

AWS PROJECT3

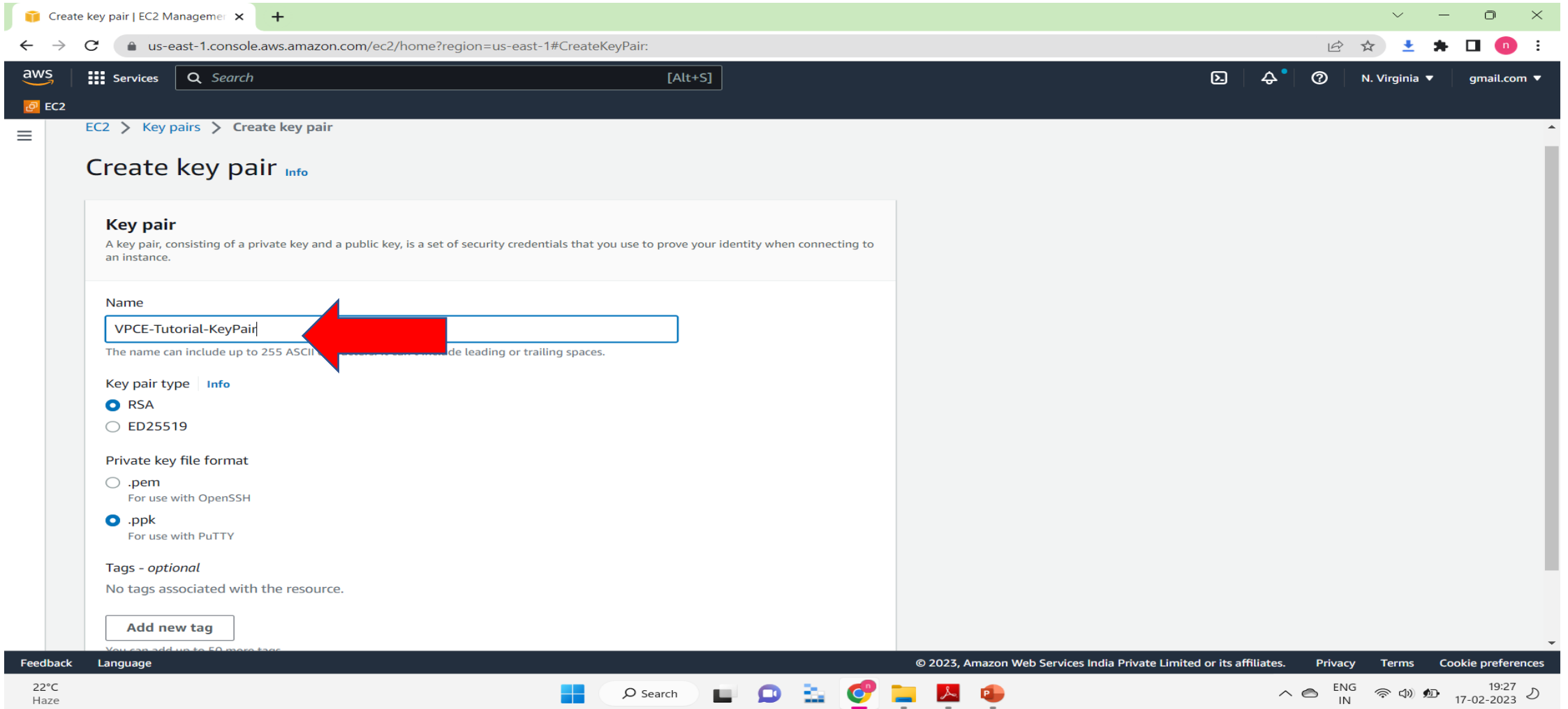
NAME: NIVEDITA PATHAK

COURSE: MASTER'S IN DEVOPS ARCHITECT

Project 3 – Publishing Amazon SNS Messages Privately

- **Project:** Publishing Amazon SNS messages privately
- **Industry:** Healthcare
- **Problem Statement:** How to secure patient records online and send it privately to the intended party
- **Topics:** In this project, you will be working on a hospital project to send reports online and develop a platform so the patients can access the reports via mobile and push notifications. You will publish the report to an Amazon SNS which keeping it secure and private. Your message will be hosted on an EC2 instance within your Amazon VPC. By publishing the messages privately, you can improve the message delivery and receipt through Amazon SNS

1.went to create key pair



The screenshot shows the AWS Management Console interface for creating a key pair. The browser address bar shows the URL: `us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateKeyPair:`. The console header includes the AWS logo, 'Services' menu, a search bar, and the current region 'N. Virginia' and user 'gmail.com'.

The breadcrumb navigation shows: `EC2 > Key pairs > Create key pair`. The main heading is 'Create key pair' with an 'Info' link.

Key pair
A key pair, consisting of a private key and a public key, is a set of security credentials that you use to prove your identity when connecting to an instance.

Name
The name can include up to 255 ASCII characters. It cannot contain leading or trailing spaces.

Key pair type | Info
☒ RSA
☐ ED25519

Private key file format
☐ .pem
For use with OpenSSH
☒ .ppk
For use with PuTTY

Tags - optional
No tags associated with the resource.
Add new tag

The footer of the console shows 'Feedback', 'Language', and copyright information: '© 2023, Amazon Web Services India Private Limited or its affiliates.' It also includes links for 'Privacy', 'Terms', and 'Cookie preferences'. The system tray at the bottom shows the date and time: '17-02-2023 19:27'.

created key-pair

Key pairs | EC2 Management Console

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#KeyPairs:v=3

aws Services Search [Alt+S]

EC2

New EC2 Experience Tell us what you think

EC2 Dashboard
EC2 Global View
Events
Tags
Limits

Instances

Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Scheduled Instances
Capacity Reservations

Images

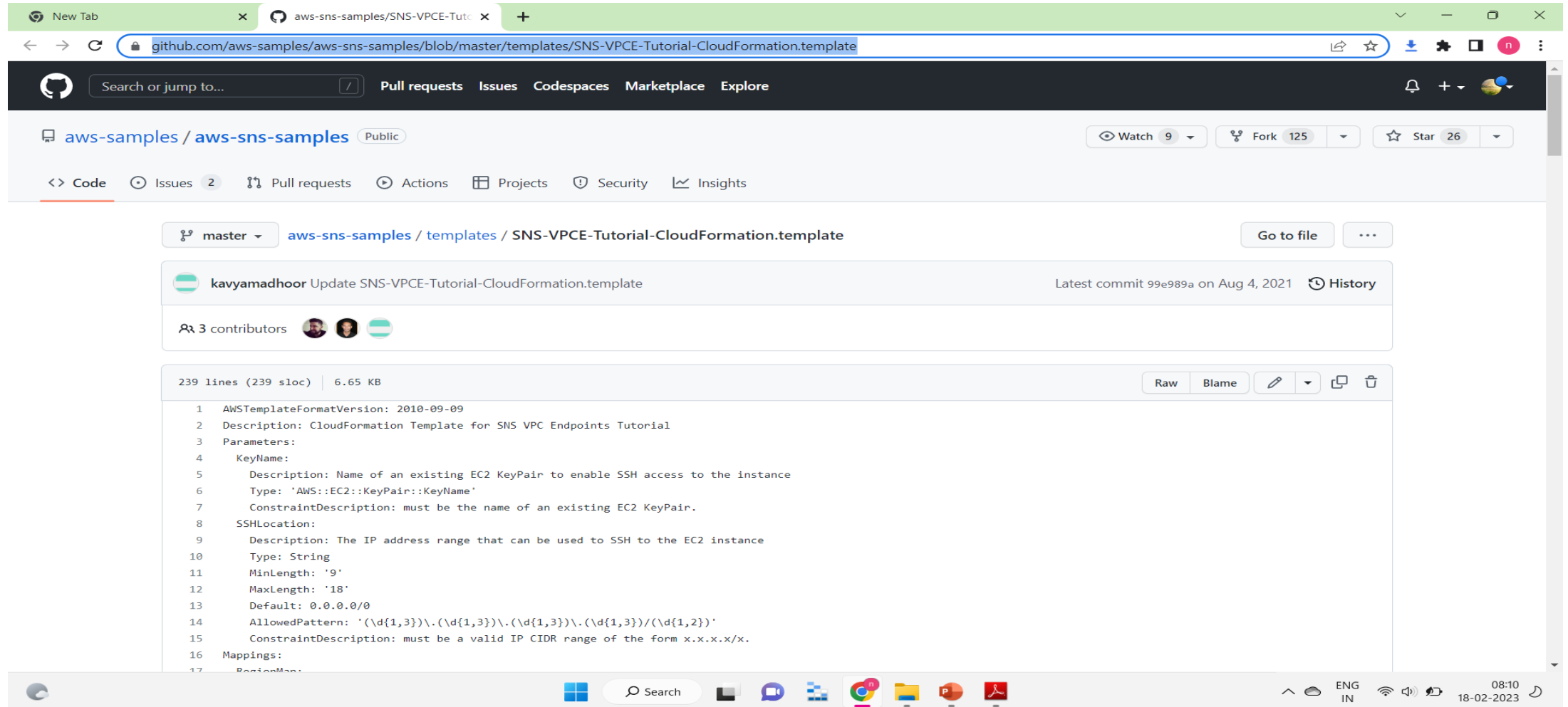
Key pairs (1/41) Info

Search

Actions Create key pair

	Name	Type	Created	Fingerprint	ID
<input type="checkbox"/>	ubuntu-ansible	rsa	2022/10/27 17:28 GMT+5:30	97:04:3c:7b:a0:c9:ec:00:26:0f:dd:c1:71:f...	key-03f50db0779422bd4
<input type="checkbox"/>	new-ubuntu-ansi	rsa	2022/10/27 19:03 GMT+5:30	d9:bd:76:f8:87:d8:14:58:92:12:2a:14:13...	key-03a42b3cdc8e6d2b4
<input type="checkbox"/>	migration-key	rsa	2022/10/28 07:20 GMT+5:30	a6:f9:15:c9:4e:79:9c:99:12:b1:c2:f7:ec:0...	key-0f3db3114f826cb7a
<input type="checkbox"/>	jenkins	rsa	2022/11/04 12:36 GMT+5:30	53:92:15:4c:86:1b:27:af:b2:65:11:f0:da:...	key-0a44895505d0afce4
<input type="checkbox"/>	jenkins assignment	rsa	2022/11/07 11:57 GMT+5:30	ef:a3:a9:54:f2:d9:be:23:f9:5e:cd:e4:13:ff...	key-0d774c036e3304541
<input type="checkbox"/>	kubernetes	rsa	2022/11/08 13:27 GMT+5:30	bb:58:45:c7:d2:f5:df:b6:f1:32:3f:70:39:4...	key-0980c9b931386a7aa
<input type="checkbox"/>	linuxnew1	rsa	2022/11/18 13:27 GMT+5:30	24:12:6c:ab:ec:0c:17:8e:ff:49:ac:94:cf:f3...	key-085d3dada3a5100e7
<input type="checkbox"/>	redehat	rsa	2022/11/18 13:26 GMT+5:30	cb:fb:43:42:0d:8b:63:0a:72:6a:f5:f6:23:...	key-0b2de62027df9fe93
<input type="checkbox"/>	lin29nov	rsa	2022/11/29 14:53 GMT+5:30	04:50:5b:aa:36:2d:ad:fa:c4:78:cf:91:32:c...	key-0e6deaa14bc38f143
<input type="checkbox"/>	ubu21	rsa	2022/12/17 08:50 GMT+5:30	b7:25:3a:2a:78:a7:90:e1:fa:3c:61:25:8c:...	key-0d912811d2800ed93
<input type="checkbox"/>	win1	rsa	2022/12/25 12:57 GMT+5:30	35:00:69:64:37:34:23:5e:73:75:6e:5e:22...	key-026ad66ed2e749267
<input type="checkbox"/>	ubuntu2023	rsa	2023/01/13 09:41 GMT+5:30	c4:8c:7e:05:aa:a1:0b:b5:ea:67:11:83:d0:...	key-0cf4d4c5c2792a10e
<input type="checkbox"/>	nagios key	rsa	2023/01/13 19:43 GMT+5:30	88:56:82:c0:bf:ee:3b:2e:3f:56:0c:42:c7:e...	key-0c1ccdefcbbd3e2ae
<input type="checkbox"/>	tf-key-pair	rsa	2023/02/01 11:58 GMT+5:30	b4:dd:08:b0:e6:d8:78:a4:f7:08:70:80:71...	key-0e2c18bb8ec95414f
<input type="checkbox"/>	tf-key-pair1	rsa	2023/02/01 12:19 GMT+5:30	ed:18:c5:2f:40:66:54:5d:70:ca:40:ca:6a:...	key-0e1ee9bb1056eba01
<input checked="" type="checkbox"/>	VPCE-Tutorial-KeyPair	rsa	2023/02/17 19:31 GMT+5:30	1d:d6:6f:26:d1:67:48:3b:92:35:40:68:9b...	key-01e9647ffa23f5752

step 2. went to github to download the template file



The screenshot shows a web browser window displaying the GitHub repository for `aws-sns-samples/SNS-VPCE-Tutorial-CloudFormation.template`. The browser's address bar shows the URL `github.com/aws-samples/aws-sns-samples/blob/master/templates/SNS-VPCE-Tutorial-CloudFormation.template`. The repository page includes a navigation bar with links for `Code`, `Issues` (2), `Pull requests`, `Actions`, `Projects`, `Security`, and `Insights`. The repository is owned by `aws-samples` and is public. It has 9 watchers, 125 forks, and 26 stars. The file `SNS-VPCE-Tutorial-CloudFormation.template` is selected, showing its commit history and contributors. The file content is displayed in a code editor, showing the CloudFormation template structure with parameters like `KeyName`, `SSHLocation`, and `Mappings`.

aws-samples / aws-sns-samples (Public)

Watch 9 Fork 125 Star 26

<> Code Issues 2 Pull requests Actions Projects Security Insights

master aws-sns-samples / templates / SNS-VPCE-Tutorial-CloudFormation.template Go to file ...

kavyamadhoor Update SNS-VPCE-Tutorial-CloudFormation.template Latest commit 99e989a on Aug 4, 2021 History

3 contributors

239 lines (239 sloc) 6.65 KB Raw Blame

```
1 AWSTemplateFormatVersion: 2010-09-09
2 Description: CloudFormation Template for SNS VPC Endpoints Tutorial
3 Parameters:
4   KeyName:
5     Description: Name of an existing EC2 KeyPair to enable SSH access to the instance
6     Type: 'AWS::EC2::KeyPair::KeyName'
7     ConstraintDescription: must be the name of an existing EC2 KeyPair.
8   SSHLocation:
9     Description: The IP address range that can be used to SSH to the EC2 instance
10    Type: String
11    MinLength: '9'
12    MaxLength: '18'
13    Default: 0.0.0.0/0
14    AllowedPattern: '(\d{1,3})\.(\d{1,3})\.(\d{1,3})\.(\d{1,3})/(\d{1,2})'
15    ConstraintDescription: must be a valid IP CIDR range of the form x.x.x.x/x.
16 Mappings:
17   RegionMap:
```

08:10 18-02-2023

Step3. went to create stack

The screenshot displays the AWS CloudFormation console interface. The browser address bar shows the URL `us-east-1.console.aws.amazon.com/cloudformation/home?region=us-east-1#/`. The left-hand navigation pane includes sections for CloudFormation (Stacks, StackSets, Exports, Designer), Registry (Public extensions, Activated extensions, Publisher), Spotlight, and Feedback. The main content area features a large heading "AWS CloudFormation" with the subtitle "Model and provision all your cloud infrastructure". Below this, a paragraph states: "AWS CloudFormation provides a common language to describe and provision all the infrastructure resources in your environment in a safe, repeatable way." A prominent orange button labeled "Create stack" is visible. To the right, a "Getting started" section lists links for "What is AWS CloudFormation", "Getting started with CloudFormation", "Learn template basics", and "Quick starts". At the bottom, a "More resources" section is partially visible. The footer of the console shows "© 2023, Amazon Web Services India Private Limited or its affiliates." along with links for Privacy, Terms, and Cookie preferences. The Windows taskbar at the very bottom indicates a temperature of 21°C, a "Haze" weather condition, and the date/time as 19:52 on 17-02-2023.

CloudFormation

aws-sns-samples/SNS-VPCE-Tut...

us-east-1.console.aws.amazon.com/cloudformation/home?region=us-east-1#/?

Services

Search [Alt+S]

EC2

CloudFormation

Stacks

StackSets

Exports

Designer

Registry

Public extensions

Activated extensions

Publisher

Spotlight

Feedback

Management & Governance

AWS CloudFormation

Model and provision all your cloud infrastructure

AWS CloudFormation provides a common language to describe and provision all the infrastructure resources in your environment in a safe, repeatable way.

Create a CloudFormation stack

Use your own template or a sample template to quickly get started.

Create stack

Getting started

What is AWS CloudFormation

Getting started with CloudFormation

Learn template basics

Quick starts

More resources

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21°C Haze

Search

19:52 17-02-2023

CloudFormation - Stack

aws-sns-samples/SNS-VPCE-Tut

+

us-east-1.console.aws.amazon.com/cloudformation/home?region=us-east-1#/stacks/create

aws

Services

Search

[Alt+S]

EC2

N. Virginia

gmail.com

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

Upload a template file

Choose file

stack.txt

JSON or YAML formatted file

S3 URL: https://s3.us-east-1.amazonaws.com/cf-templates-18nqajz58kgev-us-east-1/2023-02-17T142437.695Z4js-stack.txt

View in Designer

Cancel

Next

Feedback

Language

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Haze

Search

ENG
IN

19:54
17-02-2023

template option

template selected

CloudFormation - Stack

aws-sns-samples/SNS-VPCE-Tuto

us-east-1.console.aws.amazon.com/cloudformation/home?region=us-east-1#/stacks/create

Services

Search

[Alt+S]

EC2

N. Virginia

gmail.com

CloudFormation > Stacks > Create stack

Step 1

Create stack

Step 2

Specify stack details

Step 3

Configure stack options

Step 4

Review VPCE-Tutorial-Stack

Specify stack details

Stack name

Stack name

VPCE-Tutorial-Stack

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Parameters

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

KeyName

Name of an existing EC2 KeyPair to enable SSH access to the instance

VPCE-Tutorial-KeyPair

SSHLocation

The IP address range that can be used to SSH to the EC2 instance

0.0.0.0/0

key-pair selected

ssh-location

Cancel

Previous

Next

Feedback

Language

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Privacy

Terms

Cookie preferences

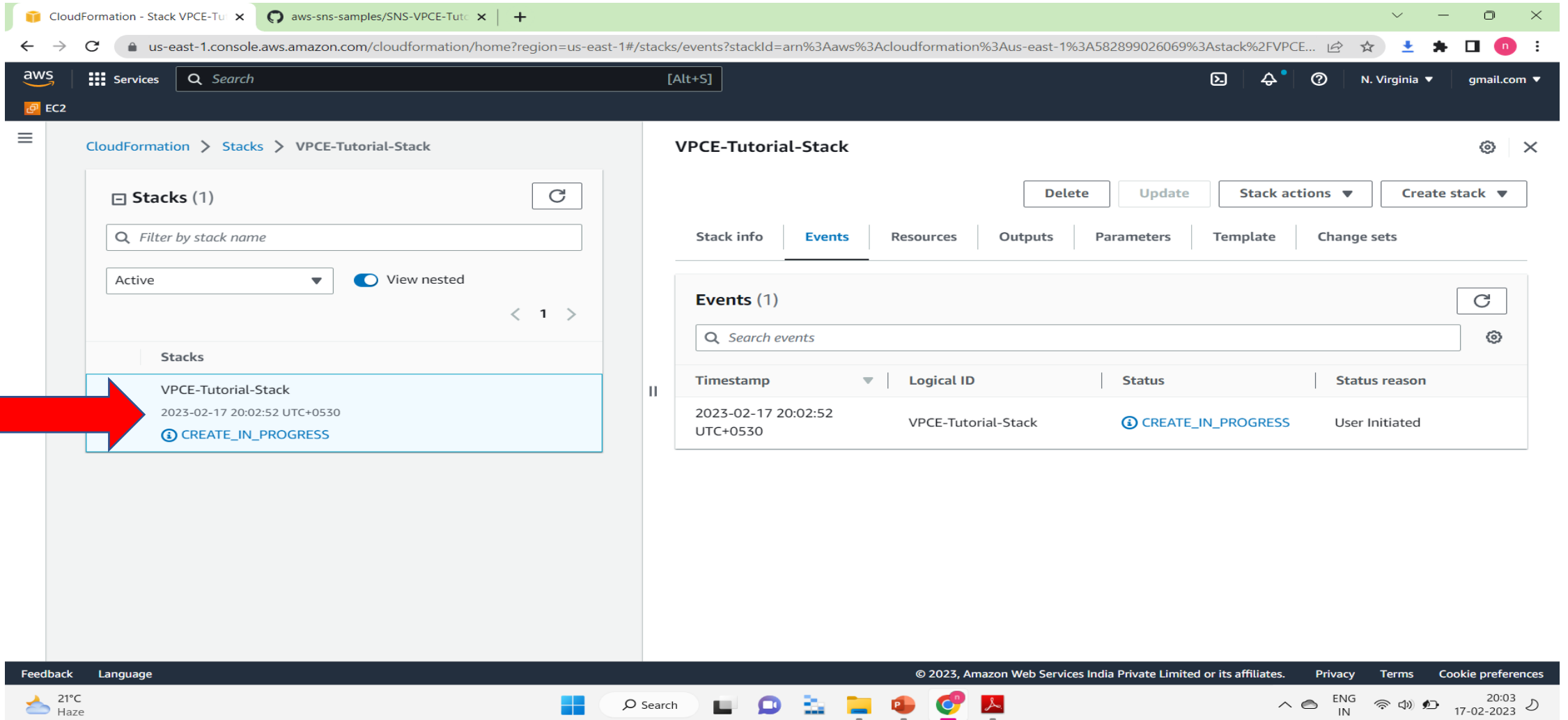
21°C Haze

Search

ENG IN

19:57 17-02-2023

stack creation in progress



The screenshot displays the AWS CloudFormation console interface. The browser address bar shows the URL: `us-east-1.console.aws.amazon.com/cloudformation/home?region=us-east-1#/stacks/events?stackId=arn%3Aaws%3Acloudformation%3Aus-east-1%3A582899026069%3Astack%2FVPCE...`. The console header includes the AWS logo, 'Services' menu, a search bar, and the region 'N. Virginia'.

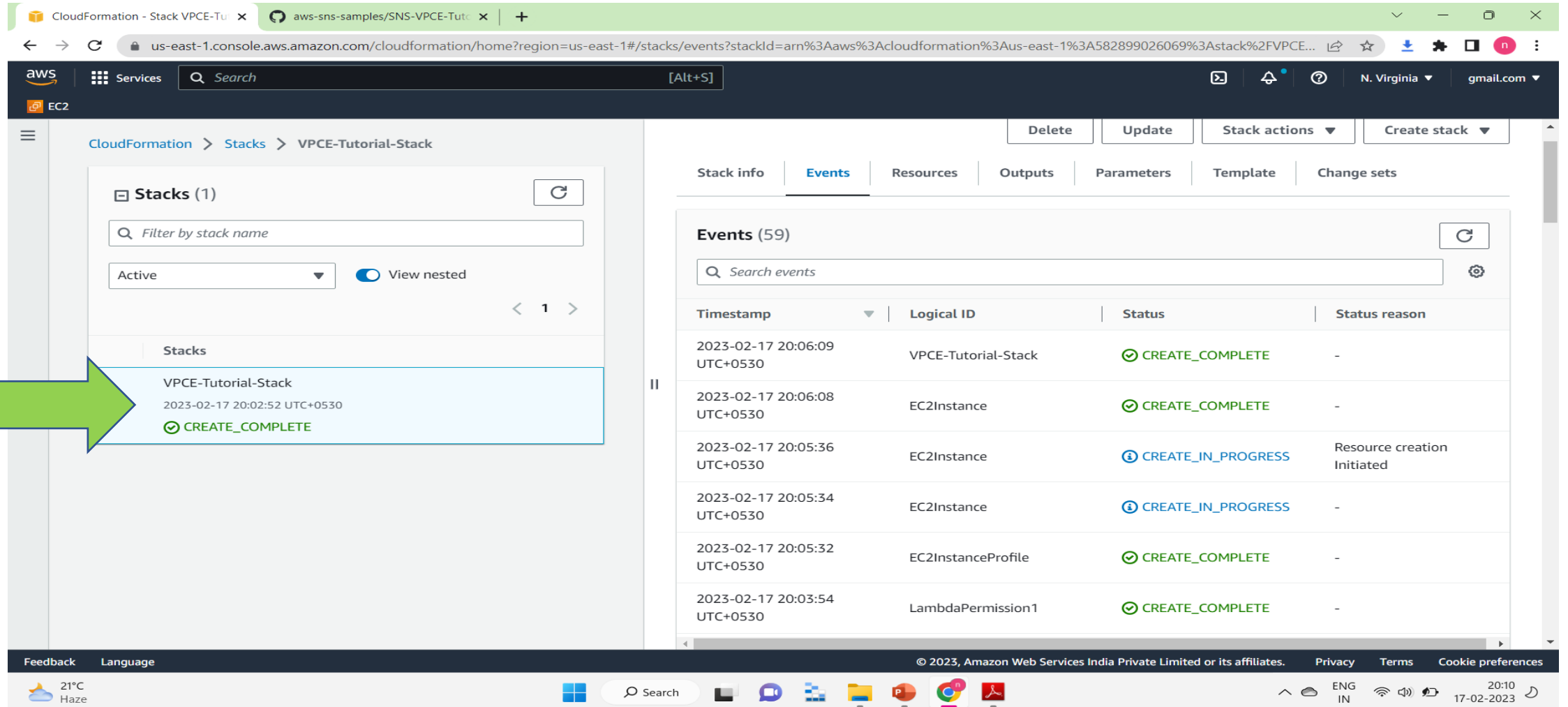
The left-hand navigation pane shows the breadcrumb 'CloudFormation > Stacks > VPCE-Tutorial-Stack'. Below this, a 'Stacks (1)' section contains a search bar and a filter dropdown set to 'Active'. A list of stacks is shown, with 'VPCE-Tutorial-Stack' highlighted. A large red arrow points to this stack, which has a timestamp of '2023-02-17 20:02:52 UTC+0530' and a status of 'CREATE_IN_PROGRESS'.

The main content area is titled 'VPCE-Tutorial-Stack' and features tabs for 'Stack info', 'Events', 'Resources', 'Outputs', 'Parameters', 'Template', and 'Change sets'. The 'Events' tab is selected, showing a table of events. The table has columns for 'Timestamp', 'Logical ID', 'Status', and 'Status reason'. One event is listed with the status 'CREATE_IN_PROGRESS' and the reason 'User Initiated'.

Timestamp	Logical ID	Status	Status reason
2023-02-17 20:02:52 UTC+0530	VPCE-Tutorial-Stack	CREATE_IN_PROGRESS	User Initiated

The footer of the console shows 'Feedback', 'Language', and copyright information for Amazon Web Services India Private Limited. The Windows taskbar at the bottom displays the date '17-02-2023' and time '20:03'.

stack created



The screenshot displays the AWS CloudFormation console for the 'VPCE-Tutorial-Stack'. The left sidebar shows the 'Stacks (1)' list with a green arrow pointing to the 'VPCE-Tutorial-Stack' entry, which has a status of 'CREATE_COMPLETE'. The main panel shows the 'Events (59)' tab, which lists the stack's creation progress. The events table includes columns for Timestamp, Logical ID, Status, and Status reason.

Timestamp	Logical ID	Status	Status reason
2023-02-17 20:06:09 UTC+0530	VPCE-Tutorial-Stack	✓ CREATE_COMPLETE	-
2023-02-17 20:06:08 UTC+0530	EC2Instance	✓ CREATE_COMPLETE	-
2023-02-17 20:05:36 UTC+0530	EC2Instance	ⓘ CREATE_IN_PROGRESS	Resource creation Initiated
2023-02-17 20:05:34 UTC+0530	EC2Instance	ⓘ CREATE_IN_PROGRESS	-
2023-02-17 20:05:32 UTC+0530	EC2InstanceProfile	✓ CREATE_COMPLETE	-
2023-02-17 20:03:54 UTC+0530	LambdaPermission1	✓ CREATE_COMPLETE	-

The bottom of the screenshot shows the AWS footer with '© 2023, Amazon Web Services India Private Limited or its affiliates.' and the system taskbar with the date '17-02-2023' and time '20:10'.

step4: instance connection establishment

The screenshot displays the AWS Management Console interface for the EC2 service. The browser tabs at the top include 'CloudFormation - Stack VPCE-Tu', 'aws-sns-samples/SNS-VPCE-Tut', and 'Instances | EC2 Management Co'. The address bar shows the URL 'us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:instanceState=running'. The console header features the AWS logo, 'Services', a search bar, and the region 'N. Virginia'.

On the left sidebar, the 'EC2' service is selected, and the 'Instances' section is expanded. The main content area is titled 'Instances (1/1) Info' and includes a search bar and a filter 'Instance state = running'. A table lists the instance details:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
VPCE-Tutorial-...	i-0e1b2557df302ff9c	Running	t2.micro	2/2 checks passed	No alarms	us-east-1c	ec2-54-91-27-13

Below the table, the 'Instance: i-0e1b2557df302ff9c (VPCE-Tutorial-EC2Instance)' details are shown. The 'Details' tab is active, displaying the 'Instance summary' with the following information:

- Instance ID: i-0e1b2557df302ff9c (VPCE-Tutorial-EC2Instance)
- IPv6 address: -
- Hostname type: IP name: ip-10-0-0-54.ec2.internal
- Answer private resource DNS name: -
- Public IPv4 address: 54.91.27.132 | [open address](#)
- Instance state: **Running**
- Private IP DNS name (IPv4 only): ip-10-0-0-54.ec2.internal
- Instance type: t2.micro
- Private IPv4 addresses: 10.0.0.54
- Public IPv4 DNS: ec2-54-91-27-132.compute-1.amazonaws.com | [open address](#)
- Elastic IP addresses: -

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ssh-client

CloudFormation - Stack VPCE-Tu xaws-sns-samples/SNS-VPCE-Tut xConnect to instance | EC2 Manag x+

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ConnectToInstance:instanceId=i-0e1b2557df302ff9c

awsServicesSearch[Alt+S]

EC2

Connect to instance

Connect to instanceInfo

Connect to your instance i-0e1b2557df302ff9c (VPCE-Tutorial-EC2Instance) using any of these options

EC2 Instance Connect

Session Manager

SSH client

EC2 serial console

Instance ID

i-0e1b2557df302ff9c (VPCE-Tutorial-EC2Instance)

1. Open an SSH client.

2. Locate your private key file. The key used to launch this instance is VPCE-Tutorial-KeyPair.pem

3. Run this command, if necessary, to ensure your key is not publicly viewable.

chmod 400 VPCE-Tutorial-KeyPair.pem

4. Connect to your instance using its Public DNS:

ec2-54-91-27-132.compute-1.amazonaws.com

Example:

ssh -i "VPCE-Tutorial-KeyPair.pem" ec2-user@ec2-54-91-27-132.compute-1.amazonaws.com

Note:

In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

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Search

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20:16 17-02-2023

step5. checked permission of connection through ssh , which was denied

```
ec2-user@ip-10-0-0-54:~  
login as: ec2-user  
Authenticating with public key "imported-openssh-key"  
  
  _ |  _ | _ )  
  _ | ( _ | _ /  
  _ | \ _ | _ |  
Amazon Linux 2 AMI  
  
https://aws.amazon.com/amazon-linux-2/  
[ec2-user@ip-10-0-0-54 ~]$ ssh -i "VPCE-Tutorial-KeyPair.pem" ec2-user@ec2-54-91-27-132.compute-1.amazonaws.com  
Warning: Identity file VPCE-Tutorial-KeyPair.pem not accessible: No such file or directory.  
The authenticity of host 'ec2-54-91-27-132.compute-1.amazonaws.com (10.0.0.54)' can't be established.  
ECDSA key fingerprint is SHA256:ryxngVgPVRxF32K+byiIfkcMX+SApioITdSQORY+uHA.  
ECDSA key fingerprint is MD5:1e:94:02:6e:0c:0b:66:00:60:9a:1f:a3:0b:11:e7:d2.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added 'ec2-54-91-27-132.compute-1.amazonaws.com,10.0.0.54' (ECDSA) to the list of known hosts.  
Permission denied (publickey,gssapi-keyex,gssapi-with-mic).  
[ec2-user@ip-10-0-0-54 ~]$
```

step 6. Went to SNS

The screenshot shows the AWS Management Console for the Amazon SNS service. The browser tabs at the top include 'CloudFormation - Stack VPCE-Tu...', 'aws-sns-samples/SNS-VPCE-Tut...', 'Connect to instance | EC2 Manag...', and 'Simple Notification Service'. The address bar shows the URL 'us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/topics'. The left sidebar shows the 'Amazon SNS' section with links to 'Dashboard', 'Topics', 'Subscriptions', and 'Mobile'. The main content area is titled 'Amazon SNS > Topics' and displays a table of topics. A blue arrow points to the 'VPCE-Tutorial-Topic' in the table.

Topics (1)

Search

Name	Type	ARN
VPCE-Tutorial-Topic	Standard	arn:aws:sns:us-east-1:582899026069:VPCE-Tut...

Feedback Language

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21°C Haze 20:24 17-02-2023

copied ARN

The screenshot displays the AWS Management Console for an Amazon SNS topic. The browser tabs at the top include 'CloudFormation - Stack VPCE-Tu', 'aws-sns-samples/SNS-VPCE-Tut', 'Connect to instance | EC2 Manag', and 'Simple Notification Service'. The address bar shows the URL: `us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/topic/arn:aws:sns:us-east-1:582899026069:VPCE-Tutorial-Topic`.

The console header features the AWS logo, a 'Services' menu, a search bar, and the region 'N. Virginia'.

Amazon SNS sidebar navigation:

- Dashboard
- Topics
- Subscriptions
- ▼ Mobile
 - Push notifications
 - Text messaging (SMS)
 - Origination numbers

VPCE-Tutorial-Topic details:

- Name:** VPCE-Tutorial-Topic
- Display name:** VPCE-Tutorial-Topic
- ARN:** `arn:aws:sns:us-east-1:582899026069:VPCE-Tutorial-Topic` (highlighted in blue)
- Topic owner:** 582899026069
- Type:** Standard

Buttons at the top right: **Edit**, **Delete**, **Publish message**.

Subscriptions (2) section:

- Buttons: **Edit**, **Delete**, **Request confirmation**, **Confirm subscription**, **Create subscription**
- Search bar: `Search`
- Table headers: **ID**, **Endpoint**, **Status**, **Protocol**

Footer: Feedback, Language, © 2023, Amazon Web Services India Private Limited or its affiliates. Privacy, Terms, Cookie preferences. Weather: 21°C Haze. Time: 20:24 17-02-2023.

step 7. checked publish attempt, which failed

```
ec2-user@ip-10-0-0-54:~  
login as: ec2-user  
Authenticating with public key "imported-openssh-key"  
Last login: Fri Feb 17 14:50:03 2023 from 47.9.33.164  
  
  _ |  ( _ | _ )  
  _ |  ( _ | _ /  Amazon Linux 2 AMI  
  _ | \ _ | _ |  
  
https://aws.amazon.com/amazon-linux-2/  
[ec2-user@ip-10-0-0-54 ~]$ arn:aws:sns:us-east-1:582899026069:VPCE-Tutorial-Topic --message "Hello"  
-bash: arn:aws:sns:us-east-1:582899026069:VPCE-Tutorial-Topic: command not found  
[ec2-user@ip-10-0-0-54 ~]$ aws sns publish --region aws-region --topic-arn sns-topic-arn --message "Hello"  
  
Could not connect to the endpoint URL: "https://sns.aws-region.amazonaws.com/"  
[ec2-user@ip-10-0-0-54 ~]$
```

21°C Haze

Search

ENG IN

20:28 17-02-2023

step 8: went to vpc → to create Endpoint

The screenshot shows the AWS Management Console interface for the 'Endpoints | VPC Management' section. The browser tabs at the top include 'CloudFormation - Stack VPCE-Tu...', 'aws-sns-samples/SNS-VPCE-Tut...', 'Connect to instance | EC2 Manag...', 'Simple Notification Service', and 'Endpoints | VPC Management Co...'. The address bar shows 'us-east-1.console.aws.amazon.com/vpc/home?region=us-east-1#Endpoints:'. The console header includes the AWS logo, 'Services' menu, a search bar, and the region 'N. Virginia'.

On the left sidebar, the 'Virtual private cloud' section is expanded, showing options like 'Your VPCs', 'Subnets', 'Route tables', 'Internet gateways', 'Egress-only internet gateways', 'Carrier gateways', 'DHCP option sets', 'Elastic IPs', 'Managed prefix lists', 'Endpoints' (highlighted), 'Endpoint services', 'NAT gateways', and 'Peering connections'. Below this is the 'Security' section.

The main content area is titled 'Endpoints' with an 'Info' link. It features a 'Filter endpoints' search bar and a table with columns: 'Name', 'VPC endpoint ID', 'VPC ID', 'Service name', and 'Endpoint'. The table currently displays 'No endpoint found'. Below the table is a section titled 'Select an endpoint' with three placeholder icons. In the top right corner of the main area, there is a 'Create endpoint' button, which is highlighted by a large blue arrow.

The footer of the console includes 'Feedback', 'Language', and copyright information: '© 2023, Amazon Web Services India Private Limited or its affiliates.' It also has links for 'Privacy', 'Terms', and 'Cookie preferences'. The system tray at the bottom shows the date and time as '17-02-2023 20:30' and the weather as '21°C Haze'.

CloudFormation - Stack VPCE-Tu x | aws-sns-samples/SNS-VPCE-Tut x | Connect to instance | EC2 Manag x | Simple Notification Service x | VPC Management Console x

us-east-1.console.aws.amazon.com/vpc/home?region=us-east-1#CreateVpcEndpoint:

aws

Services

Search

[Alt+S]

EC2

☒ AWS services

Services provided by Amazon

☐ PrivateLink Ready partner services

Services with an AWS Service Ready designation

☐ AWS Marketplace services

Services that you've purchased through AWS Marketplace

☐ Other endpoint services

Find services shared with you by service name

Services (1/1)

< 1 >

Service Name: com.amazonaws.us-east-1.sns

Clear filters

Service Name	Owner	Type
<input checked="" type="radio"/> com.amazonaws.us-east-1.sns	amazon	Interface

VPC

Select the VPC in which to create the endpoint

VPC

The VPC in which to create your endpoint.

Select a VPC

► Additional settings

Feedback

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Search

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IN

20:31

17-02-2023

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us-east-1.console.aws.amazon.com/vpc/home?region=us-east-1#CreateVpcEndpoint:

awsServicesSearch[Alt+S]

EC2N. Virginiagmail.com

☒ AWS services
Services provided by Amazon

☐ PrivateLink Ready partner services
Services with an AWS Service Ready designation

☐ AWS Marketplace services
Services that you've purchased through AWS Marketplace

☐ Other endpoint services
Find services shared with you by service name

Services (1/1)

Filter services

Service Name: com.amazonaws.us-east-1.sns ×Clear filters

Service Name	Owner	Type
com.amazonaws.us-east-1.sns	amazon	Interface

VPC

Select the VPC in which to create the endpoint

VPC

The VPC in which to create your endpoint.

vpc-07b94d4f000290a11 (VPCE-Tutorial-VPC)

Additional settings

FeedbackLanguage

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us-east-1.console.aws.amazon.com/vpc/home?region=us-east-1#CreateVpcEndpoint:

aws Services Search [Alt+S] N. Virginia gmail.com

EC2

Additional settings

Subnets (1/6) Info

<input checked="" type="checkbox"/>	Availability Zone	Subnet ID
<input type="checkbox"/>	us-east-1a (use1-az1)	No subnet available
<input type="checkbox"/>	us-east-1b (use1-az2)	No subnet available
<input checked="" type="checkbox"/>	us-east-1c (use1-az4)	
<input type="checkbox"/>	us-east-1d (use1-az6)	No subnet available
<input type="checkbox"/>	us-east-1e (use1-az3)	No subnet available
<input type="checkbox"/>	us-east-1f (use1-az5)	No subnet available

IP address type

- ☐ IPv4
- ☒ IPv6
- ☐ Dualstack

Security groups (2) Info

Filter security groups

<input type="checkbox"/>	Group ID	Group name	VPC ID
<input type="checkbox"/>	sg-0ef9090cad01f147a	default	vpc-07b94d4f00029
<input type="checkbox"/>	sg-00174a0d5f30cfd3d	Tutorial Security Group	vpc-07b94d4f00029

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us-east-1.console.aws.amazon.com/vpc/home?region=us-east-1#CreateVpcEndpoint

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EC2

Availability Zone Subnet ID

IP address type

☐ IPv4

☐ IPv6

☐ Dualstack

Security groups (1/2) Info

Filter security groups

Group ID Group name VPC ID

☐ sg-0ef9090cad01f147a default vpc-07b94d4f00029

☒ sg-09174a9d5f39cfd2d Tutorial Security Group vpc-07b94d4f00029

sg-09174a9d5f39cfd2d X

Policy Info

VPC endpoint policy controls access to the service.

Full access

Allow access by any user or service within the VPC using credentials from any Amazon Web Services accounts to any resources in this Amazon Web Services service. All policies — IAM user policies, VPC endpoint policies, and Amazon Web Services service-specific policies (e.g. Amazon S3 bucket policies, any S3 ACL policies) — must grant the necessary permissions for access to succeed.

Custom

Use the policy creation tool to generate a policy, then paste the generated policy below.

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VPC Endpoint created

The screenshot displays the AWS Management Console interface. At the top, a green banner indicates 'Successfully created VPC endpoint vpce-0dc292d686695c2df'. Below this, the 'Endpoints (1/1)' section shows a table with one endpoint. The endpoint is in a 'Pending' state, as indicated by the 'Update in progress' message and the 'Status' field. The endpoint details are as follows:

Name	VPC endpoint ID	VPC ID	Service name	Endpoint type
vpce-0dc292d686695c2df / endpoint21	vpce-0dc292d686695c2df			Interface

The console also shows a sidebar with navigation options like 'VPC dashboard', 'EC2 Global View', and 'Virtual private cloud'. The bottom of the screen features a Windows taskbar with various application icons and system information.

CloudFormation - Stack VPCE-Tu xaws-sns-samples/SNS-VPCE-Tut xConnect to instance | EC2 Manag xSimple Notification Service xEndpoints | VPC Management Co x

us-east-1.console.aws.amazon.com/vpc/home?region=us-east-1#Endpoints:vpceEndpointId=vpce-0dc292d686695c2df

awsServicesSearch[Alt+S]

EC2

VPC dashboard xEC2 Global View NewFilter by VPC: Select a VPCVirtual private cloudYour VPCsSubnetsRoute tablesInternet gatewaysEgress-only internet gatewaysCarrier gatewaysDHCP option setsElastic IPsManaged prefix listsEndpointsEndpoint servicesNAT gatewaysPeering connectionsSecurity

Endpoints (1/1) Info

Filter endpoints

VPCE endpoint ID: vpce-0dc292d686695c2dfClear filters

VPC ID	Service name	Endpoint type	Status
vpc-07b94d4f000290a11 VPCE-Tutori...	com.amazonaws.us-east-1.sns	Interface	Available

vpce-0dc292d686695c2df / endpoint21

DetailsSubnetsSecurity GroupsNotificationPolicyTags

Details

Endpoint IDvpce-0dc292d686695c2df

VPC IDvpc-07b94d4f000290a11 (VPCE-Tutorial-VPC)

DNS record IP typeipv4

StatusAvailable

Status message-

IP address typeipv4

Creation timeFriday, February 17, 2023 at 20:37:30 GMT+5:30

Service namecom.amazonaws.us-east-1.sns

DNS namesvpce-0dc292d686695c2df-fhy3c4il.sns.us-east-1.vpce.amazonaws.com

Endpoint typeInterface

Private DNS names enabledYes

Private DNS namessns.us-east-1.amazonaws.com

FeedbackLanguage

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Search

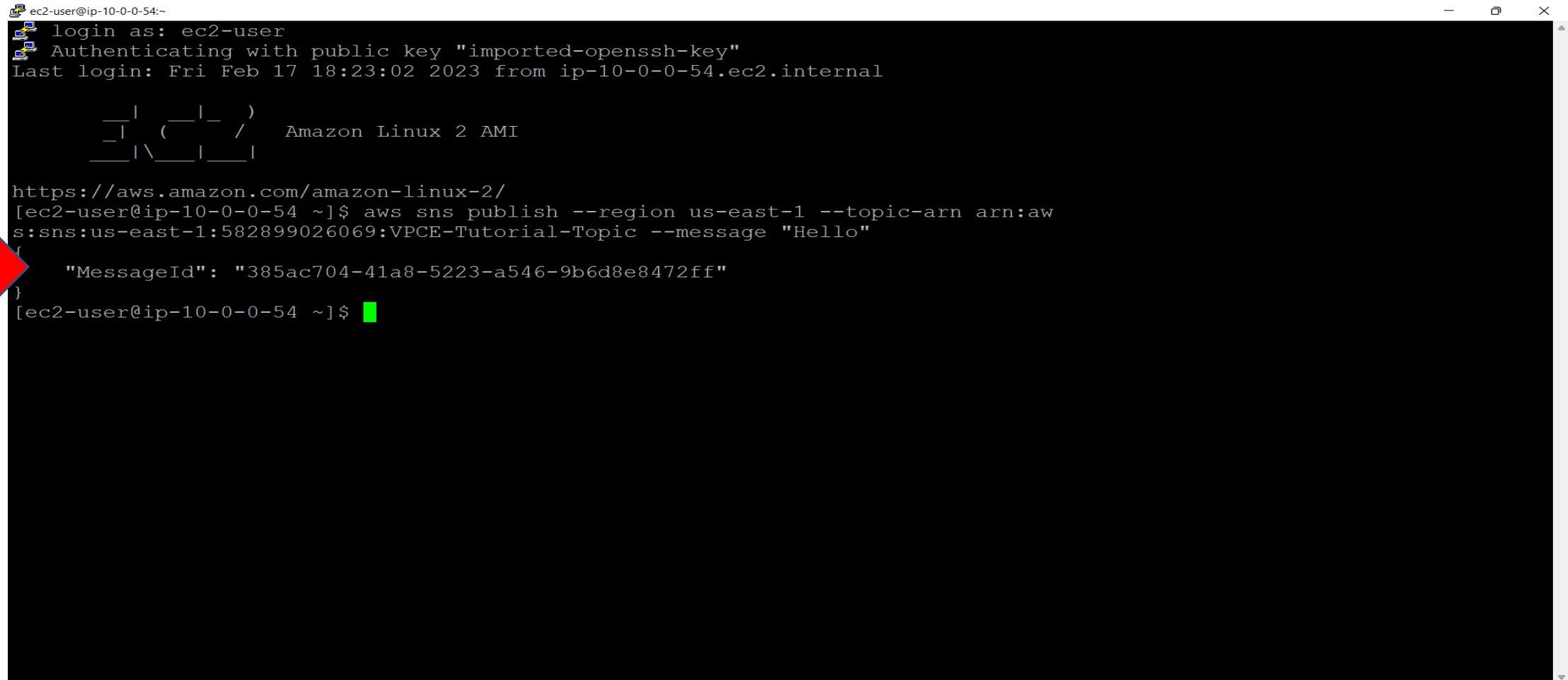
ENG IN

20:3917-02-2023

Step 9. on terminal, tried to publish a message to SNS topic.

- `aws sns publish --region us-east-1 --topic-arn arn:aws:sns:us-east-1:582899026069:VPCE-Tutorial-Topic --message "Hello"`

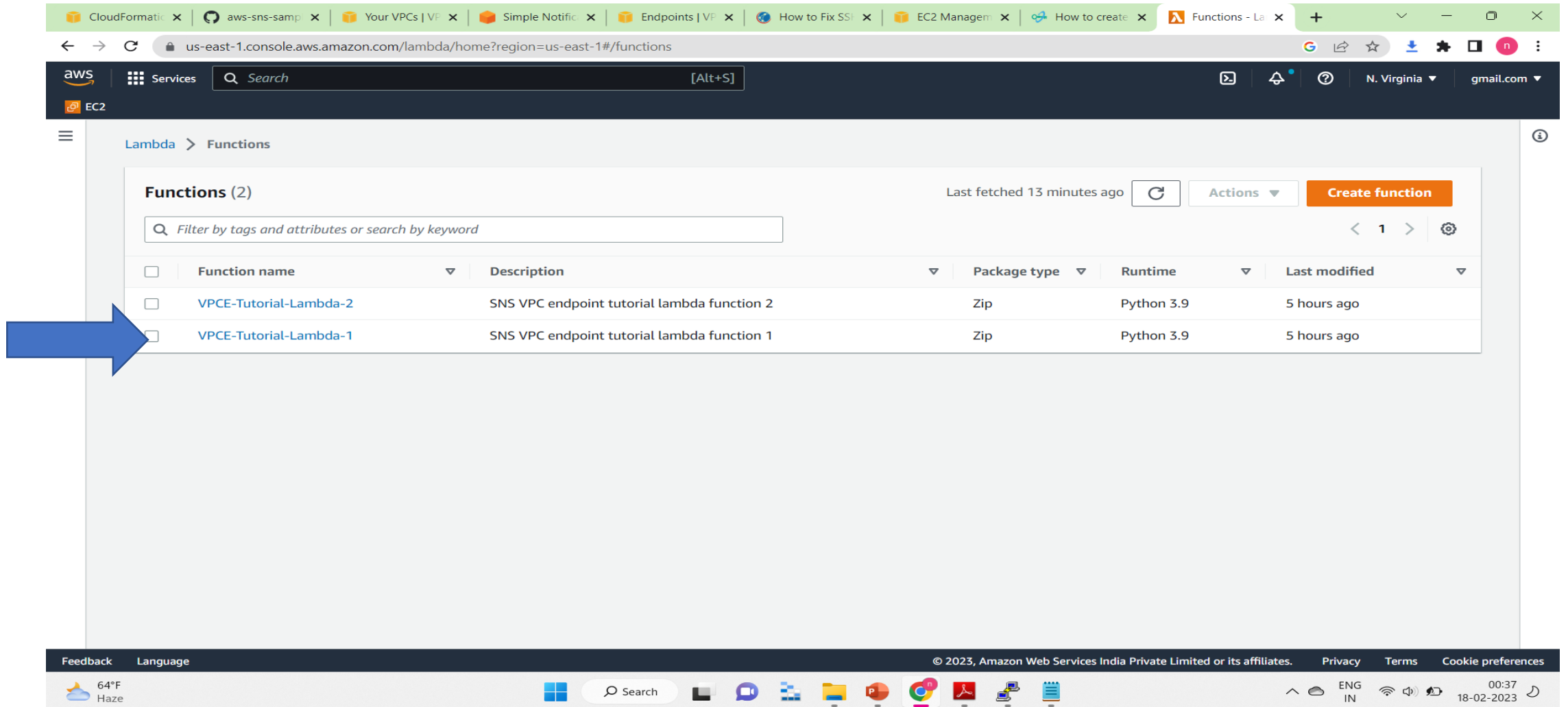
publish attempt succeeded, and Amazon SNS returned a message ID



A terminal window titled 'ec2-user@ip-10-0-0-54:~' showing the login process for 'ec2-user' on an Amazon Linux 2 AMI. The user runs the command 'aws sns publish --region us-east-1 --topic-arn arn:aws:sns:us-east-1:582899026069:VPCE-Tutorial-Topic --message "Hello"'. The output is a JSON object with 'MessageId' set to '385ac704-41a8-5223-a546-9b6d8e8472ff'. A red arrow points to the 'MessageId' field in the output.

```
ec2-user@ip-10-0-0-54:~  
login as: ec2-user  
Authenticating with public key "imported-openssh-key"  
Last login: Fri Feb 17 18:23:02 2023 from ip-10-0-0-54.ec2.internal  
  
  _ |  ( _ | _ )  
  _ |  /  
  _ | \ _ | _ |  
Amazon Linux 2 AMI  
  
https://aws.amazon.com/amazon-linux-2/  
[ec2-user@ip-10-0-0-54 ~]$ aws sns publish --region us-east-1 --topic-arn arn:aws:sns:us-east-1:582899026069:VPCE-Tutorial-Topic --message "Hello"  
{  
  "MessageId": "385ac704-41a8-5223-a546-9b6d8e8472ff"  
}  
[ec2-user@ip-10-0-0-54 ~]$
```

Step 10. Verified Message Deliveries: went to VPCE-Tutorial_lambda-1



The screenshot shows the AWS Lambda console in the us-east-1 region. The 'Functions' page displays a list of two functions. A blue arrow points to the 'VPCE-Tutorial-Lambda-1' function, which is the first in the list.

Function name	Description	Package type	Runtime	Last modified
VPCE-Tutorial-Lambda-2	SNS VPC endpoint tutorial lambda function 2	Zip	Python 3.9	5 hours ago
VPCE-Tutorial-Lambda-1	SNS VPC endpoint tutorial lambda function 1	Zip	Python 3.9	5 hours ago

The bottom of the screenshot shows the Windows taskbar with the system clock indicating 00:37 on 18-02-2023.

in log ,selected VPCE-Tutorial-Lambda1

The screenshot shows the AWS CloudWatch console in the us-east-1 region. The left sidebar contains navigation links for CloudWatch, Alarms, Logs, Metrics, X-Ray traces, Events, and Application monitoring. The 'Logs' section is expanded, and 'Log groups' is selected. The main content area displays a list of log groups. A blue arrow points to the log group '/aws/lambda/VPCE-Tutorial-Lambda-1'.

Log groups (5)

By default, we only load up to 10000 log groups.

Filter log groups or try prefix search ☐ Exact match

<input type="checkbox"/>	Log group	Data protection	Sensitive dat...	Retention	Metric filters	Contribut
<input type="checkbox"/>	/aws/codebuild/projet21	Inactive	-	Never expire	-	-
<input type="checkbox"/>	/aws/fsx/lustre	Inactive	-	Never expire	-	-
<input checked="" type="checkbox"/>	/aws/lambda/VPCE-Tutorial-Lambda-1	Inactive	-	1 week	-	-
<input type="checkbox"/>	/aws/lambda/VPCE-Tutorial-Lambda-2	Inactive	-	1 week	-	-
<input type="checkbox"/>	RDSOSMetrics	Inactive	-	1 month	-	-

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64°F Haze 00:36 18-02-2023

verified that the CloudWatch logs updation : VPCE-Tutorial-Lambda-1

us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#logsV2:log-groups/log-group/\$252Faws\$252Flambda\$252FVPCE-Tutorial-Lambda-1/log-events/2023\$252F02\$...

aws Services Search [Alt+S] N. Virginia gmail.com

EC2

CloudWatch

Favorites and recents

Dashboards

▼ Alarms 0 0 0

In alarm

All alarms

Billing

▼ Logs

Log groups

Logs Insights

▼ Metrics

All metrics

Explorer

Streams

► X-Ray traces

► Events

► Application monitoring

CloudWatch > Log groups > /aws/lambda/VPCE-Tutorial-Lambda-1 > 2023/02/17/[\$LATEST]8b4a2c2a4d9e46be8a508c26ebd7f72a

Log events

You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

Actions Create metric filter

Filter events Clear 1m 30m 1h 12h Custom Display

Timestamp	Message
No older events at this moment. Retry	
2023-02-18T00:22:28.828+05:30	INIT_START Runtime Version: python:3.9.v16 Runtime Version ARN: arn:aws:lambda:us-east-1::runtime:07a48df201798d627f2b950f03b...
2023-02-18T00:22:28.925+05:30	Loading function
2023-02-18T00:22:28.927+05:30	START RequestId: 148fb4bc-d7db-4794-97c5-67883398a866 Message: \$LATEST
2023-02-18T00:22:28.927+05:30	From SNS: Hello
2023-02-18T00:22:28.928+05:30	END RequestId: 148fb4bc-d7db-4794-97c5-67883398a866
2023-02-18T00:22:28.928+05:30	REPORT RequestId: 148fb4bc-d7db-4794-97c5-67883398a866 Duration: 1.19 ms Billed Duration: 2 ms Memory Size: 128 MB Max Memory...
No newer events at this moment. Auto retry paused . Resume	

hello message

VPCE-Tutorial-Lambda-2

The screenshot shows the AWS CloudWatch console interface. The left sidebar contains navigation options: CloudWatch, Favorites and recents, Dashboards, Alarms, Logs, Metrics, X-Ray traces, Events, and Application monitoring. The main content area displays the 'Log events' for a specific log group. A blue arrow points to the log entry 'From SNS: Hello'.

CloudWatch > Log groups > /aws/lambda/VPCE-Tutorial-Lambda-2 > 2023/02/17/[\$LATEST]b837bab024e14b6f919c260ebc70a5dd

Log events
You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

Filter events

Timestamp	Message
No older events at this moment. Retry	
2023-02-18T00:22:28.864+05:30	INIT_START Runtime Version: python:3.9.v16 Runtime Version ARN: arn:aws:lambda:us-east-1::runtime:07a48df201798d627f2b950f03b...
2023-02-18T00:22:28.964+05:30	Loading function
2023-02-18T00:22:28.966+05:30	START RequestId: fd0e7d12-6008-4385-aa71-a90aaefa16ac Version: \$LATEST
2023-02-18T00:22:28.966+05:30	From SNS: Hello
2023-02-18T00:22:28.967+05:30	END RequestId: fd0e7d12-6008-4385-aa71-a90aaefa16ac
2023-02-18T00:22:28.967+05:30	REPORT RequestId: fd0e7d12-6008-4385-aa71-a90aaefa16ac Duration: 1.21 ms Billed Duration: 2 ms Memory Size: 128 MB Max Memory...
No newer events at this moment. Auto retry paused. Resume	