

# CLOUD FORMATION OF EC2 ,S3,Cloud Watch Alarm Services

## Project Overview :

AWS CloudFormation is a service that allows you to define and provision AWS infrastructure using code, making it easier to manage and automate the setup of AWS resources. With CloudFormation, you can create templates that describe the desired configuration of resources like EC2 instances, S3 buckets, and CloudWatch alarms

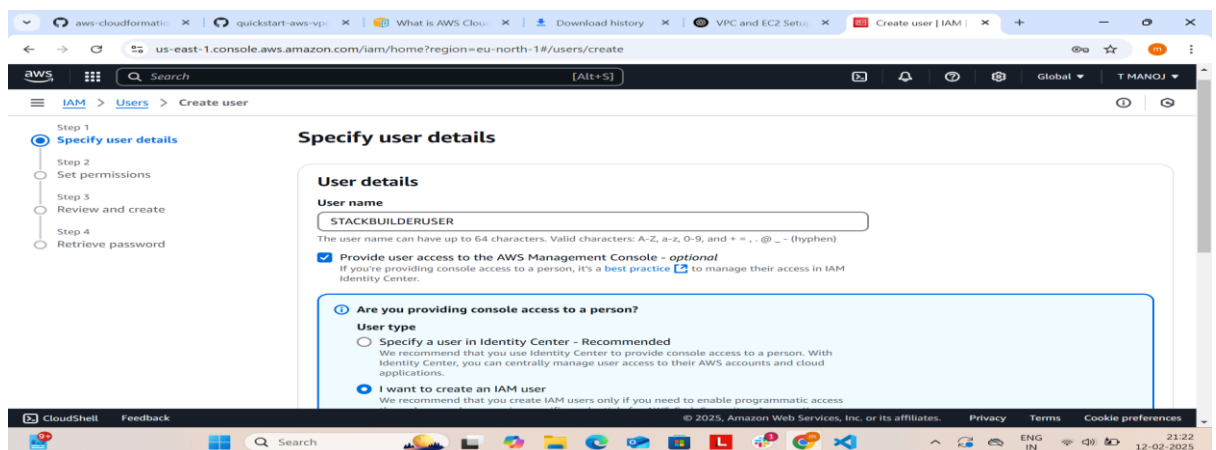
## Prerequisite :

- 1.AWS Console Access
- 2.User Access with Service Policy Permission
- 3.AWS CLI Access

## Procedure to Connect and Creation of Stack

### 1.User Creation :

- Sign in to the AWS Management Console
- Navigate to IAM (Identity and Access Management)
- Add a New User
- Set Permissions
- Review and Create the User



aws-cloudformatio x quickstart-aws-vp What is AWS Cloud Download history VPC and EC2 Setu Create user | IAM x

us-east-1.console.aws.amazon.com/iam/home?region=eu-north-1#/users/create

aws Search [Alt+S]

IAM > Users > Create user

Step 2

Set permissions

Step 3

Review and create

Step 4

Retrieve password

User created successfully

You can view and download the user's password and email instructions for signing in to the AWS Management Console.

View user

You can view and download the user's password below or email users instructions for signing in to the AWS Management Console. This is the only time you can view and download this password.

Console sign-in details

Email sign-in instructions

Console sign-in URL

https://cloudprotocols-hybrid-devops.signin.aws.amazon.com/console

User name

STACKBUILDERUSER

Console password

\*\*\*\*\* Show

Cancel Download .csv file Return to users list

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us-east-1.console.aws.amazon.com/iam/home?region=eu-north-1#/users/details/STACKBUILDERUSER/create-access-key

aws Search [Alt+S]

IAM > Users > STACKBUILDERUSER > Create access key

Step 2 - optional

Set description tag

Step 3

Retrieve access keys

Access key created

This is the only time that the secret access key can be viewed or downloaded. You cannot recover it later. However, you can create a new access key any time.

Access key

If you lose or forget your secret access key, you cannot retrieve it. Instead, create a new access key and make the old key inactive.

Access key

AKIAEVXYTCL5RTKMPP

Secret access key

\*\*\*\*\* Show

Access key best practices

- Never store your access key in plain text, in a code repository, or in code.
- Disable or delete access key when no longer needed.
- Enable least-privilege permissions.
- Rotate access keys regularly.

For more details about managing access keys, see the [best practices for managing AWS access keys](#).

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## 2.Cloud formation Process

- Prepare the CloudFormation Template OF EC2,CloudWatch,S3
- Save the Template to a File
- Create the CloudFormation Stack
- Check the Status of the Stack Creation
- Retrieve the Stack Output (Instance ID and Public IP)

### EC2 SERVICE :

### YML FILE :

```
AWSTemplateFormatVersion: '2010-09-09'
Resources:

  SNSTopic:
    Type: AWS::SNS::Topic
    Properties:
      TopicName: MyImportantAlerts

  SNSTopicSubscription:
    Type: AWS::SNS::Subscription
    Properties:
      Protocol: email
      Endpoint: dreamers2k22@gmail.com
      TopicArn: !Ref SNSTopic

  MyHighCPUAlarm:
    Type: AWS::CloudWatch::Alarm
    Properties:
      AlarmName: HighCPUAlarm
      ComparisonOperator: GreaterThanOrEqualToThreshold
      EvaluationPeriods: '1'
      MetricName: CPUUtilization
      Namespace: AWS/EC2
      Period: '300'
      Statistic: Average
      Threshold: '0'
```

**AlarmActions:**

- !Ref **SNSTopic**

**Dimensions:**

- **Name:** **InstanceId**

**Value:** **i-0abcd1234efgh5678**

**Unit:** **Percent**

```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22631.4890]
(c) Microsoft Corporation. All rights reserved.

C:\Users\T Manoj\Desktop\AWS>aws --v
aws-cli/2.24.2 Python/3.12.6 Windows/11 exe/AMD64

C:\Users\T Manoj\Desktop\AWS>aws configure
AWS Access Key ID [None]: AKIAEVXYTCL5RTKMPP
AWS Secret Access Key [None]: kBV785sYHg7IeFAQZRPdU9ZRiNyRyKLC LZTKIWbF
Default region name [None]: us-east-1
Default output format [None]:

C:\Users\T Manoj\Desktop\AWS>
```

```
C:\Windows\System32\cmd.e x + v
Microsoft Windows [Version 10.0.22631.4890]
(c) Microsoft Corporation. All rights reserved.

C:\Users\T Manoj\Desktop\AWS>aws --v
aws-cli/2.24.2 Python/3.12.6 Windows/11 exe/AMD64

C:\Users\T Manoj\Desktop\AWS>aws configure
AWS Access Key ID [None]: AKIAEVXYTCL5RTKMPP
AWS Secret Access Key [None]: kBV785sYHg7IeFAQZRPdU9ZRiNyRyKLC LZTKIWbF
Default region name [None]: us-east-1
Default output format [None]:

C:\Users\T Manoj\Desktop\AWS>aws s3 ls

C:\Users\T Manoj\Desktop\AWS>aws cloudformation create stack --stack-name EC2-STACK --template-body file://"C:\Users\T Manoj\Desktop\AWS\infra-1.yml" --region us-east-1
```

```
C:\Windows\System32\cmd.e x + v

C:\Users\T Manoj\Desktop\AWS>aws cloudformation create-stack --stack-name EC2-STACK --template-body file://"C:/Users/T Manoj/Desktop/AWS/infra-1.yml" --region us-east-1
{
  "StackId": "arn:aws:cloudformation:us-east-1:491085415620:stack/EC2-STACK/89738600-e95b-11ef-9234-120313247877"
}

C:\Users\T Manoj\Desktop\AWS>
```

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

aws [Search] [Alt+S] United States (N. Virginia) T MANOJ

EC2 > Instances

Dashboard EC2 Global View Events

▼ Instances

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

▼ Images

- AMIs
- AMI Catalog

**Instances (1)** Info Last updated less than a minute ago [Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

Find Instance by attribute or tag (case-sensitive) All states < 1 > ⚙

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
<input type="checkbox"/>		i-0360f245ae4a1c666	Running	t3.micro	Initializing	<a href="#">View alarms +</a>

Select an instance

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The screenshot shows the AWS CloudFormation console in the us-east-1 region. The left sidebar contains navigation links for CloudFormation, Stacks, StackSets, Exports, Infrastructure Composer, laC generator, Hooks overview, and Hooks. The main area displays a table of stacks with one stack, EC2-STACK, in the CREATE\_COMPLETE state. The stack was created on 2025-02-12 at 21:38:02 UTC+0530. The description is 'VPC and EC2 Instar deployment'. The bottom of the screenshot shows a Windows taskbar with various application icons and a system tray.

Stack name	Status	Created time	Description
<a href="#">EC2-STACK</a>	CREATE_COMPLETE	2025-02-12 21:38:02 UTC+0530	VPC and EC2 Instar deployment

```
C:\Users\T Manoj\Desktop\AWS>aws cloudformation delete-stack --stack-name EC2-STACK --region us-east-1  
C:\Users\T Manoj\Desktop\AWS>
```

S3 :

JSON FILE :

```
{  
  "AWSTemplateFormatVersion": "2010-09-09",  
  "Description": "CloudFormation Template to create an S3 bucket with  
versioning enabled.",  
  "Parameters": {  
    "BucketName": {  
      "Type": "String",  
      "Description": "Unique S3 Bucket Name",  
      "Default": "mycloudbucket-52020221"  
    }  
  },  
  "Resources": {  
    "MyS3Bucket52020221": {  
      "Type": "AWS::S3::Bucket",  
      "Properties": {  
        "BucketName": { "Ref": "BucketName" },  
        "VersioningConfiguration": {  
          "Status": "Enabled"  
        }  
      }  
    }  
  }  
}
```

```

    }
  }
},
"Outputs": {
  "S3BucketName52020221": {
    "Description": "The name of the created S3 bucket",
    "Value": { "Ref": "MyS3Bucket52020221" }
  }
}
}

```

```

C:\Users\T Manoj\Desktop\AWS>aws cloudformation create-stack --stack-name S3bucket-stack --template-body file://C:/Users/T Manoj/Desktop/AWS/s3.json --region us-east-1
{
  "StackId": "arn:aws:cloudformation:us-east-1:491085415620:stack/S3bucket-stack/c6fdbfc0-e962-11ef-8cfc-0affcc59126b"
}

C:\Users\T Manoj\Desktop\AWS>aws cloudformation describe-stack-events --stack-name S3bucket-stack
{
  "StackEvents": [
    {
      "StackId": "arn:aws:cloudformation:us-east-1:491085415620:stack/S3bucket-stack/c6fdbfc0-e962-11ef-8cfc-0affcc59126b",
      "EventId": "d1818d50-e962-11ef-ad8c-129e9ea3a091",
      "StackName": "S3bucket-stack",
      "LogicalResourceId": "S3bucket-stack",
      "PhysicalResourceId": "arn:aws:cloudformation:us-east-1:491085415620:stack/S3bucket-stack/c6fdbfc0-e962-11ef-8cfc-0affcc59126b",
      "ResourceType": "AWS::CloudFormation::Stack",
      "Timestamp": "2025-02-12T17:00:10.265000+00:00",
      "ResourceStatus": "CREATE_COMPLETE"
    },
    {
      "StackId": "arn:aws:cloudformation:us-east-1:491085415620:stack/S3bucket-stack/c6fdbfc0-e962-11ef-8cfc-0affcc59126b",
      "EventId": "MyS3Bucket52020221-CREATE_COMPLETE-2025-02-12T17:00:09.461Z",
      "StackName": "S3bucket-stack",
      "LogicalResourceId": "MyS3Bucket52020221",
      "PhysicalResourceId": "mycloudbucket-52020221",
      "ResourceType": "AWS::S3::Bucket",
      "Timestamp": "2025-02-12T17:00:09.461000+00:00",
      "ResourceStatus": "CREATE_COMPLETE",
      "ResourceProperties": "{\"BucketName\":\"mycloudbucket-52020221\",\"VersioningConfiguration\":{\"Status\":\"Enabled\"}}"
    }
  ]
}

```

us-east-1.console.aws.amazon.com/cloudformation/home?region=us-east-1#/stacks?filteringText=&filteringStatus=active&viewNested=true

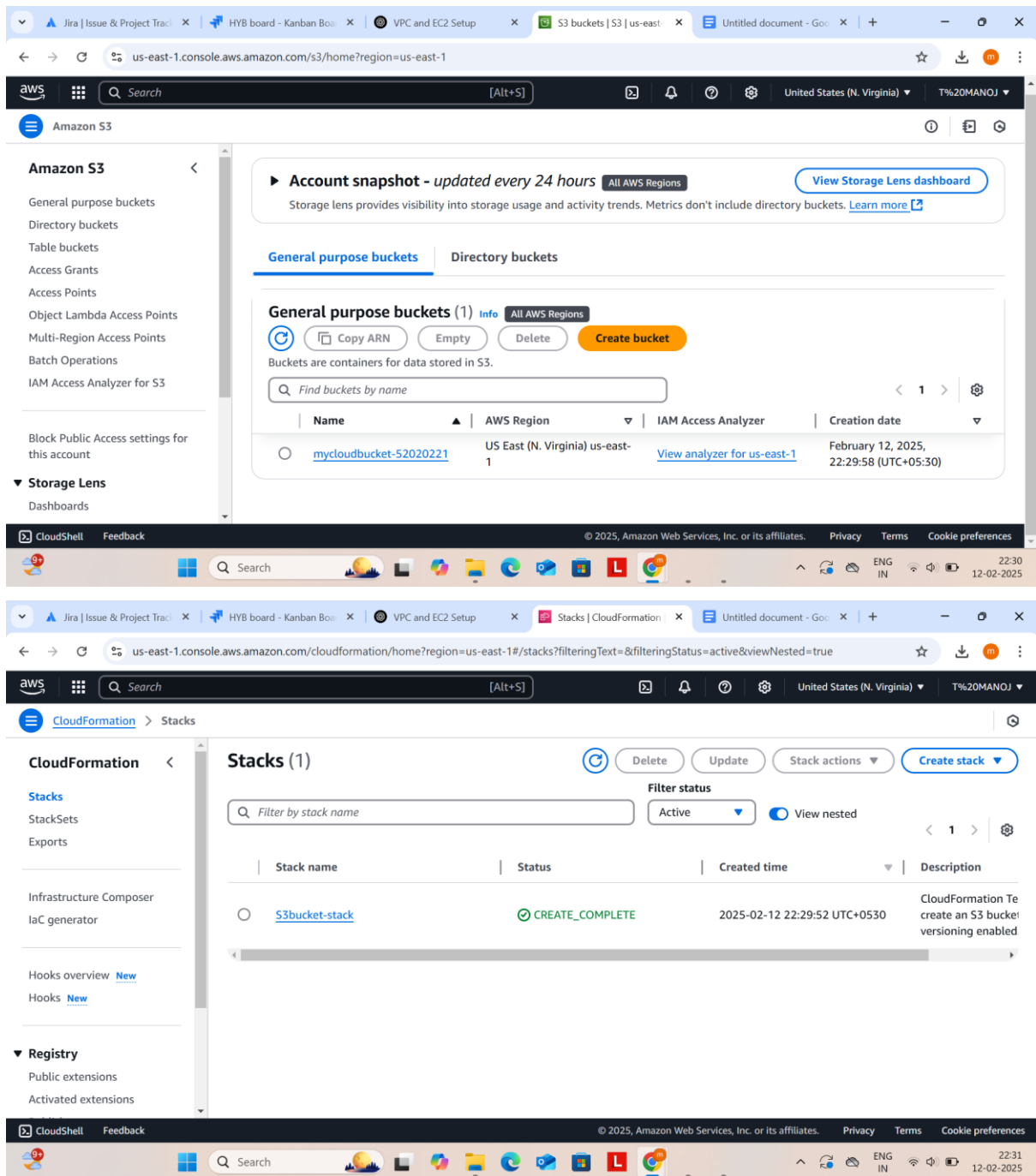
CloudFormation > Stacks

Stacks (1)

Filter status: Active View nested

Stack name	Status	Created time	Description
<a href="#">S3bucket-stack</a>	CREATE_IN_PROGRESS	2025-02-12 22:29:52 UTC+0530	CloudFormation Template to create an S3 bucket with versioning enabled

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Cloud Watch Alarm:

YML FILE:

```
AWSTemplateFormatVersion: '2010-09-09'
```

```
Resources:
```

```
  SNSTopic:
```

```
    Type: AWS::SNS::Topic
```

```
    Properties:
```



TopicName: MyImportantAlerts

**SNSTopicSubscription:**

Type: AWS::SNS::Subscription

**Properties:**

Protocol: email

Endpoint: dreamers2k22@gmail.com

TopicArn: !Ref SNSTopic

**MyHighCPUAlarm:**

Type: AWS::CloudWatch::Alarm

**Properties:**

AlarmName: HighCPUAlarm

ComparisonOperator: GreaterThanOrEqualToThreshold

EvaluationPeriods: '1'

MetricName: CPUUtilization

Namespace: AWS/EC2

Period: '300'

Statistic: Average

Threshold: '0'

**AlarmActions:**

- !Ref SNSTopic

**Dimensions:**

- Name: InstanceId

Value: i-0abcd1234efgh5678

Unit: Percent

```
C:\Windows\System32\cmd.exe
C:\Users\T Manoj\Desktop\AWS>aws cloudformation create-stack --stack-name alarm-stack --template-body file://"C:/Users/T Manoj/Desktop/AWS/alarm.yml" --region us-east-1
{
  "StackId": "arn:aws:cloudformation:us-east-1:491085415620:stack/alarm-stack/f5963cc0-e964-11ef-b76e-0afffd806ac3"
}

C:\Users\T Manoj\Desktop\AWS>
```

us-east-1.console.aws.amazon.com/cloudformation/home?region=us-east-1#/stacks?filteringText=&filteringStatus=active&viewNested=true

CloudFormation > Stacks

**Stacks (1)**

Filter status:  Active ☒ View nested

Stack name	Status	Created time	Description
<a href="#">alarm-stack</a>	CREATE_COMPLETE	2025-02-12 22:45:29 UTC+0530	-

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us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#alarmsV2:

CloudWatch > Alarms

### CloudWatch

Favorites and recents

Dashboards [New](#)

- AI Operations [Preview](#)
- Alarms [1](#)
  - In alarm
  - All alarms
  - Billing
- Logs [New](#)
- Metrics
- X-Ray traces [New](#)
- Events

### Alarms (1)

☐ Hide Auto Scaling alarms

Alarm state: Any Alarm type: Any Actions status: Any

<input type="checkbox"/>	Name	State	Last state update (UTC)	Conditions
<input type="checkbox"/>	<a href="#">HighCPUAlarm</a>	Insufficient data	2025-02-12 17:15:36	CPUUtilization >= 0 for 1 datapoints within 1 minutes

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mail.google.com/mail/u/0/#inbox/FMfcgZQZTCqZZJBwISINJMKCtSSSkTI

Gmail

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Compose

Inbox 455

Starred

Snoozed

Sent

Drafts 2

More

Labels +

1 of 533

### AWS Notification - Subscription Confirmation

**AWS Notifications** <no-reply@sns.amazonaws.com> to me 22:45 (0 minutes ago)

You have chosen to subscribe to the topic:  
**arn:aws:sns:us-east-1:491085415620:MyImportantAlerts**

To confirm this subscription, click or visit the link below (If this was in error no action is necessary):  
[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please send an email to [sns-opt-out](#)