

Lab Assignment 07

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. The top navigation bar includes the AWS logo, 'Services' dropdown, a search bar, and user information. The left sidebar shows the navigation menu with 'CloudFormation' selected. The main content area is titled 'Create stack' and shows 'Step 1: Specify template'. The 'Prerequisite - Prepare template' section explains that a template is a JSON or YAML file. Three options are available: '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

The screenshot shows the 'Specify template' step of the 'Create stack' process. It explains that a template is a JSON or YAML file. Under 'Template source', 'Upload a template file' is selected. The 'Upload a template file' section shows a 'Choose file' button and the filename 'VPC.yaml'. Below this, the 'S3 URL' is displayed as '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

The screenshot shows the 'Specify stack details' step of the 'Create stack' process. The 'Stack name' section has a text input field containing 'Cloud-VPC'. Below it, a note states: 'Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-)'. The 'Parameters' section explains that parameters are defined in the template. The 'EnvironmentName' parameter is shown with a text input field containing 'Stage-VPC'. The 'PrivateSubnet1CIDR' parameter is shown with a text input field containing '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

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-0e874a68bfd...	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