

Experiment 7

Creating a lambda function in AWS to email daily reports

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

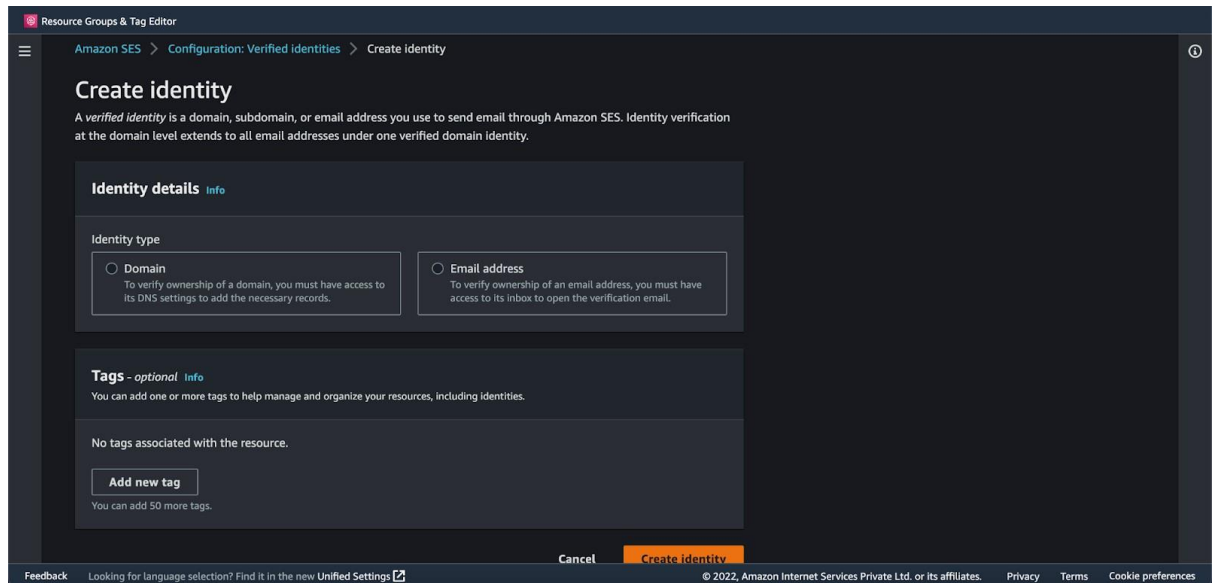
Pre-requisites: AWS Console, Amazon SES, Amazon Lambda, Amazon CloudWatch.

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.



The screenshot shows the 'Create Identity' page in the AWS SES console. The page title is 'Create identity'. Below the title, there is a description: '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.' The 'Identity details' section has two radio buttons: 'Domain' and 'Email address'. The 'Email address' option is selected. Below this, there is a 'Tags - optional' section with a note: 'You can add one or more tags to help manage and organize your resources, including identities.' There is a button 'Add new tag' and a note: 'You can add 50 more tags.' At the bottom, there are 'Cancel' and 'Create identity' buttons.

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.

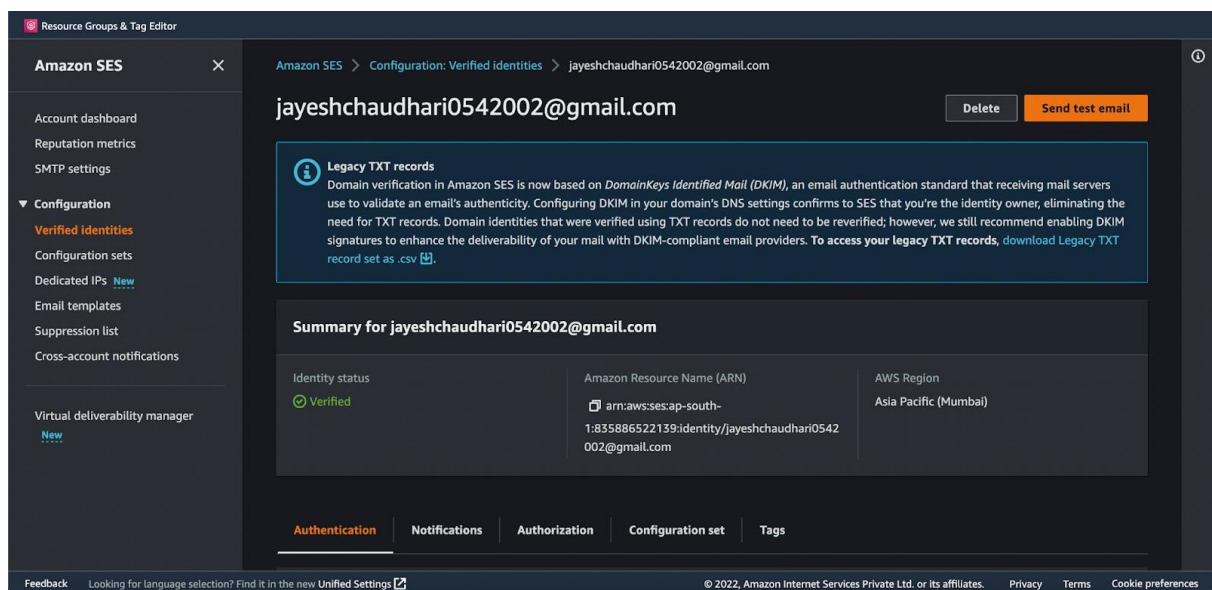
No tags associated with the resource.

[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



The screenshot shows the 'Verified identities' page in the AWS SES console for the email address 'jayeshchaudhari0542002@gmail.com'. The page title is 'Verified identities'. Below the title, there is a description: '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.' The 'Summary for jayeshchaudhari0542002@gmail.com' section shows the identity status as 'Verified', the Amazon Resource Name (ARN) as 'arn:aws:ses:ap-south-1:835886522139:identity/jayeshchaudhari0542002@gmail.com', and the AWS Region as 'Asia Pacific (Mumbai)'. At the bottom, there are tabs for 'Authentication', 'Notifications', 'Authorization', 'Configuration set', and 'Tags'. The 'Authentication' tab is selected.

Resource Groups & Tag Editor

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

Verified identities

[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 [📄](#).

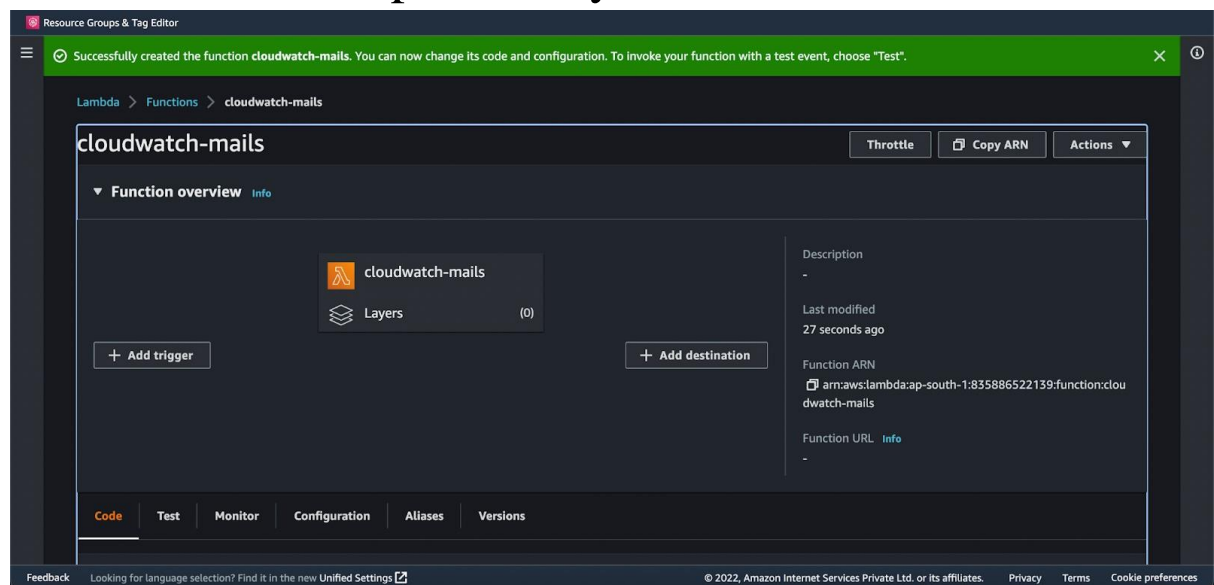
Summary for jayeshchaudhari0542002@gmail.com

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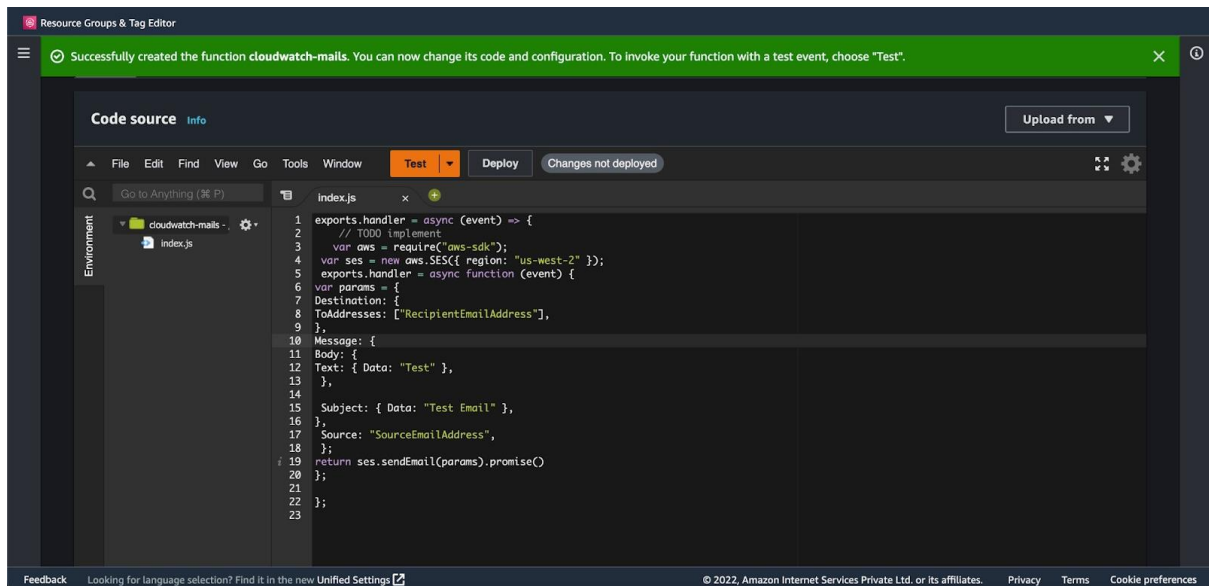
[Authentication](#) [Notifications](#) [Authorization](#) [Configuration set](#) [Tags](#)

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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, rule type- 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

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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

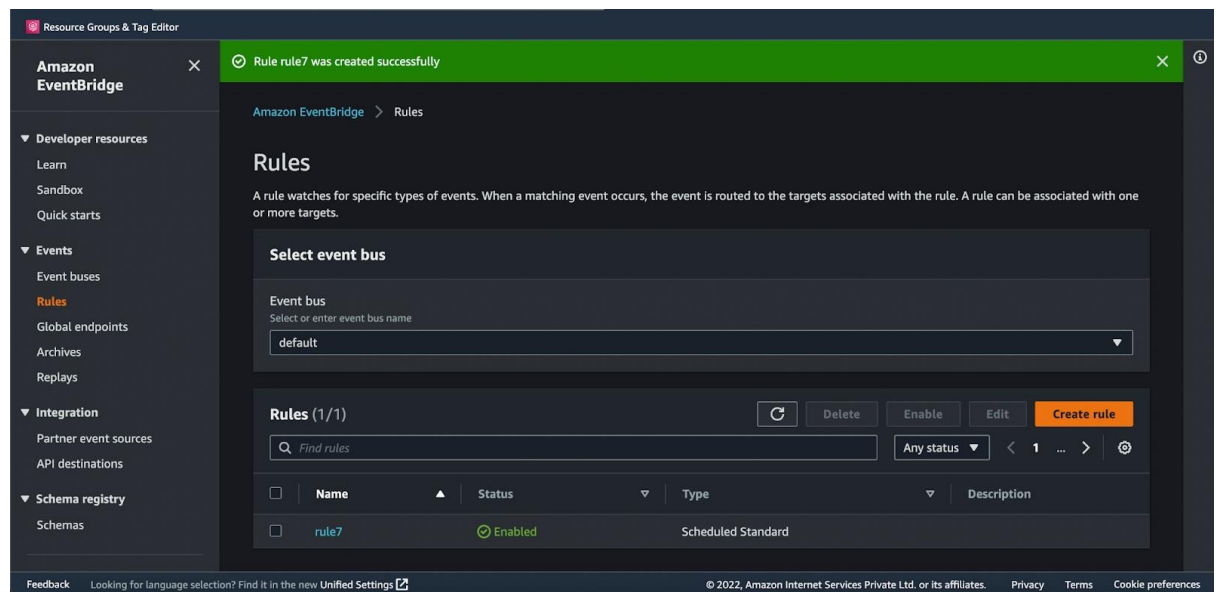
Nov 14, 2022, 02:45 PM GMT+5:30
Nov 15, 2022, 02:45 PM GMT+5:30
Nov 16, 2022, 02:45 PM GMT+5:30
Nov 17, 2022, 02:45 PM GMT+5:30
Nov 18, 2022, 02:45 PM GMT+5:30
Nov 19, 2022, 02:45 PM GMT+5:30
Nov 20, 2022, 02:45 PM GMT+5:30
Nov 21, 2022, 02:45 PM GMT+5:30
Nov 22, 2022, 02:45 PM GMT+5:30
Nov 23, 2022,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