

Lab Assignment 09

Create a VPC with AWS Cloud Formation

Reference article link: <https://medium.com/@rahulmuthu80/provision-highly-available-vpc-architecture-using-cloudformation-fit-devops-3cd62ba54a91>

Task-1 : Provisioning VPC using CloudFormation template

We are going to implement the following architecture.

We will create the following Resources.

- VPC with CIDR : 10.0.0.0/16
- 2 Public Subnets in Each AZ.

PublicSubnet1 : 10.0.10.0/24

PublicSubnet2 : 10.0.11.0/24

- 2 Private Subnets in Each AZ.

PrivateSubnet1 : 10.0.20.0/24

PrivateSubnet2 : 10.0.21.0/24

- 1 Route Table for Public Subnets
- 2 Route Tables , One for each Private Subnet
- Internet Gateway — Will be attached with Public Route Table
- 2 NAT Gateway in each AZ and will be attached with each private Route Tables.

Let us create a template file named VPC.yaml

Now let's provision the VPC using the template we built.

The screenshot shows the AWS CloudFormation console's 'Create stack' wizard. The left sidebar lists four steps: Step 1: Specify template (active), Step 2: Specify stack details, Step 3: Configure stack options, and Step 4: Review. The main content area is titled 'Create stack' and contains a 'Prerequisite - Prepare template' section. This section explains that every stack is based on a template (JSON or YAML) and provides three options: 'Template is ready' (selected), 'Use a sample template', and 'Create template in Designer'.

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CloudFormation > Stacks > Create stack

Step 1
Specify template

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Create stack

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

This screenshot shows the 'Specify template' step of the AWS CloudFormation console. It explains that a template is a JSON or YAML file describing stack resources. Under 'Template source', the 'Upload a template file' option is selected. Below this, the 'Upload a template file' section shows a 'Choose file' button and the filename 'VPC.yaml'. The 'S3 URL' field is populated with 'https://s3.ap-south-1.amazonaws.com/cf-templates-6diwj0pcl7a-ap-south-1/2021097koB-VPC.yaml'. A 'View in Designer' button is also present. At the bottom right, there are 'Cancel' and 'Next' buttons.

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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 VPC.yaml

JSON or YAML formatted file

S3 URL: https://s3.ap-south-1.amazonaws.com/cf-templates-6diwj0pcl7a-ap-south-1/2021097koB-VPC.yaml View in Designer

Cancel Next

This screenshot shows the 'Specify stack details' step of the AWS CloudFormation console. The left sidebar shows Step 2: Specify stack details (active), Step 3: Configure stack options, and Step 4: Review. The main content area is titled 'Specify stack details' and contains two sections: 'Stack name' and 'Parameters'. In the 'Stack name' section, the name 'Cloud-VPC' is entered. In the 'Parameters' section, 'EnvironmentName' is set to 'Stage-VPC' and 'PrivateSubnet1CIDR' is set to '10.0.20.0/24'.

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Specify stack details

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Specify stack details

Stack name

Stack name

Cloud-VPC

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.

EnvironmentName
Each Resource name will be prefixed with Environment Name

Stage-VPC

PrivateSubnet1CIDR
Enter CIDR notation for Private subnet in the First Availability Zone

10.0.20.0/24

Create the stack

CloudFormation > Stacks > Cloud-VPC

Stacks (1)

Filter by stack name

Active View nested

Cloud-VPC
2021-04-07 17:20:16 UTC+0530
CREATE_IN_PROGRESS

Cloud-VPC Delete Update Stack actions Create stack

Stack info **Events** Resources Outputs Parameters Template

Change sets

Events (1)

Search events

Timestamp	Logical ID	Status	Status reason
2021-04-07 17:20:16 UTC+0530	Cloud-VPC	CREATE_IN_PROGRESS	User Initiated

Task-2 : Check the resources created in the Resources Tab.

CloudFormation > Stacks > Cloud-VPC

Stacks (1)

Filter by stack name

Active View nested

Cloud-VPC
2021-04-07 17:20:16 UTC+0530
CREATE_IN_PROGRESS

Cloud-VPC Delete Update Stack actions Create stack

Stack info Events **Resources** Outputs Parameters Template

Change sets

Resources (20)

Search resources

Logical ID	Physical ID	Type	Status	Status reason	Module
DefaultPublicRoute	Cloud-DefaultPublicRoute1S	AWS::EC2::Route	CREATE_COMPLETE	-	-
		AWS::E	CREATE_COMPLETE	-	-

Task-3 : Go to VPC and find the newly created VPC from the template.

Your VPCs (2) Info

Filter VPCs

<input type="checkbox"/>	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR
<input type="checkbox"/>	-	vpc-a827d6c3	Available	172.31.0.0/16	-
<input type="checkbox"/>	Stage-VPC	vpc-0087231c4af6...	Available	10.0.0.0/16	-

Task-4 : Check the subnets.

Subnets (7) Info

Filter subnets

<input type="checkbox"/>	Name	Subnet ID	State	VPC	IPv4 CIDR
<input type="checkbox"/>	-	subnet-4e1d8b35	Available	vpc-a827d6c3	172.31.16.0/24
<input type="checkbox"/>	Stage-VPC Pu...	subnet-00fc0459062c...	Available	vpc-0087231c4af694e...	10.0.11.0/24
<input type="checkbox"/>	Stage-VPC Pri...	subnet-0561db1a429...	Available	vpc-0087231c4af694e...	10.0.21.0/24
<input type="checkbox"/>	Stage-VPC Pri...	subnet-0e874a68bffd...	Available	vpc-0087231c4af694e...	10.0.20.0/24
<input type="checkbox"/>	Stage-VPC Pu...	subnet-0519fb4367e3...	Available	vpc-0087231c4af694e...	10.0.10.0/24
<input type="checkbox"/>	-	subnet-29074865	Available	vpc-a827d6c3	172.31.0.0/24

Select a subnet

Task-5 : Check the route tables.

Filter by tags and attributes or search by keyword

Name	Route Table ID	Explicit subnet association	Edge associations	Main	VPC ID
Stage-VPC Private Routes (AZ1)	rtb-09e06d902f2531843	subnet-0e874a68bffe5e1a	-	No	vpc-0087231c4af694e
Stage-VPC Public Routes	rtb-00a875ce5b61d606f	2 subnets	-	No	vpc-0087231c4af694e
	rtb-080233c222975b2b8	-	-	Yes	vpc-0087231c4af694e
Stage-VPC Private Routes (AZ2)	rtb-08bb1c8229055fc18	subnet-0561db1a42999e553	-	No	vpc-0087231c4af694e
	rtb-ca2196a1	-	-	Yes	vpc-a827d6c3

Task-6 : Check the Internet Gateway.

Filter internet gateways

Name	Internet gateway ID	State	VPC ID
Stage-VPC	igw-0af022b83dfdf8d01	Attached	vpc-0087231c4af694eda St...
-	igw-1a149772	Attached	vpc-a827d6c3

Task-7 : Check the NAT Gateway.

Filter NAT gateways

Name	NAT gateway ID	State	State mes...	Elastic IP a...	Public IP
-	nat-07680badf9a448a...	Available	-	65.1.203.36	1
-	nat-00abb6b75cbb1e...	Available	-	65.2.61.146	1

Select a NAT gateway