

AWS CloudFormation Task Documentation

This document provides a comprehensive walkthrough for the task of creating a public VPC, Subnet, EC2 instance, Elastic IP, Internet Gateway, and Security Group using AWS CloudFormation. The outputs and configurations are documented below as per the provided requirements.

```
$ aws cloudformation create-stack \
  --stack-name MyCloudFormationStack \
  --template-body file://cloudformation-template.yaml \
  --region us-east-2
{
  "StackId": "arn:aws:cloudformation:us-east-2:908027419603:stack/MyCloudFormationStack/d3171b50-abb2-11ef-969f-02250bef4841"
}
```

VPC Creation

The VPC was created with the following details:

```
$ aws ec2 describe-vpcs --region us-east-2 --query "Vpcs[*].{VPCId:VpcId,CidrBlock:CidrBlock,IsDefault:IsDefault}" --output table
DescribeVpcs
+-----+-----+-----+
| CidrBlock | IsDefault | VPCId |
+-----+-----+-----+
| 10.0.0.0/16 | False | vpc-0287ad2c549dc6947 |
+-----+-----+-----+
```

Subnet details

The Subnet created under the VPC has the following details:

```
$ aws ec2 describe-subnets --region us-east-2 --query "Subnets[*].{SubnetId:SubnetId,VpcId:VpcId,CidrBlock:CidrBlock,MapPublicIpOnLaunch:MapPublicIpOnLaunch}" --output table
DescribeSubnets
+-----+-----+-----+
| CidrBlock | MapPublicIpOnLaunch | SubnetId | VpcId |
+-----+-----+-----+
| 10.0.1.0/24 | True | subnet-03e46ce9420b1944c | vpc-0287ad2c549dc6947 |
+-----+-----+-----+
```

Internet gateway details

The Internet Gateway was attached to the VPC with the following details:

```
$ aws ec2 describe-internet-gateways --region us-east-2 --query "InternetGateways[*].{InternetGatewayId:InternetGatewayId,Attachments:Attachments}" --output table
DescribeInternetGateways
+-----+
| InternetGatewayId |
+-----+
| igw-016697cdf897a6949 |
+-----+
Attachments
+-----+-----+
| State | VpcId |
+-----+-----+
| available | vpc-0287ad2c549dc6947 |
+-----+-----+
```

Security groups details

A security group was created to allow SSH access with the following details:

Inbound Rule: TCP 22 from 0.0.0.0/0

```
$ aws ec2 describe-security-groups --region us-east-2 --query "SecurityGroups[*].{GroupName:GroupName,GroupId:GroupId,Description:Description,VpcId:VpcId}" --output table
```

DescribeSecurityGroups			
Description	GroupId	GroupName	VpcId
default VPC security group	sg-037b3b31c3ac5aff8	default	vpc-0287ad2c549dc6947
Allow SSH access	sg-007947a9114c0a711	MyCloudFormationStack-MySecurityGroup-gwh2hSI7uspq	vpc-0287ad2c549dc6947

Route table details

The Route tables was successfully attached with the following details

```
$ aws ec2 describe-route-tables --region us-east-2 --query "RouteTables[*].{VpcId:VpcId, Routes:Routes}" --output table
```

DescribeRouteTables			
VpcId	Routes		
DestinationCidrBlock	GatewayId	Origin	State
10.0.0.0/16	local	CreateRouteTable	active
0.0.0.0/0	igw-016697cdf897a6949	CreateRoute	active

DescribeRouteTables			
VpcId	Routes		
DestinationCidrBlock	GatewayId	Origin	State
10.0.0.0/16	local	CreateRouteTable	active

Ec2 instance details

The EC2 instance was successfully launched with the following details:

```
$ aws ec2 describe-instances --region us-east-2 --query 'Reservations[*].Instances[*].{InstanceId:InstanceId,State:State.Name,PublicIpAddress:PublicIpAddress,SubnetId:SubnetId,SecurityGroups:SecurityGroups[0].GroupName}' --output table
```

DescribeInstances	
InstanceId	i-0469ff1e1cd670ef6
PublicIpAddress	3.16.48.236
SecurityGroups	MyCloudFormationStack-MySecurityGroup-gwh2hSI7uspq
State	running
SubnetId	subnet-03e46ce9420b1944c

Connectivity test

```
$ ssh -i "MyKeyPair.pem" ec2-user@3.16.48.236
Last login: Tue Nov 26 16:18:07 2024 from 49.204.162.175

#_
~\##### Amazon Linux 2
~~\#####
~~\###| AL2 End of Life is 2025-06-30.
~~\#/
~~V~'-'>
~~~
~~~.._
~~~/_/_/_
_/_/_/_/m/'_

A newer version of Amazon Linux is available!

Amazon Linux 2023, GA and supported until 2028-03-15.
https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-10-0-1-11 ~]$
[ec2-user@ip-10-0-1-11 ~]$
[ec2-user@ip-10-0-1-11 ~]$ ping google.com
PING google.com (142.250.191.174) 56(84) bytes of data:
64 bytes from ord38s30-in-f14.1e100.net (142.250.191.174): icmp_seq=1 ttl=117 time=8.87 ms
64 bytes from ord38s30-in-f14.1e100.net (142.250.191.174): icmp_seq=2 ttl=117 time=8.69 ms
64 bytes from ord38s30-in-f14.1e100.net (142.250.191.174): icmp_seq=3 ttl=117 time=9.11 ms
64 bytes from ord38s30-in-f14.1e100.net (142.250.191.174): icmp_seq=4 ttl=117 time=9.28 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 8.695/8.991/9.289/0.236 ms
[ec2-user@ip-10-0-1-11 ~]$
```