

# Project 3

## Problem Statement: How to secure patient records online and send it privately to the intended party

First Create i had created on VPC By using CloudFormation stack  
By uploading yaml file Template

The screenshot shows the AWS CloudFormation console in the 'ap-south-1' region, specifically the 'Create stack' wizard. The left sidebar shows the progress: Step 1 (Create stack), Step 2 (Specify stack details), Step 3 (Configure stack options), and Step 4 (Review). The main content area is titled 'Create stack' and is divided into two sections: 'Prerequisite - Prepare template' and 'Specify template'.

**Prerequisite - Prepare template**

Prepare template  
Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

☒ Template is ready ☐ Use a sample template ☐ Create template in Designer

**Specify template**

A template is a JSON or YAML file that describes your stack's resources and properties.

Template source  
Selecting a template generates an Amazon S3 URL where it will be stored.

☒ Amazon S3 URL ☐ Upload a template file ☐ Sync from Git - new

Provide an Amazon S3 URL to your template. Upload your template directly to the console. Sync a template from your Git repository.

Amazon S3 URL  
  
Amazon S3 template URL

S3 URL: Will be generated when URL is provided

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Step 2

Specify stack details

Step 3

Configure stack options

Step 4

Review

Prerequisite - Prepare template

Prepare template

Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

☒ Template is ready

☐ Use a sample template

☐ Create template in Designer

Specify template

A template is a JSON or YAML file that describes your stack's resources and properties.

Template source

Selecting a template generates an Amazon S3 URL where it will be stored.

☐ Amazon S3 URL

☒ Upload a template file

☐ Sync from Git - new

Provide an Amazon S3 URL to your template.

Upload your template directly to the console.

Sync a template from your Git repository.

Upload a template file

Choose file

project.yml

X

JSON or YAML formatted file

S3 URL: https://s3.ap-south-1.amazonaws.com/cf-templates-16n0l9bsjmlc-ap-south-1/2023-12-14T090447.8322f9q-project.yml

View in Designer

Cancel

Next

## Create an Instance

←

→

↺

↻

ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/create-subscription

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Amazon SNS

Subscriptions

Create subscription

Create subscription

Details

Topic ARN

arn:aws:sns:ap-south-1:457228467332:mytopic

X

Protocol

The type of endpoint to subscribe

SMS

Endpoint

A mobile number that can receive notifications from Amazon SNS.

+1 999 999 9999

Sandbox destination phone numbers

When in the sandbox, you can only deliver SMS to the sandbox destination phone numbers you have verified. [Learn more](#)

Add phone number

Subscription filter policy - optional

Info

This policy filters the messages that a subscriber receives.

← → ↻ ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/sms-sandbox/create-phone-number

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New Feature

Amazon SNS now supports in-place message archiving and replay for FIFO topics. [Learn more](#)

Amazon SNS > Text messaging (SMS) > Sandbox add phone number

Add a phone number

Add a destination phone number in SMS Sandbox in order to send a test message to the specified phone number.

Destination details

Phone number

+91 83092-68794

The phone number can have up to 20 digits, with a leading '+' and no spaces or hyphens (-).

Verification message language

English (United States)

The language the verification message will be sent in.

Cancel

Add phone number

← → ↻ ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/sms-sandbox/verify-phone-number

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New Feature

Amazon SNS now supports in-place message archiving and replay for FIFO topics. [Learn more](#)

Amazon SNS > Text messaging (SMS) > Sandbox verify phone number

Verify phone number

Verify a destination phone number in SMS Sandbox in order to send a test message and verification code.

Details

Phone number

+918309268794

The phone number can have up to 20 digits, with a leading '+' and no spaces or hyphens (-).

Verification code

579102

Enter a string of 5-8 digits.

Cancel

Resend verification code

Verify phone number

← → ↺ ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/create-subscription

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Topic ARN

Q project X

Protocol

The type of endpoint to subscribe

SMS

Endpoint

A mobile number that can receive notifications from Amazon SNS.

Q +918309268794 X

📘 Sandbox destination phone numbers

When in the sandbox, you can only deliver SMS to the sandbox destination phone numbers you have verified. [Learn more](#)

Add phone number

▶ Subscription filter policy - optional Info

This policy filters the messages that a subscriber receives.

▶ Redrive policy (dead-letter queue) - optional Info

Send undeliverable messages to a dead-letter queue.

Cancel Create subscription

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← → ↺ ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/subscription/arn:aws:sns:ap-south-1:457228467332:mytopic:dd461a17-0857-45fc-a805-b7042cac234

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Amazon SNS X

📘 New Feature

Amazon SNS now supports in-place message archiving and replay for FIFO topics. [Learn more](#)

🟢 Subscription to mytopic created successfully.

The ARN of the subscription is arn:aws:sns:ap-south-1:457228467332:mytopic:dd461a17-0857-45fc-a805-b7042cac234.

Amazon SNS > Topics > mytopic > Subscription: dd461a17-0857-45fc-a805-b7042cac234

Subscription: dd461a17-0857-45fc-a805-b7042cac234

Edit Delete

Details

ARN

arn:aws:sns:ap-south-1:457228467332:mytopic:dd461a17-0857-45fc-a805-b7042cac234

Status

🟢 Confirmed

Endpoint

+918309268794

Protocol

SMS

Topic

[mytopic](#)

Subscription Principal

arn:aws:iam::457228467332:root

Subscription filter policy

Redrive policy (dead-letter queue)

ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/topic/am:aws:sns:ap-south-1:457228467332:mytopic

Amazon SNS

mytopic

Edit Delete Publish message

**Details**

Name	mytopic	Display name	-
ARN	arn:aws:sns:ap-south-1:457228467332:mytopic	Topic owner	457228467332
Type	Standard		

Subscriptions Access policy Data protection policy Delivery policy (HTTP/S) Delivery status logging Encryption Tags Integrations

**Subscriptions (1)** Edit Delete Request confirmation Confirm subscription Create subscription

Search

ID	Endpoint	Status	Protocol
dd461a17-0857-45fc-a805-b7042cacf...	+918309268794	Confirmed	SMS

ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/sms-sandbox/create-phone-number

Amazon SNS > Text messaging (SMS) > Sandbox add phone number

**Add a phone number**

Add a destination phone number in SMS Sandbox in order to send a test message to the specified phone number.

**Destination details**

Phone number

+91 94900-80432

The phone number can have up to 20 digits, with a leading '+' and no spaces or hyphens (-).

Verification message language

English (United States)

The language the verification message will be sent in.

Cancel Add phone number

aws

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Details

Topic ARN

MyTopic

Protocol

The type of endpoint to subscribe

SMS

Endpoint

A mobile number that can receive notifications from Amazon SNS.

+919490080432

Info

Sandbox destination phone numbers

When in the sandbox, you can only deliver SMS to the sandbox destination phone numbers you have verified. [Learn more](#)

Add phone number

Subscription filter policy - optional

[Info](#)

This policy filters the messages that a subscriber receives.

Redrive policy (dead-letter queue) - optional

[Info](#)

Send undeliverable messages to a dead-letter queue.

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Advanced options

You can set additional options for your stack, like notification options and a stack policy. [Learn more](#)

Stack policy

Defines the resources that you want to protect from unintentional updates during a stack update.

Rollback configuration

Specify alarms for CloudFormation to monitor when creating and updating the stack. If the operation breaches an alarm threshold, CloudFormation rolls it back.

Notification options

SNS topic ARN - optional

arn:aws:sns:ap-south-1:457228467332:mytopic

Remove

arn:aws:sns:ap-south-1:457228467332:Project

Remove

Q |

arn:aws:sns:ap-south-1:457228467332:project

Create new SNS topic

Stack creation options

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Monitoring time

-

CloudWatch alarm ARN

-

Notification options

SNS topic ARN

[arn:aws:sns:ap-south-1:457228467332:mytopic](#)

[arn:aws:sns:ap-south-1:457228467332:Project](#)

Stack creation options

Timeout

-

Termination protection

Deactivated

Quick-create link

Create change set

CancelPreviousSubmit

ap-south-1.console.aws.amazon.com/cloudformation/home?region=ap-south-1#/stacks/events?stackId=arn%3Aaws%3Acloudformation%3Aap-south-1%3A457228467332%3Astack...

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CloudFormationStacksProject

Stacks (1)

Filter by stack name

Active

View nested

Stacks

Project

2023-12-14 15:03:17 UTC+0530

CREATE\_IN\_PROGRESS

Project

DeleteUpdateStack actionsCreate stack

Stack infoEventsResourcesOutputsParametersTemplateChange setsGit sync - new

Events (1)

Detect root cause

Search events

Timestamp	Logical ID	Status	Status reason
2023-12-14 15:03:17 UTC+0530	Project	CREATE_IN_PROGRESS	User Initiated





Route tables (3/6) Info

Find resources by attribute or tag

	Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC	Own...
<input type="checkbox"/>	-	rtb-078831cc63be5793a	-	-	Yes	vpc-06615ada7df92289b   Proj...	601568...
<input checked="" type="checkbox"/>	Project Private Routes (AZ1)	rtb-02d6a0cf740f2d8b2	subnet-0bd741803fc041...	-	No	vpc-06615ada7df92289b   Proj...	601568...
<input type="checkbox"/>	-	rtb-0689b017a89a82aa4	-	-	Yes	vpc-05900351591efe7d4	601568...
<input checked="" type="checkbox"/>	Project Public Routes	rtb-035d3e69ed59383db	2 subnets	-	No	vpc-06615ada7df92289b   Proj...	601568...
<input type="checkbox"/>	-	rtb-0386716eaf3310586	-	-	Yes	vpc-0075e1482c330f036   vpc...	601568...
<input checked="" type="checkbox"/>	Project Private Routes (AZ2)	rtb-059339c04f6648d7e	subnet-0ce9f7c1a9636ce...	-	No	vpc-06615ada7df92289b   Proj...	601568...

CloudFormation > Stacks > Project

Stacks (1)

Filter by stack name

Filter status: Active View nested

Stacks

- Project  
2023-12-14 15:20:52 UTC+0530  
CREATE\_COMPLETE

Project

Stack info Events Resources Outputs Parameters Template Change sets Git sync - new

Events (68)

Search events

Timestamp	Logical ID	Status	Status reason
2023-12-14 15:23:20 UTC+0530	Project	CREATE_COMPLETE	-
2023-12-14 15:23:19 UTC+0530	DefaultPrivateRoute2	CREATE_COMPLETE	-
2023-12-14 15:23:18 UTC+0530	DefaultPrivateRoute2	CREATE_IN_PROGRESS	Resource creation Initiated
2023-12-14 15:23:18 UTC+0530	DefaultPrivateRoute1	CREATE_COMPLETE	-
2023-12-14 15:23:18 UTC+0530	DefaultPrivateRoute1	CREATE_IN_PROGRESS	Resource creation Initiated
2023-12-14 15:23:17 UTC+0530	DefaultPrivateRoute2	CREATE_IN_PROGRESS	-
2023-12-14 15:23:17 UTC+0530	DefaultPrivateRoute1	CREATE_IN_PROGRESS	-
2023-12-14 15:23:16 UTC+0530	NatGateway2	CREATE_COMPLETE	-
2023-12-14 15:23:15 UTC+0530	NatGateway1	CREATE_COMPLETE	-

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CloudFormation

Stacks

Project

Stacks (1)

Filter by stack name

Filter status

Active

View nested

Stacks

Project

2023-12-14 15:20:52 UTC+0530

CREATE\_COMPLETE

Deactivated

Tags

Stack-level tags will apply to all supported resources in your stack. You can add up to 200 unique tags for each stack.

Search tags

Key

Value

No tags

There are no tags defined for this stack

Stack policy

Defines the resources that you want to protect from unintentional updates during a stack update.

Rollback configuration

Specifies alarms for CloudFormation to monitor when creating and updating the stack. If the operation breaches an alarm threshold, CloudFormation rolls it back.

Notification options

Specifies where notifications about stack actions will be sent.

SNS topic ARN

am:aws:sns:ap-south-1:601568096541:Project

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Network settings

Info

VPC - required

vpc-05900351591efe7d4

172.31.0.0/16

(default)

Subnet

No preference

Create new subnet

Auto-assign public IP

Enable

Firewall (security groups)

Info

Create security group

Select existing security group

Security group name - required

launch-wizard-10

Description - required

Info

launch-wizard-10 created 2023-12-14T09:57:44.258Z

Inbound Security Group Rules

Security group rule 1 (TCP, 22, 0.0.0.0/0)

Remove

Summary

Number of instances

Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.2.2...read more

ami-02a2af70a6a6afdfb

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2

Cancel

Launch instance

Review commands

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▼ Network settings Info

VPC - required Info

vpc-06615ada7df92289b (Project)  
10.192.0.0/16

Subnet Info

subnet-006b2db3ac8a81886 Project Public Subnet (AZ1)  
VPC: vpc-06615ada7df92289b Owner: 601568096541  
Availability Zone: ap-south-1a IP addresses available: 250 CIDR: 10.192.10.0/24

Create new subnet

Auto-assign public IP Info

Enable

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group

Select existing security group

Security group name - required

launch-wizard-10

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_-./!#,%&()\*~{|}[]\$\*

Description - required Info

launch-wizard-10 created 2023-12-14T09:57:44.258Z

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0)

Remove

▼ Summary

Number of instances Info  
1

Software Image (AMI)  
Amazon Linux 2023 AMI 2023.2.2...read more  
ami-02a2af70a66af6dfb

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2

Cancel

Launch instance

Review commands

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EC2 Dashboard

EC2 Global View

Events

▼ Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

New

▼ Images

AMIs

AMI Catalog

▼ Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

▼ Network & Security

Instances (1/1) Info

Find Instance by attribute or tag (case-sensitive)

Instance ID = i-0ff6e54ff65859ff5

Clear filters

< 1 >

<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IP
<input checked="" type="checkbox"/>	Project	i-0ff6e54ff65859ff5	Running	t2.micro	Initializing	No alarms	ap-south-1a	ec2-13-233-106-90.ap-...	13.233.1

Instance: i-0ff6e54ff65859ff5 (Project)

Details

Security

Networking

Storage

Status checks

Monitoring

Tags

▼ Instance summary Info

Instance ID  
i-0ff6e54ff65859ff5 (Project)

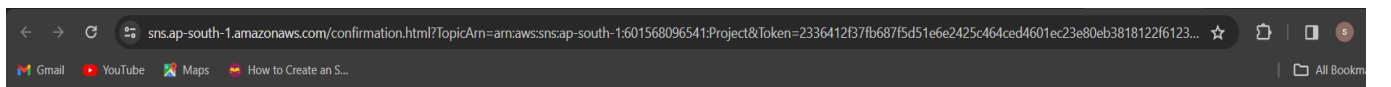
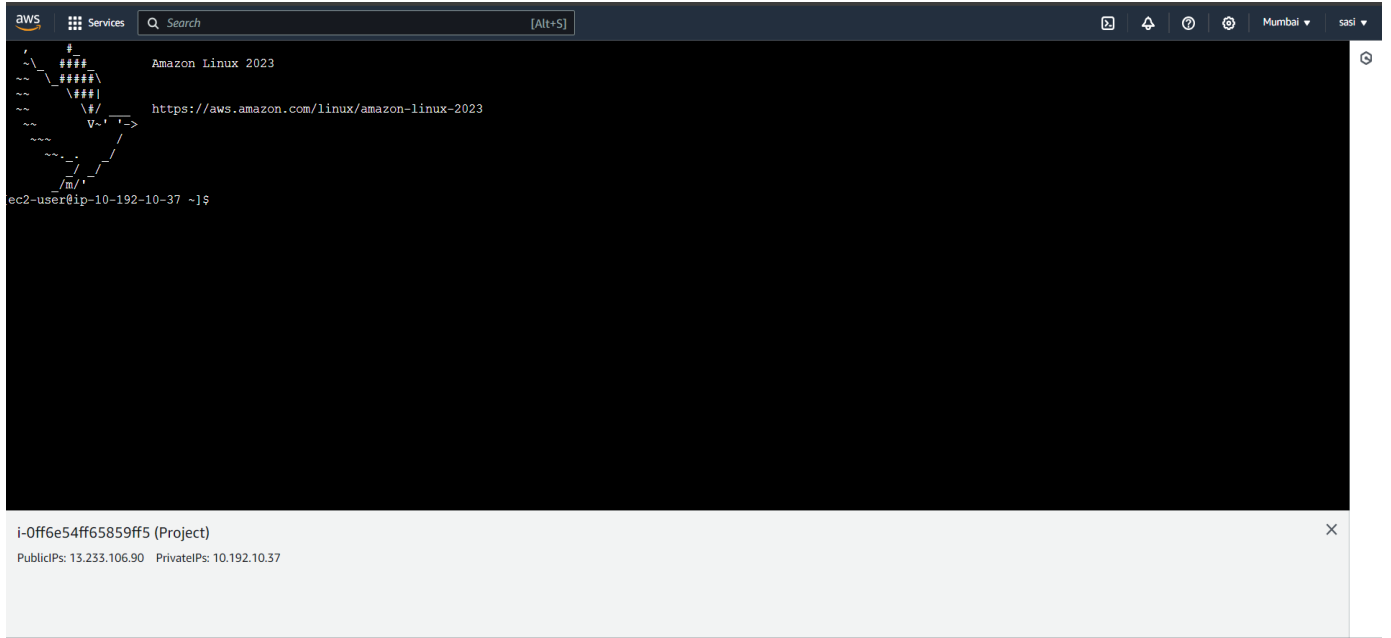
Public IPv4 address  
13.233.106.90 | open address

Private IPv4 addresses  
10.192.10.37

IPv6 address

Instance state

Public IPv4 DNS



**Subscription confirmed!**

You have successfully subscribed.

Your subscription's id is:  
arn:aws:sns:ap-south-1:601568096541:Project:92725316-6269-4155-b37b-3cecb74e774d

If it was not your intention to subscribe, [click here to unsubscribe](#).

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Message structure

☒ Identical payload for all delivery protocols.  
The same payload is sent to endpoints subscribed to the topic, regardless of their delivery protocol.

☐ Custom payload for each delivery protocol.  
Different payloads are sent to endpoints subscribed to the topic, based on their delivery protocol.

Message body to send to the endpoint

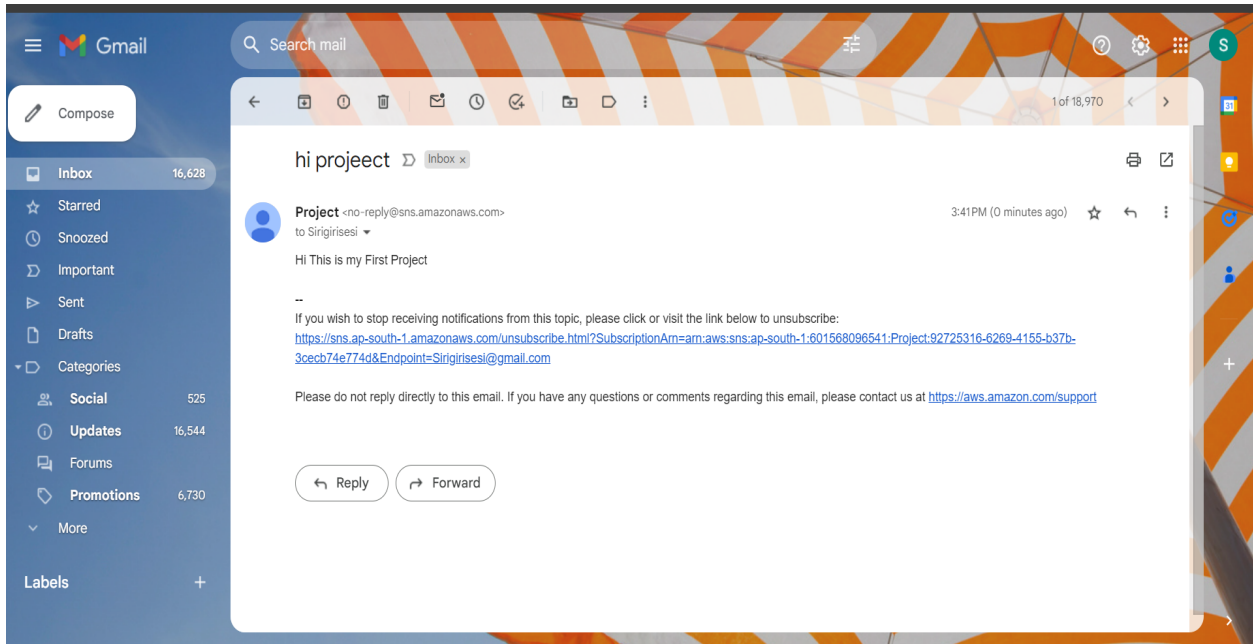
1

Hi This is my First Project

Message attributes Info

Message attributes let you provide structured metadata items (such as timestamps, geospatial data, signatures, and identifiers) for the message.

Type	Name	Value
Select attribute type	Select attribute name	Select attribute value
		Remove



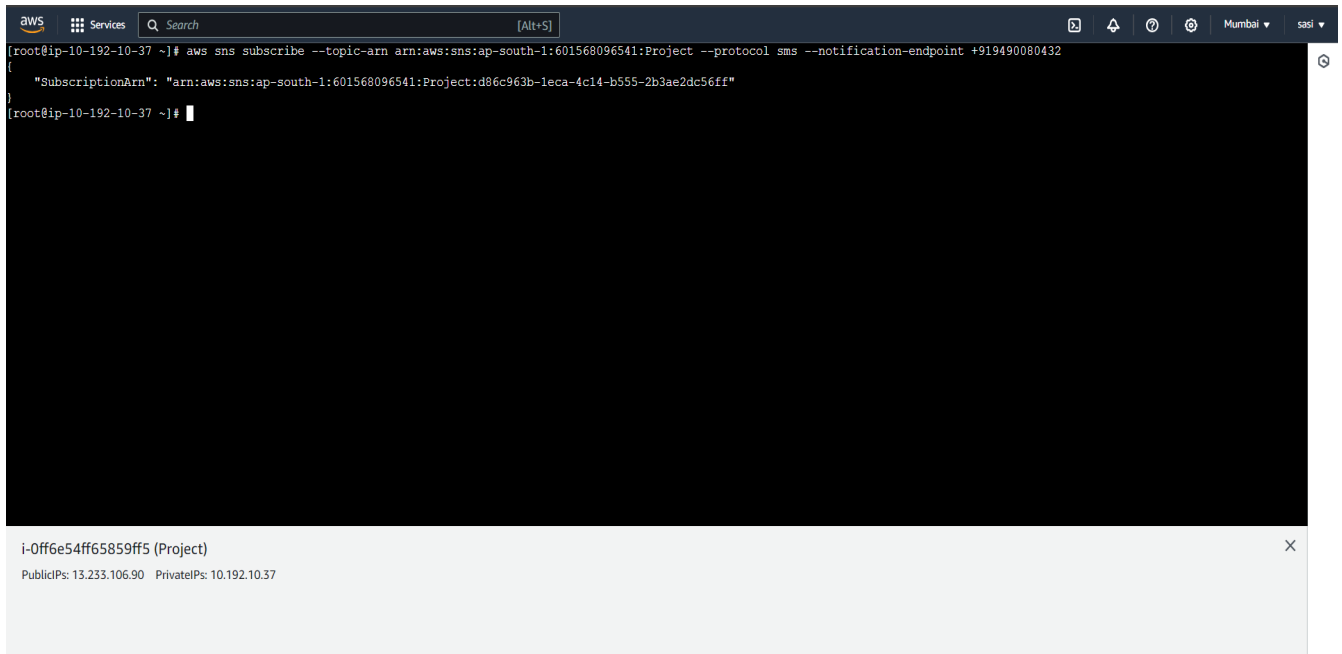
```
[root@ip-10-192-10-37 ~]# aws configure
AWS Access Key ID [*****]: AKIAIYYECAMEOXT5UHS43
AWS Secret Access Key [*****]: fJ0c8++InvYITf9/qnjK0v0kps5ZczCd7YeocXo
Default region name [ap-south-1]: ap-south-1
Default output format [JSON]: json
[root@ip-10-192-10-37 ~]# aws sns subscribe --topic-arn arn:aws:sns:ap-south-1:601568096541:Project --protocol sms --notification-endpoint +918309268794
{
  "SubscriptionArn": "arn:aws:sns:ap-south-1:601568096541:Project:5580705d-aad4-4cc9-be23-65c93d25e141"
}
[root@ip-10-192-10-37 ~]#
```

i-Off6e54ff65859ff5 (Project)

PublicIPs: 13.233.106.90 PrivateIPs: 10.192.10.37

## Using AWS CLI

We can connect EC2 instance and SNS topic

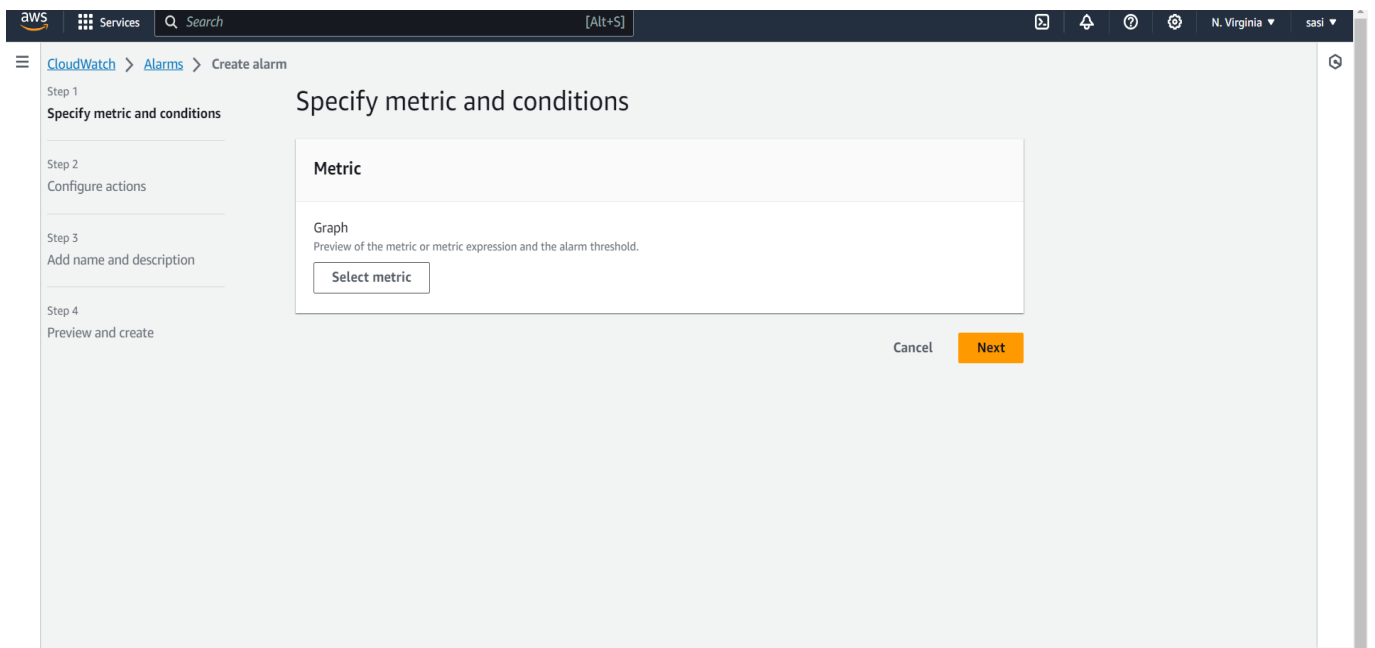


```
aws
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[root@ip-10-192-10-37 ~]# aws sns subscribe --topic-arn arn:aws:sns:ap-south-1:601568096541:Project --protocol sms --notification-endpoint +919490080432
{
  "SubscriptionArn": "arn:aws:sns:ap-south-1:601568096541:Project:d86c963b-1eca-4c14-b555-2b3ae2dc56ff"
}
[root@ip-10-192-10-37 ~]#
```

i-Off6e54ff65859ff5 (Project)

PublicIPs: 13.233.106.90 PrivateIPs: 10.192.10.37



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CloudWatch > Alarms > Create alarm

Step 1  
Specify metric and conditions

Step 2  
Configure actions

Step 3  
Add name and description

Step 4  
Preview and create

### Specify metric and conditions

**Metric**

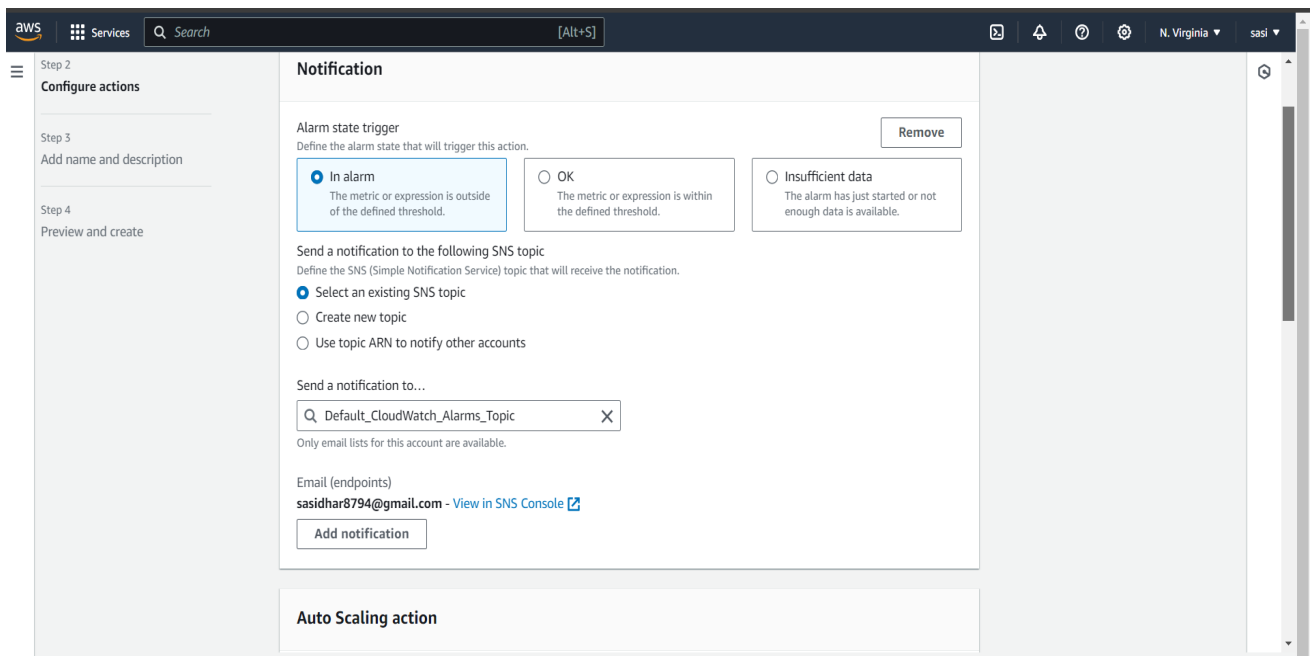
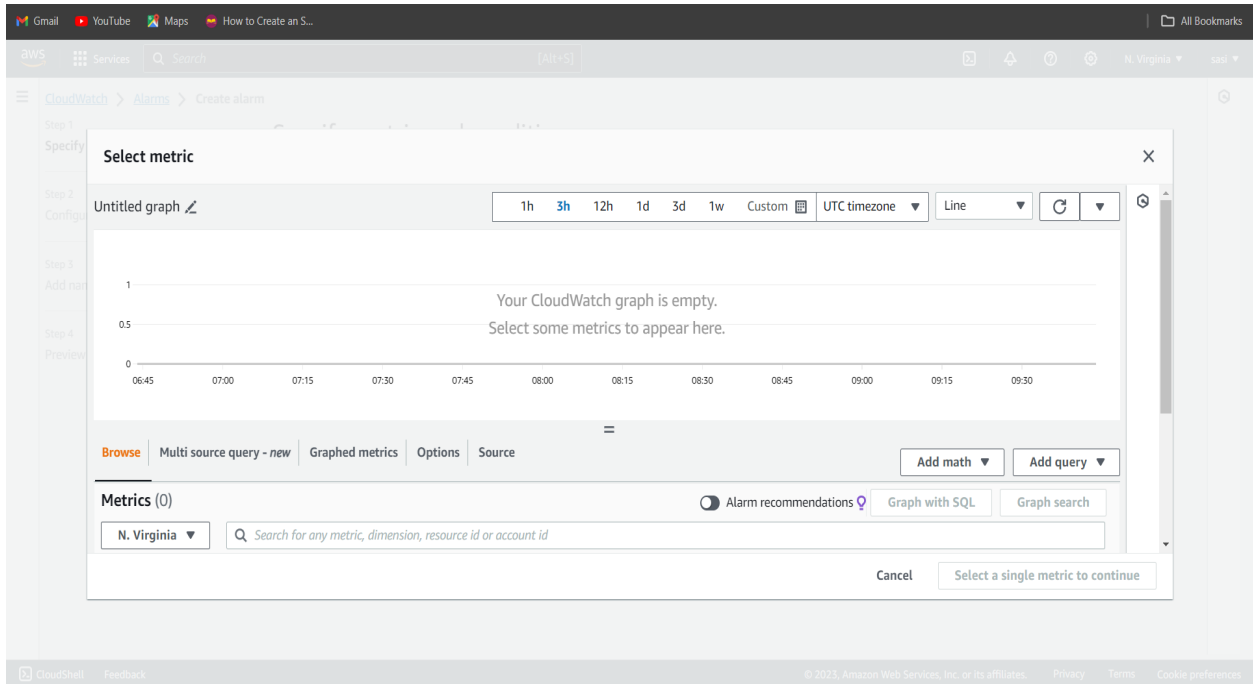
Graph

Preview of the metric or metric expression and the alarm threshold.

Select metric

Cancel Next

For logging and monitoring we can use Cloudwatch



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EC2 action

Alarm state trigger

Define the alarm state that will trigger this action.

☒ In alarm

The metric or expression is outside of the defined threshold.

☐ OK

The metric or expression is within the defined threshold.

☐ Insufficient data

The alarm has just started or not enough data is available.

Remove

Take the following action...

Define what will happen to the EC2 instance with the Instance ID i-0ff6e54ff65859ff5 when this alarm is triggered.

☐ Recover this instance

You can only recover certain EC2 instance types. [See documentation](#)

☒ Stop this instance

You can only stop an instance if it is backed by an EBS volume. AWS will use the existing Service Linked Role (AWSServiceRoleForCloudWatchEvents) to perform this action. [Show IAM policy document](#)

☐ Terminate this instance

You will not be able to terminate this instance if termination protection is enabled. AWS will use the existing Service Linked Role (AWSServiceRoleForCloudWatchEvents) to perform this action. [Show IAM policy document](#)

☐ Reboot this instance

An instance reboot is equivalent to an operating system reboot. AWS will use the existing Service Linked Role (AWSServiceRoleForCloudWatchEvents) to perform this action. [Show IAM policy document](#)

☐ Failed to check if the instance is recoverable

Add EC2 action

Systems Manager action

[info](#)

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Step 1

Specify metric and conditions

Step 2

Configure actions

Step 3

Add name and description

Step 4

Preview and create

Add name and description

Name and description

Alarm name

Project

Alarm description - optional

[View formatting guidelines](#)

Edit

Preview

Hi,

This Project is about to send Reports to Clients through SMS notifications and Emails

Up to 1024 characters (90/1024)

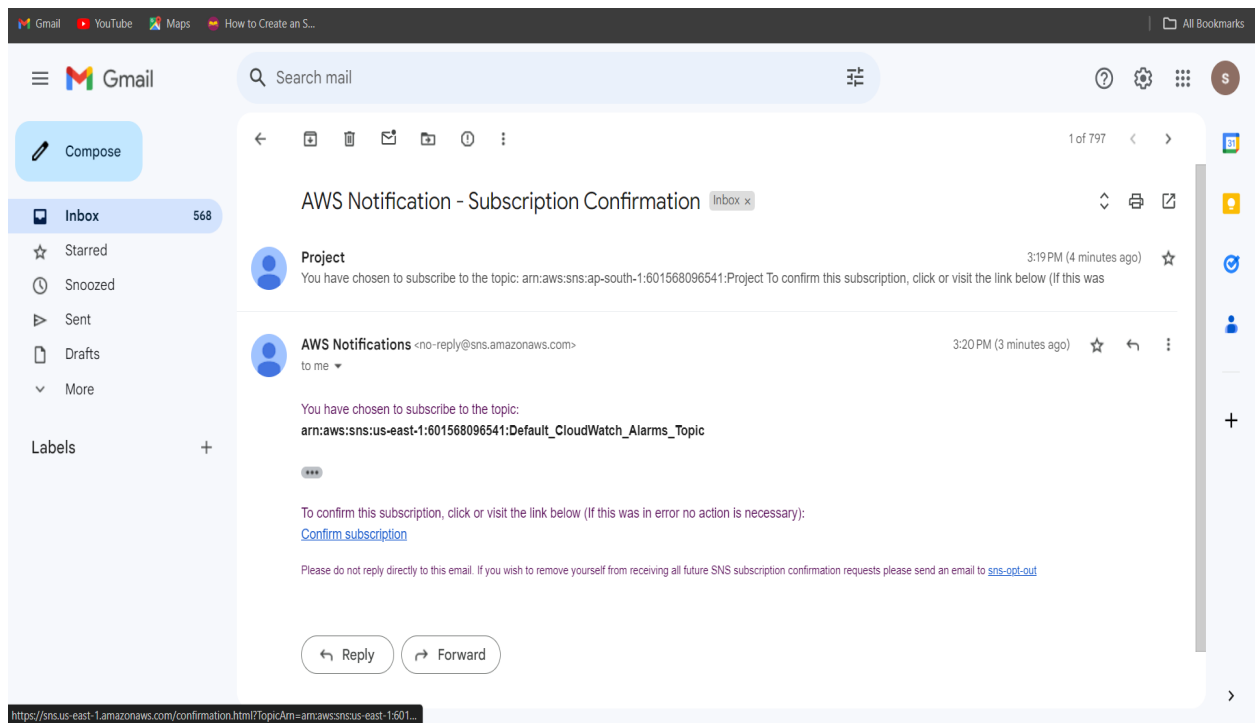
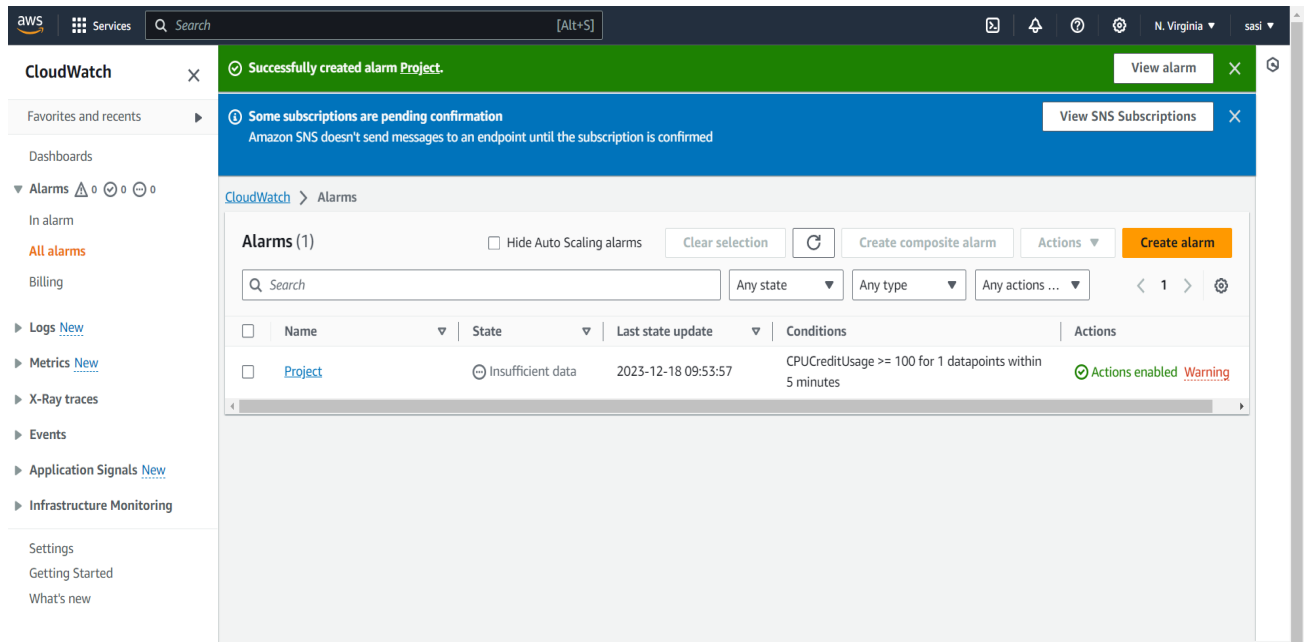
Markdown formatting is only applied when viewing your alarm in the console. The description will remain in plain text in the alarm notifications.

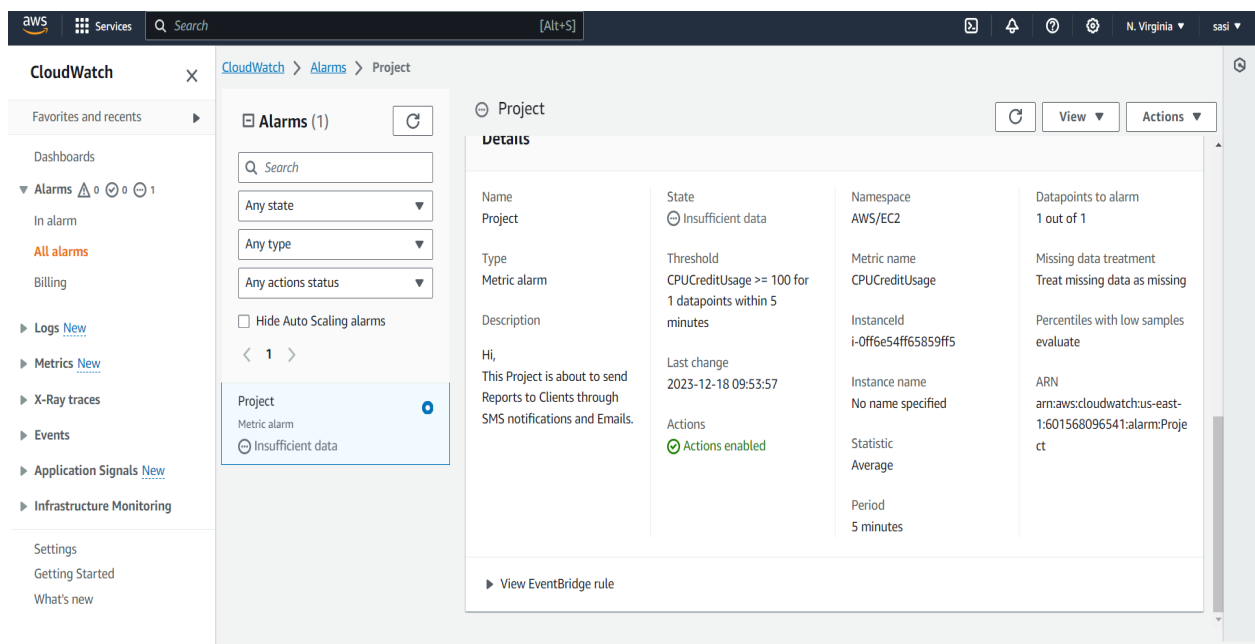
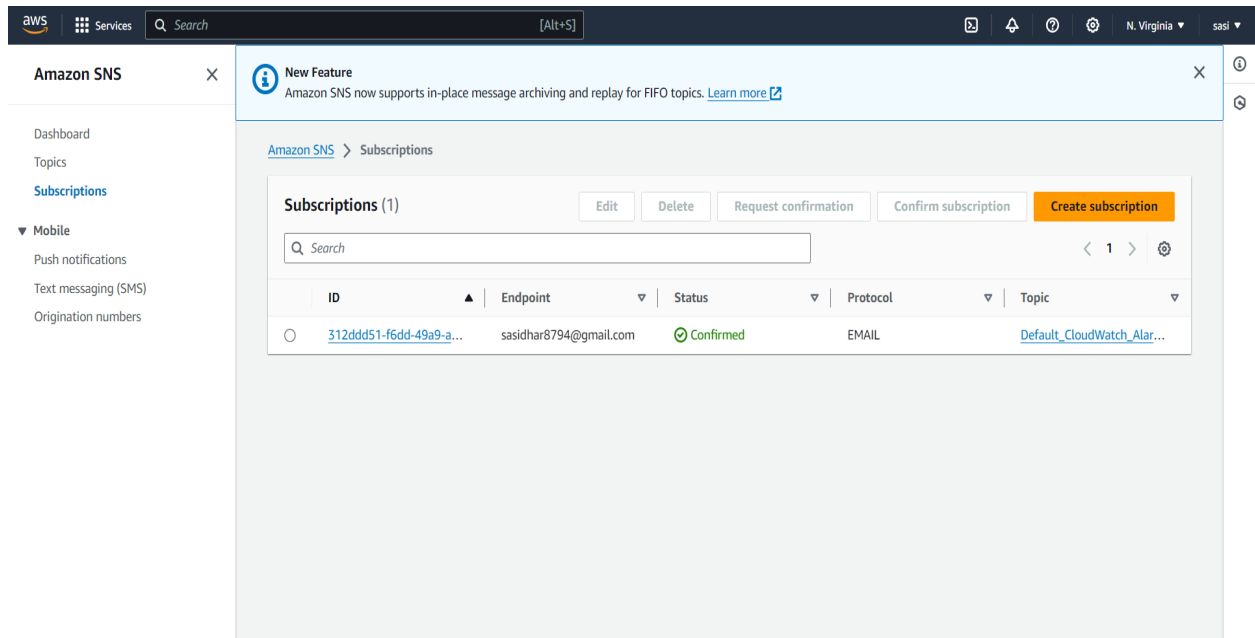
Cancel

Previous

Next







And before we have to create one app for patience records and security etc  
After doing the above steps it will go for testing.