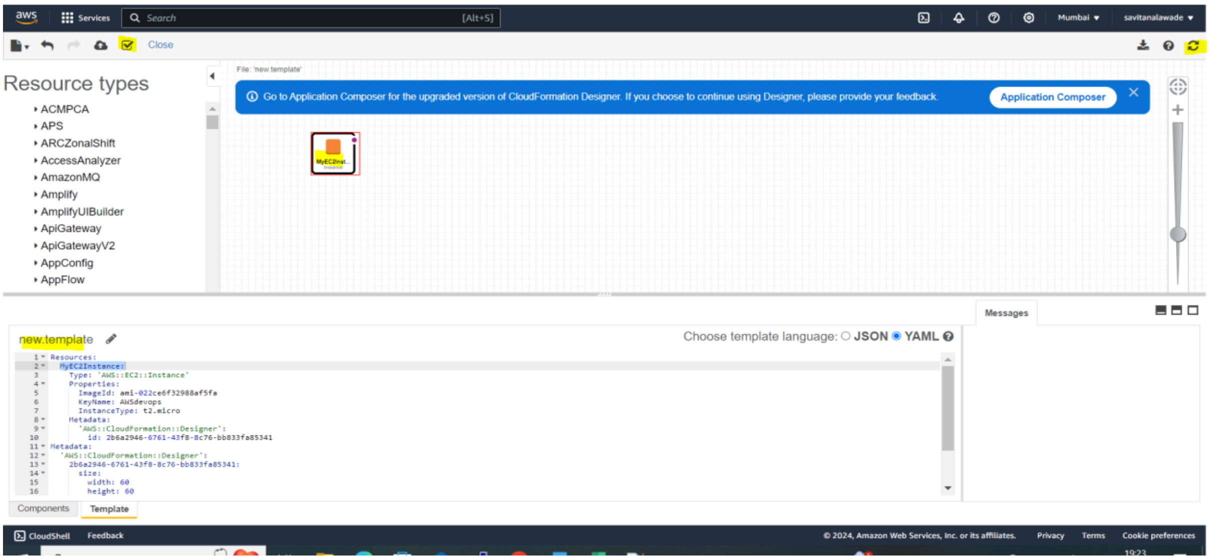
CloudFormation 27th_Sep_2024 SavitaNalawade

CloudFormation:

- AWS CloudFormation is a service provided by AWS that enables users to model and manage infrastructure resources in an automated and secure manner.
- Using CloudFormation, developers can define and provision AWS infrastructure resources
- In Cloudformation we can use JSON- or YAML Language to code.

1) Create instance through CF write code in template ->refresh->Validate template



File: new.template

Go to Application Composer for the upgraded version of CloudFormation Designer. If you choose to continue using Designer, please provide your feedback.

new.template

Choose template language: ○ JSON ● YAML

```
Resources:
  MyEC2Instance:
    Type: 'AWS::EC2::Instance'
    Properties:
      ImageId: ami-022ce6f32988af5fa
      KeyName: AWSdevops
      InstanceType: t2.micro
    Metadata:
      'AWS::CloudFormation::Designer':
        id: 2b6a2946-6761-43f8-8c76-bb833fa85341
Metadata:
  'AWS::CloudFormation::Designer':
    2b6a2946-6761-43f8-8c76-bb833fa85341:
      size:
        width: 60
        height: 60
```

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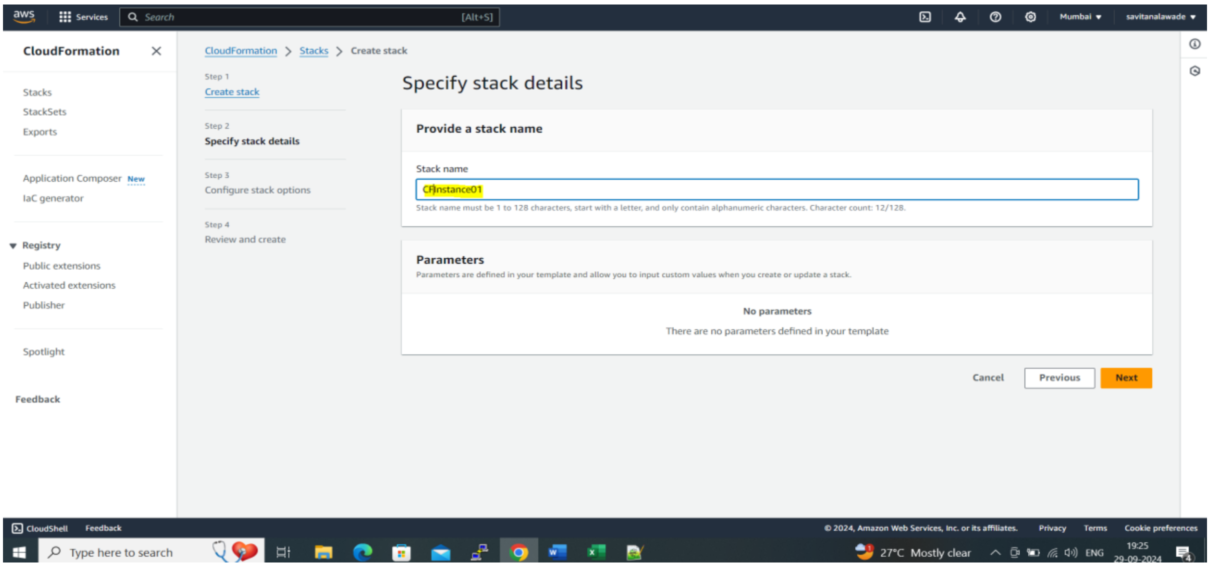
Create Stack



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: CFInstance01

Stack name must be 1 to 128 characters, start with a letter, and only contain alphanumeric characters. Character count: 12/128.

Parameters

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

No parameters

There are no parameters defined in your template

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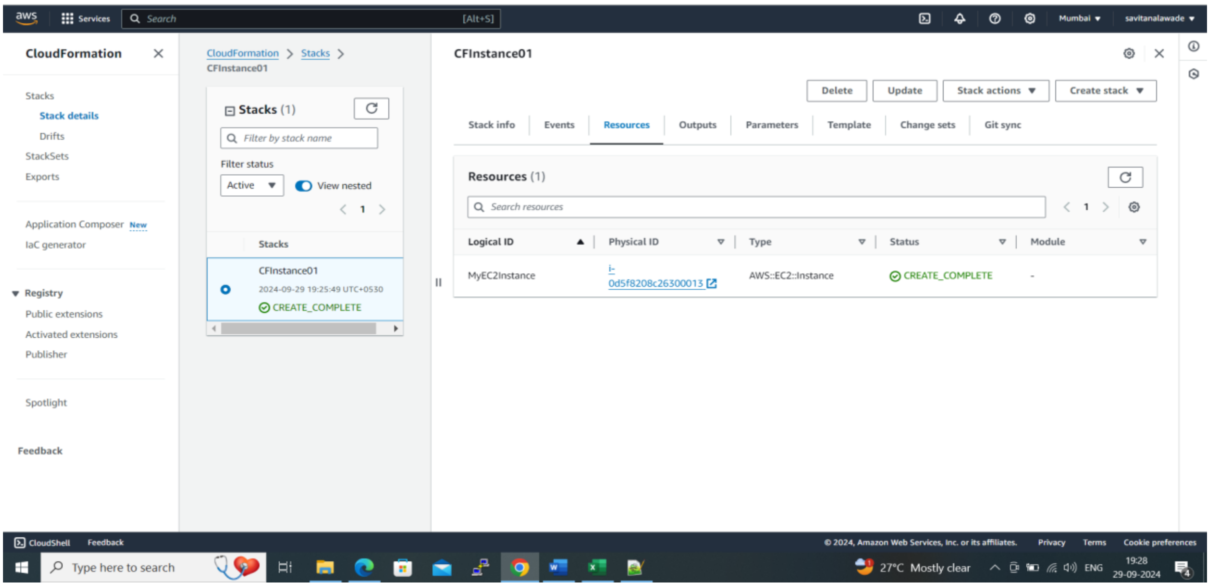
Instance have been created



CFInstance01
2024-09-29 19:25:49 UTC+0530
CREATE_COMPLETE

CFInstance01

Resources (1)

Logical ID	Physical ID	Type	Status	Module
MyEC2Instance	i-0d5f8208c26300013	AWS::EC2::Instance	CREATE_COMPLETE	-

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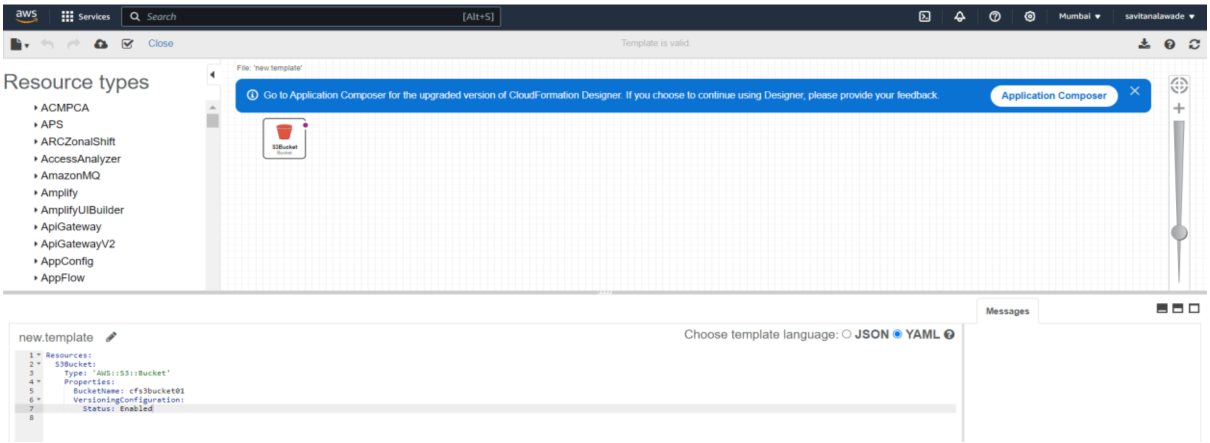
2)Create S3 Bucket



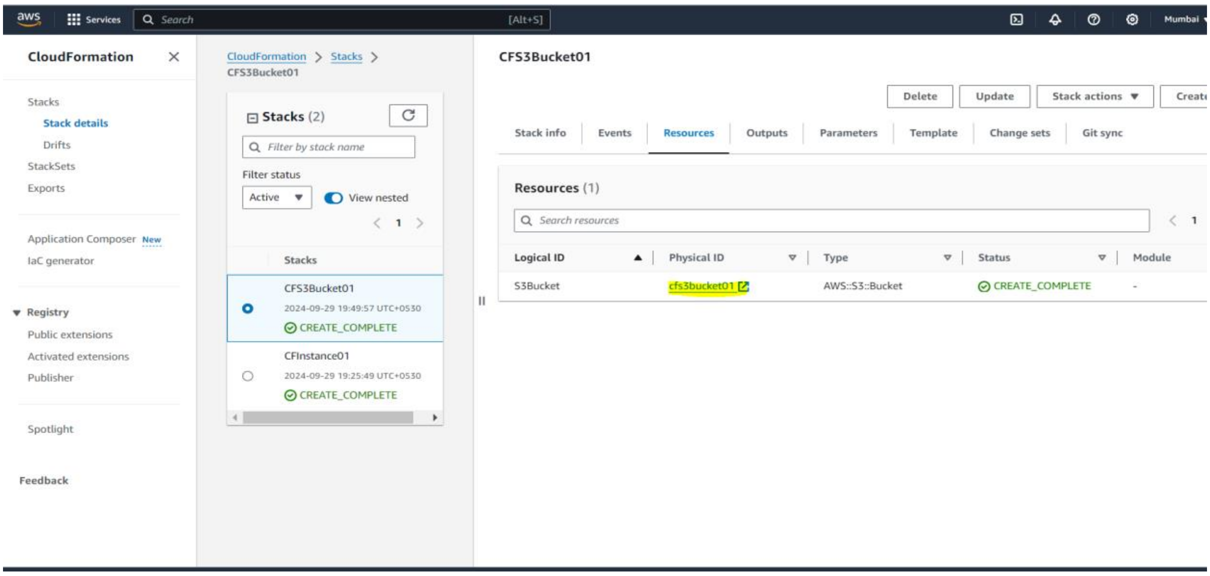
Go to Application Composer for the upgraded version of CloudFormation Designer. If you choose to continue using Designer, please provide your feedback.

new.template

Choose template language: ○ JSON ● YAML

```
Resources:
  S3Bucket:
    Type: 'AWS::S3::Bucket'
    Properties:
      BucketName: cfs3bucket01
      VersioningConfiguration:
        Status: Enabled
```

Bucket is created



CFS3Bucket01
2024-09-29 19:49:57 UTC+0530
CREATE_COMPLETE

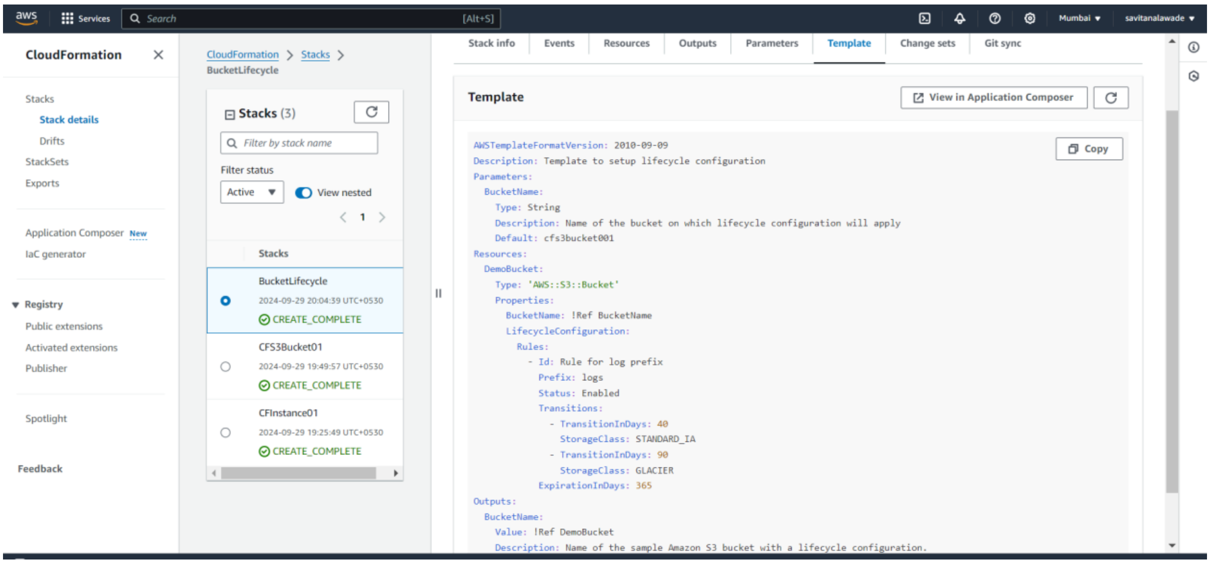
CFInstance01
2024-09-29 19:25:49 UTC+0530
CREATE_COMPLETE

CFS3Bucket01

Resources (1)

Logical ID	Physical ID	Type	Status	Module
S3Bucket	cfs3bucket01	AWS::S3::Bucket	CREATE_COMPLETE	-

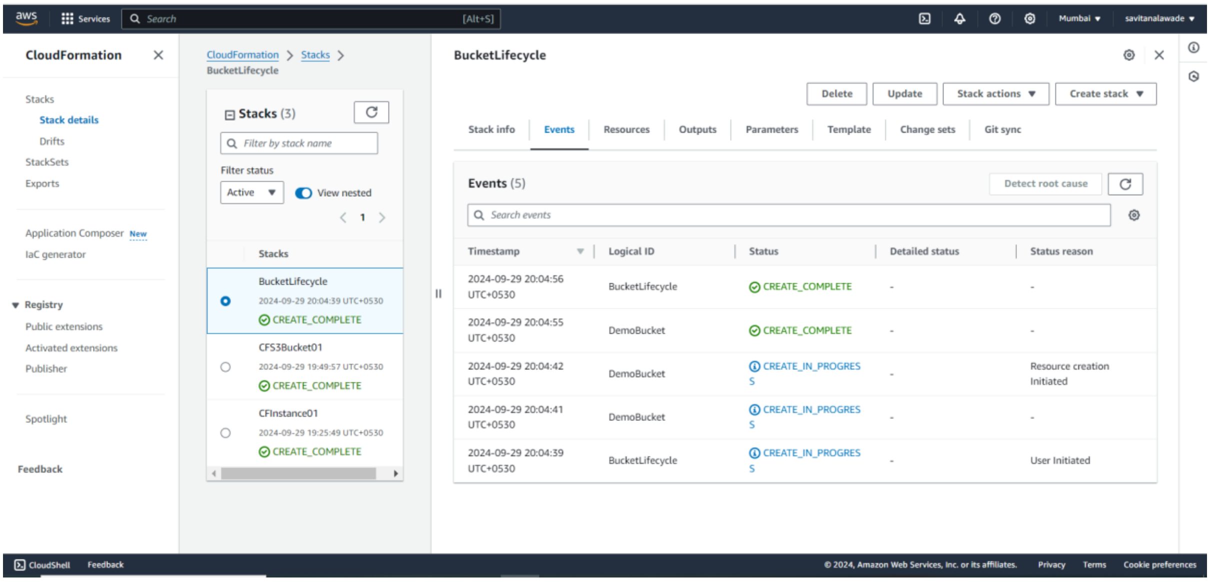
3) Template to setup lifecycle configuration



Stacks
● BucketLifecycle 2024-09-29 20:04:39 UTC+0530 CREATE_COMPLETE
○ CFS3Bucket01 2024-09-29 19:49:57 UTC+0530 CREATE_COMPLETE
○ CFInstance01 2024-09-29 19:25:49 UTC+0530 CREATE_COMPLETE

Template

```yaml
AWSTemplateFormatVersion: 2010-09-09
Description: Template to setup lifecycle configuration
Parameters:
  BucketName:
    Type: String
    Description: Name of the bucket on which lifecycle configuration will apply
    Default: cfs3bucket001
Resources:
  DemoBucket:
    Type: 'AWS::S3::Bucket'
    Properties:
      BucketName: !Ref BucketName
      LifecycleConfiguration:
        Rules:
          - Id: Rule for log prefix
            Prefix: logs
            Status: Enabled
            Transitions:
              - TransitionInDays: 40
                StorageClass: STANDARD_IA
              - TransitionInDays: 90
                StorageClass: GLACIER
            ExpirationInDays: 365
Outputs:
  BucketName:
    Value: !Ref DemoBucket
    Description: Name of the sample Amazon S3 bucket with a lifecycle configuration.
```



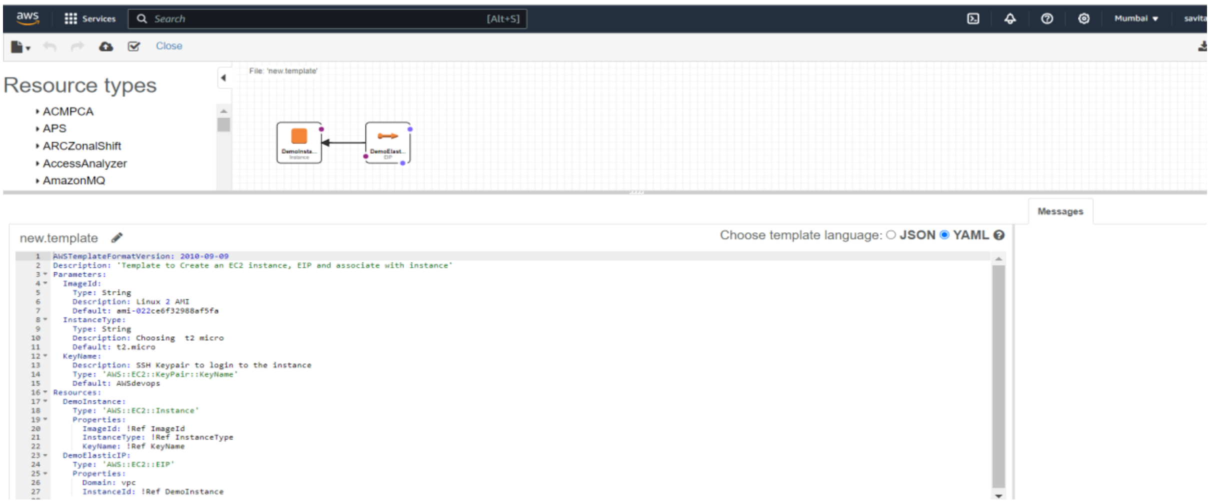
Stacks
● BucketLifecycle 2024-09-29 20:04:39 UTC+0530 CREATE_COMPLETE
○ CFS3Bucket01 2024-09-29 19:49:57 UTC+0530 CREATE_COMPLETE
○ CFInstance01 2024-09-29 19:25:49 UTC+0530 CREATE_COMPLETE

BucketLifecycle

Events (5)

Timestamp	Logical ID	Status	Detailed status	Status reason
2024-09-29 20:04:56 UTC+0530	BucketLifecycle	CREATE_COMPLETE	-	-
2024-09-29 20:04:55 UTC+0530	DemoBucket	CREATE_COMPLETE	-	-
2024-09-29 20:04:42 UTC+0530	DemoBucket	CREATE_IN_PROGRESS	-	Resource creation Initiated
2024-09-29 20:04:41 UTC+0530	DemoBucket	CREATE_IN_PROGRESS	-	-
2024-09-29 20:04:39 UTC+0530	BucketLifecycle	CREATE_IN_PROGRESS	-	User Initiated

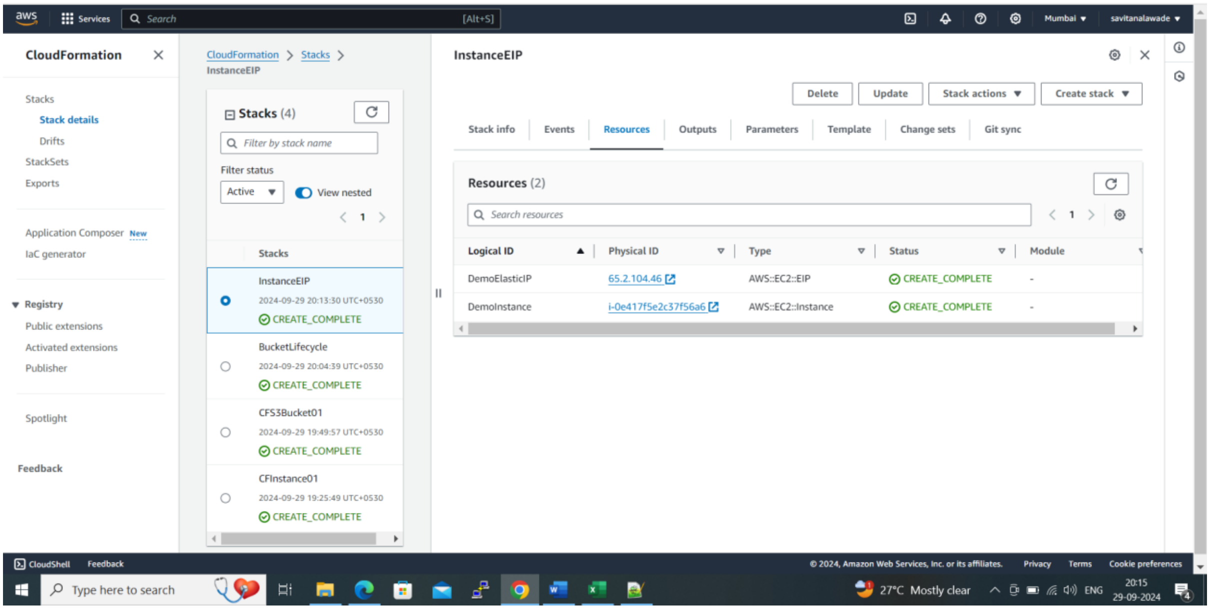
4) Create an EC2 instance, EIP and associate with instance



new.template

Choose template language: ○ JSON ● YAML

```yaml
AWSTemplateFormatVersion: 2010-09-09
Description: 'Template to Create an EC2 instance, EIP and associate with instance'
Parameters:
  ImageId:
    Type: String
    Description: Linux 2 AMI
    Default: ami-022ce6f32988af5fa
  InstanceType:
    Type: String
    Description: Choosing  t2 micro
    Default: t2.micro
  KeyName:
    Description: SSH Keypair to login to the instance
    Type: 'AWS::EC2::KeyPair::KeyName'
    Default: AWSdevops
Resources:
  DemoInstance:
    Type: 'AWS::EC2::Instance'
    Properties:
      ImageId: !Ref ImageId
      InstanceType: !Ref InstanceType
      KeyName: !Ref KeyName
  DemoElasticIP:
    Type: 'AWS::EC2::EIP'
    Properties:
      Domain: vpc
      InstanceId: !Ref DemoInstance
```



CloudFormation > Stacks > InstanceEIP

Stacks (4)

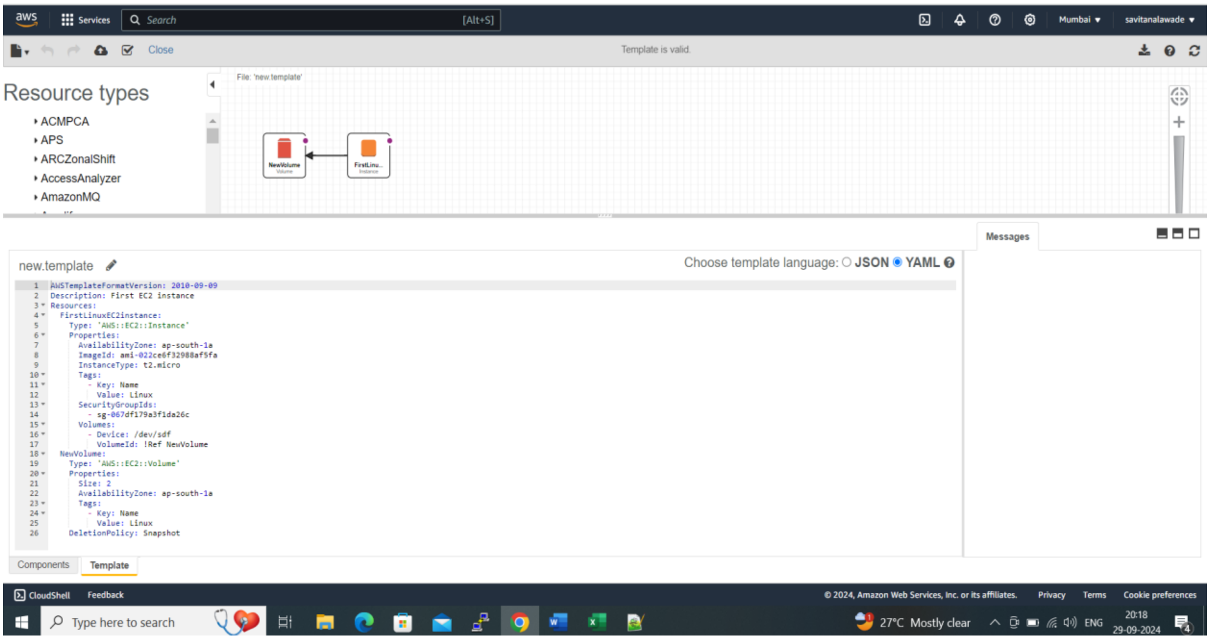
Stacks
InstanceEIP 2024-09-29 20:13:30 UTC+0530 CREATE_COMPLETE
BucketLifecycle 2024-09-29 20:04:39 UTC+0530 CREATE_COMPLETE
CFS3Bucket01 2024-09-29 19:49:57 UTC+0530 CREATE_COMPLETE
CFInstance01 2024-09-29 19:25:49 UTC+0530 CREATE_COMPLETE

InstanceEIP

Resources (2)

Logical ID	Physical ID	Type	Status	Module
DemoElasticIP	65.2.104.46	AWS::EC2::EIP	CREATE_COMPLETE	-
DemoInstance	i-0e417f5e2c37f56a6	AWS::EC2::Instance	CREATE_COMPLETE	-

5) EC2 Instance with EBS Volume



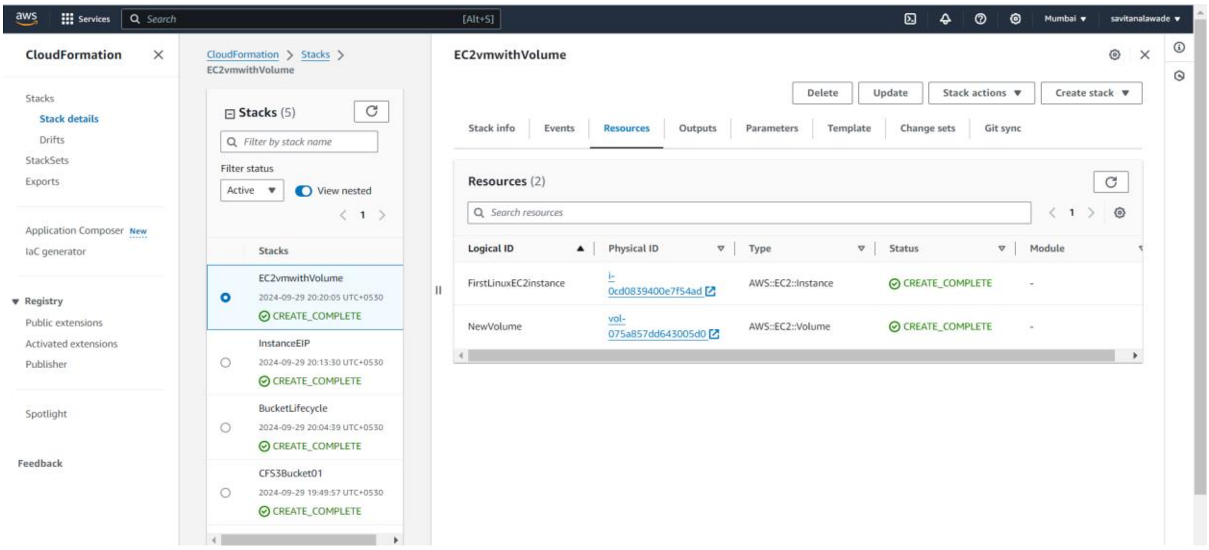
Template is valid.

File: 'new.template'

new.template

Choose template language: ○ JSON ● YAML

```yaml
AWSTemplateFormatVersion: 2010-09-09
Description: First EC2 instance
Resources:
  FirstLinuxEC2instance:
    Type: 'AWS::EC2::Instance'
    Properties:
      AvailabilityZone: ap-south-1a
      ImageId: ami-022ce6f32988af5fa
      InstanceType: t2.micro
      Tags:
        - Key: Name
          Value: Linux
      SecurityGroupIds:
        - sg-067df179a3f1da26c
      Volumes:
        - Device: /dev/sdf
          VolumeId: !Ref NewVolume
  NewVolume:
    Type: 'AWS::EC2::Volume'
    Properties:
      Size: 2
      AvailabilityZone: ap-south-1a
      Tags:
        - Key: Name
          Value: Linux
    DeletionPolicy: Snapshot
```



EC2vmwithVolume

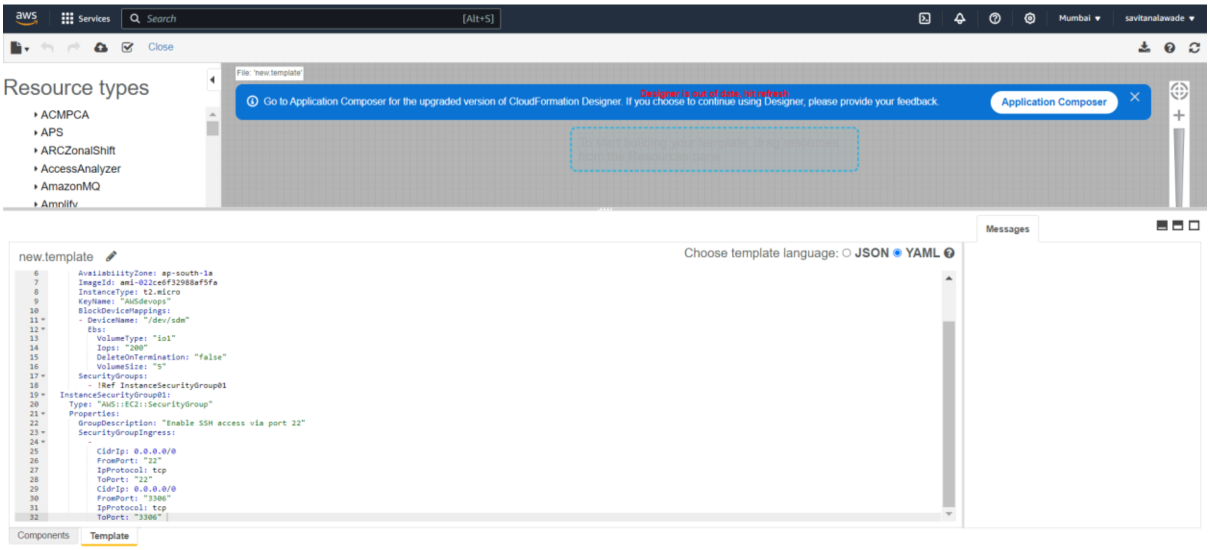
Stacks (5)

Stacks
EC2vmwithVolume 2024-09-29 20:20:05 UTC+0530 CREATE_COMPLETE
InstanceEIP 2024-09-29 20:13:30 UTC+0530 CREATE_COMPLETE
BucketLifecycle 2024-09-29 20:04:39 UTC+0530 CREATE_COMPLETE
CFS3Bucket01 2024-09-29 19:49:57 UTC+0530 CREATE_COMPLETE

Resources (2)

Logical ID	Physical ID	Type	Status	Module
FirstLinuxEC2instance	i-0cd0839400e7f54ad	AWS::EC2::Instance	CREATE_COMPLETE	-
NewVolume	vol-075a857dd643005d0	AWS::EC2::Volume	CREATE_COMPLETE	-

6) EC2 with EBS Volume + Secuirty Group

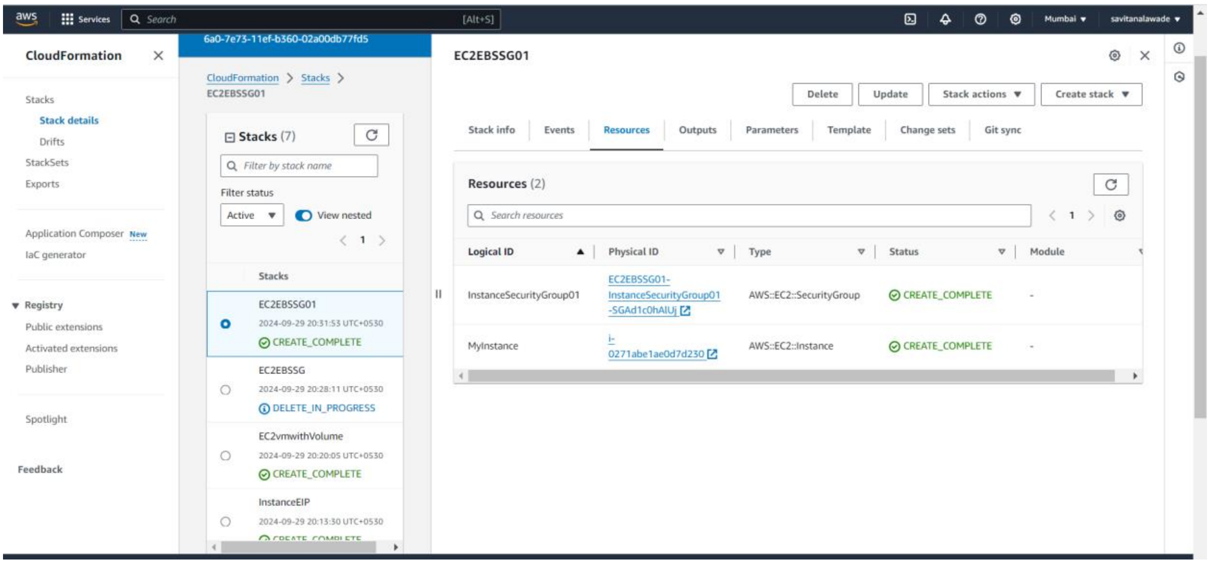


Go to Application Composer for the upgraded version of CloudFormation Designer. If you choose to continue using Designer, please provide your feedback.

new.template

Choose template language: ○ JSON ● YAML

```
      AvailabilityZone: ap-south-1a
      ImageId: ami-022ce6f32988af5fa
      InstanceType: t2.micro
      KeyName: "AWSdevops"
      BlockDeviceMappings:
      - DeviceName: "/dev/sdm"
        Ebs:
          VolumeType: "io1"
          Iops: "200"
          DeleteOnTermination: "false"
          VolumeSize: "5"
      SecurityGroups:
        - !Ref InstanceSecurityGroup01
  InstanceSecurityGroup01:
    Type: "AWS::EC2::SecurityGroup"
    Properties:
      GroupDescription: "Enable SSH access via port 22"
      SecurityGroupIngress:
        -
          CidrIp: 0.0.0.0/0
          FromPort: "22"
          IpProtocol: tcp
          ToPort: "22"
          CidrIp: 0.0.0.0/0
          FromPort: "3306"
          IpProtocol: tcp
          ToPort: "3306"
```



EC2EBSSG01

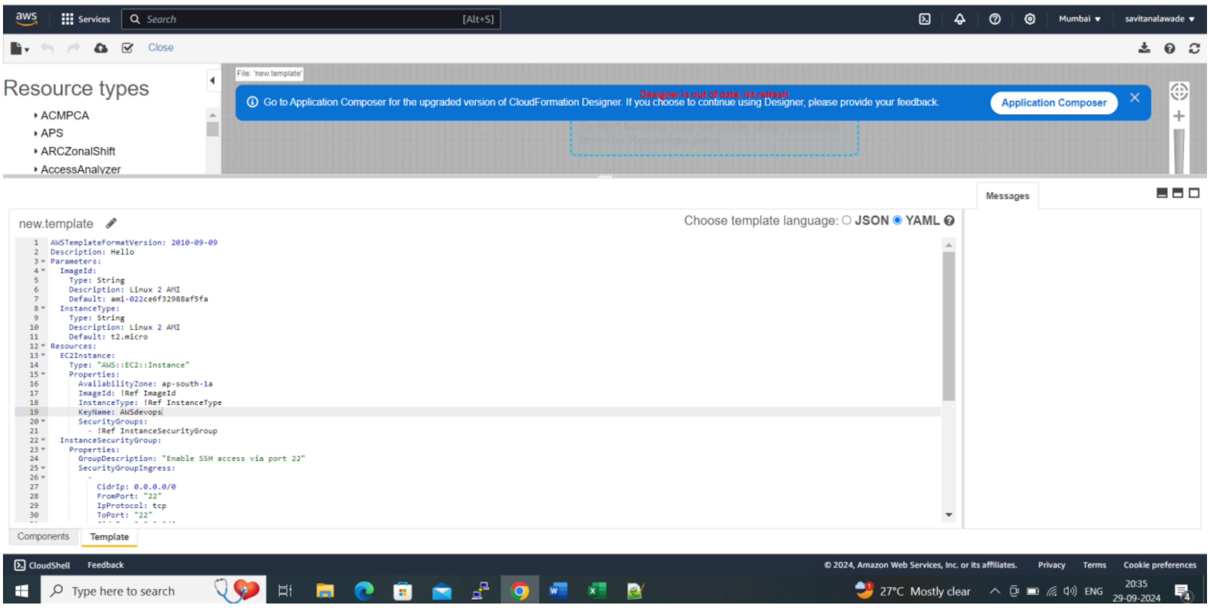
Stacks (7)

Stacks
EC2EBSSG01 2024-09-29 20:31:53 UTC+0530 CREATE_COMPLETE
EC2EBSSG 2024-09-29 20:28:11 UTC+0530 DELETE_IN_PROGRESS
EC2vmwithVolume 2024-09-29 20:20:05 UTC+0530 CREATE_COMPLETE
InstanceEIP 2024-09-29 20:13:30 UTC+0530 CREATE_COMPLETE

Resources (2)

Logical ID	Physical ID	Type	Status	Module
InstanceSecurityGroup01	EC2EBSSG01-InstanceSecurityGroup01-SGAd1c0hAlUj	AWS::EC2::SecurityGroup	CREATE_COMPLETE	-
MyInstance	i-0271abe1ae0d7d230	AWS::EC2::Instance	CREATE_COMPLETE	-

7)Create EC2 instance & update security group and Public IP address of the newly created EC2 instance

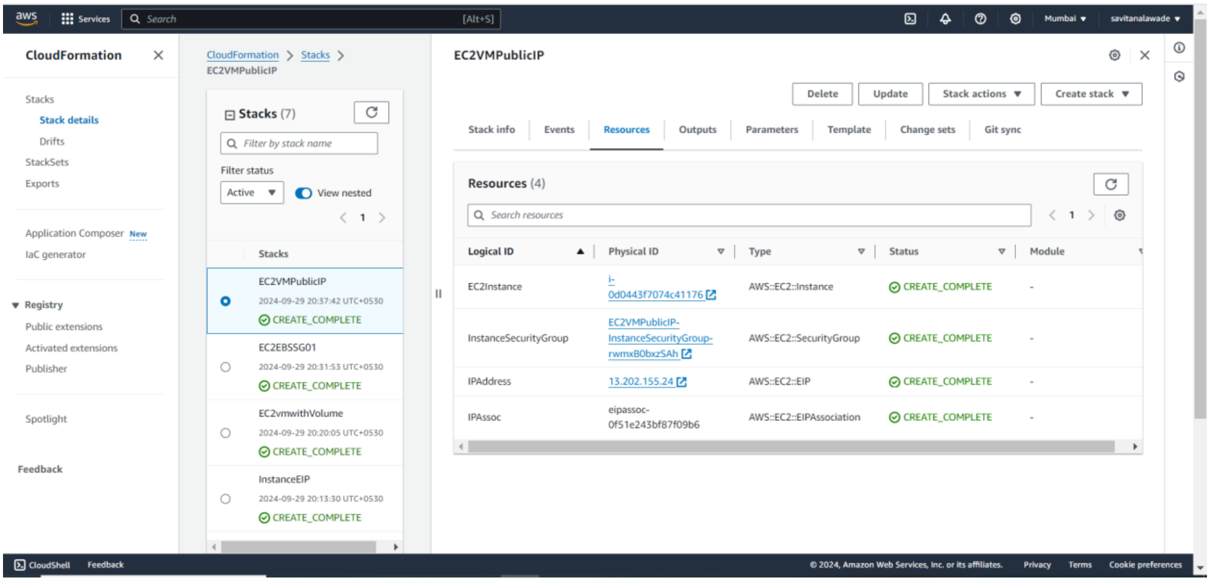


Go to Application Composer for the upgraded version of CloudFormation Designer. If you choose to continue using Designer, please provide your feedback.

new.template

Choose template language: ○ JSON ● YAML

```
AWSTemplateFormatVersion: 2010-09-09
Description: Hello
Parameters:
  ImageId:
    Type: String
    Description: Linux 2 AMI
    Default: ami-022ce6f32988af5fa
  InstanceType:
    Type: String
    Description: Linux 2 AMI
    Default: t2.micro
Resources:
  EC2Instance:
    Type: "AWS::EC2::Instance"
    Properties:
      AvailabilityZone: ap-south-1a
      ImageId: !Ref ImageId
      InstanceType: !Ref InstanceType
      KeyName: AWSdevops
      SecurityGroups:
        - !Ref InstanceSecurityGroup
  InstanceSecurityGroup:
    Properties:
      GroupDescription: "Enable SSH access via port 22"
      SecurityGroupIngress:
        -
          CidrIp: 0.0.0.0/0
          FromPort: "22"
          IpProtocol: tcp
          ToPort: "22"
```



CloudFormation > Stacks > EC2VMPublicIP

Stacks (7)

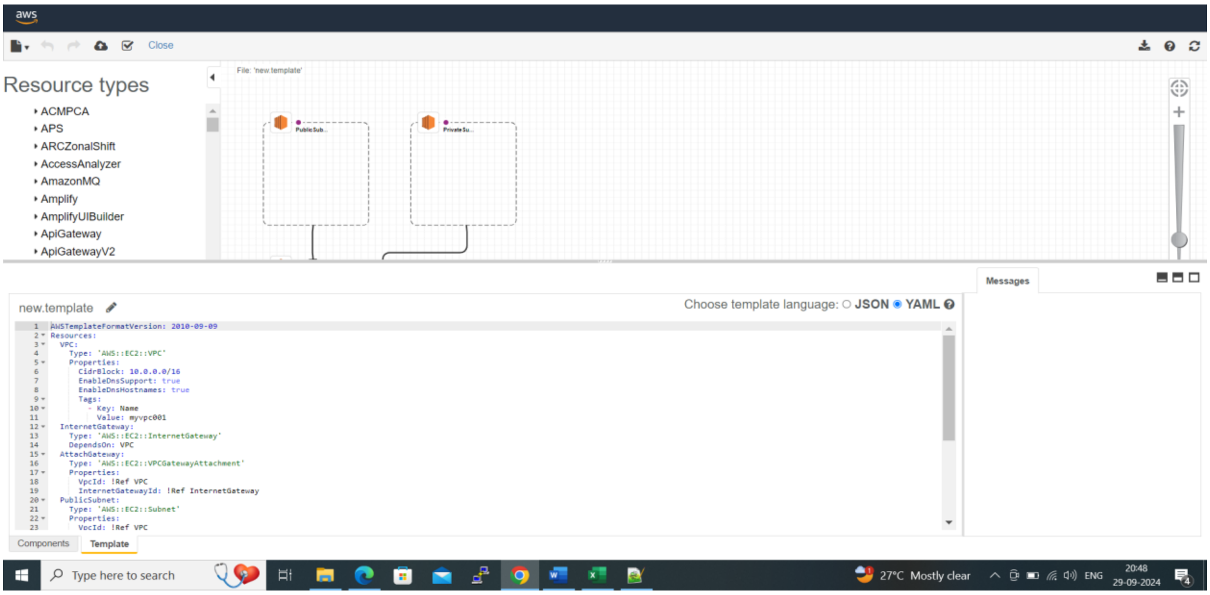
Stacks
EC2VMPublicIP 2024-09-29 20:37:42 UTC+0530 CREATE_COMPLETE
EC2EBSSG01 2024-09-29 20:31:53 UTC+0530 CREATE_COMPLETE
EC2vmwithVolume 2024-09-29 20:20:05 UTC+0530 CREATE_COMPLETE
InstanceEIP 2024-09-29 20:13:30 UTC+0530 CREATE_COMPLETE

EC2VMPublicIP

Resources (4)

Logical ID	Physical ID	Type	Status	Module
EC2Instance	i-0d0443f7074c41176	AWS::EC2::Instance	CREATE_COMPLETE	-
InstanceSecurityGroup	EC2VMPublicIP-InstanceSecurityGroup-rwmxB0bxzSAh	AWS::EC2::SecurityGroup	CREATE_COMPLETE	-
IPAddress	13.202.155.24	AWS::EC2::EIP	CREATE_COMPLETE	-
IPAssoc	eipassoc-0f51e243bf87f09b6	AWS::EC2::EIPAssociation	CREATE_COMPLETE	-

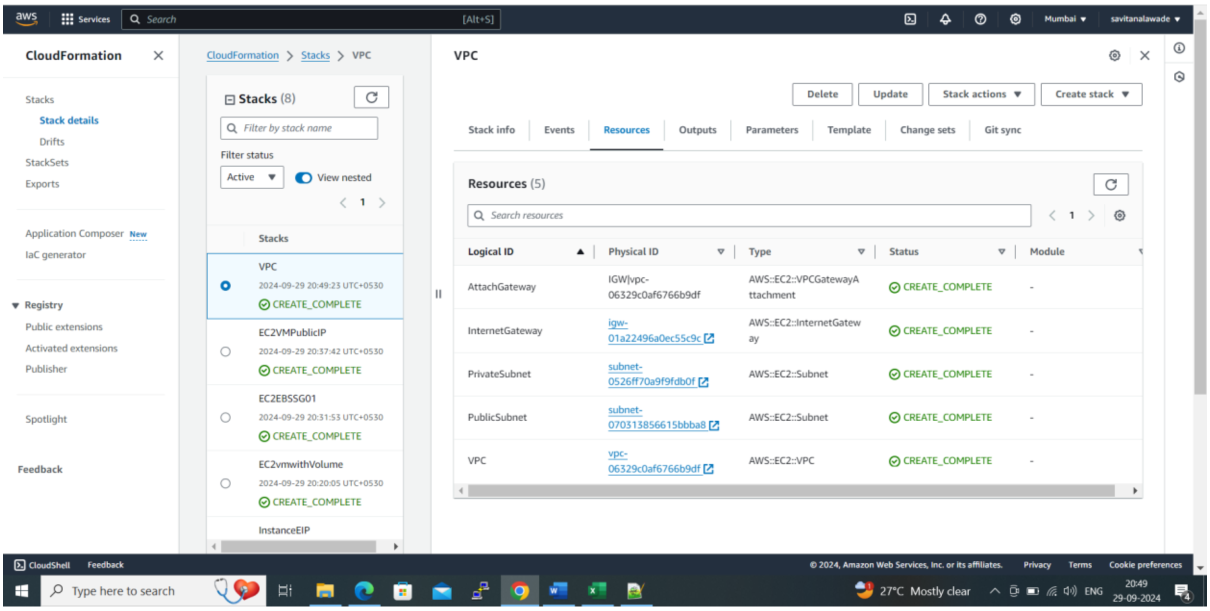
8)Create VPC



new.template

Choose template language: ○ JSON ● YAML

```
AWSTemplateFormatVersion: 2010-09-09
Resources:
  VPC:
    Type: 'AWS::EC2::VPC'
    Properties:
      CidrBlock: 10.0.0.0/16
      EnableDnsSupport: true
      EnableDnsHostnames: true
      Tags:
        - Key: Name
          Value: myvpc001
  InternetGateway:
    Type: 'AWS::EC2::InternetGateway'
    DependsOn: VPC
  AttachGateway:
    Type: 'AWS::EC2::VPCGatewayAttachment'
    Properties:
      VpcId: !Ref VPC
      InternetGatewayId: !Ref InternetGateway
  PublicSubnet:
    Type: 'AWS::EC2::Subnet'
    Properties:
      VpcId: !Ref VPC
```



Stacks (8)

Filter status: Active ☑ View nested

Stacks
● VPC 2024-09-29 20:49:23 UTC+0530 CREATE_COMPLETE
○ EC2VMPublicIP 2024-09-29 20:37:42 UTC+0530 CREATE_COMPLETE
○ EC2EBSSG01 2024-09-29 20:31:53 UTC+0530 CREATE_COMPLETE
○ EC2vmwithVolume 2024-09-29 20:20:05 UTC+0530 CREATE_COMPLETE
InstanceEIP

VPC

Resources (5)

Logical ID	Physical ID	Type	Status	Module
AttachGateway	IGW|vpc-06329c0af6766b9df	AWS::EC2::VPCGatewayAttachment	CREATE_COMPLETE	-
InternetGateway	igw-01a22496a0ec55c9c	AWS::EC2::InternetGateway	CREATE_COMPLETE	-
PrivateSubnet	subnet-0526ff70a9f9fdb0f	AWS::EC2::Subnet	CREATE_COMPLETE	-
PublicSubnet	subnet-070313856615bbba8	AWS::EC2::Subnet	CREATE_COMPLETE	-
VPC	vpc-06329c0af6766b9df	AWS::EC2::VPC	CREATE_COMPLETE	-

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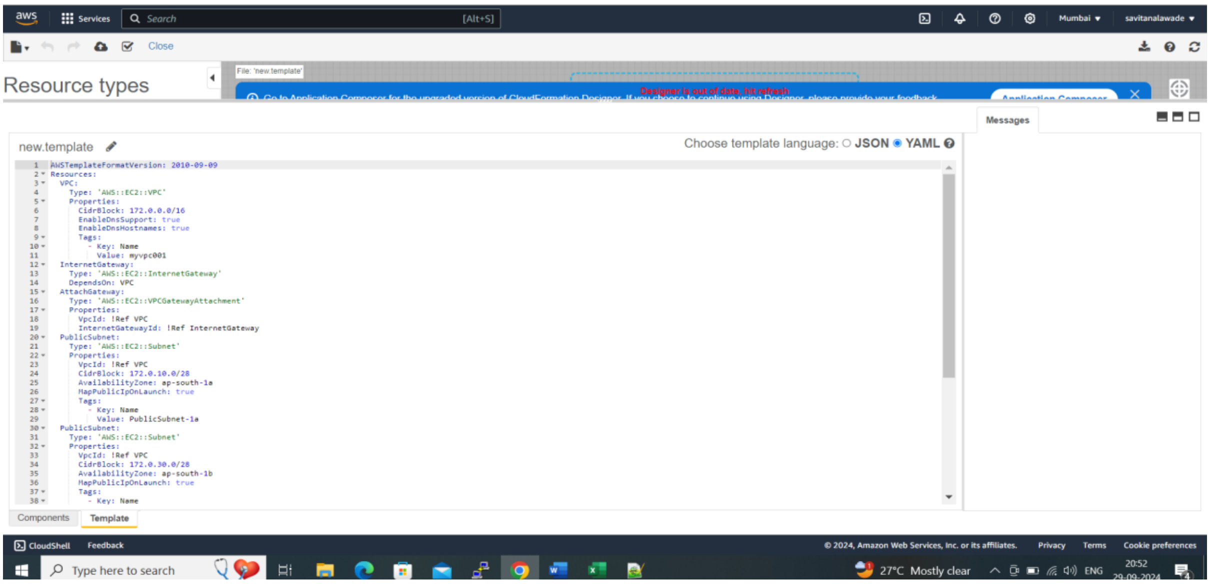
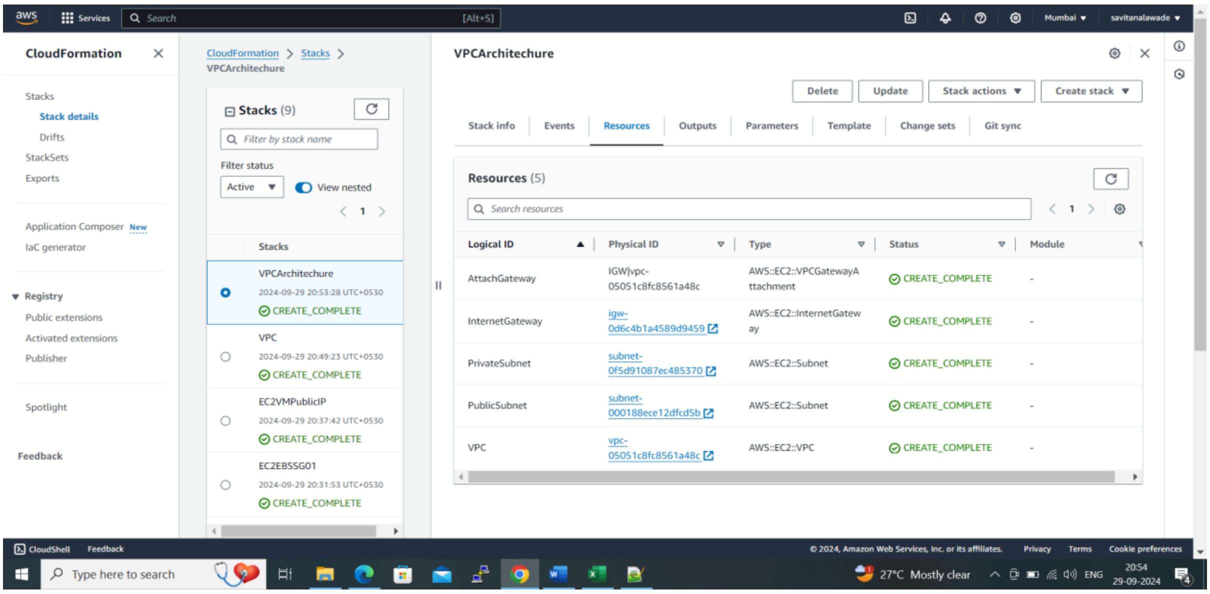
9)VPC Architecture



new.template

```yaml
AWSTemplateFormatVersion: 2010-09-09
Resources:
  VPC:
    Type: 'AWS::EC2::VPC'
    Properties:
      CidrBlock: 172.0.0.0/16
      EnableDnsSupport: true
      EnableDnsHostnames: true
      Tags:
        - Key: Name
          Value: myvpc001
  InternetGateway:
    Type: 'AWS::EC2::InternetGateway'
    DependsOn: VPC
  AttachGateway:
    Type: 'AWS::EC2::VPCGatewayAttachment'
    Properties:
      VpcId: !Ref VPC
      InternetGatewayId: !Ref InternetGateway
  PublicSubnet:
    Type: 'AWS::EC2::Subnet'
    Properties:
      VpcId: !Ref VPC
      CidrBlock: 172.0.10.0/28
      AvailabilityZone: ap-south-1a
      MapPublicIpOnLaunch: true
      Tags:
        - Key: Name
          Value: PublicSubnet-1a
  PublicSubnet:
    Type: 'AWS::EC2::Subnet'
    Properties:
      VpcId: !Ref VPC
      CidrBlock: 172.0.30.0/28
      AvailabilityZone: ap-south-1b
      MapPublicIpOnLaunch: true
      Tags:
        - Key: Name
```

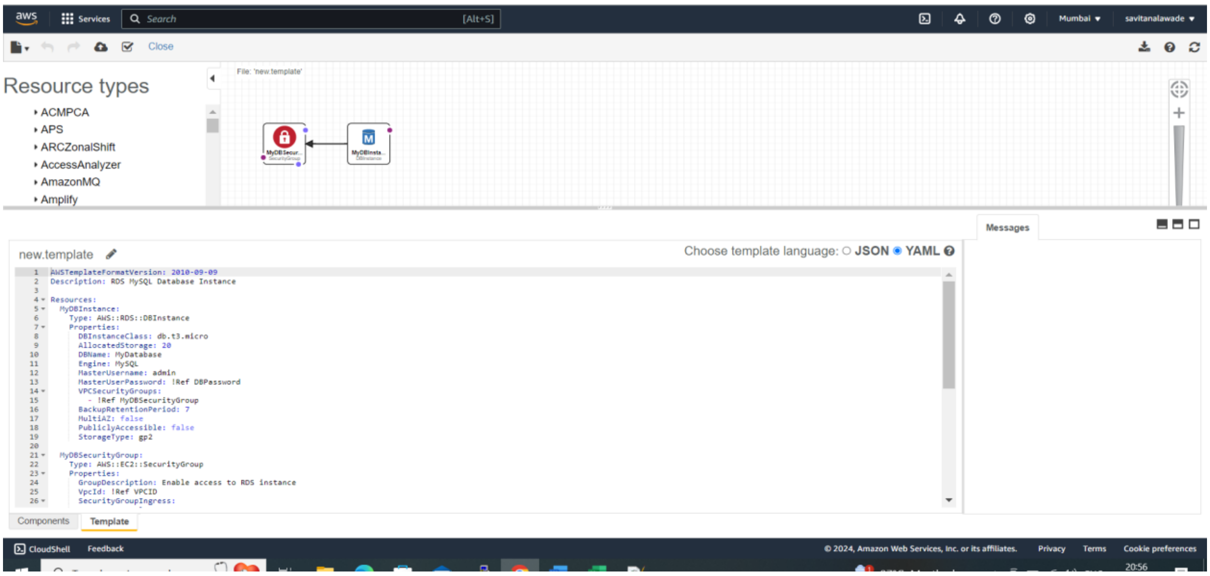


Stacks
● VPCArchitechure 2024-09-29 20:53:28 UTC+0530 CREATE_COMPLETE
○ VPC 2024-09-29 20:49:23 UTC+0530 CREATE_COMPLETE
○ EC2VMPublicIP 2024-09-29 20:37:42 UTC+0530 CREATE_COMPLETE
○ EC2EBSSG01 2024-09-29 20:31:53 UTC+0530 CREATE_COMPLETE

Resources (5)

Logical ID	Physical ID	Type	Status	Module
AttachGateway	IGW|vpc-05051c8fc8561a48c	AWS::EC2::VPCGatewayAttachment	CREATE_COMPLETE	-
InternetGateway	igw-0d6c4b1a4589d9459	AWS::EC2::InternetGateway	CREATE_COMPLETE	-
PrivateSubnet	subnet-0f5d91087ec485370	AWS::EC2::Subnet	CREATE_COMPLETE	-
PublicSubnet	subnet-000188ece12dfcd5b	AWS::EC2::Subnet	CREATE_COMPLETE	-
VPC	vpc-05051c8fc8561a48c	AWS::EC2::VPC	CREATE_COMPLETE	-

10)Create RDS MySQL Database Instance



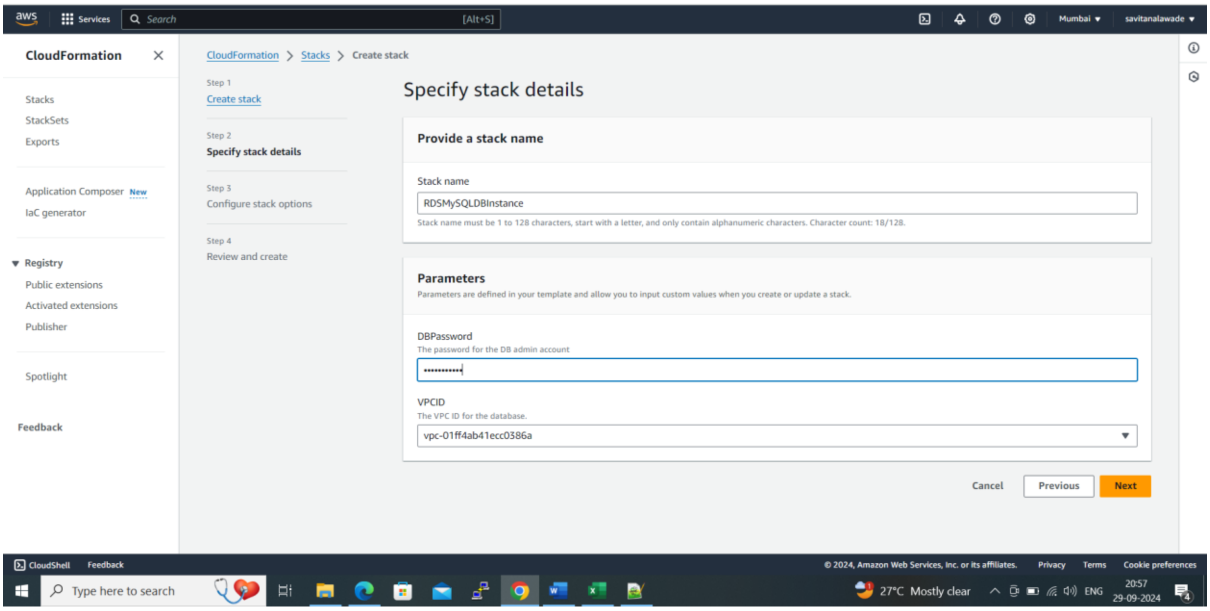
new.template

```yaml
AWSTemplateFormatVersion: 2010-09-09
Description: RDS MySQL Database Instance

Resources:
  MyDBInstance:
    Type: AWS::RDS::DBInstance
    Properties:
      DBInstanceClass: db.t3.micro
      AllocatedStorage: 20
      DBName: MyDatabase
      Engine: MySQL
      MasterUsername: admin
      MasterUserPassword: !Ref DBPassword
      VPCSecurityGroups:
        - !Ref MyDBSecurityGroup
      BackupRetentionPeriod: 7
      MultiAZ: false
      PubliclyAccessible: false
      StorageType: gp2

  MyDBSecurityGroup:
    Type: AWS::EC2::SecurityGroup
    Properties:
      GroupDescription: Enable access to RDS instance
      VpcId: !Ref VPCID
      SecurityGroupIngress:
```

Specify stack details



Specify stack details

Provide a stack name

Stack name: RDSMySQLDBInstance

Stack name must be 1 to 128 characters, start with a letter, and only contain alphanumeric characters. Character count: 18/128.

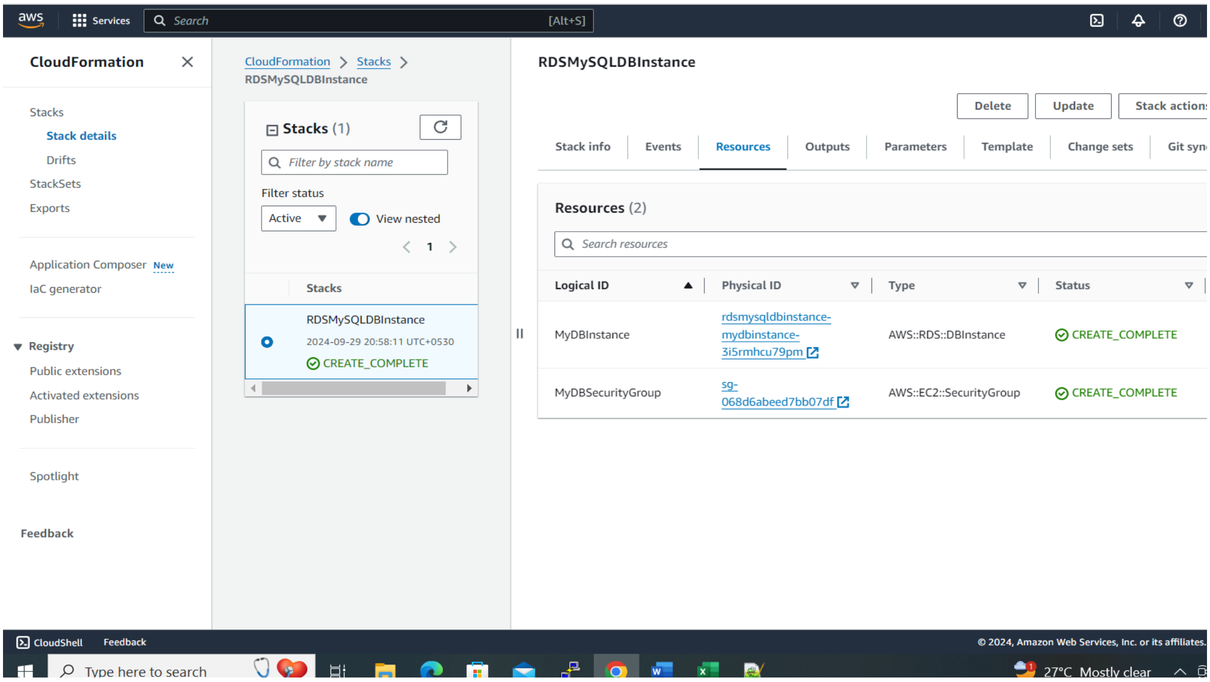
Parameters

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

DBPassword
The password for the DB admin account: •••••••••••

VPCID
The VPC ID for the database.: vpc-01ff4ab41ecc0386a

DBInstance and Security group are created

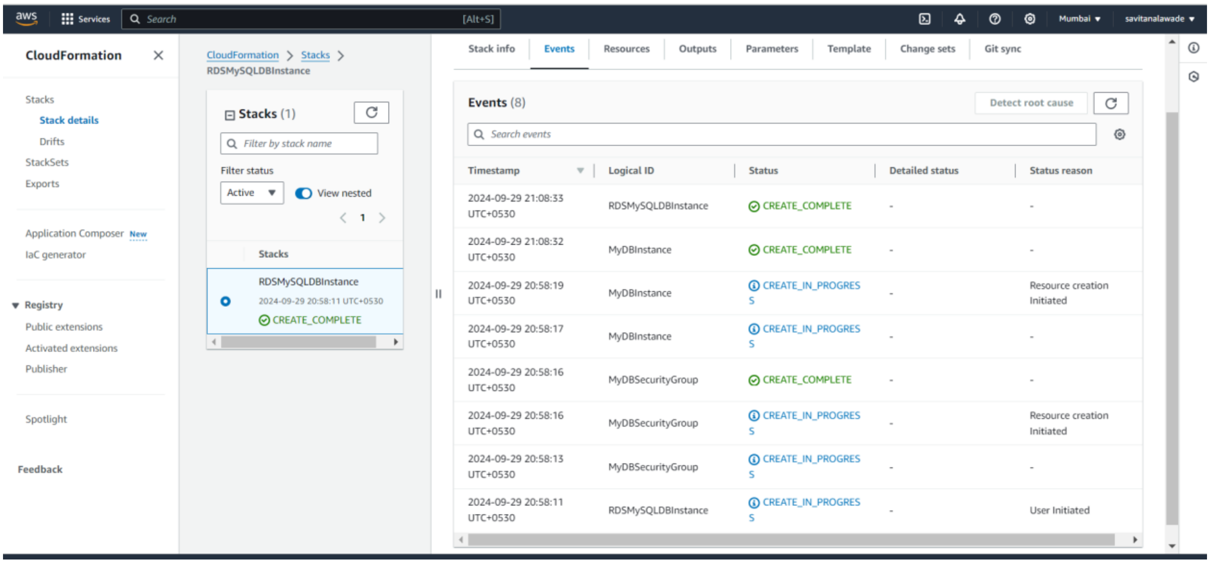


RDSMySQLDBInstance

Stacks
● RDSMySQLDBInstance 2024-09-29 20:58:11 UTC+0530 ✓ CREATE_COMPLETE

Resources (2)

Logical ID	Physical ID	Type	Status
MyDBInstance	rdsmysqldbinstance-mydbinstance-3i5rmhcu79pm	AWS::RDS::DBInstance	✓ CREATE_COMPLETE
MyDBSecurityGroup	sg-068d6abeed7bb07df	AWS::EC2::SecurityGroup	✓ CREATE_COMPLETE



Timestamp	Logical ID	Status	Detailed status	Status reason
2024-09-29 21:08:33 UTC+0530	RDSMySQLDBInstance	✓ CREATE_COMPLETE	-	-
2024-09-29 21:08:32 UTC+0530	MyDBInstance	✓ CREATE_COMPLETE	-	-
2024-09-29 20:58:19 UTC+0530	MyDBInstance	ⓘ CREATE_IN_PROGRESS	-	Resource creation Initiated
2024-09-29 20:58:17 UTC+0530	MyDBInstance	ⓘ CREATE_IN_PROGRESS	-	-
2024-09-29 20:58:16 UTC+0530	MyDBSecurityGroup	✓ CREATE_COMPLETE	-	-
2024-09-29 20:58:16 UTC+0530	MyDBSecurityGroup	ⓘ CREATE_IN_PROGRESS	-	Resource creation Initiated
2024-09-29 20:58:13 UTC+0530	MyDBSecurityGroup	ⓘ CREATE_IN_PROGRESS	-	-
2024-09-29 20:58:11 UTC+0530	RDSMySQLDBInstance	ⓘ CREATE_IN_PROGRESS	-	User Initiated

Thank You!