

Module 8: CloudFormation
Assignment - 3

Assignment Submitted By:-Hitesh Chauhan

Course Offered: -Advanced Cloud Computing and Devops

Assignment By: -Intellipaat

Trainer: -Puneet Gavri

Date Of Submission: -11/11/2024

Problem Statement:

You work for XYZ Corporation. Your team is asked to deploy similar architecture multiple times for testing, development, and production purposes.

Implement CloudFormation for the tasks assigned to you below.

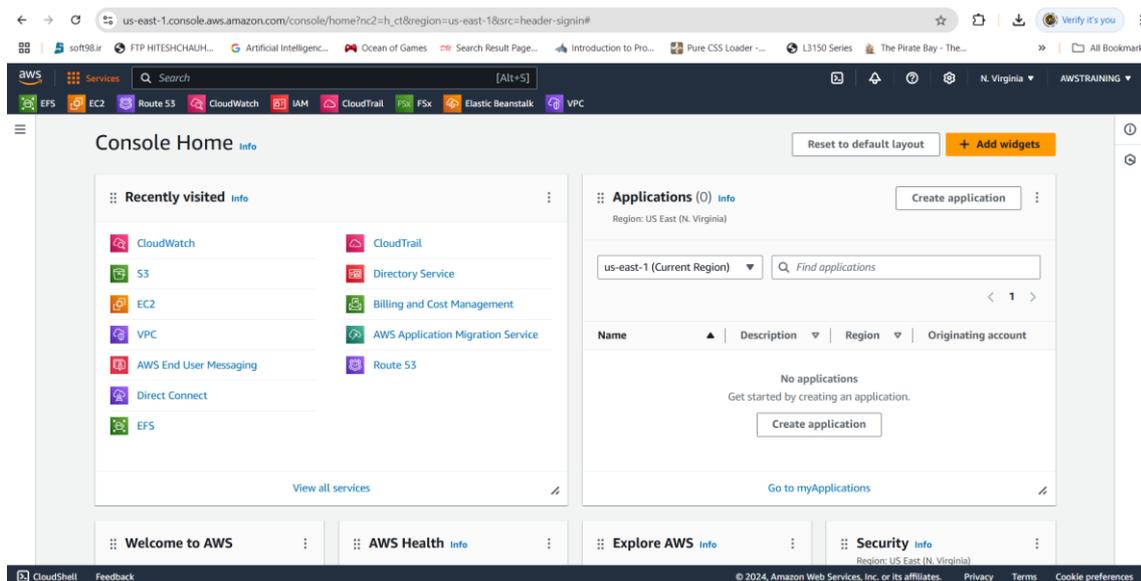
Tasks To Be Performed:

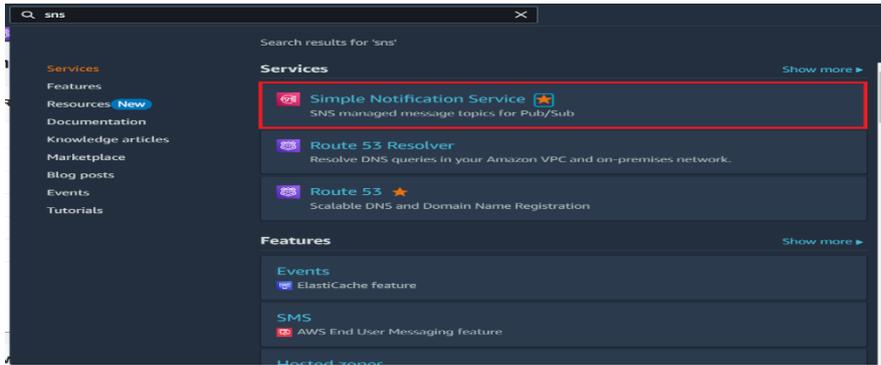
1. Use the template from CloudFormation task 1.
2. Add Notification to the CloudFormation stack using SNS so that you get a notification via mail for every step of the stack creation process.

ANSWER:

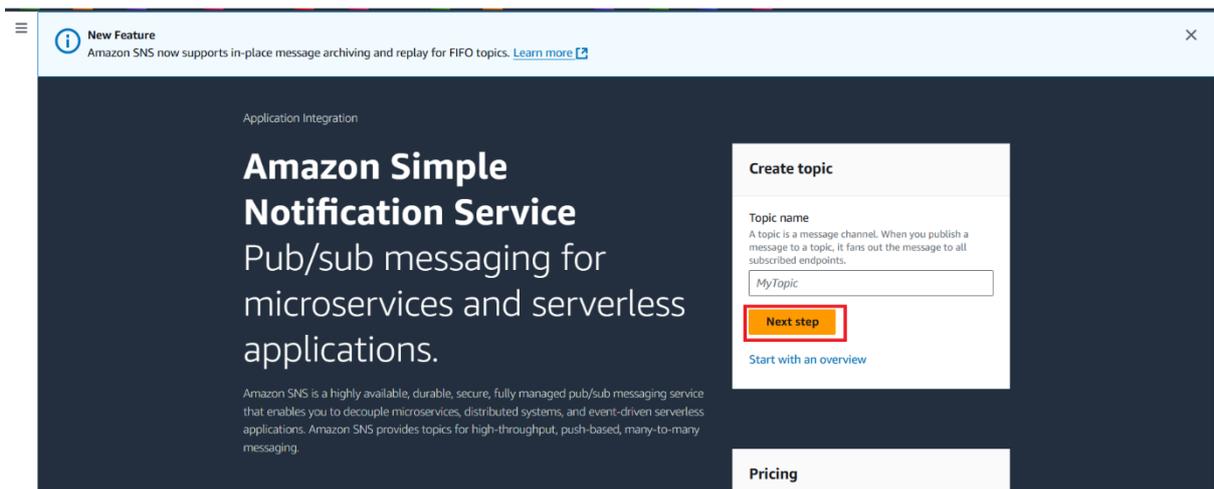
1. Use the template from CloudFormation task 1.

Login to AWS Management Console then Search SNS.you will see the Simple Notification Service and click the Simple Notification Service.





Then Open This Page



Create Topic>Next Step

Then You will See this Option to create the Topic.

Create Topic And There is two type

1.FIFO(First In First Out)

2.Standard

In my case I choose STANDARD.

In This Topic Name Will be **HiteshSNS**

Create topic

Details

Type [Info](#)

Topic type cannot be modified after topic is created

FIFO (first-in, first-out)

- Strictly-preserved message ordering
- Exactly-once message delivery
- High throughput, up to 300 publishes/second
- Subscription protocols: SQS

Standard

- Best-effort message ordering
- At-least once message delivery
- Highest throughput in publishes/second
- Subscription protocols: SQS, Lambda, HTTP, SMS, email, mobile application endpoints

Name

HiteshSNS

Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).

Display name - optional [Info](#)

To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message.

From SNS]

Maximum 100 characters.

There is nothing will be and click create topic.

▶ Access policy - optional [Info](#)

This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.

▶ Archive policy - new, optional [Info](#)

This policy tells Amazon SNS how long to store your messages so that they can be resent to a subscription. By default, Amazon SNS does not retain your messages.

▶ Delivery status logging - optional [Info](#)

These settings configure the logging of message delivery status to CloudWatch Logs.

▶ Tags - optional

A tag is a metadata label that you can assign to an Amazon SNS topic. Each tag consists of a key and an optional value. You can use tags to search and filter your topics and track your costs. [Learn more](#)

▶ Active tracing - optional [Info](#)

Use AWS X-Ray active tracing for this topic to view its traces and service map in Amazon CloudWatch. Additional costs apply.

Cancel

Create topic

After Create the topic you will see the Details of topic like

Name:-HiteshSNS

ARN:- arn:aws:sns:us-east-1:207567757353:HiteshSNS

Type:-Standard

Topic Owner:-20757757353.

Details

Name HiteshSNS	Display name -
ARN arn:aws:sns:us-east-1:207567757353:HiteshSNS	Topic owner 207567757353
Type Standard	

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

Subscriptions (0) Edit Delete Request confirmation Confirm subscription **Create subscription**

Q Search < 1 > ⚙

ID	Endpoint	Status	Protocol
<p>No subscriptions found</p> <p>You don't have any subscriptions to this topic.</p> <p>Create subscription</p>			

Then You will below This is the other section of sns.

You will see Many more options like

Subscriptions, Access Policy,Archive Policy, Delivery Status Logging,Encrytion,Tags And Integration.

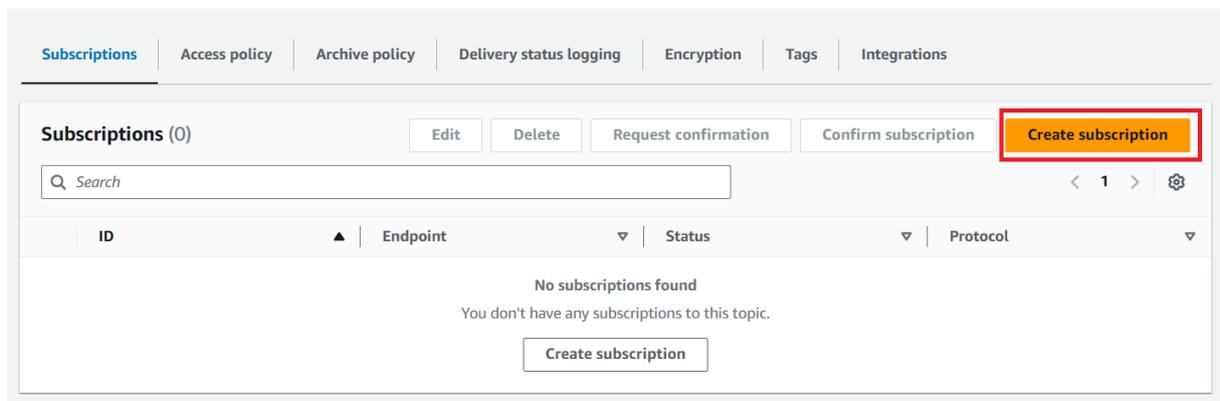
Subscriptions | Access policy | Archive policy | Delivery status logging | Encryption | Tags | Integrations

Subscriptions (0) Edit Delete Request confirmation Confirm subscription **Create subscription**

Q Search < 1 > ⚙

ID	Endpoint	Status	Protocol
<p>No subscriptions found</p> <p>You don't have any subscriptions to this topic.</p> <p>Create subscription</p>			

We need To Choose As per task **Create Subscription** Option.



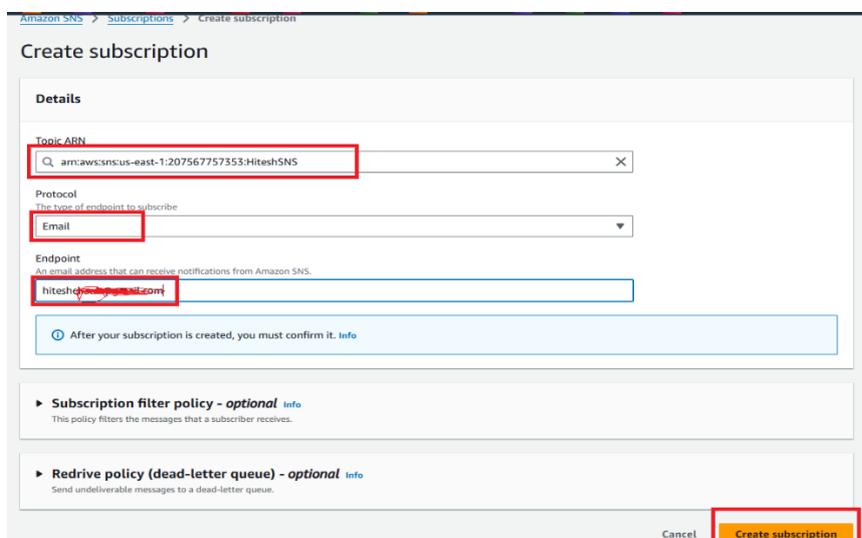
After Create Subscription.

The Topic ARN: `arn:aws:sns:us-east-1:207567757353:HiteshSNS`

Protocol Will Be Used: Email

Endpoint will be: my email id.

Then Confirm Subscription



After The Create The Subscription You will be subscribed the SNS topics.

SNS Subscription will be send notification to given email then you will see the Pending Confirmation from sender email id.

In my case sender is me so I used to subscribed the SNS from email notification.

Subscription to HiteshSNS created successfully.
The ARN of the subscription is arn:aws:sns:us-east-1:207567757353:HiteshSNS:4559d3db-1418-48ec-b07d-959f6bf2bd51.

Amazon SNS > Topics > HiteshSNS > Subscription: 4559d3db-1418-48ec-b07d-959f6bf2bd51

Subscription: 4559d3db-1418-48ec-b07d-959f6bf2bd51

Edit Delete

Details

ARN arn:aws:sns:us-east-1:207567757353:HiteshSNS:4559d3db-1418-48ec-b07d-959f6bf2bd51	Status Pending confirmation
Endpoint hit[REDACTED]	Protocol EMAIL
Topic HiteshSNS	
Subscription Principal arn:aws:iam::207567757353:root	

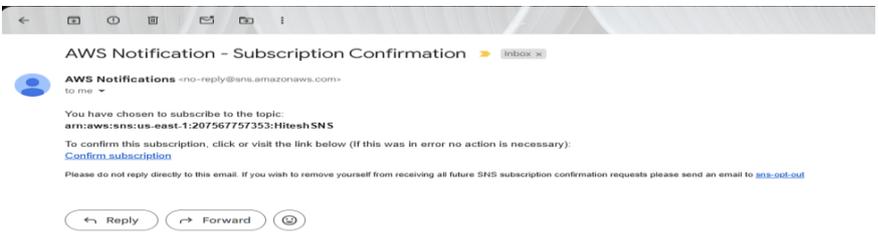
Amazon SNS > Subscriptions

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

Search

ID	Endpoint	Status	Protocol	Topic
Pending confirmation	hit[REDACTED]	Pending confirmation	EMAIL	HiteshSNS

This is SNS Push Notification to My Email id and subscribed this sns service.



This is Subscription confirmed by me.



Simple Notification Service

Subscription confirmed!

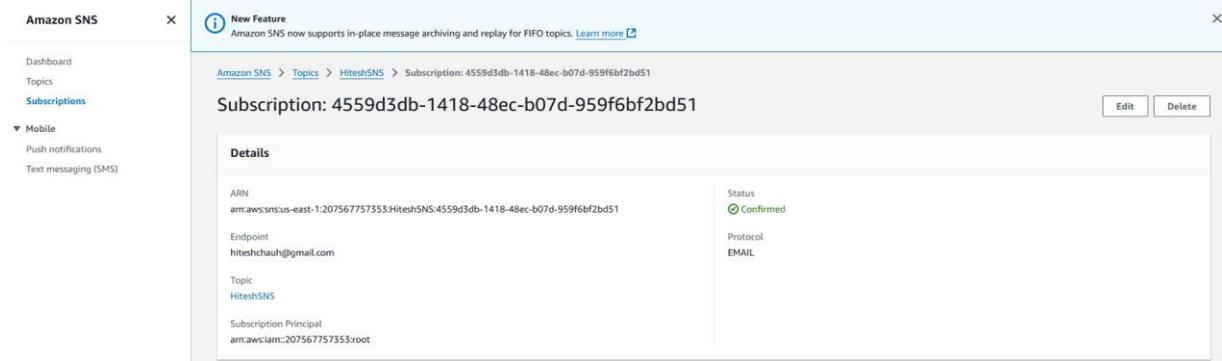
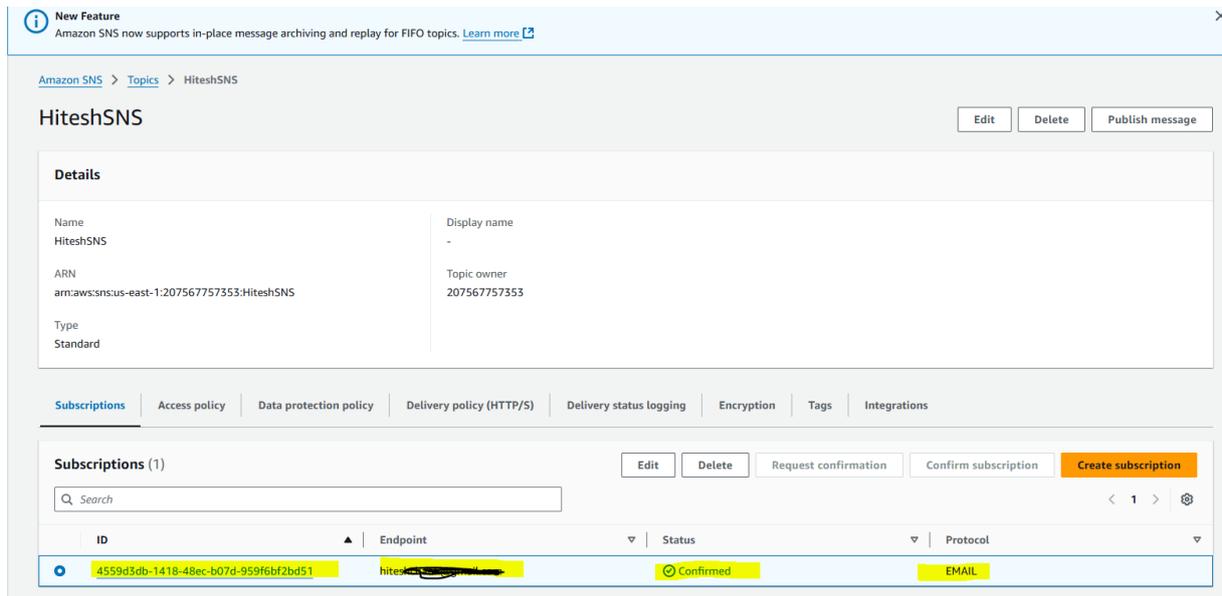
You have successfully subscribed.

Your subscription's id is:
arn:aws:sns:us-east-1:207567757353:HiteshSNS:4559d3db-1418-48ec-b07d-959f6bf2bd51

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

After Subscription Confirmed you will see in sns.

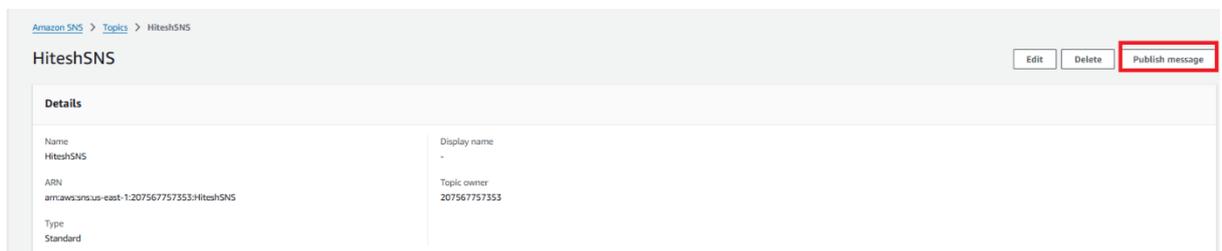
In Subscription Section you will there is ID generated,endpoint means my email id,status has been confirmed and protocol is email.



After Confirmed The SNS Subscription,you go to Amazon SNS Then Click Topics And Click HiteshSNS

Note:-This SNS Created my me.when you created SNS So you will be Your SNS.

After Click The HiteshSNS,Click Publish Message.



After Click the Publish Message You will see like this screen and Go to Subject.

In my case Subject is **Hi This is Test Message For SNS.**

Time To Live(TTL) will be 1.

In Message Body Section You will see there is two options

1.Message Structure and 2.Custom Payload for each delivery protocol

In My Case I choose Message Structure and message body to send to the endpoint means my email id

So my message is Hi This is Test Message For SNS.After Send the Publish Message.

Amazon SNS > Topics > HiteshSNS > Publish message

Publish message to topic

Message details

Topic ARN
arn:aws:sns:us-east-1:207567757353:HiteshSNS

Subject - *optional*

Hi This is Test Message For SNS

Time to Live (TTL) - *optional* | [Info](#)
This setting applies only to mobile application endpoints. The number of seconds that the push notification service has to deliver the message to the endpoint.

1

Message body

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

Hi This is Test Message For SNS

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 ▼	Enter attribute name	value or ["value1", "value2"]	Remove

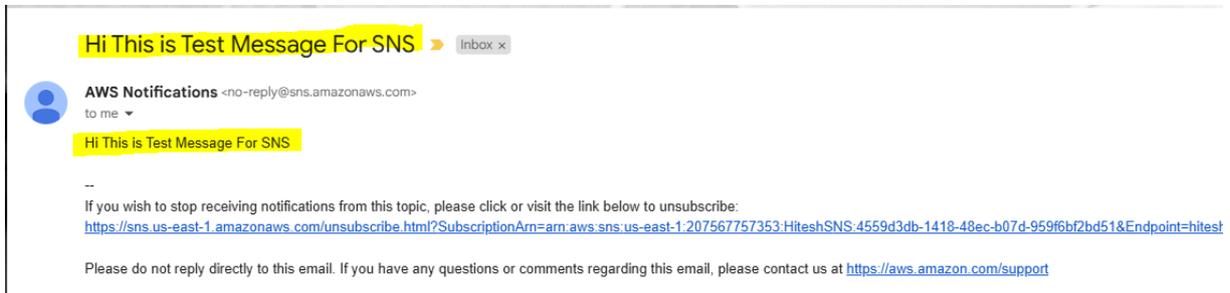
Add another attribute

Cancel **Publish message**

After Send the message will be notification given by sns.

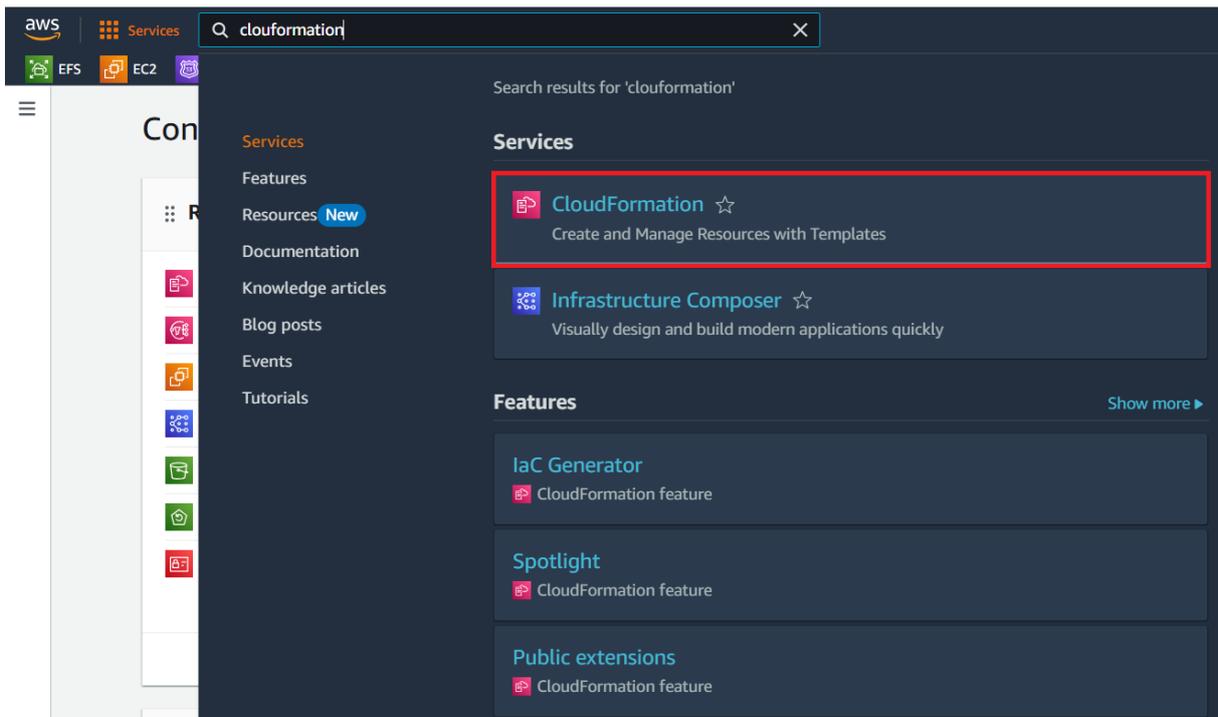


Then You have received one mail of the same subject as we have set in message detail.



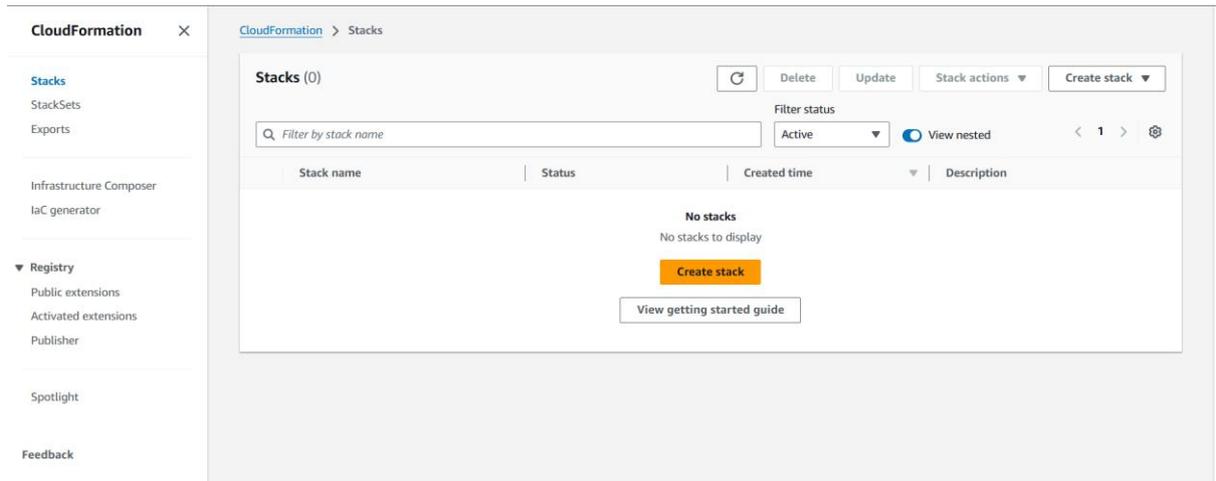
2. Add Notification to the CloudFormation stack using SNS so that you get a notification via mail for every step of the stack creation process.

Go to Aws Dashboard And Search the CloudFormation Service.

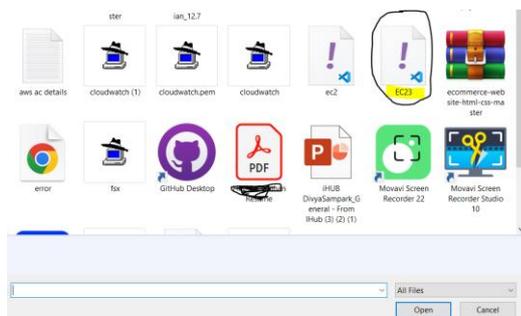
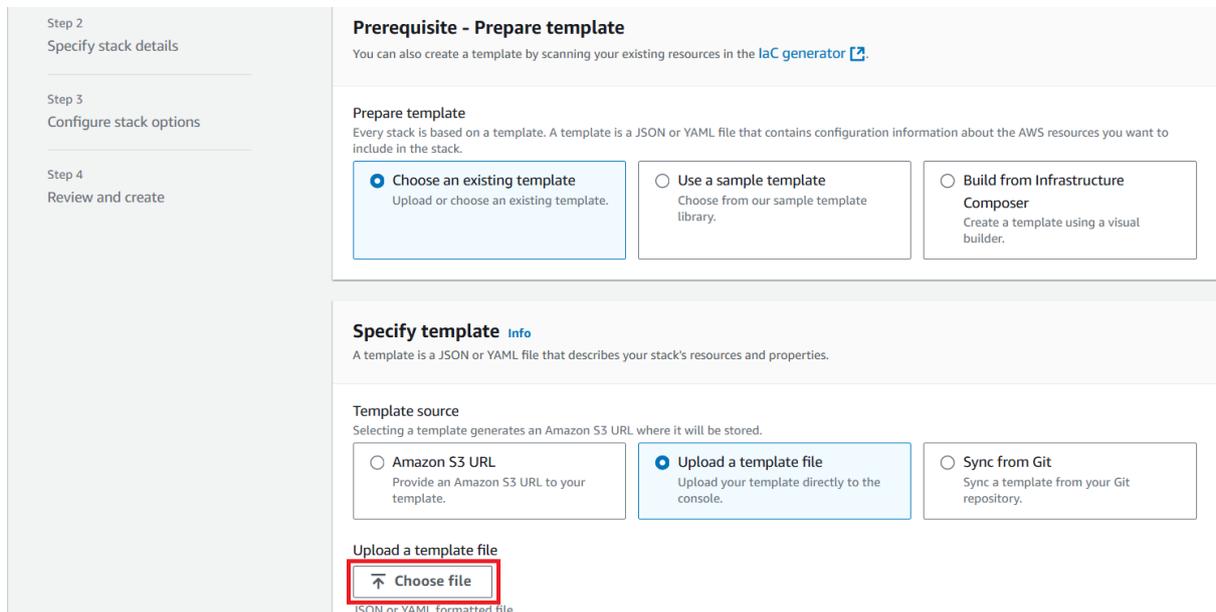


After Open the CloudFormation Service open like this.

After Open the ClouFormation,Click Create Stack.



In This Case Choose an Existing Template the Click Upload a template file.



I have Uploaded the templates in cloudformation.

Upload a template file

EC23.YAML

JSON or YAML formatted file

S3 URL: <https://s3.us-east-1.amazonaws.com/cf-templates-2jwhgbwpj8cw-us-east-1/2024-11-11T171237.831Zlv4-EC23.YAML>

Uploaded the template in .YAML format.

Upload a template file

EC23.YAML

JSON or YAML formatted file

S3 URL: <https://s3.us-east-1.amazonaws.com/cf-templates-2jwhgbwpj8cw-us-east-1/2024-11-11T171237.831Zlv4-EC23.YAML>

Provided the stack name.

CloudFormation > Stacks > Create stack

Step 1
[Create stack](#)

Step 2
Specify stack details

Step 3
[Configure stack options](#)

Step 4
[Review and create](#)

Specify stack details

Provide a stack name

Stack name

ec2

Stack name must be 1 to 128 characters, start with a letter, and only contain alphanumeric characters. Character count: 3/128.

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

EC2InstanceType
Select Instance Type

t2.micro

CloudFormation > Stacks > Create stack

Step 1
[Create stack](#)

Step 2
[Specify stack details](#)

Step 3
Configure stack options

Step 4
Review and create

Configure stack options

Tags - optional

Tags (key-value pairs) are used to apply metadata to AWS resources, which can help in organizing, identifying, and categorizing those resources. You can add up to 50 unique tags for each stack.

No tags associated with the stack.

[Add new tag](#)

You can add 50 more tag(s)

Permissions - optional

Specify an existing AWS Identity and Access Management (IAM) service role that CloudFormation can assume.

IAM role - optional

Choose the IAM role for CloudFormation to use for all operations performed on the stack.

[Remove](#)

[↻](#)

Stack failure options

Behavior on provisioning failure

Specify the roll back behavior for a stack failure. [Learn more](#)

- Roll back all stack resources**
Roll back the stack to the last known stable state.
- Preserve successfully provisioned resources**
Preserves the state of successfully provisioned resources, while rolling back failed resources to the last known stable state. Resources without a last known stable state will be deleted upon the next stack operation.

Delete newly created resources during a rollback

Specify whether resources that were created during a failed operation should be deleted regardless of their deletion policy. [Learn more](#)

- Use deletion policy**
Retains or deletes created resources according to their attached deletion policy.
- Delete all newly created resources**
Deletes created resources during a rollback regardless of their attached deletion policy.

In Advanced Option, there is 4 options

1. Stack Policy (Optional)

2. Rollback Configuration (Optional)

3. Notification option (Optional)

4. Stack Creation option (Optional)

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

- ▶ **Stack policy - optional**
Defines the resources that you want to protect from unintentional updates during a stack update.
- ▶ **Rollback configuration - optional**
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 - optional**
Specify a new or existing Amazon Simple Notification Service topic where notifications about stack events are sent.
- ▶ **Stack creation options - optional**
Specify the timeout and termination protection options for stack creation.

Cancel Previous **Next**

I Choose Notification Options

Then After Dropped the Notification option You Will see like this.

▼ **Notification options - optional**
Specify a new or existing Amazon Simple Notification Service topic where notifications about stack events are sent.

SNS topic ARN - optional

Add SNS topic

Create new SNS topic

In Notification Option.I Chosed SNS Topic ARN before I created in SNS Service.

Select this SNS Topic.

▼ **Notification options - optional**
Specify a new or existing Amazon Simple Notification Service topic where notifications about stack events are sent.

SNS topic ARN - optional

arn:aws:sns:us-east-1:207567757353:HiteshSNS

Add SNS topic

Create new SNS topic

After Select the SNS Topic,Click Next.

▶ **Stack creation options - optional**
Specify the timeout and termination protection options for stack creation.

Cancel Previous **Next**

Then Review and create

[CloudFormation](#) > [Stacks](#) > Create stack

Step 1
[Create stack](#)

Step 2
[Specify stack details](#)

Step 3
[Configure stack options](#)

Step 4
Review and create

Review and create

Step 1: Specify template Edit

Prerequisite - Prepare template

Template
Template is ready

Template

Template URL
`https://s3.us-east-1.amazonaws.com/cf-templates-2jwhgbwpj8cw-us-east-1/2024-11-11T171237.831Zlv4-EC23.YAML`

Stack description
-

Step 2: Specify stack details Edit

Provide a stack name

Stack name
ec2

Parameters (1)

< 1 > ⚙️

Key	Value
EC2InstanceType	t2.micro

Step 3: Configure stack options Edit

Tags

< 1 >

Key	Value
No tags	
There are no tags defined for this stack	

Permissions

No permissions

There is no IAM role associated with this stack

Stack failure options

Rollback on failure
Activated

Delete newly created resources during a rollback
Deactivated

Stack policy

No stack policy
There is no stack policy defined

Then You will selected your sns topic.

Rollback configuration

Monitoring time
-

CloudWatch alarm ARN
-

Notification options

SNS topic ARN
arn:aws:sns:us-east-1:207567757353:HiteshSNS

Stack creation options

Timeout
-

Termination protection
Deactivated

Quick-create link

Use quick-create links to get stacks up and running quickly from the AWS CloudFormation console with the same basic configuration as this stack. Copy the URL on the link to share. [Learn more](#)

Then Click Submit.

After Click The Submit Cloud Formation has started creating the resources as per template.

The screenshot shows the AWS CloudFormation console for a stack named 'ec2'. On the left, a sidebar shows the 'Stacks (1)' list with 'ec2' selected, indicating its status as 'CREATE_IN_PROGRESS'. The main panel shows the 'Events (1)' tab, with a table containing one event:

Timestamp	Logical ID	Status	Detailed status
2024-11-11 22:48:49 UTC+0530	ec2	CREATE_IN_PROGRESS	-

When Resources is created you will be notified by email.

AWS CloudFormation Notification Inbox x

AWS Notifications <no-reply@sns.amazonaws.com>
to me

StackId=arn:aws:cloudformation:us-east-1:207567757353:stack/ws/702be480-a04f-11ef-a030-125402017eaf
Timestamp=2024-11-11T17:07:31.760Z
EventId=702e5580-a04f-11ef-a030-125402017eaf
LogicalResourceId=ws
Namespace=207567757353
PhysicalResourceId=arn:aws:cloudformation:us-east-1:207567757353:stack/ws/702be480-a04f-11ef-a030-125402017eaf
PrincipalId=207567757353
ResourceProperties=null
ResourceStatus=CREATE_IN_PROGRESS
ResourceStatusReason=User Initiated
DetailedStatus=
ResourceType=AWS::CloudFormation::Stack
StackName=ws
ClientRequestToken=Console-CreateStack-dfbf636d-95b9-bd72-18a4-ee7dc9a25518

--

If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:
<https://sns.us-east-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-east-1:207567757353:HiteshSNS:4559d3db-1418-48ec-b07d-959f6b2bd518&Endpoint=hiteshchauh@gmail.com>

AWS Notifications <no-reply@sns.amazonaws.com> 10:37 PM (0 minutes ago) ☆ 🔍 ↶ ⋮

to me

StackId=arn:aws:cloudformation:us-east-1:207567757353:stack/ws/702be480-a04f-11ef-a030-125402017eaf
Timestamp=2024-11-11T17:07:34.330Z
EventId=myInstance-CREATE_IN_PROGRESS-2024-11-11T17:07:34.320Z
LogicalResourceId=myInstance
Namespace=207567757353
ResourceProperties={"KeyName":"cloudwatch logs","UserData":"eXVhVWZGF0ZSAtaSBzZXJ2aWNIIGh0dHBkIHNOYXJ0IGNoa2NvbmlZpZyBodHRwZCBybG9m","ImageId":"ami-063443db0594b521","InstanceType":"t2.micro","SecurityGroups":["sg-029680e590dac0c6a"]}
ResourceStatus=CREATE_IN_PROGRESS
ResourceStatusReason=
DetailedStatus=
ResourceType=AWS::EC2::Instance

AWS Notifications <no-reply@sns.amazonaws.com> 10:37 PM (0 minutes ago) ☆ 🔍 ↶ ⋮

to me

StackId=arn:aws:cloudformation:us-east-1:207567757353:stack/ws/702be480-a04f-11ef-a030-125402017eaf
Timestamp=2024-11-11T17:07:34.303Z
EventId=newmyInstance-CREATE_IN_PROGRESS-2024-11-11T17:07:34.303Z
LogicalResourceId=newmyInstance
Namespace=207567757353
ResourceProperties={"KeyName":"cloudwatch logs","UserData":"c3Vkb3h0dGZlZV9hVWZGF0ZSAtaSBzZXJ2aWNIIGh0dHBkIHNOYXJ0IGNoa2NvbmlZpZyBodHRwZCBybG9m","ImageId":"ami-0866a3c8686eaeaba","InstanceType":"t2.micro","SecurityGroups":["sg-029680e590dac0c6a"]}

AWS Notifications <no-reply@sns.amazonaws.com> 10:37 PM (0 minutes ago) ☆ 🔍 ↶ ⋮

to me

StackId=arn:aws:cloudformation:us-east-1:207567757353:stack/ws/702be480-a04f-11ef-a030-125402017eaf
Timestamp=2024-11-11T17:07:35.454Z
EventId=myInstance-CREATE_FAILED-2024-11-11T17:07:35.454Z
LogicalResourceId=myInstance
Namespace=207567757353
ResourceProperties={"KeyName":"cloudwatch logs","UserData":"eXVhVWZGF0ZSAtaSBzZXJ2aWNIIGh0dHBkIHNOYXJ0IGNoa2NvbmlZpZyBodHRwZCBybG9m","ImageId":"ami-063443db0594b521","InstanceType":"t2.micro","SecurityGroups":["sg-029680e590dac0c6a"]}
ResourceStatus=CREATE_FAILED
ResourceStatusReason=Resource handler returned message: "Invalid id "ami-063443db0594b521" (expecting "ami-...") (Service: Ec2, Status Code: 400, Request ID: 346e97db-907e-48ca-a261-5b1c443c3cd)" (RequestToken: 05876b99-a453-9da-2250-a51dbab67abd, HandlerErrorCode: InvalidRequest)

AWS Notifications <no-reply@sns.amazonaws.com> 10:37 PM (0 minutes ago) ☆ 🔍 ↶ ⋮

to me

StackId=arn:aws:cloudformation:us-east-1:207567757353:stack/ws/702be480-a04f-11ef-a030-125402017eaf
Timestamp=2024-11-11T17:07:35.617Z
EventId=newmyInstance-CREATE_FAILED-2024-11-11T17:07:35.617Z
LogicalResourceId=newmyInstance
Namespace=207567757353
ResourceProperties={"KeyName":"cloudwatch logs","UserData":"c3Vkb3h0dGZlZV9hVWZGF0ZSAtaSBzZXJ2aWNIIGh0dHBkIHNOYXJ0IGNoa2NvbmlZpZyBodHRwZCBybG9m","ImageId":"ami-0866a3c8686eaeaba","InstanceType":"t2.micro","SecurityGroups":["sg-029680e590dac0c6a"]}
ResourceStatus=CREATE_FAILED
ResourceStatusReason=Resource handler returned message: "The security group "sg-029680e590dac0c6a" does not exist in VPC "vpc-0ca4b13727b758cb" (Service: Ec2, Status Code: 400, Request ID: 035ccaca-25aa-4a93-8265-d76922822df)" (RequestToken: 14443d16-3dfe-8ec4-2d81-873356ba8405, HandlerErrorCode: InvalidRequest)