

Experiment 7

Creating a lambda function in AWS to email daily reports

Name: Aditya Singh

Reg No: RA2011028010089 **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 to 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.

Resource Groups & Tag Editor

Amazon SES > Configuration: Verified identities > Create identity

Create identity

A *verified identity* is a domain, subdomain, or email address you use to send email through Amazon SES. Identity verification at the domain level extends to all email addresses under one verified domain identity.

Identity details Info

Identity type

☐ Domain
To verify ownership of a domain, you must have access to its DNS settings to add the necessary records.

☒ Email address
To verify ownership of an email address, you must have access to its inbox to open the verification email.

Tags - optional Info

You can add one or more tags to help manage and organize your resources, including identities.

No tags associated with the resource.

[Add new tag](#)

You can add 50 more tags.

[Cancel](#) [Create identity](#)

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

Resource Groups & Tag Editor

Amazon SES > Configuration: Verified identities > jayeshchaudhari0542002@gmail.com

jayeshchaudhari0542002@gmail.com

[Delete](#) [Send test email](#)

Legacy TXT records

Domain verification in Amazon SES is now based on *DomainKeys Identified Mail (DKIM)*, an email authentication standard that receiving mail servers use to validate an email's authenticity. Configuring DKIM in your domain's DNS settings confirms to SES that you're the identity owner, eliminating the need for TXT records. Domain identities that were verified using TXT records do not need to be reverified; however, we still recommend enabling DKIM signatures to enhance the deliverability of your mail with DKIM-compliant email providers. To access your **legacy TXT records**, download **Legacy TXT record set as .csv** [↗](#).

Summary for jayeshchaudhari0542002@gmail.com

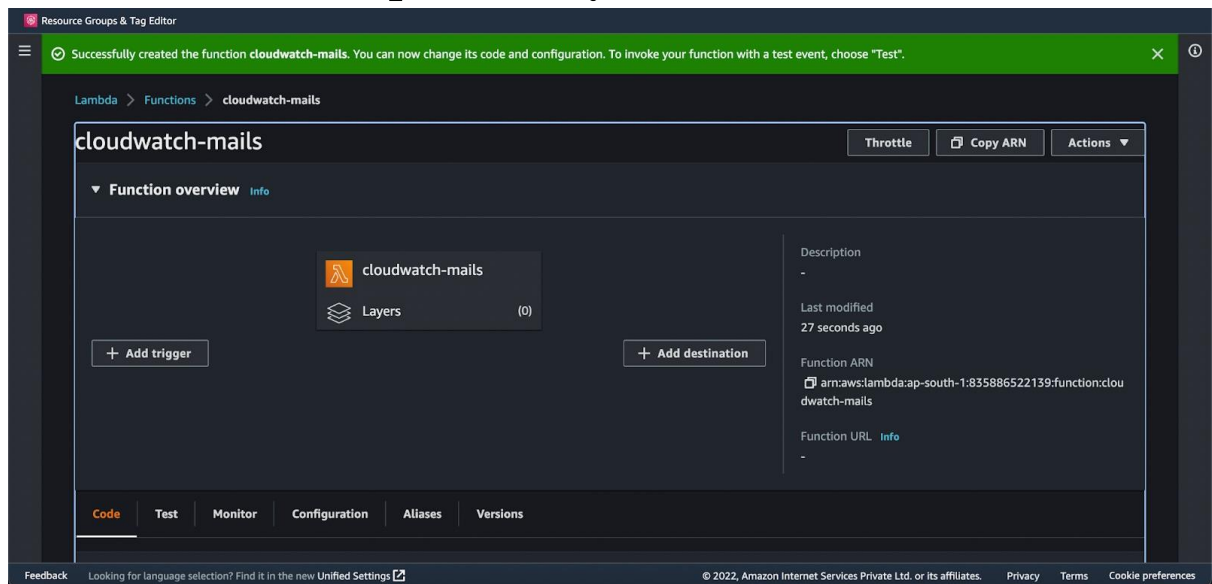
Identity status ✔ Verified	Amazon Resource Name (ARN) <code>arn:aws:ses:ap-south-1:835886522139:identity/jayeshchaudhari0542002@gmail.com</code>	AWS Region Asia Pacific (Mumbai)
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[Authentication](#) [Notifications](#) [Authorization](#) [Configuration set](#) [Tags](#)

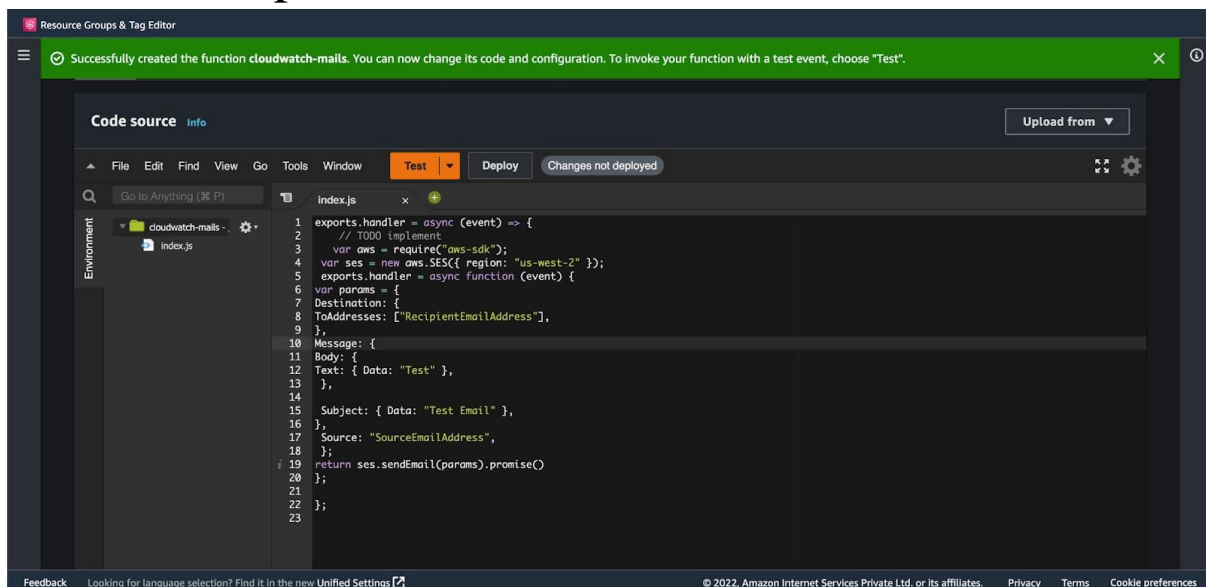
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3. Create two identities (email address). One for sending emails and another for receiving.
4. Create an IAM role.

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:



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

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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

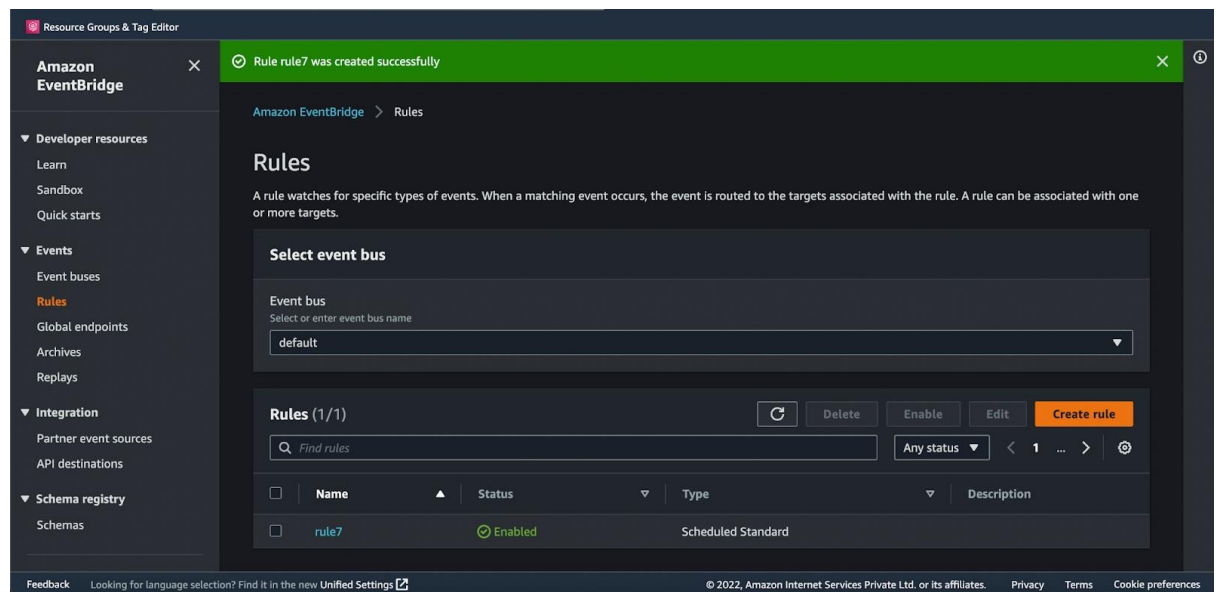
Nov 14, 2022, 02:45 PM GMT+5:30
Nov 15, 2022, 02:45 PM GMT+5:30
Nov 16, 2022, 02:45 PM GMT+5:30
Nov 17, 2022, 02:45 PM GMT+5:30
Nov 18, 2022, 02:45 PM GMT+5:30
Nov 19, 2022, 02:45 PM GMT+5:30
Nov 20, 2022, 02:45 PM GMT+5:30
Nov 21, 2022, 02:45 PM GMT+5:30
Nov 22, 2022, 02:45 PM GMT+5:30
Nov 23, 2022,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

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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

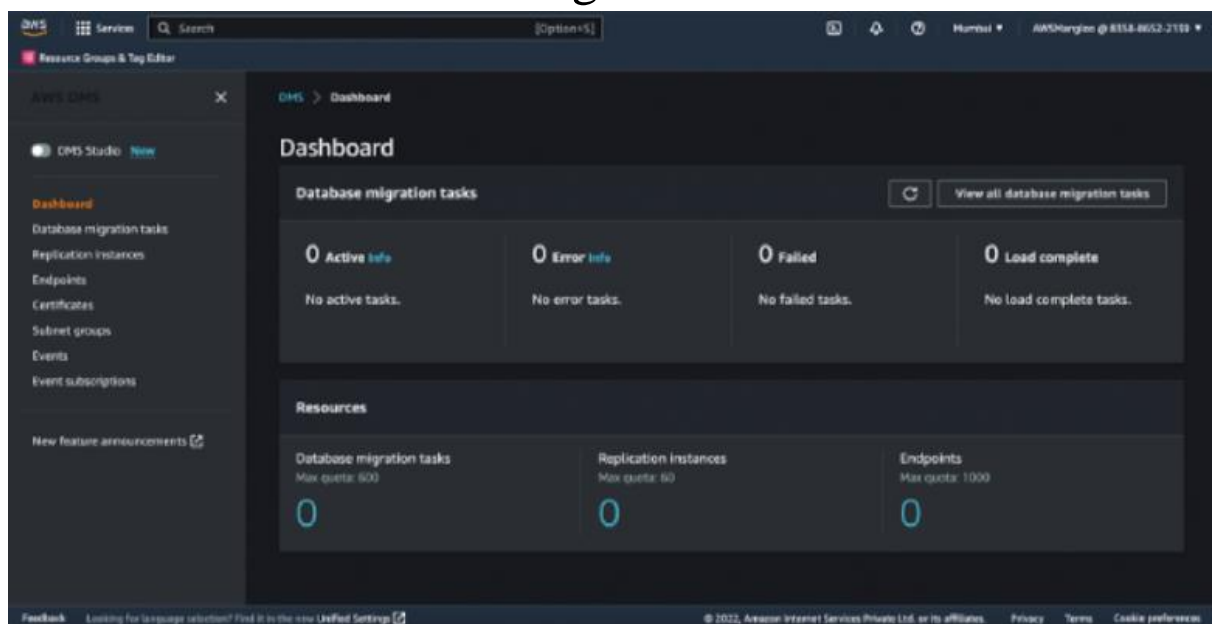
Name: Aditya Singh

Reg No: RA2011028010089

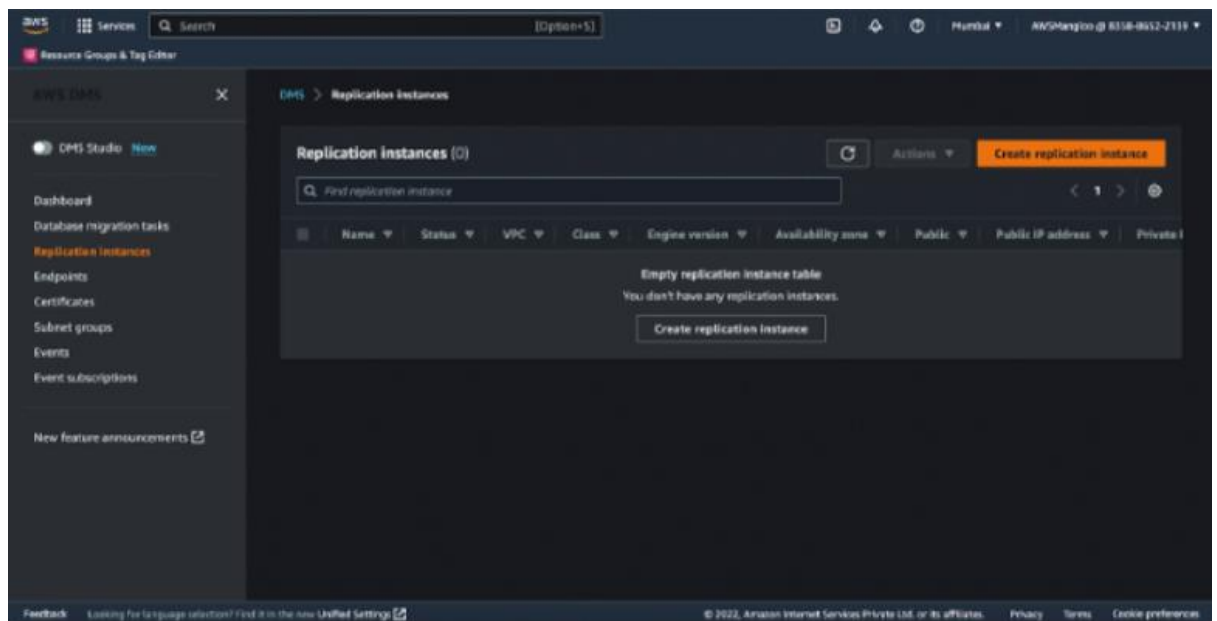
Aim: Migrating to AWS RDS

Procedure:

1. Search for Database Management Service



2. Open Replication Instances



3. Create Replication Instances

Resource Groups & Tag Editor

AWS DMS

DMS Studio

New

Dashboard

Database migration tasks

Replication Instances

Endpoints

Certificates

Subnet groups

Events

Event subscriptions

New feature announcements

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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Resource Groups & Tag Editor

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New feature announcements

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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New feature announcements

VPC

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

vpc-0ff4be3e874c31406

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.

Dev or test workload (Single-AZ)

☒ 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.

default-vpc-0ff4be3e874c31406

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.

No Preference

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New feature announcements

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.

No Preference

VPC security group(s)

Choose one or more security groups for your replication instances. The security group(s) specify inbound and outbound rules to control network access to your replication instance.

Use default

KMS key

Info

(Default) aws/dms

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.

Cancel

Create

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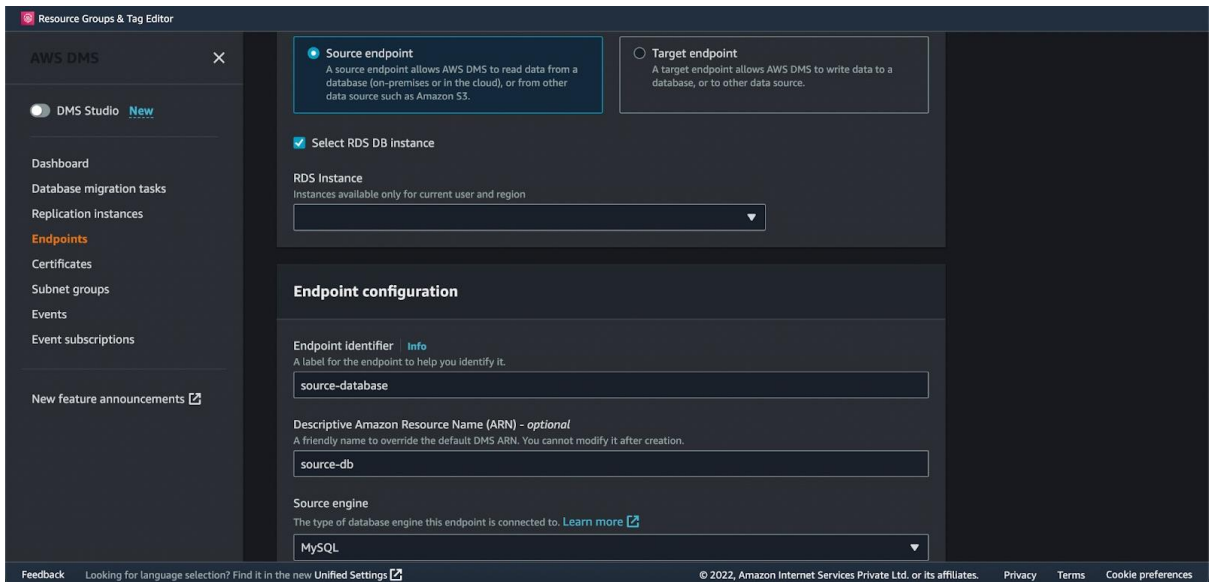
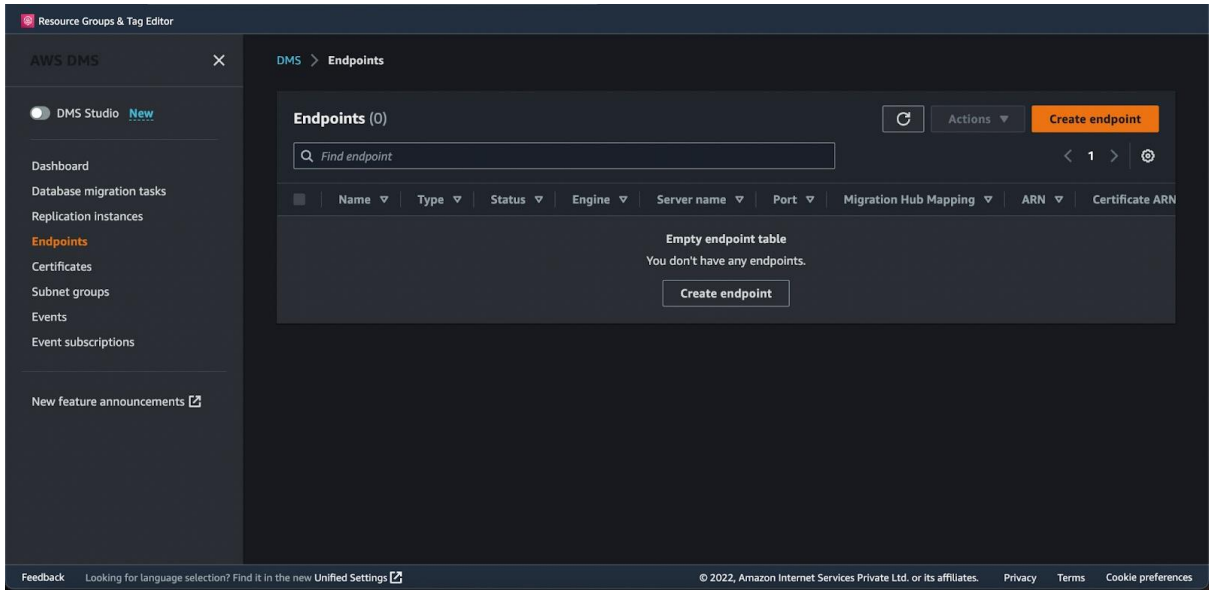
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4. Create Endpoints



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New feature announcements [🔗](#)

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.c39ashxumfg.ap-south-1.rds.amazonaws.com

Port

The port the database runs on for this endpoint.

3306

User name [Info](#)

admin

Password [Info](#)

Secure Socket Layer (SSL) mode

The type of Secure Socket Layer enforcement

none

► Endpoint settings

► KMS key

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5. Create Database Migration Task

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Dashboard

Database migration tasks

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Certificates

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Events

Event subscriptions

New feature announcements [🔗](#)

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

[🔔](#) 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](#)

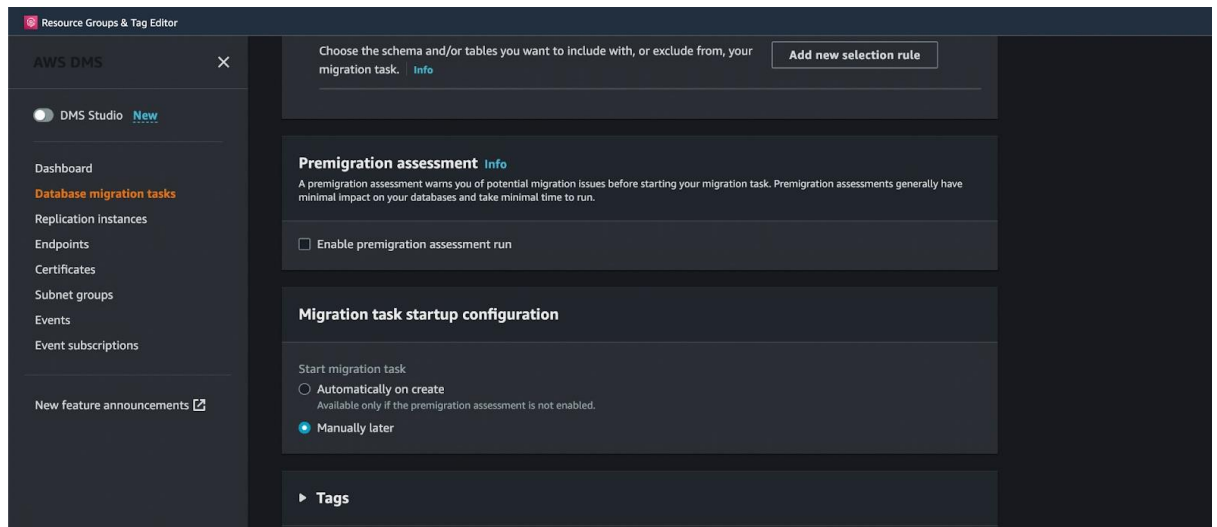
Source database endpoint

source-database

Target database endpoint

[Choose a target database endpoint](#)

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Result:

Hence, we migrated data to Amazon RDS.

Experiment 9

Configure Failover Routing with Amazon Route 53

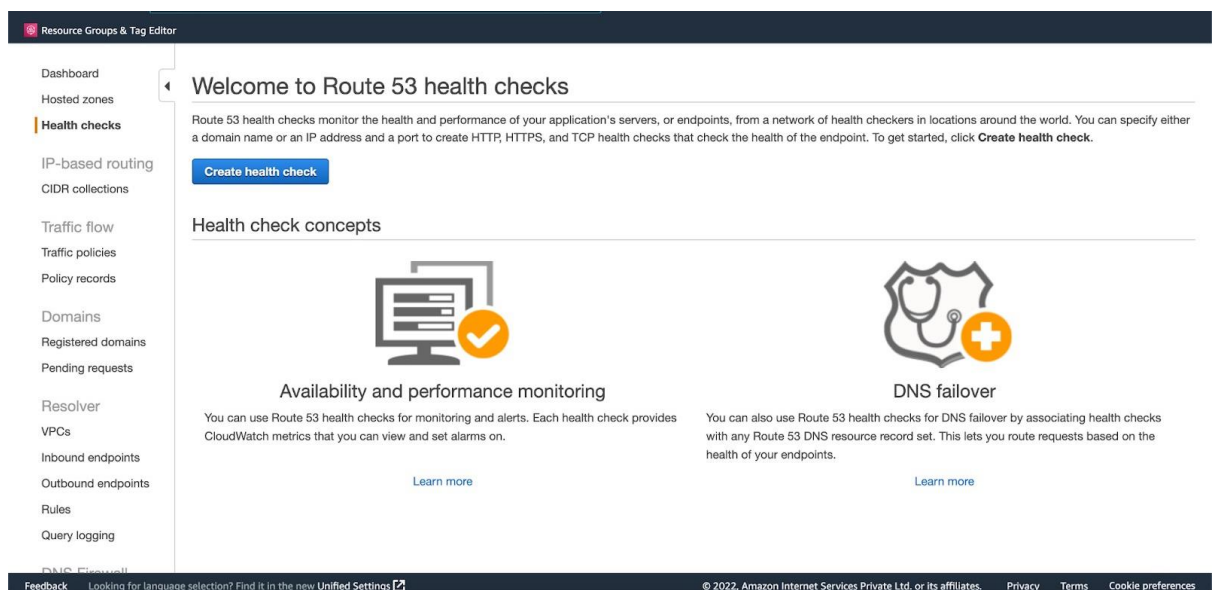
Name: Aditya Singh
RA2011028010089

Reg No:

Aim: To configure failover routing with AWS Route 53

Procedure:

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



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

Resource Groups & Tag Editor

Step 1: Configure health check

Step 2: Get notified when health check fails

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:

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. [Learn more](#)

Specify endpoint by: ☒ IP address ☐ Domain name

Protocol:

IP address *:

Host name:

Port *:

Path:

Advanced configuration

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

Dashboard
Hosted zones
Health checks
Traffic flow
Traffic policies
Policy records
Domains
Registered domains
Pending requests
Resolver
VPCs
Inbound endpoints
Outbound endpoints
Rules

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

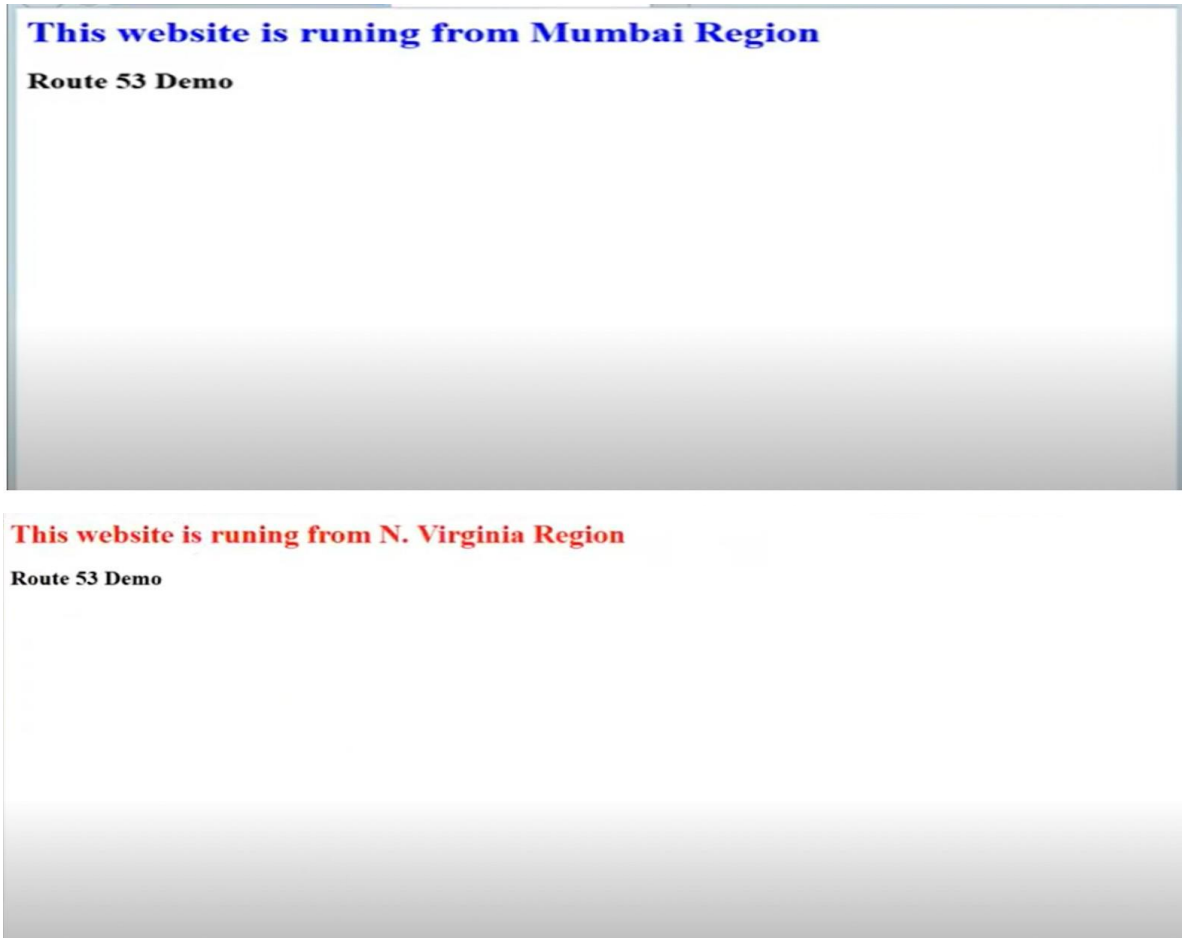
Info Monitoring Alarms Tags Health checkers Latency

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.



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

