requester pays

Disabled

Static website hosting

Use this bucket to host a website or redirect requests. [Learn more](#)

Static website hosting

Enabled

Hosting type

Bucket hosting

Bucket website endpoint

When you configure your bucket as a static website, the website is available at the AWS Region-specific website endpoint of the bucket. [Learn more](#)

<http://bucket1-mm7247.s3-website.ap-south-1.amazonaws.com>

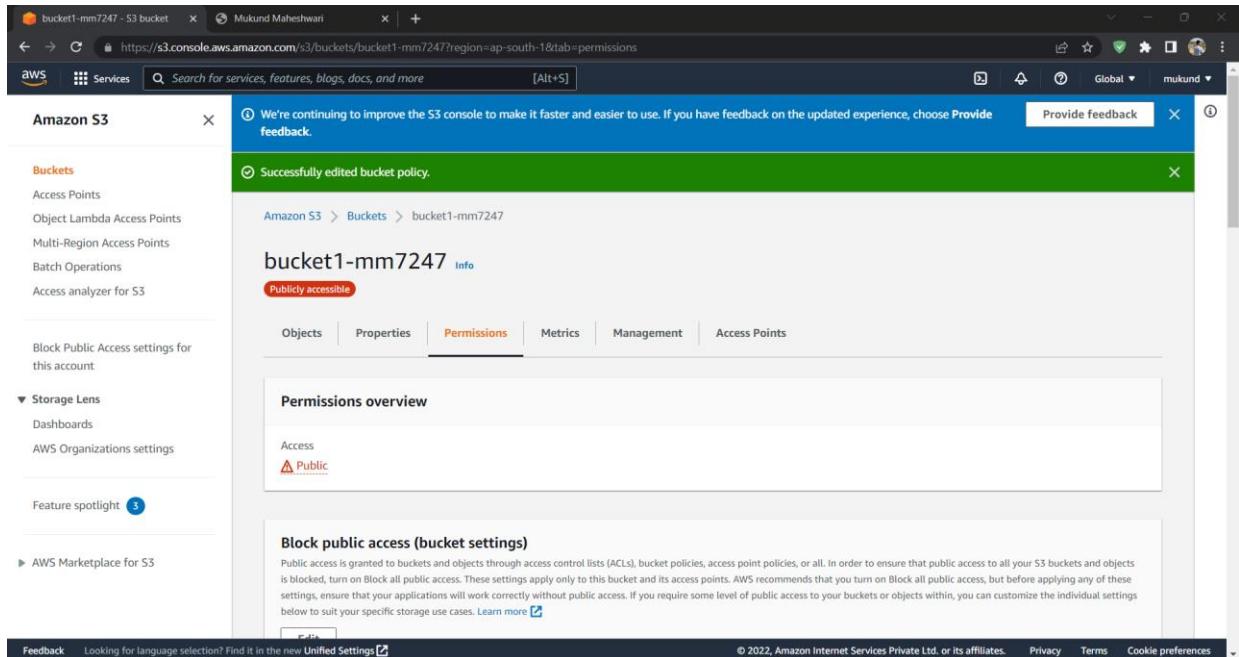
Feedback Looking for language selection? Find it in the new Unified Settings

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- 6) Then click on the upload option after selecting your bucket and upload your project files(index.html, style.css, main.js). Also, make sure that the project files you will upload have proper names as they are case-sensitive.

The screenshot shows the AWS S3 Management Console interface. At the top, there's a blue header bar with a message: "We're continuing to improve the S3 console to make it faster and easier to use. If you have feedback on the updated experience, choose Provide feedback." Below this, a green success message says "Upload succeeded" and "View details below." The main area is titled "Summary" and shows the destination as "s3://bucket1-mm7247". It indicates 2 files were uploaded successfully (Succeeded) and 0 files failed. A table below lists the uploaded files: "8.jpg" (image/jpeg, 503.3 KB, Status: Succeeded) and "index.html" (text/html, 461.0 B, Status: Succeeded). The "Files and folders" tab is selected. At the bottom, there are links for Feedback, Unified Settings, Privacy, Terms, and Cookie preferences.

- 7) After configuring the website you can use the endpoint to test the website out.
8) Choose the name of the bucket you just configured and then choose permissions under that block public access will be visible, click on the edit option and save the changes.



9) under the bucket permissions there will be a bucket policy, click on that and paste this code into the bucket policy editor:

```
{
```

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

```
    "Statement": [
```

```
        {
```

```
            "Sid": "PublicReadGetObject",
```

```
            "Effect": "Allow",
```

```
            "Principal": "*",
```

```
            "Action": [
```

```
                "s3:GetObject"
```

```
            ],
```

```
            "Resource": [
```

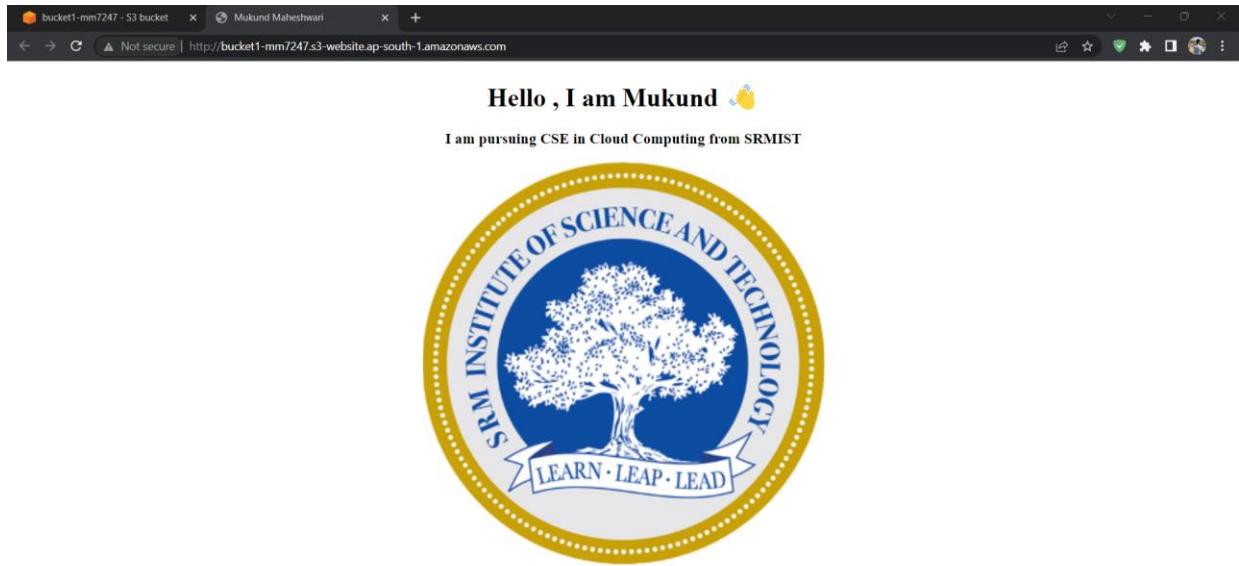
```
                "arn:aws:s3:::Bucket1-mm7247/*"
```

```
            ]
```

```
        }  
    ]  
}  
}
```

10) Click on save changes

11) Under the buckets, choose the name of your bucket which you just created, and in the properties, choose a static website hosting - then choose your bucket endpoint 12) Now you can access your website as it has successfully been hosted.



13) Make sure to clean up after this experiment by deleting the AWS Resources that have been just allocated . After you have deleted these resources, your website will no longer be available

RESULT:

A static website has been successfully created on Amazon S3 using AWS System Manager.

Experiment 5

Automation and Optimization with Amazon S3

Name: Mukund Maheshwari

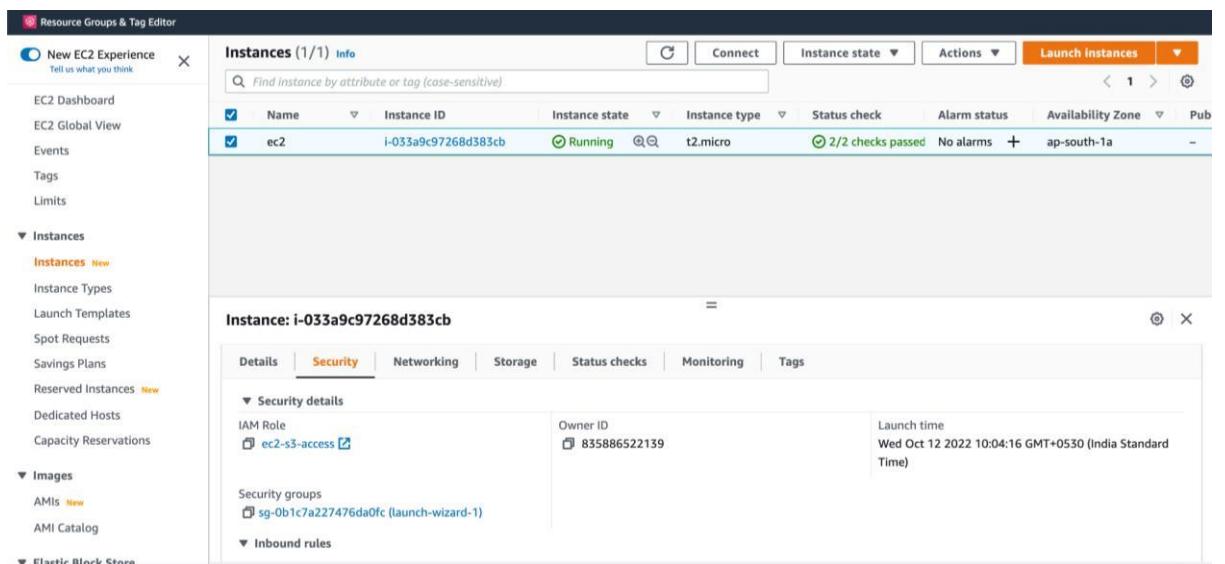
Reg No: RA2011028010089

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

Procedure: -

Steps:

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



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

1. Connect to your EC2 instance CLI.
2. Type “sudo su” to give access root directory.
3. Create a directory “backup”. Type: mkdir backup 4. Go inside the “backup” directory.
5. Make some test files. Type: touch a

```
The user-provided path /root/backup does not exist.
[root@ip-172-31-0-253 backup]# aws s3 sync /backup s3://automate-uploadd

The user-provided path /backup does not exist.
[root@ip-172-31-0-253 backup]# aws s3 /backup s3://automate-uploadd
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-172-31-0-253 backup]# pwd
/home/ec2-user/backup
[root@ip-172-31-0-253 backup]# aws s3 sync /home/ec2-user/backup s3://automate-uploadd
upload: ./ to s3://automate-uploadd/
upload: ./ to s3://automate-uploadd/c
upload: ./ to s3://automate-uploadd/b
[root@ip-172-31-0-253 backup]#
```

9. List Them by Cmd–ls

Amazon S3

Buckets

- Access Points
- Object Lambda Access Points
- Multi-Region Access Points
- Batch Operations
- Access analyzer for S3

Block Public Access settings for this account

Storage Lens

- Dashboards
- AWS Organizations settings

Feature spotlight

AWS Marketplace for S3

automate-uploaddd

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	-	October 12, 2022, 10:37:37 (UTC+05:30)	0 B	Standard
b	-	October 12, 2022, 10:37:37 (UTC+05:30)	0 B	Standard
c	-	October 12, 2022, 10:37:37 (UTC+05:30)	0 B	Standard

Feedback Looking for language selection? Find it in the new Unified Settings [\[?\]](#)

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Now to sync these files of backup directory on the S3 bucket.
Cmd : aws s3 sync local file path 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/>

```
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-172-31-0-253 backup]# pwd
/home/ec2-user/backup
[root@ip-172-31-0-253 backup]# aws s3 sync /home/ec2-user/backup s3://automate-uploadd
upload: ./a to s3://automate-uploadd/a
upload: ./c to s3://automate-uploadd/c
upload: ./b to s3://automate-uploadd/b
[root@ip-172-31-0-253 backup]# crontab -e
no crontab for root - using an empty one
[1]+  Stopped                  crontab -e
[root@ip-172-31-0-253 backup]# cron code aws s3 sync /home/ec2-user/backup s3://automate-uploadd
bash: cron: command not found
[root@ip-172-31-0-253 backup]# cron code aws s3 sync /backup s3://automate-uploadd
bash: cron: command not found
[root@ip-172-31-0-253 backup]#
```

Restart the Crond service

Run “systemctl restart/stop/start cornd.service” to restart/stop/start your cron jobs respectively.

12. Now, we are going to create some test files to check if they are uploaded every minute or not.

13. File d and file e have been updated.

The screenshot shows the AWS S3 console interface. On the left, there's a sidebar with 'Amazon S3' and various navigation links like 'Buckets', 'Access Points', 'Object Lambda Access Points', etc. The main area is titled 'automate-upload' and shows a table of objects. The table has columns for Name, Type, Last modified, Size, and Storage class. There are 6 objects listed, all named with lowercase letters (a, b, c, d, e). All objects are of type '-' (file), last modified on October 12, 2022, at 10:52:03 (UTC+05:30), have 0 B size, and are in the Standard storage class.

	Name	Type	Last modified	Size	Storage class
	3	-	October 12, 2022, 10:52:03 (UTC+05:30)	0 B	Standard
	a	-	October 12, 2022, 10:37:37 (UTC+05:30)	0 B	Standard
	b	-	October 12, 2022, 10:37:37 (UTC+05:30)	0 B	Standard
	c	-	October 12, 2022, 10:52:03 (UTC+05:30)	0 B	Standard
	d	-	October 12, 2022, 10:52:03 (UTC+05:30)	0 B	Standard
	e	-	October 12, 2022, 10:52:03 (UTC+05:30)	0 B	Standard

Result:

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

EXPERIMENT 6

Querying Data in S3 with Amazon Athena

Name: Mukund Maheshwari

Reg No: RA2011028010086

Aim: Querying Data in S3 with Amazon Athena

Step 1:

Go to buckets and create two buckets.

The screenshot shows the Amazon S3 console interface. On the left, there is a sidebar with navigation links: 'Buckets' (which is highlighted in orange), 'Batch operations', 'Access analyzer for S3', 'Block public access (account settings)', and 'Feature spotlight'. The main content area is titled 'Amazon S3' and shows a message: 'We're gradually updating the design of the Amazon S3 console. You will notice some updated screens as we improve the performance and user interface. To help us improve the experience, give feedback on the recent updates.' Below this message, there is a table titled 'Buckets (2)'. The table has columns for 'Name', 'Region', 'Access', and 'Bucket created'. It lists two buckets: 'aws-simplified-athena-demo' and 'aws_simplified-results'. Both buckets are located in 'US East (N. Virginia)' (region us-east-1) and have 'Not Public' access. The 'Bucket created' column shows the creation dates: '2020-03-20T23:48:56.000Z' and '2020-03-20T23:40:43.000Z' respectively. At the top of the table, there are buttons for 'Copy ARN', 'Empty', 'Delete', and 'Create bucket'.

Name	Region	Access	Bucket created
aws-simplified-athena-demo	US East (N. Virginia) us-east-1	Not Public	2020-03-20T23:48:56.000Z
aws_simplified-results	US East (N. Virginia) us-east-1	Not Public	2020-03-20T23:40:43.000Z

Step 2:

After clicking onto the bucket add files to it.

The screenshot shows the AWS S3 console interface. At the top, the path 'Amazon S3 > aws-simplified-athena-demo' is visible. Below it, the bucket name 'aws-simplified-athena-demo' is displayed. A navigation bar with tabs 'Overview', 'Properties', 'Permissions', 'Management', and 'Access points' is present, with 'Properties' being the active tab. A search bar below the navigation bar contains the placeholder text 'Type a prefix and press Enter to search. Press ESC to clear.' Under the search bar are buttons for 'Upload', '+ Create folder', 'Download', and 'Actions'. To the right of these buttons, the region 'US East (N. Virginia)' is shown with a location pin icon. Below the buttons, a message 'Viewing 1 to 1' is displayed. The main content area shows a single file entry: 'transactions.json'. The file details are as follows: Name is 'transactions.json', Last modified is 'Mar 20, 2020 7:49:26 PM GMT-0400', Size is '78.1 KB', and Storage class is 'Standard'. Another message 'Viewing 1 to 1' is located at the bottom right of the file list.

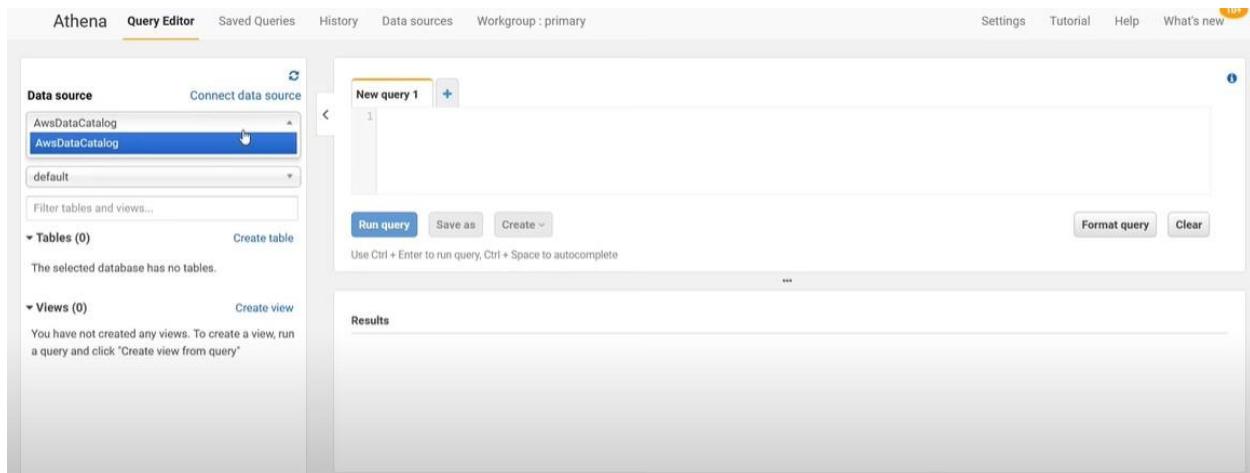
Step 3:

Now go to Amazon Athena.

The screenshot shows the AWS navigation menu. On the left, there is a sidebar with links for 'History', 'S3', 'Console Home', 'Athena', 'AWS Glue', 'CloudWatch', 'IAM', 'Compute' (with EC2, Lightsail, Lambda, Batch, Elastic Beanstalk, Serverless Application Repository, AWS Outposts, and EC2 Image Builder), 'Storage' (with S3, EFS, FSx, S3 Glacier, Storage Gateway, and AWS Backup), and 'Management & Governance' (with AWS Organizations, CloudWatch, AWS Auto Scaling, CloudFormation, CloudTrail, and Config). On the right, search results for 'athena' are displayed under several categories: 'Analytics' (Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, QuickSight, Data Pipeline, AWS Data Exchange, AWS Glue, AWS Lake Formation, MSK), 'End User Computing' (WorkSpaces, AppStream 2.0, WorkDocs, WorkLink), 'Internet Of Things' (IoT Core, FreeRTOS, IoT 1-Click, IoT Analytics, IoT Device Defender, IoT Device Management, IoT Events, IoT Greengrass, IoT SiteWise, IoT Things Graph), and 'Other Services' (Group and A-Z buttons).

Step 4:

Select Aws Data Catalog in the left side which is present in the data source tab.



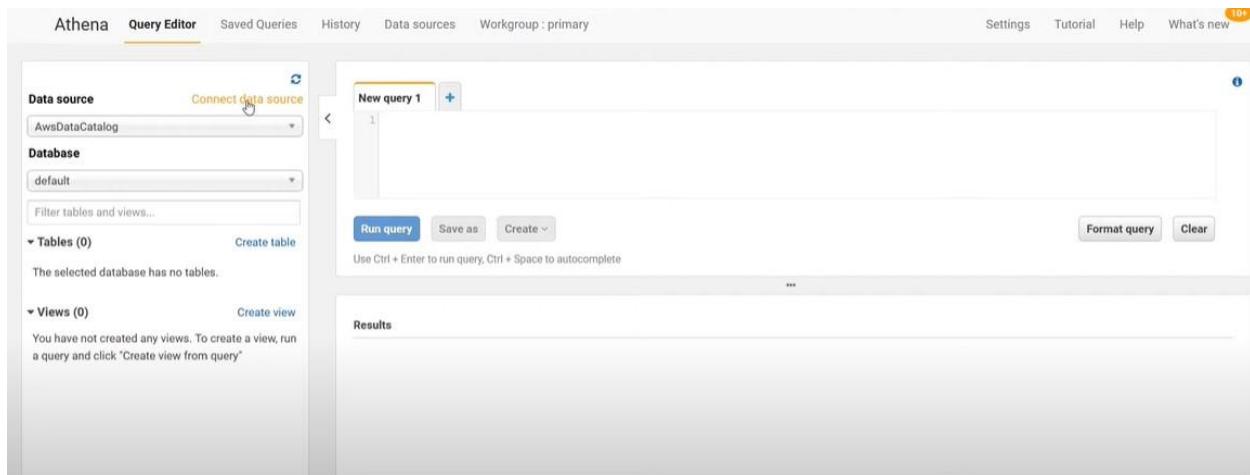
Step 5:

After that go to settings and specify an output path.



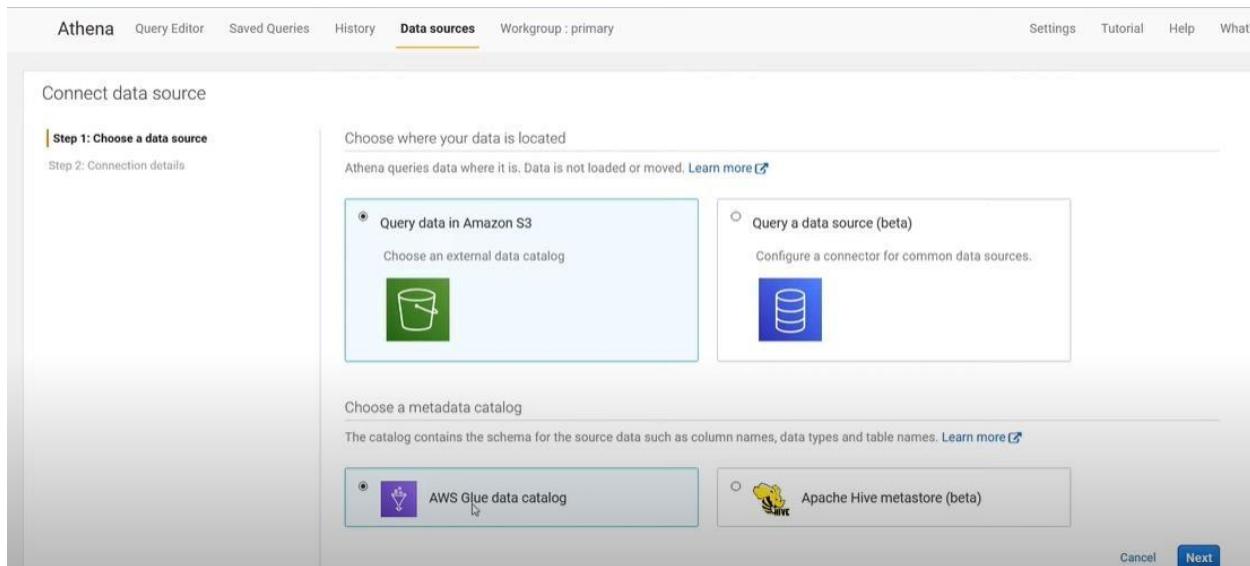
Step 6:

Click on connect data source.



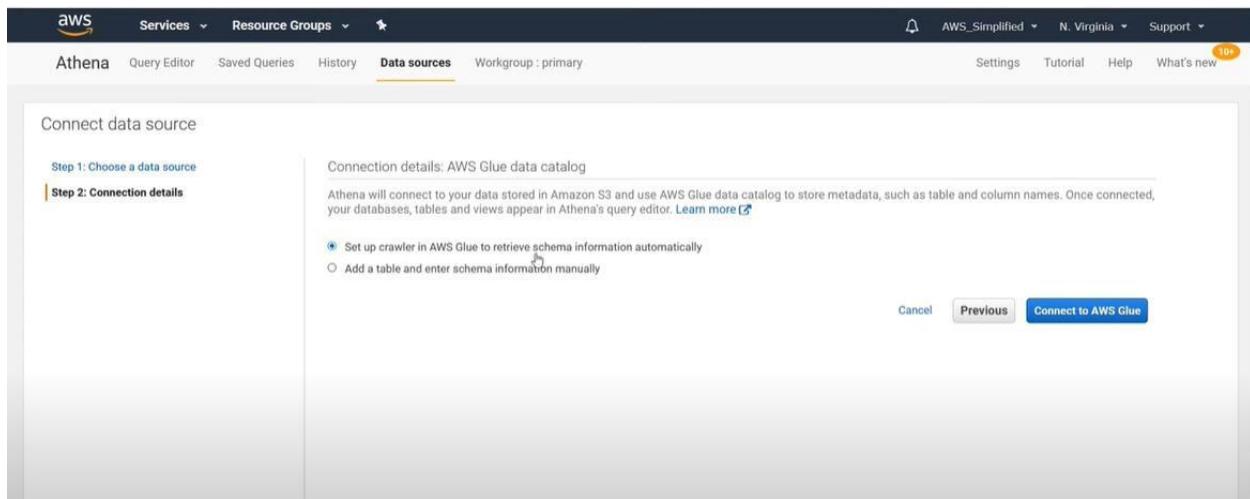
Step 7:

After clicking choose a query in amazon s3 and Aws glue data catalog.



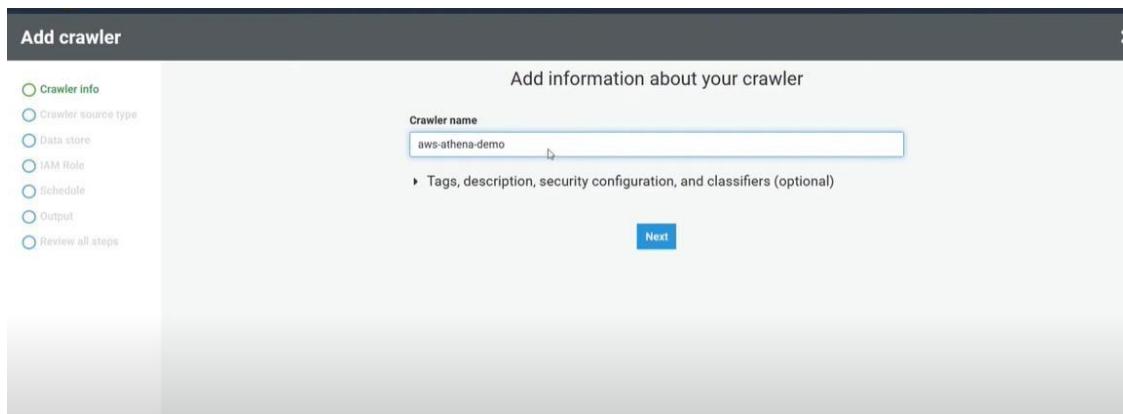
Step 8:

Click on next and select setup a crawler in AWS glue to retrieve schema information automatically.



Step 9:

After selecting that it will redirect to a new page and add crawler and follow below steps to add a new crawler after setting up click on finish.



Add crawler

Specify crawler source type

Choose Existing catalog tables to specify catalog tables as the crawler source. The selected tables specify the data stores to crawl. This option doesn't support JDBC data stores.

Crawler source type

Data stores
 Existing catalog tables

[Back](#) [Next](#)

Add crawler

Add a data store

Choose a data store

S3

Crawl data in

Specified path in my account
 Specified path in another account

Include path

s3://bucket/prefix/object

Exclude patterns (optional)

[Back](#) [Next](#)

Add crawler

Choose an IAM role

The IAM role allows the crawler to run and access your Amazon S3 data stores. [Learn more](#)

Update a policy in an IAM role
 Choose an existing IAM role
 Create an IAM role

IAM role [?](#)

AWSGlueServiceRole- demo

To create an IAM role, you must have **CreateRole**, **CreatePolicy**, and **AttachRolePolicy** permissions. Create an IAM role named "AWSGlueServiceRole-rolename" and attach the AWS managed policy, **AWSGlueServiceRole**, plus an inline policy that allows read access to:

- s3://aws-simplified-athena-demo/

You can also create an IAM role on the [IAM console](#).

[Back](#) [Next](#)

Create a schedule for this crawler

Frequency: Run on demand

Back Next

Add crawler

- Crawler info: aws-athena-demo
- Crawler source type: Data stores
- Data store: S3: s3://aws-simplif...
- IAM Role: arn:aws:iam::398447858632:role/service-role/AWSGlueServiceRole-demo
- Schedule: Run on demand
- Output: default
- Review all steps

Crawler info

Name: aws-athena-demo
Tags: -

IAM role

IAM role: arn:aws:iam::398447858632:role/service-role/AWSGlueServiceRole-demo

Schedule

Schedule: Run on demand

Output

Database: default
Prefix added to tables (optional):
Create a single schema for each S3 path: false

Step 10:

Crawler is successfully created and now click on the crawler and click run crawler.

AWS Glue

Crawlers: A crawler connects to a data store, progresses through a prioritized list of classifiers to determine the schema for your data, and then creates metadata tables in your data catalog.

Attempting to run crawler "aws-athena-demo"...

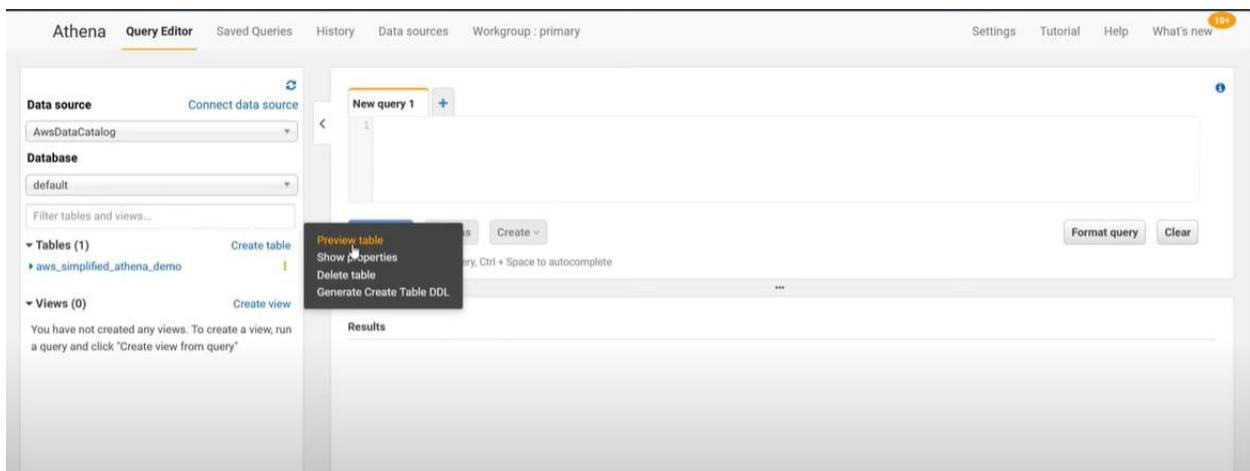
User preferences

Show: 1 - 1

Name	Schedule	Status	Logs	Last runtime	Median runtime	Tables updated	Tables added
aws-athena-demo		Ready		0 secs	0 secs	0	0

Step 11:

After running the crawler go back to Athena you will see a table created on table column select that and click on preview table.



Step 12:

Now the query can be executed.

The screenshot shows the Amazon Athena Query Editor. On the left, the sidebar displays the 'Data source' set to 'AwsDataCatalog' and the 'Database' set to 'default'. Under 'Tables (1)', there is a single entry: 'aws_simplified_athena_demo'. The main panel contains two tabs: 'New query 1' and 'New query 2'. 'New query 2' is active, showing the SQL query: 'SELECT * FROM "default"."aws_simplified_athena_demo" WHERE type='PURCHASE' and amount >= 50;'. Below the query, the results show a single row: 'Run time: 1.81 seconds, Data scanned: 78.08 KB'. At the bottom, there are buttons for 'Run query', 'Save as', 'Create', 'Format query', and 'Clear'.

Result:

Querying Data in S3 with Amazon Athena is done and output is verified.

Experiment 7

Creating a lambda function in AWS to email daily reports

Name: Mukund Maheshwari

Reg No: RA2011028010086

Aim: Automate Sending Emails at a Specific Time with AWS Lambda, CloudWatch and SES

Pre-requisites: AWS Console, Amazon SES, Amazon Lambda, Amazon CloudWatch.

Procedure:

We are going automate sending email to a person or a group of people. AWS **Cloudwatch** is used to setup a schedule to trigger AWS **Lambda** function and then it's going to use AWS **SES (Simple Email Service)** to send out emails to people.

Steps:

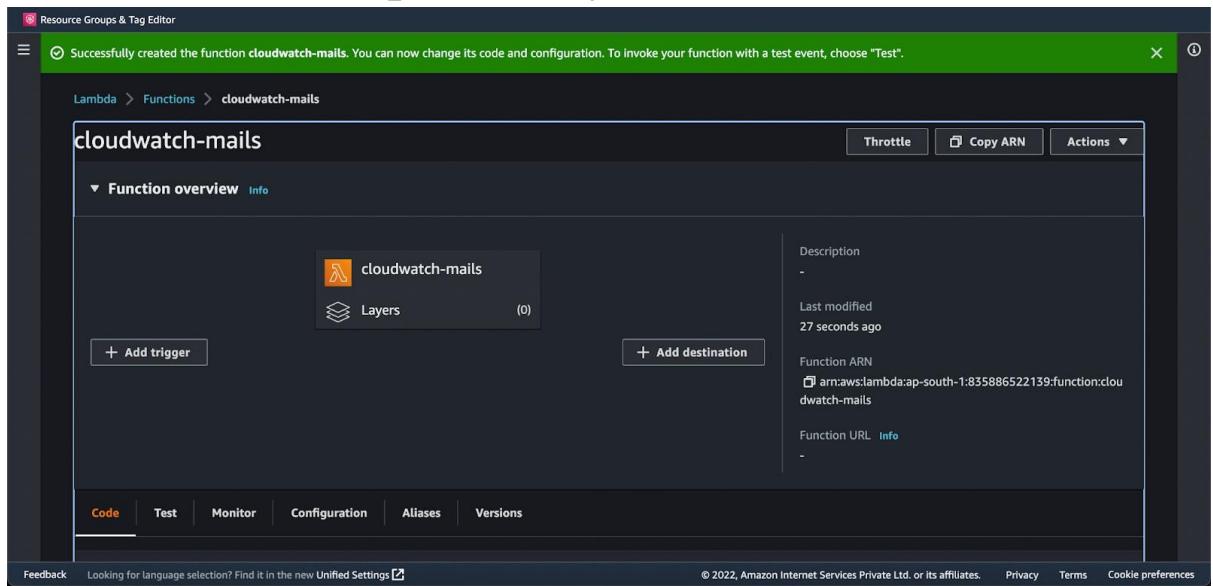
1. Go to AWS SES (Simple email service), click on “Create Identity”. Use email address as a type and type the email address.

The screenshot shows the 'Create identity' wizard in the AWS SES console. The 'Identity type' section is displayed, with two options: 'Domain' and 'Email address'. The 'Domain' option is selected, showing a note about verifying ownership via DNS settings. Below this is a 'Tags - optional' section with a note about adding tags for resource management. At the bottom right are 'Cancel' and 'Create identity' buttons, along with standard footer links for feedback, language selection, and legal notices.

2. Verify the email address that received an email from aws to tell you to verify that

The screenshot shows the 'Verified identities' page in the AWS SES console. It displays a summary for the email address 'jayeshchaudhari0542002@gmail.com', which is listed as 'Verified'. A 'Legacy TXT records' section provides information about domain verification using DKIM. Below this is a 'Summary' section with details like the ARN, AWS Region (Asia Pacific (Mumbai)), and email address. At the bottom are tabs for 'Authentication', 'Notifications', 'Authorization', 'Configuration set', and 'Tags'. The footer includes standard links for feedback, language selection, and legal notices.

3. Create two identities (email address). One for sending emails and another for receiving.
4. Create an IAM role.
5. Give Use case as lambda and give full access to cloudwatch, SES.
6. Go to Lambda Service, create a lambda function.
7. Give name, runtime as NodeJS, execution role as created IAM role previously.



Use this template for the code:

The screenshot shows the AWS Lambda function editor for a function named 'cloudwatch-mails'. The status bar at the top indicates 'Successfully created the function cloudwatch-mails. You can now change its code and configuration. To invoke your function with a test event, choose "Test".' The main area displays the 'index.js' file content:

```
1 exports.handler = async (event) => {
2     // TODO implement
3     var aws = require('aws-sdk');
4     var ses = new aws.SES({ region: "us-west-2" });
5     exports.handler = async function (event) {
6         var params = {
7             Destination: {
8                 ToAddresses: ["RecipientEmailAddress"],
9             },
10            Message: {
11                Body: {
12                    Text: { Data: "Test" },
13                },
14                Subject: { Data: "Test Email" },
15            },
16            Source: "SourceEmailAddress",
17        };
18        return ses.sendEmail(params).promise()
19    };
20};
21
22};
```

Below the code editor, there is a feedback message: 'Feedback Looking for language selection? Find it in the new Unified Settings'.

8. Click on Deploy and then TEST, you will receive the message in your mentioned emails.
9. For scheduled daily report, go to AWS Cloudwatch , navigate to rule section (now called as eventBridge)
10. Create rule- give name, ruletype- schedule, use cron expression for schedule pattern for e.g.: 15 19 * *? *

Resource Groups & Tag Editor

Step 1
Define rule detail

Step 2
Define schedule

Step 3
Select target(s)

Step 4 - optional
Configure tags

Step 5
Review and create

Define rule detail [Info](#)

Rule detail

Name: rule7
Maximum of 64 characters consisting of numbers, lower/upper case letters, -, _.

Description - optional
Enter description

Event bus [Info](#)
Select the event bus this rule applies to, either the default event bus or a custom or partner event bus.
default

Enable the rule on the selected event bus

Rule type [Info](#)

Rule with an event pattern
A rule that runs when an event matches the defined event pattern. EventBridge sends the event to the specified target.

Schedule
A rule that runs on a schedule

[Cancel](#) [Next](#)

[Feedback](#) Looking for language selection? Find it in the new [Unified Settings](#)

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Resource Groups & Tag Editor

Step 3
Select target(s)

Step 4 - optional
Configure tags

Step 5
Review and create

Schedule pattern
Choose the schedule type that best meets your needs.

A fine-grained schedule that runs at a specific time, such as 8:00 a.m. PST on the first Monday of every month.

A schedule that runs at a regular rate, such as every 10 minutes.

Cron expression [Info](#)
Define the cron expression for the schedule

cron (15 9 * * ? *)
Minutes Hours Day of month Month Day of week Year

Next 10 trigger date(s) [Local time zone](#)

Nov 14, 2022, 02:45 PM GMT+5:30
Nov 15, 2022, 02:45 PM GMT+5:30
Nov 16, 2022, 02:45 PM GMT+5:30
Nov 17, 2022, 02:45 PM GMT+5:30
Nov 18, 2022, 02:45 PM GMT+5:30
Nov 19, 2022, 02:45 PM GMT+5:30
Nov 20, 2022, 02:45 PM GMT+5:30
Nov 21, 2022, 02:45 PM GMT+5:30
Nov 22, 2022, 02:45 PM GMT+5:30
Nov 23, 2022, 02:45 PM GMT+5:30

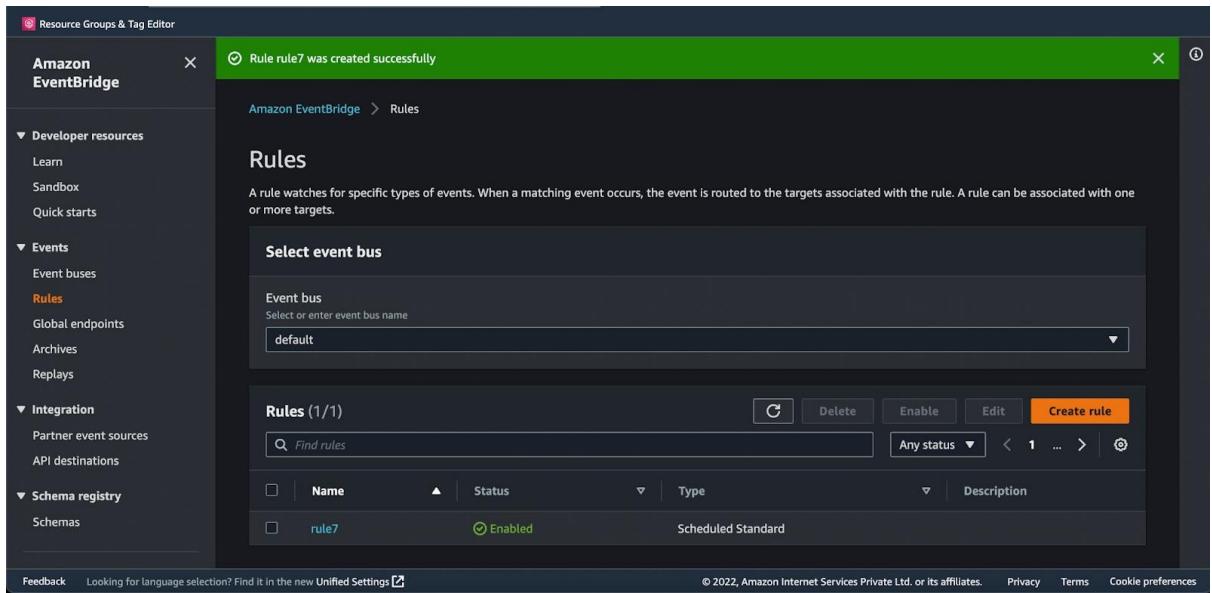
[Cancel](#) [Previous](#) [Next](#)

[Feedback](#) Looking for language selection? Find it in the new [Unified Settings](#)

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11. Select Targets as lambda function, and use the above defined function.

12. Go to monitoring in Lambda service, click on View logs in cloudWatch and check your mail inbox.



Result:

Hence, the lambda function is created and implemented using SES, CloudWatch to schedule daily reports.

Experiment 8

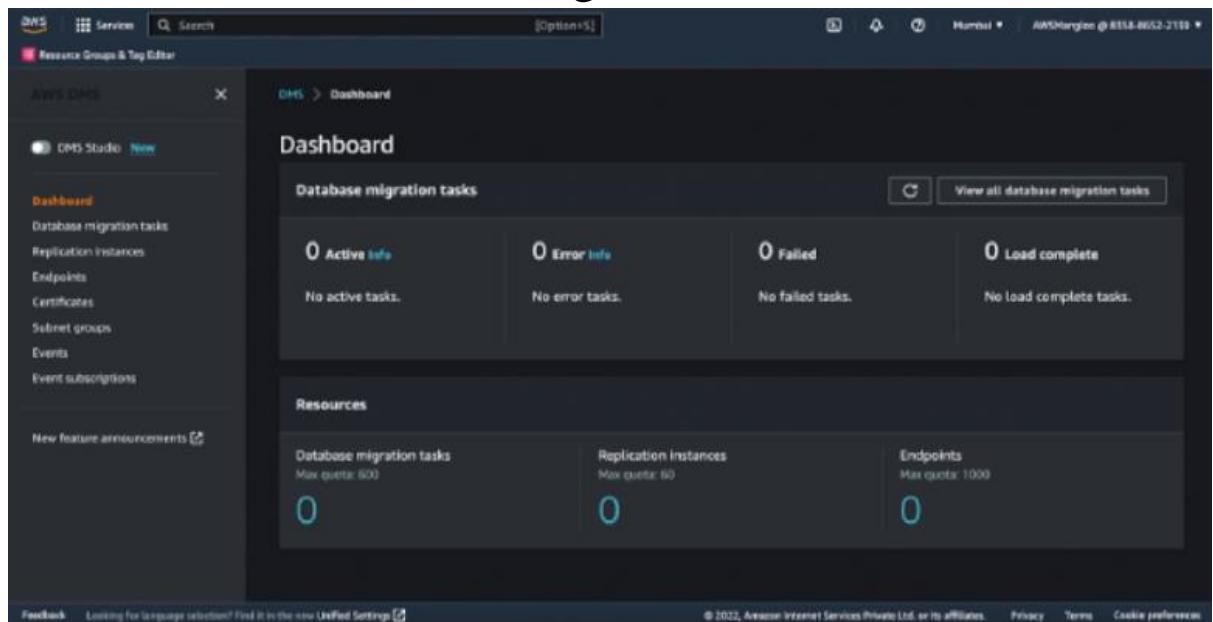
Migrating to Amazon RDS

Name: Mukund Maheshwari
Reg No: RA2011028010086

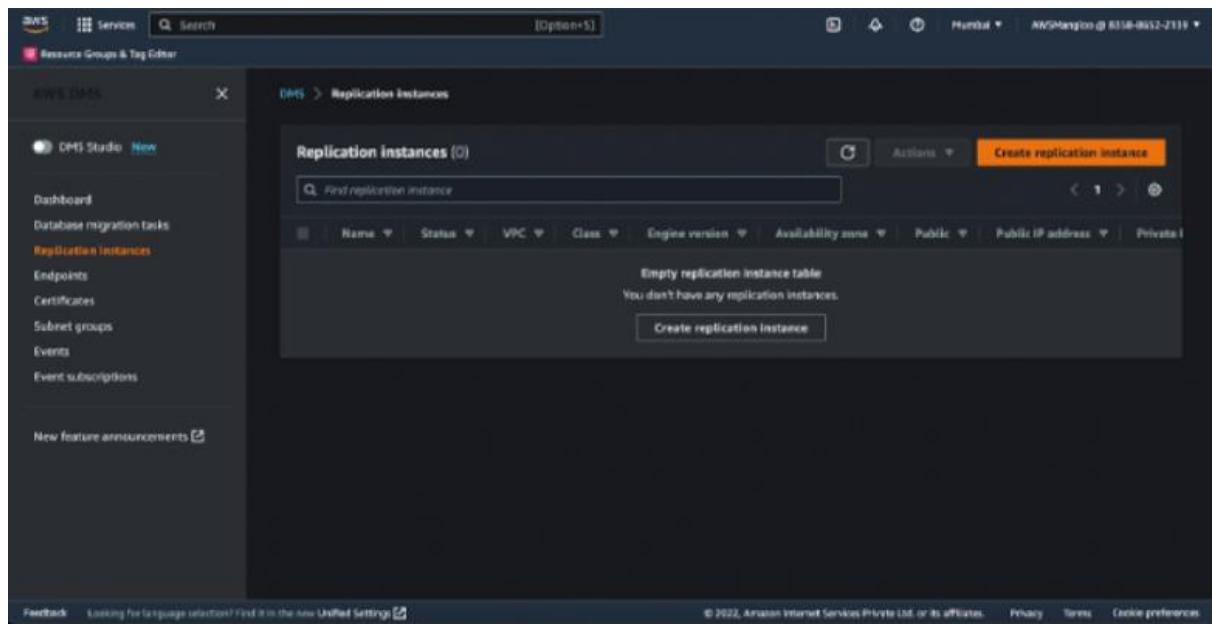
Aim: Migrating to AWS RDS

Procedure:

1. Search for Database Management Service



2. Open Replication Instances



3. Create Replication Instances

Resource Groups & Tag Editor

AWS DMS X

DMS Studio New

Dashboard

Database migration tasks

Replication instances

Endpoints

Certificates

Subnet groups

Events

Event subscriptions

New feature announcements

Feedback Looking for language selection? Find it in the new Unified Settings

DMS > Replication instances > Create replication instance

Create replication instance

Replication instance configuration

Name

The name must be unique among all of your replication instances in the current AWS region.

test-instance

Replication instance name must not start with a numeric value

Descriptive Amazon Resource Name (ARN) - optional

A friendly name to override the default DMS ARN. You cannot modify it after creation.

test-instance

Description

test DMS replication instance

The description must only have unicode letters, digits, whitespace, or one of these symbols: _-/+=@. 1000 maximum character.

Instance class Info

Choose an appropriate instance class for your replication needs. Each instance class provides differing levels of compute, network and memory capacity. [DMS pricing](#)

dms.t3.medium

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This screenshot shows the 'Create replication instance' configuration page in the AWS DMS console. The 'Name' field is set to 'test-instance'. The 'Descriptive Amazon Resource Name (ARN)' field is also set to 'test-instance'. The 'Description' field contains 'test DMS replication instance'. The 'Instance class' dropdown is set to 'dms.t3.medium'. A note at the bottom left of the configuration area states: 'Choose an appropriate instance class for your replication needs. Each instance class provides differing levels of compute, network and memory capacity. [DMS pricing](#)'.

Resource Groups & Tag Editor

AWS DMS X

DMS Studio New

Dashboard

Database migration tasks

Replication instances

Endpoints

Certificates

Subnet groups

Events

Event subscriptions

New feature announcements

Feedback Looking for language selection? Find it in the new Unified Settings

DMS > Replication instances > Create replication instance

Create replication instance

Choose an appropriate instance class for your replication needs. Each instance class provides differing levels of compute, network and memory capacity. [DMS pricing](#)

dms.t3.medium
2 vCPUs 4 GiB Memory

Include previous-generation instance classes

Engine version

Choose an AWS DMS version to run on your replication instance. [DMS versions](#)

3.4.7

Include Beta DMS versions

Upgrades to versions 3.4.7 and higher

Upgrades to AWS DMS versions 3.4.7 and higher require that you configure AWS DMS to use VPC endpoints or use public routes. This requirement applies to source and target endpoints for S3, Kinesis, Secrets Manager, DynamoDB, Amazon Redshift, and OpenSearch Service. [Learn more](#)

View endpoints

Allocated storage (GiB) Info

Choose the amount of storage space you want for your replication instance. AWS DMS uses this storage for log files and cached transactions while replication tasks are in progress.

20

VPC

Choose an Amazon Virtual Private Cloud (VPC) where your replication instance should run.

vpc-0ff4be3e874c31406

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This screenshot shows the 'Create replication instance' configuration page in the AWS DMS console. The 'Instance class' dropdown is set to 'dms.t3.medium'. The 'Engine version' dropdown is set to '3.4.7'. The 'Allocated storage (GiB)' input field is set to '20'. The 'VPC' dropdown is set to 'vpc-0ff4be3e874c31406'. A note in the middle of the configuration area states: 'Upgrades to versions 3.4.7 and higher require that you configure AWS DMS to use VPC endpoints or use public routes. This requirement applies to source and target endpoints for S3, Kinesis, Secrets Manager, DynamoDB, Amazon Redshift, and OpenSearch Service. [Learn more](#)'.

VPC
Choose an Amazon Virtual Private Cloud (VPC) where your replication instance should run.

Multi AZ
The Multi-AZ option deploys a primary replication instance in one Availability Zone (AZ) and a standby in another AZ. The Single-AZ option deploys a single replication instance in one AZ. Billing is based on DMS pricing.

Publicly accessible
If you choose this option, AWS DMS will assign a public IP address to your replication instance, and you'll be able to connect to databases outside of your Amazon VPC.

Advanced security and network configuration

Replication subnet group
Choose a subnet group for your replication instance. The subnet group defines the IP ranges and subnets that your replication instance can use within the Amazon VPC you've chosen.

Availability zone
Choose an availability zone (AZ) where you want your replication instance to run. The default is "No preference", meaning that AWS DMS will determine which AZ to use.

Maintenance

Tags

ⓘ DMS requires access permissions to manage your VPC resources. By clicking Create replication instance, you grant permission for DMS to create a role that has this access.

Create **Cancel**

4. Create Endpoints

AWS DMS

DMS > Endpoints

Endpoints (0)

Find endpoint

Name Type Status Engine Server name Port Migration Hub Mapping ARN Certificate ARN

Empty endpoint table
You don't have any endpoints.

Create endpoint

Feedback Looking for language selection? Find it in the new Unified Settings

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This screenshot shows the AWS DMS Endpoints page. On the left, there's a sidebar with options like Dashboard, Database migration tasks, Replication instances, Endpoints (which is selected), Certificates, Subnet groups, Events, and Event subscriptions. Below that is a New feature announcements section. The main content area has a header 'Endpoints (0)' with a search bar. It shows a table with columns for Name, Type, Status, Engine, Server name, Port, Migration Hub Mapping, ARN, and Certificate ARN. A message says 'Empty endpoint table' and 'You don't have any endpoints.' At the bottom right of the table is a 'Create endpoint' button. At the very bottom of the page, there's a feedback link and a copyright notice for 2022.

AWS DMS

DMS > Endpoints

Source endpoint
A source endpoint allows AWS DMS to read data from a database (on-premises or in the cloud), or from other data source such as Amazon S3.

Source endpoint

Target endpoint
A target endpoint allows AWS DMS to write data to a database, or to other data source.

Select RDS DB instance

RDS Instance
Instances available only for current user and region

Endpoint configuration

Endpoint identifier [Info](#)
A label for the endpoint to help you identify it.
source-database

Descriptive Amazon Resource Name (ARN) - optional
A friendly name to override the default DMS ARN. You cannot modify it after creation.
source-db

Source engine
The type of database engine this endpoint is connected to. [Learn more](#)

MySQL

Feedback Looking for language selection? Find it in the new Unified Settings

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This screenshot shows the 'Create Endpoint' configuration page for a 'Source endpoint'. The sidebar is identical to the previous screenshot. The main area starts with a 'Source endpoint' section with a detailed description. Below it is a radio button for 'Source endpoint' which is selected. There's also a 'Target endpoint' option. Underneath is a checked checkbox for 'Select RDS DB instance'. A dropdown menu for 'RDS Instance' is open, showing a list of available instances. The next section is 'Endpoint configuration' with fields for 'Endpoint identifier' (set to 'source-database') and 'Descriptive Amazon Resource Name (ARN) - optional' (set to 'source-db'). The final section is 'Source engine' with a dropdown set to 'MySQL'. At the bottom, there's a feedback link and a copyright notice.

AWS DMS

MySQL

Access to endpoint database
 AWS Secrets Manager
 Provide access information manually

Server name
The name of the data server for the data provider.
source-database.c39ashxlmf9.ap-south-1.rds.amazonaws.com

Port
The port the database runs on for this endpoint.
3306

User name | **Info** Password | **Info**
admin *********

Secure Socket Layer (SSL) mode
The type of Secure Socket Layer enforcement
none

▶ Endpoint settings

▶ KMS key

Feedback Looking for language selection? Find it in the new Unified Settings [\[?\]](#)

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5. Create Database Migration Task

AWS DMS

Task configuration

Task identifier
test-task

Descriptive Amazon Resource Name (ARN) - optional
A friendly name to override the default DMS ARN. You cannot modify it after creation.
test

Replication instance
test-instance - vpc-0ff4be3e874c31406

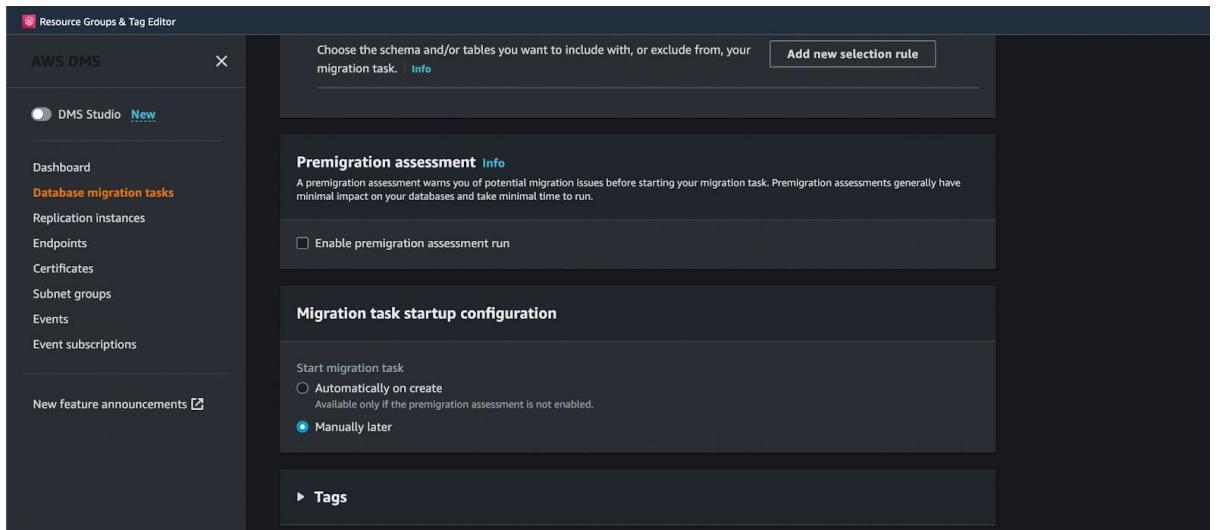
i Upgrades to versions 3.4.7 and higher
You have 1 instance that uses AWS DMS version 3.4.7. Upgrades to AWS DMS versions 3.4.7 and higher require that you configure AWS DMS to use VPC endpoints or use public routes. This requirement applies to source and target endpoints for these data stores: S3, Kinesis, Secrets Manager, DynamoDB, Amazon Redshift, and OpenSearch Service. [Learn more \[?\]](#) [View endpoints](#)

Source database endpoint
source-database

Target database endpoint
Choose a target database endpoint

Feedback Looking for language selection? Find it in the new Unified Settings [\[?\]](#)

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Result:

Hence, we migrated data to Amazon RDS.

Experiment 9

Configure Failover Routing with Amazon Route S3

Name: Mukund Maheshwari

Reg No: RA2011028010086

Aim: To configure failover routing with AWS Route 53

Procedure:

1. Go to Hosted zones.
2. Go to health checks and create health check

The screenshot shows the AWS Route 53 Health Checks console. The left sidebar has a 'Health checks' section selected. The main content area is titled 'Welcome to Route 53 health checks' and includes a 'Create health check' button. Below this, there are two sections: 'Availability and performance monitoring' (with a computer monitor icon) and 'DNS failover' (with a shield and stethoscope icon). Both sections have 'Learn more' links. At the bottom, there are footer links for 'Feedback', 'Unified Settings', '© 2022, Amazon Internet Services Private Ltd. or its affiliates.', 'Privacy', 'Terms', and 'Cookie preferences'.

3. If your health check fails then you can set notification and click on create health check

Configure health check

Route 53 health checks let you track the health status of your resources, such as web servers or mail servers, and take action when an outage occurs.

Name: example name

What to monitor: Endpoint

- Status of other health checks (calculated health check)
- State of CloudWatch alarm

Monitor an endpoint:

Multiple Route 53 health checkers will try to establish a TCP connection with the following resource to determine whether it's healthy.

Specify endpoint by: IP address

Protocol: HTTP

IP address *: 192.0.2.44 or 2001:DB8::1

Host name: www.example.com

Port *: 80

Path: /images

Advanced configuration

Feedback Looking for language selection? Find it in the new Unified Settings [\[?\]](#)

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4. Health check is created and status is unknown and soon it will turn healthy because it is healthy

Health check with id 9459b641-1d77-4853-b12e-6d9bd9d0d6b3 has been created successfully

Create health check Delete health check Edit health check				
Filter by keyword				
Name	Status	Description	Alarms	
prodhc	Unknown	http://mumbaiELB-25996257.ap-south-1....	⚠ 1 of 1 in INSUFFICIENT DATA	

Info Monitoring Alarms Tags Health checkers Latency

No health check selected.

No health check selected.

5. In the hosted zones, create a record set and give the required information with routing policy as failover and click on create.
6. Repeat the same steps for the secondary set ID.

This website is running from Mumbai Region

Route 53 Demo

This website is running from N. Virginia Region

Route 53 Demo

When the load on primary set ID increases it routes the traffic to secondary set ID.

Result:

Hence, we configured failover routing with Aws Route 53

