

Module 4: VPC Assignment - 1

You have been asked to:

1. Create a VPC with 120.0.0.0/16 CIDR block
2. Create 1 public subnet, 2 private subnets and make sure you connect a NAT gateway for internet connectivity to private subnets.

Get on to the VPC dashboard and select Create VPC.

The screenshot shows the AWS VPC dashboard in the US East region. The 'Resources by Region' section displays a grid of VPC resources. The 'Create VPC' button is located at the top left of the dashboard. The 'Service Health' section on the right indicates that the Amazon EC2 - US East service is operating normally. The 'Settings' section on the right provides links to VPC Documentation, All VPC Resources, Forums, and Report an Issue. The 'AWS Network Manager' section provides information about managing and monitoring networks on AWS. The 'Site-to-Site VPN Connections' section provides information about connecting resources directly to your own datacenter using industry-standard encrypted IPsec VPN connections.

Give our VPC a Name and enter IPv4 CIDR as mentioned in assignment, i.e 120.0.0.0/16.

The screenshot shows the 'Create VPC' wizard in the AWS console. The 'VPC settings' section is active, showing the 'Resources to create' as 'VPC only'. The 'Name tag - optional' field is set to 'for-assignment'. The 'IPv4 CIDR block' is set to 'IPv4 CIDR manual input' with the value '120.0.0.0/16'. The 'IPv6 CIDR block' is set to 'No IPv6 CIDR block'. The 'Tenancy' is set to 'Default'. The 'Tags' section shows a key-value pair: 'Name' with value 'for-assignment'. The 'Create VPC' button is visible at the bottom right.

Now let's create 1 Public and 2 Private Subnets. Select 'create subnet'.

The screenshot shows the AWS Management Console interface for the 'Subnets' page. The left sidebar contains navigation links for various AWS services. The main content area shows a table of existing subnets with columns for Name, Subnet ID, State, VPC, IPv4 CIDR, IPv6 CIDR, Available IPv4 addresses, and Availability Zone. Below the table, there is a 'Select a subnet' section with a search bar and a list of subnets. A 'Create subnet' button is visible in the top right corner.

Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses	Availability Zone
subnet-01a1bc49981cd057	subnet-01a1bc49981cd057	Available	vpc-077b06a7f3ea1c93a	172.31.80.0/20	-	4088	us-east-1
subnet-0a76001c7d668b65	subnet-0a76001c7d668b65	Available	vpc-077b06a7f3ea1c93a	172.31.32.0/20	-	4090	us-east-1
subnet-07279ccfb611d943c	subnet-07279ccfb611d943c	Available	vpc-077b06a7f3ea1c93a	172.31.40.0/20	-	4091	us-east-1
subnet-02062bdc10f97d42a	subnet-02062bdc10f97d42a	Available	vpc-077b06a7f3ea1c93a	172.31.64.0/20	-	4091	us-east-1
subnet-0270d989f6c118ad7	subnet-0270d989f6c118ad7	Available	vpc-077b06a7f3ea1c93a	172.31.16.0/20	-	4091	us-east-1
subnet-033eaffab4ef2bd3	subnet-033eaffab4ef2bd3	Available	vpc-077b06a7f3ea1c93a	172.31.0.0/20	-	4091	us-east-1

Select the VPC that we just created.

The screenshot shows the 'Create subnet' page in the AWS Management Console. The page has a 'VPC' section with a 'VPC ID' field. A dropdown menu is open, showing a list of VPCs. The first VPC is 'vpc-01b4b6467804202 (for-acceptance)' with ID '172.31.0.0/16'. The second VPC is 'vpc-077b06a7f3ea1c93a' with ID '172.31.0.0/16' and is marked as '(default)'. Below the dropdown, there is a message 'Select a VPC first to create new subnets.' and an 'Add new subnet' button. At the bottom of the page, there are 'Cancel' and 'Create subnet' buttons.

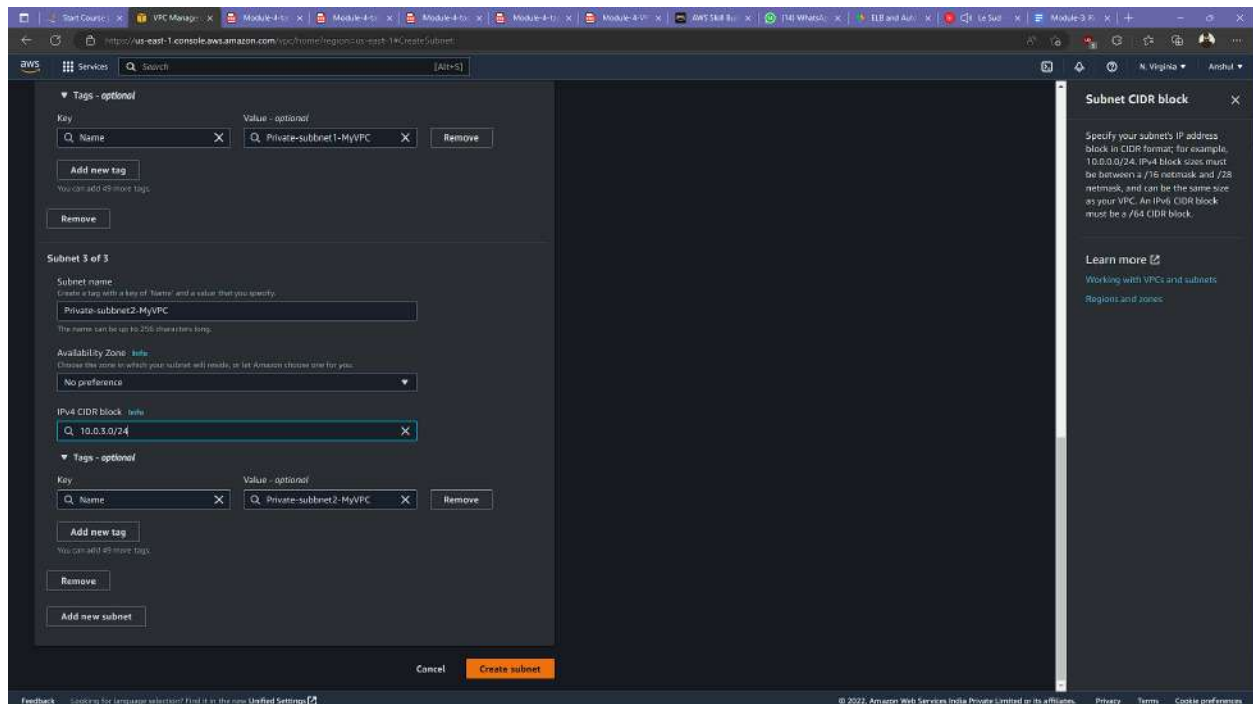
Let's create public subnet first, name it respectively. While selecting IPv4 CIDR block make sure the range of block be in between /16 netmask and /28 netmask.
After filling respective fields. Select Add subnet to add private subnet.

The screenshot shows the 'Create Subnet' page in the AWS Management Console. The 'Associated VPC' is 'vpc-0cbbd6c6467804a02 (for-assignment)'. The 'IPv4 CIDR' is '120.0.0.0/16'. Under 'Subnet settings', 'Subnet 1 of 1' is configured with the name 'MyVPC-public-subnet', 'Availability Zone' set to 'No preference', and 'IPv4 CIDR block' set to '120.0.1.0/24'. A tag is added with key 'Name' and value 'MyVPC-public-subnet'. The 'Create subnet' button is highlighted in orange.

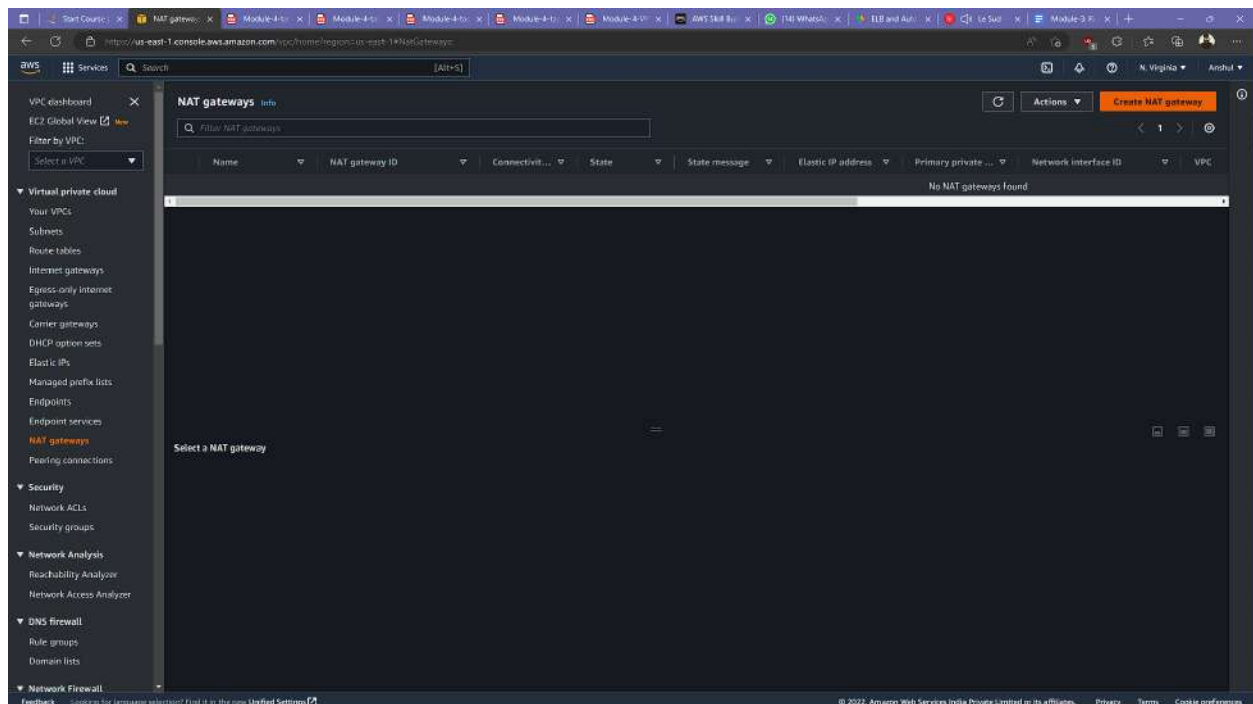
Enter name of private subnet 1 and choose ipv4 cidr block.

The screenshot shows the 'Create Subnet' page for 'Subnet 2 of 3'. The 'IPv4 CIDR' is '120.0.1.0/24'. The 'Subnet name' is 'Private-subnet1-MyVPC'. The 'Availability Zone' is 'No preference'. The 'IPv4 CIDR block' is '120.0.2.0/24'. A tag is added with key 'Name' and value 'Private-subnet1-MyVPC'. The 'Add new tag' button is visible.

Now add Private subnet2 in similar fashion,
Then choose 'create subnet'.
Your 1 public and 2 private subnets under our new VPC has been created.



Now that subnets are created, Lets create NAT gateway for our Private Subnets.



Choose name for your NAT gateway and make sure to choose PUBLIC SUBNET while making NAT gateway. Then choose create NAT Gateway.

NAT gateway settings

Name - optional
Create a tag with a key of Name and a value that you specify.
for-assignment
The name can be up to 256 characters long.

Subnet
Select a subnet in which to create the NAT gateway.
subnet-00a939199023e9e0b (MyVPC-public-subnet)

Connectivity type
Select a connectivity type for the NAT gateway.
☒ Public
☐ Private

Elastic IP allocation ID - info
Assign an Elastic IP address to the NAT gateway.
eipalloc-0eb25de7deec50d72 [Allocate Elastic IP](#)

Tags
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - optional
Name for-assignment [Remove](#)
[Add new tag](#)
You can add 43 more tags.

[Cancel](#) [Create NAT gateway](#)

Let's route nat gateway to subnet through Route Table. Create a Route Table.

Route tables (1/1) [info](#)

[Filter route tables](#) [Clear filters](#)

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC	Owner ID
-	rtb-0a0b1e6601bb8d756	-	-	Yes	vpc-0c0bd6c6467804a02 for-...	623332020272

rtb-0a0b1e6601bb8d756

[Details](#) [Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

[You can now check network connectivity with Reachability Analyzer](#) [Run Reachability Analyzer](#)

Details

Route table ID <input checked="" type="checkbox"/> rtb-0a0b1e6601bb8d756	Main <input checked="" type="checkbox"/> Yes	Explicit subnet associations -	Edge associations -
VPC vpc-0c0bd6c6467804a02 for-assignment	Owner ID <input checked="" type="checkbox"/> 623332020272		

Give name to the route table. And choose the VPC that we just created.

Create route table [info](#)

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

Route table settings

Name - optional
Create a tag with a key of 'Name' and a value that you specify.

VPC
The VPC to use for this route table.
Select a VPC

vpc-0c2bd6c6467804a02 (for-assignment)
vpc-077b06a7f3ea1c33a (default)
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key **Value - optional**

You can add 40 more tags.

Repeat the step again, Give name to the route table. And choose the VPC that we just created for other private subnet.

Create route table [info](#)

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

Route table settings

Name - optional
Create a tag with a key of 'Name' and a value that you specify.

VPC
The VPC to use for this route table.
Select a VPC

vpc-0c2bd6c6467804a02 (for-assignment)
vpc-077b06a7f3ea1c33a (default)
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key **Value - optional**

You can add 40 more tags.

Select route table that we just created. Click on edit route.

Route table rtb-0d1b855b487d3678d / for-privatesubnet2

You can now check network connectivity with Reachability Analyzer

Run Reachability Analyzer

Details

Route table ID rtb-0d1b855b487d3678d	Main No	Explicit subnet associations -	Edge associations -
VPC vpc-0cd9f6c6467804a02 (for-assignment)	Owner ID 625352020272		

Routes

Destination	Target	Status	Propagated
120.0.0.0/16	local	Active	No

Select add route.

Edit routes

Destination	Target	Status	Propagated
120.0.0.0/16	local	Active	No

Add route

Cancel Preview Save changes

Let the traffic from anywhere i.e 0.0.0.0/0 and let target be the NAT gateway we crated.

The screenshot shows the AWS Management Console interface for editing routes in a route table. The breadcrumb navigation indicates the path: VPC > Route tables > rtb-0d1b855b487f35678d > Edit routes. The page title is 'Edit routes'. Below the title, there is a table with four columns: Destination, Target, Status, and Propagated. The first row shows a destination of 120.0.0.0/16, a target of local, an active status, and no propagation. A second row is being edited, with the destination dropdown open, showing a list of IP ranges. The target is currently empty, and the status is set to 'No'. The 'Propagated' column also shows 'No'. At the bottom right of the table, there are buttons for 'Cancel', 'Preview', and 'Save changes'.

Destination	Target	Status	Propagated
120.0.0.0/16	local	Active	No
0.0.0.0/0		No	No

The screenshot shows the AWS Management Console interface for editing routes in a route table. The breadcrumb navigation indicates the path: VPC > Route tables > rtb-0d1b855b487f35678d > Edit routes. The page title is 'Edit routes'. Below the title, there is a table with four columns: Destination, Target, Status, and Propagated. The first row shows a destination of 120.0.0.0/16, a target of local, an active status, and no propagation. A second row is being edited, with the destination set to 0.0.0.0/0 and the target dropdown open, showing a list of target options. The status is set to 'No' and the 'Propagated' column also shows 'No'. At the bottom right of the table, there are buttons for 'Cancel', 'Preview', and 'Save changes'.

Destination	Target	Status	Propagated
120.0.0.0/16	local	Active	No
0.0.0.0/0	NAT Gateway	No	No

Select save changes.

The screenshot shows the 'Edit routes' page in the AWS Management Console. The page title is 'Edit routes'. Below the title, there is a table with columns: Destination, Target, Status, and Propagated. The table contains two rows:

Destination	Target	Status	Propagated
120.0.0.0/16	local	Active	No
0.0.0.0/0	nat-0b47079186aeec5ce	-	No

Below the table, there is an 'Add route' button. At the bottom right, there are three buttons: 'Cancel', 'Preview', and 'Save changes'.

Now select subnet associations and add subnet associations.

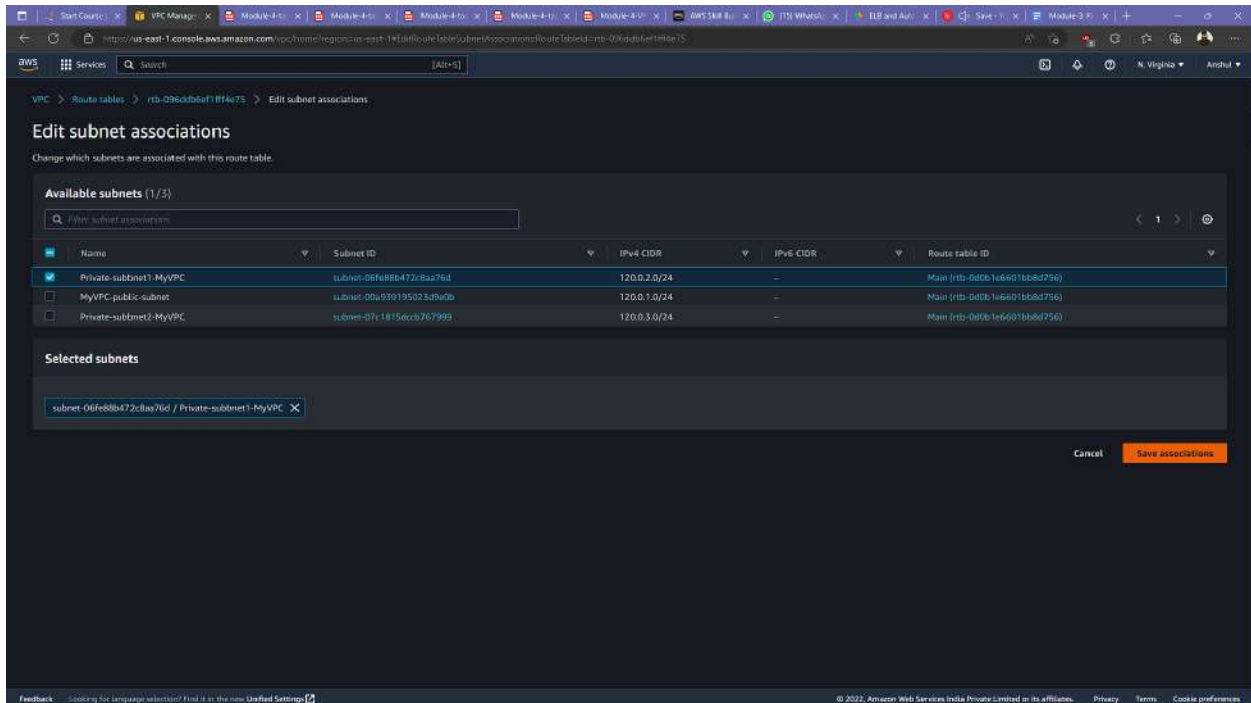
The screenshot shows the 'Subnet associations' page in the AWS Management Console. The page title is 'rtb-0d1b855b487d3678d / for-privatesubnet2'. Below the title, there is a 'Details' section with the following information:

Route table ID	Main	Explicit subnet associations	Edge associations
rtb-0d1b855b487d3678d	No	-	-

Below the details section, there is a 'Subnet associations' section with a search bar and a table. The table has columns: Subnet ID, IPv4 CIDR, and IPv6 CIDR. The table is empty, and there is a message: 'No subnet associations. You do not have any subnet associations.'

Below the subnet associations section, there is a 'Subnets without explicit associations' section with a search bar and a table. The table has columns: Subnet ID, IPv4 CIDR, and IPv6 CIDR. The table is empty, and there is a message: 'The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table.'

Choose respective subnet for that route table.



Edit subnet associations
Change which subnets are associated with this route table.

Available subnets (1/3)

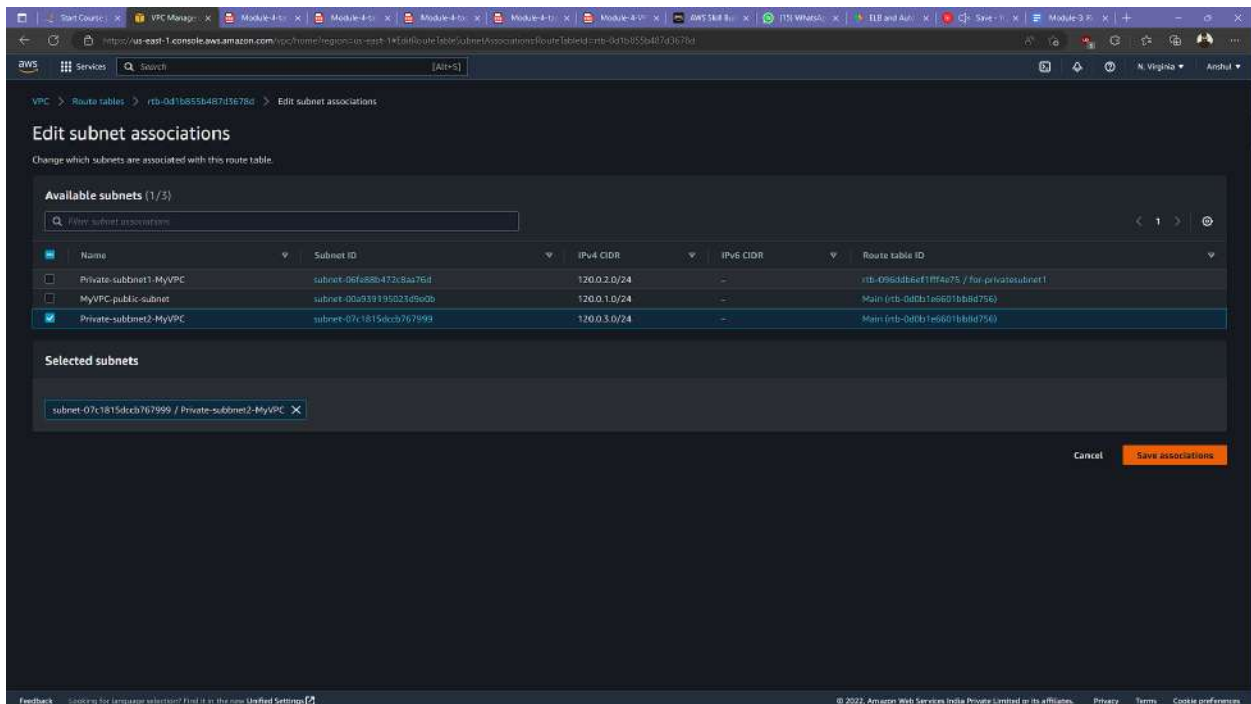
Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/> Private-subnet1-MyVPC	subnet-06fe88b472c8aa76d	120.0.2.0/24	—	Main (rtb-0d0b1e601bb8d75e)
<input type="checkbox"/> MyVPC-public-subnet	subnet-00a939195023d900b	120.0.1.0/24	—	Main (rtb-0d0b1e601bb8d75e)
<input type="checkbox"/> Private-subnet2-MyVPC	subnet-07c1815dcdb767999	120.0.3.0/24	—	Main (rtb-0d0b1e601bb8d75e)

Selected subnets

subnet-06fe88b472c8aa76d / Private-subnet1-MyVPC

Cancel Save associations

Repeat above steps for other route table as well.



Edit subnet associations
Change which subnets are associated with this route table.

Available subnets (1/3)

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/> Private-subnet1-MyVPC	subnet-06fe88b472c8aa76d	120.0.2.0/24	—	rtb-096cd8ef1ff4e75 / for-private-subnet1
<input type="checkbox"/> MyVPC-public-subnet	subnet-00a939195023d900b	120.0.1.0/24	—	Main (rtb-0d0b1e601bb8d75e)
<input checked="" type="checkbox"/> Private-subnet2-MyVPC	subnet-07c1815dcdb767999	120.0.3.0/24	—	Main (rtb-0d0b1e601bb8d75e)

Selected subnets

subnet-07c1815dcdb767999 / Private-subnet2-MyVPC

Cancel Save associations

Hence from route table, Private Subnet is connected to internet through NAT gateway, the gateway from public subnet.