

Assignment

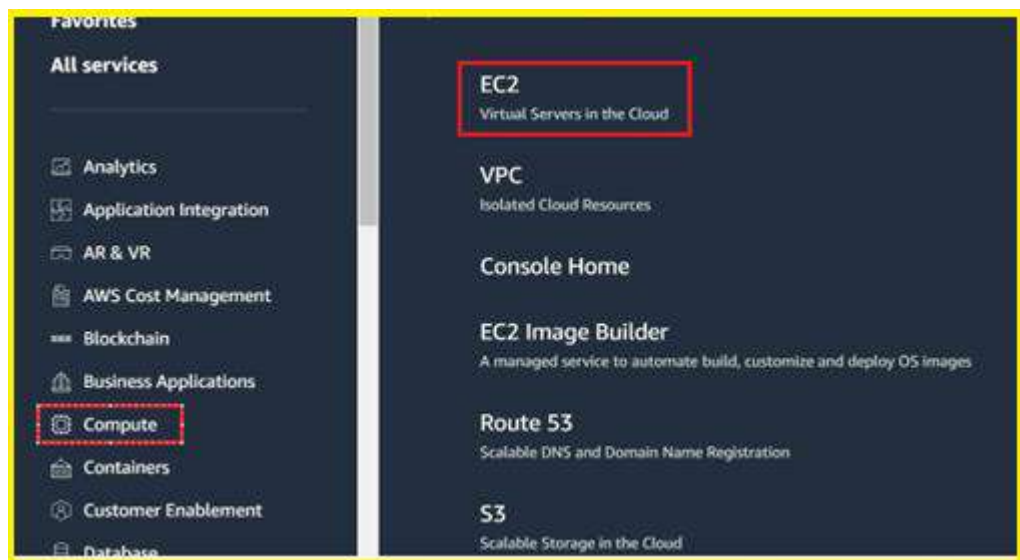
1. EC2 instances (2 machines - 1st machine - name, 2nd machine - sur name)
2. EBS volume
3. Snapshot
4. AMI
5. Load Balancer
6. VPC with 2 public subnets & 2 private subnet having Internet gateway and NAT gateway
7. VPC Peering

Note: Follow the powerpoint for VPC & VPC peering architecture and reiterate.

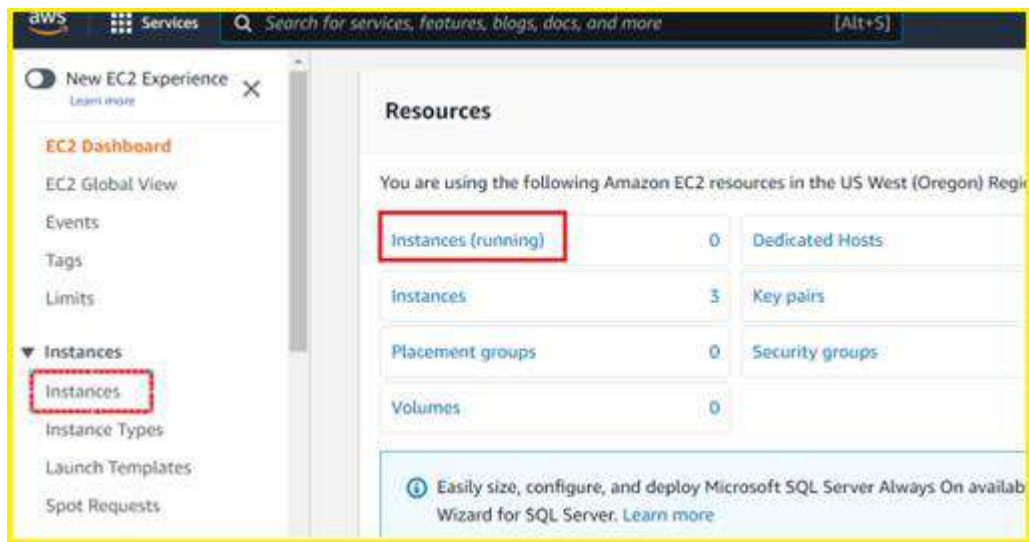
User your names & Sur names with all the practical topics and share the screen shots and step wise information.

1. Create & connect an amazon Linux AWS EC2 machine: Created two EC2 instances

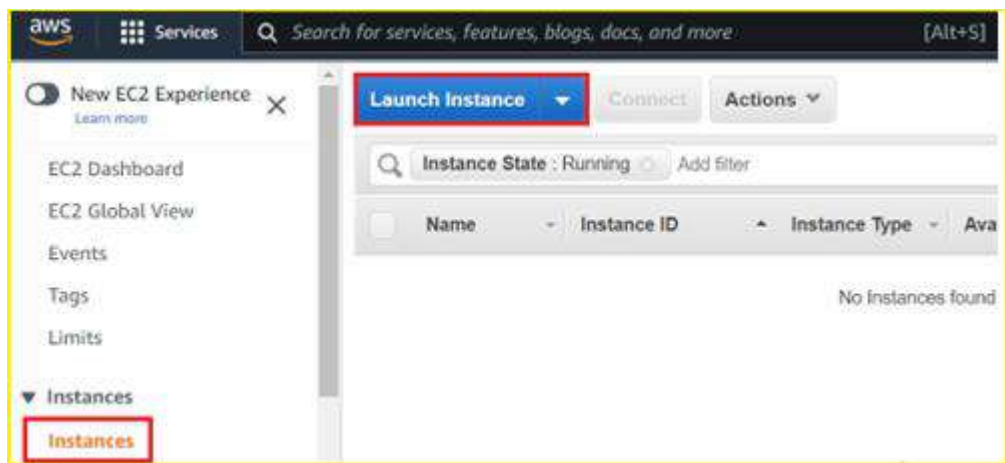
- a) Login into the AWS console page
- b) Once you login go to Services.
- c) Services -> Compute -> EC2



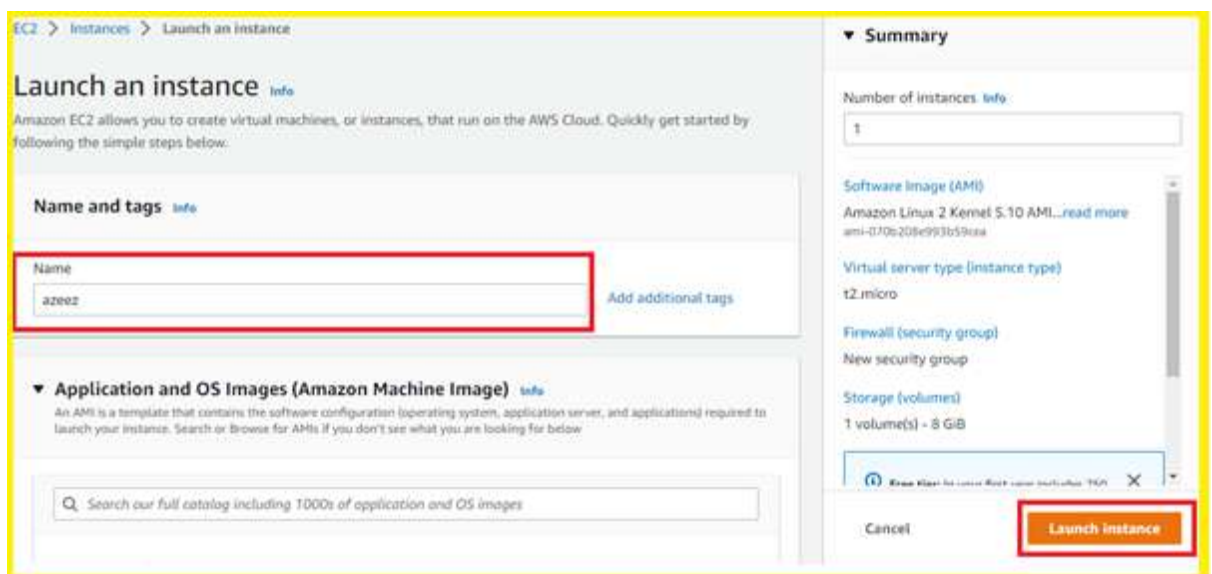
d) Then go to instances and click on Launch Instance:



e) Then click on Launch instance option:



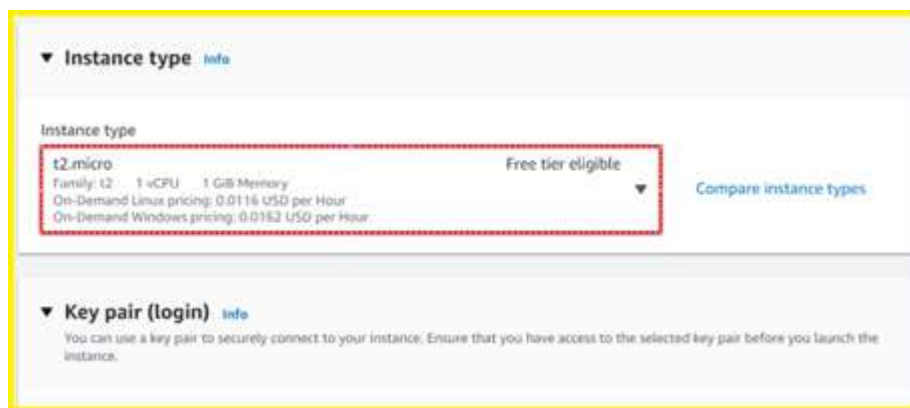
f) Then give the name to the instance machine:



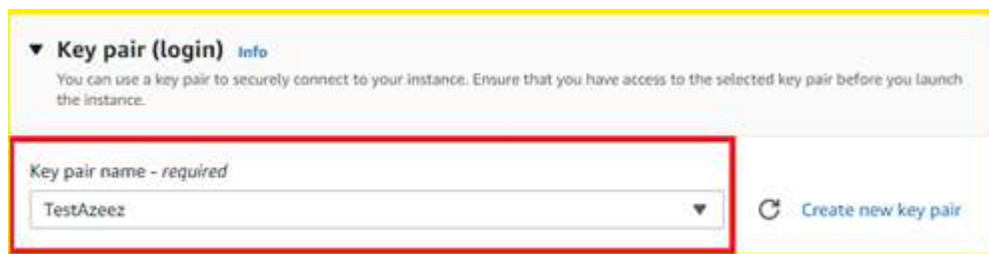
g) Then select OS Image and the version:



h) Under the Instance type: Select – t2.micro machine

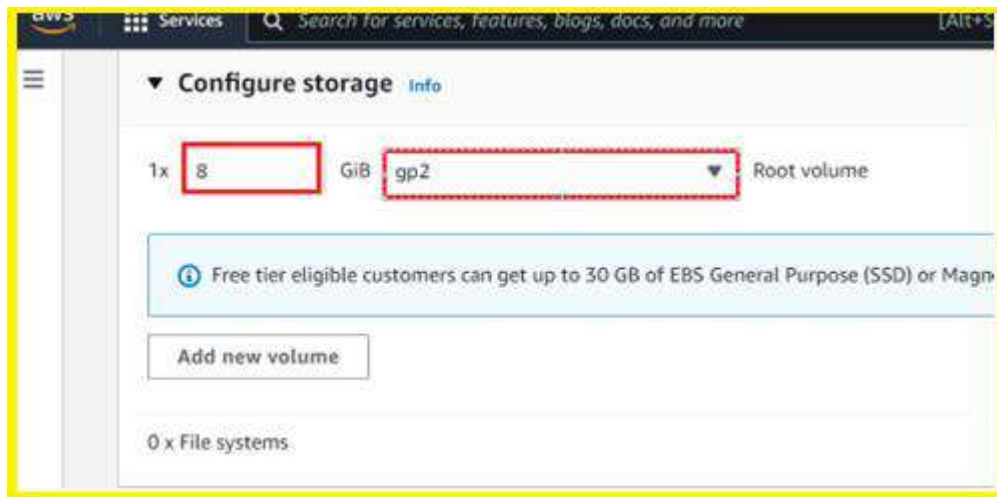


i) Then select the keypair, if you don't have the keypair please click on "create new keypair"

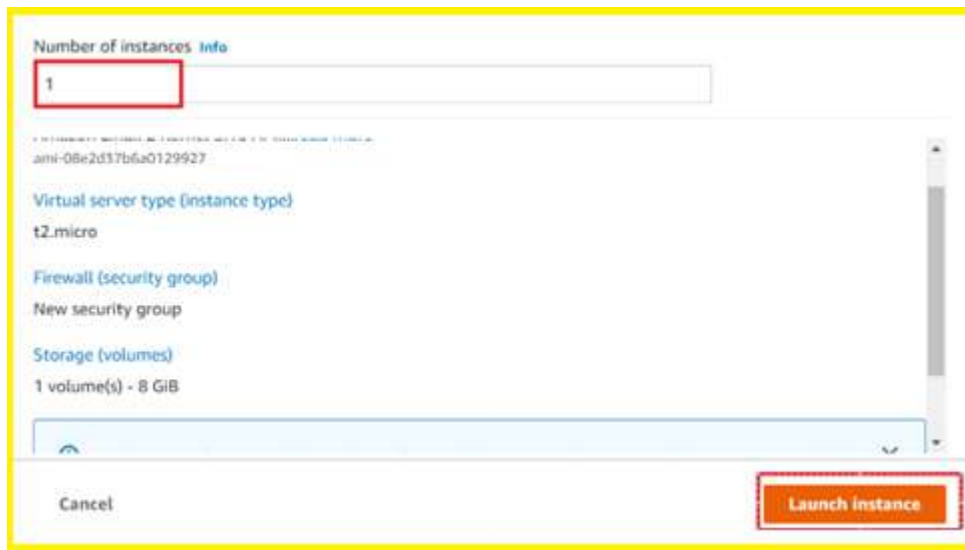


j) Under network settings, use the existing network and go to the next step:

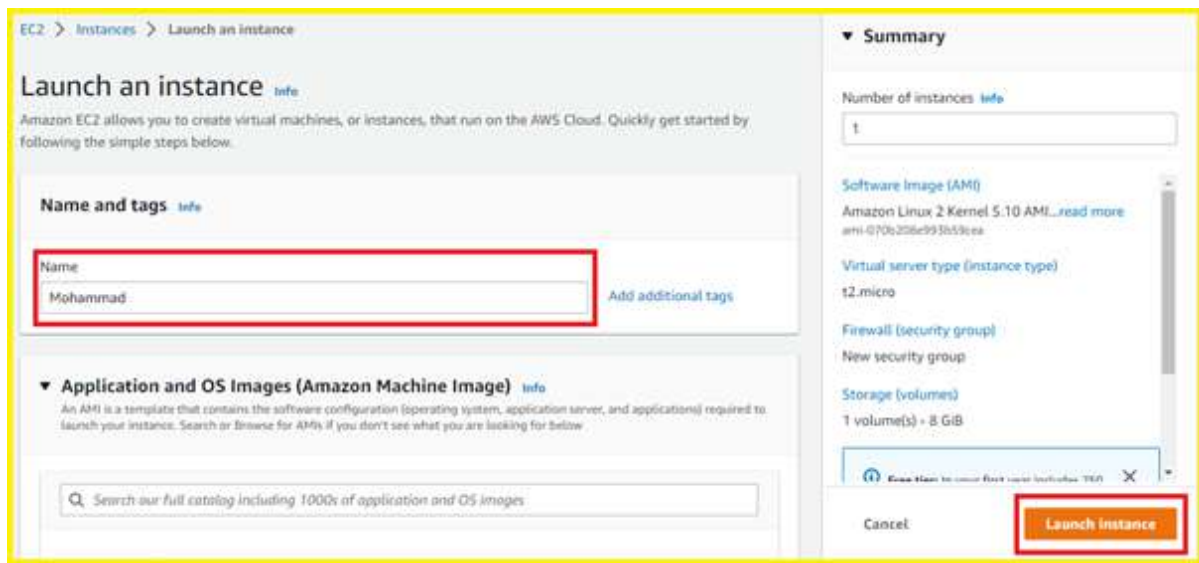
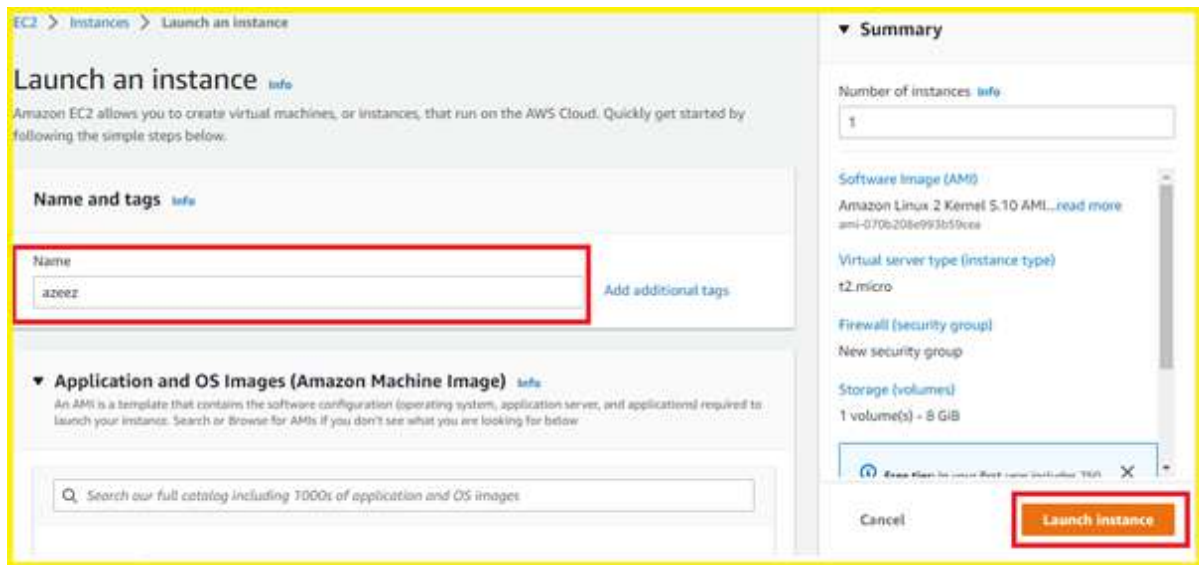
k) Under Configure storage, please provide our required configure storage:



1) Provide the number of instances we required: 1



- m) Then go to EC2 instances again:
 I have Created 2 EC2 Instances first on is azeez and another one is
 Mohammad



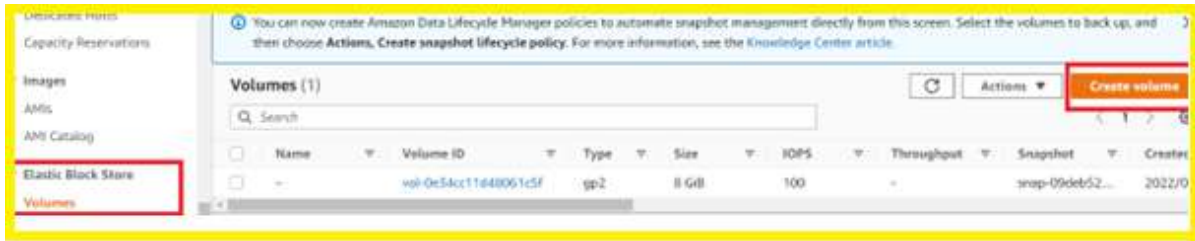
After Creation screenshot

The screenshot shows the 'Instances' page in the AWS Management Console. The table below lists the two instances created:

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
azeez	i-079004189d361dc3d	t2.micro	eu-central-1b	running	2/2 checks ...	None	ec2-3-120-227-110 eu...
Mohammad	i-0e8818e9c94236718	t2.micro	eu-central-1b	running	2/2 checks ...	None	ec2-18-190-24-141 eu...

2. Create Elastic Block Store:

- a. Go to Elastic Block Store and select Volumes



- b. I selected 1 GiB Size and Create for create volume



Don't create volume from a snapshot ▼ ↻

Encryption [Info](#)
 Use Amazon EBS encryption as an encryption solution for your EBS resources associated with your EC2 instances.

Encrypt this volume

Tags - optional [Info](#)
 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.

No tags associated with the resource.

Add tag

You can add 50 more tags.

Cancel Create volume

c. Created the EBS with Name: AzeezMohammad

Volumes (1/4) ↻ Actions ▼ Create volume

Search

<input type="checkbox"/>	Name	Volume ID	T.	S...		Snapshot	Availabilit...	Volume state
<input type="checkbox"/>	-	vol-08bccc8a14195f652	gp2	8 GiB	1...	snap-07b45...	eu-central-1b	In-use
<input type="checkbox"/>	-	vol-064a06ef05d789575	gp2	8 GiB	1...	snap-07b45...	eu-central-1b	In-use
<input checked="" type="checkbox"/>	AzeezMohammad	vol-097efe065f5fe3400	gp2	1 GiB	1...	-	eu-central-1b	Available

d. After attach EBS Volume to EC2 Instance:

Volumes (4) ↻ Actions ▼ Create volume

Search

<input type="checkbox"/>	Name	Volume ID	T.	S...		Snapshot	Availabilit...	Volume state
<input type="checkbox"/>	-	vol-08bccc8a14195f652	gp2	8 GiB	1...	snap-07b45...	eu-central-1b	In-use
<input type="checkbox"/>	-	vol-064a06ef05d789575	gp2	8 GiB	1...	snap-07b45...	eu-central-1b	In-use
<input type="checkbox"/>	AzeezMohammad	vol-097efe065f5fe3400	gp2	1 GiB	1...	-	eu-central-1b	In-use
<input type="checkbox"/>	-	vol-0e34cc11d48061c5f	gp2	8 GiB	1...	snap-09deb...	eu-central-1a	In-use

e. EC2 Screen short:

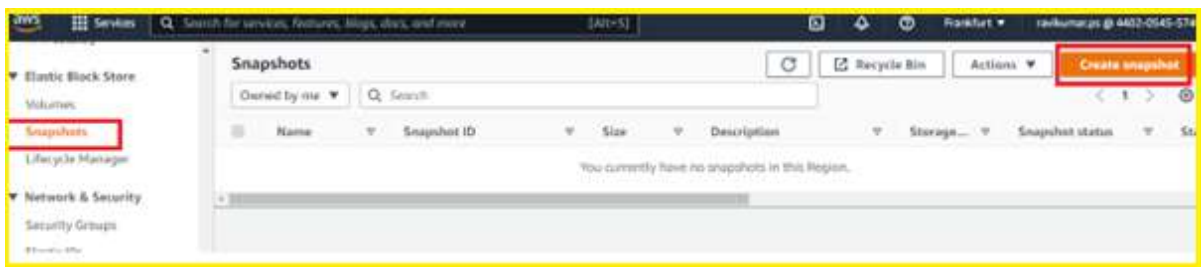
```
root@ip-172-31-38-53:/home/ec2-user
login as: ec2-user
Authenticating with public key "azeeztest"

  _ | _ | _ )
  _ | ( _ | /   Amazon Linux 2 AMI
  _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-2/
13 package(s) needed for security, out of 16 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-38-53 ~]$ ls
[ec2-user@ip-172-31-38-53 ~]$ sudo su
[root@ip-172-31-38-53 ec2-user]# lsblk
NAME        MAJ:MIN RM  SIZE RO  TYPE MOUNTPOINT
xvda        202:0    0   8G  0  disk
└─xvda1     202:1    0   8G  0  part /
xvdf        202:80   0   1G  0  disk
[root@ip-172-31-38-53 ec2-user]#
```

3. Snapshot Screenshot:

a) Go to snapshot and select create sanpshot

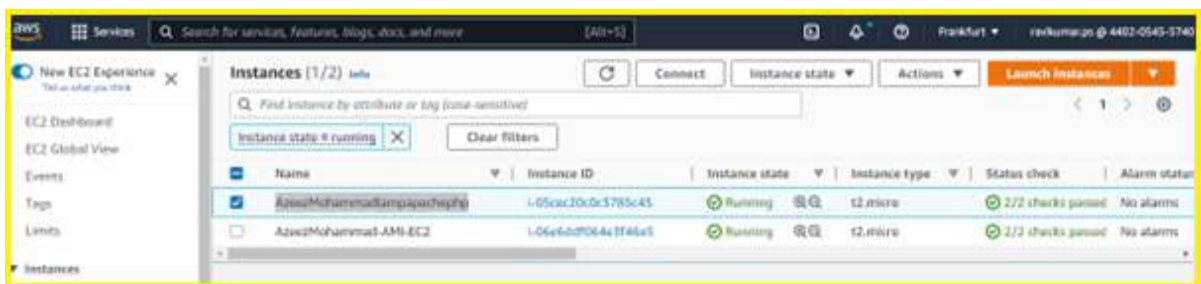


b) After creation
Description: AzeezMohammad snapshot



4. AMI Creation:

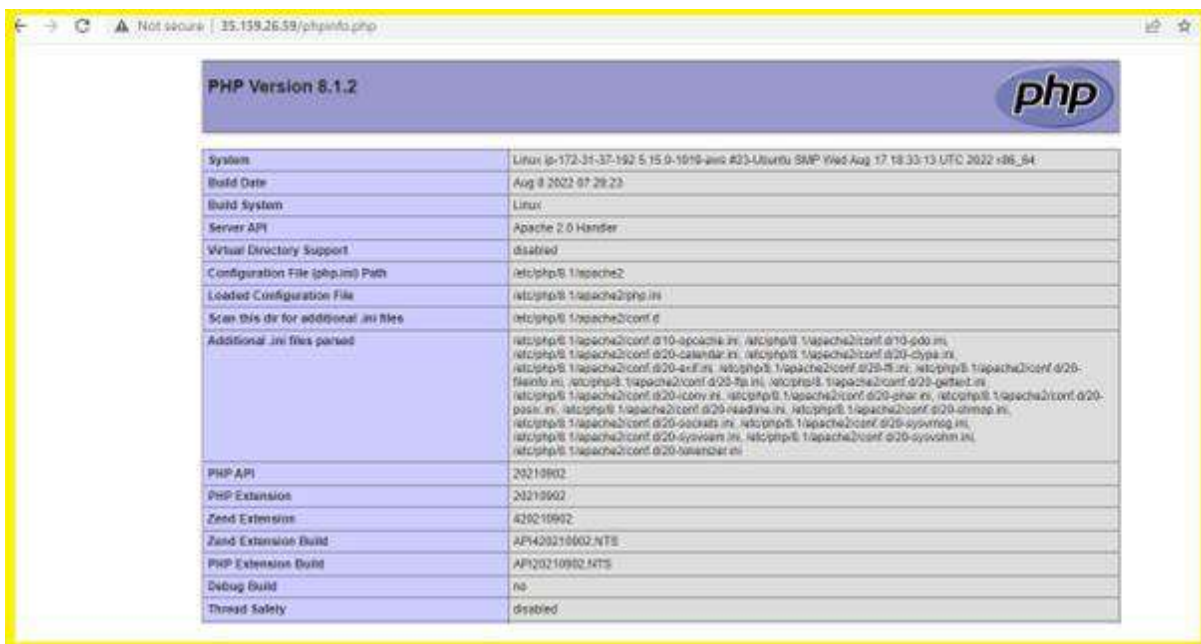
a. First created 1 EC2 Instance with Apache php install:
Name: AzeezMohammadlampapachephp



Apache2:

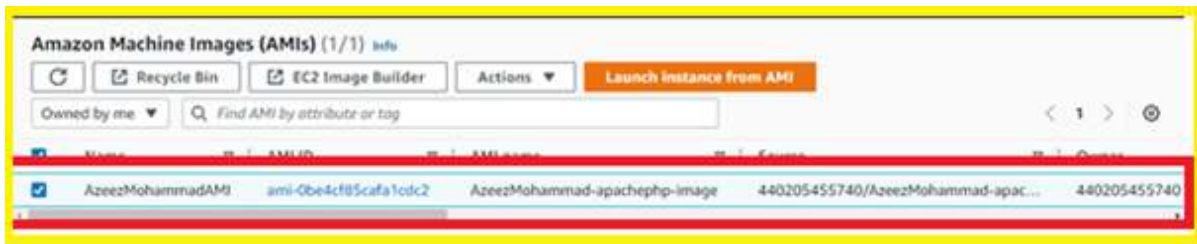


phpinfo.php



```
ubuntu@ip-172-31-37-192:~$ php --version  
PHP 8.1.2 (cli) (built: Aug 8 2022 07:28:23) (NTS)  
Copyright (c) The PHP Group  
Zend Engine v4.1.2, Copyright (c) Zend Technologies  
with Zend OPcache v8.1.2, Copyright (c), by Zend Technologies  
ubuntu@ip-172-31-37-192:~$
```

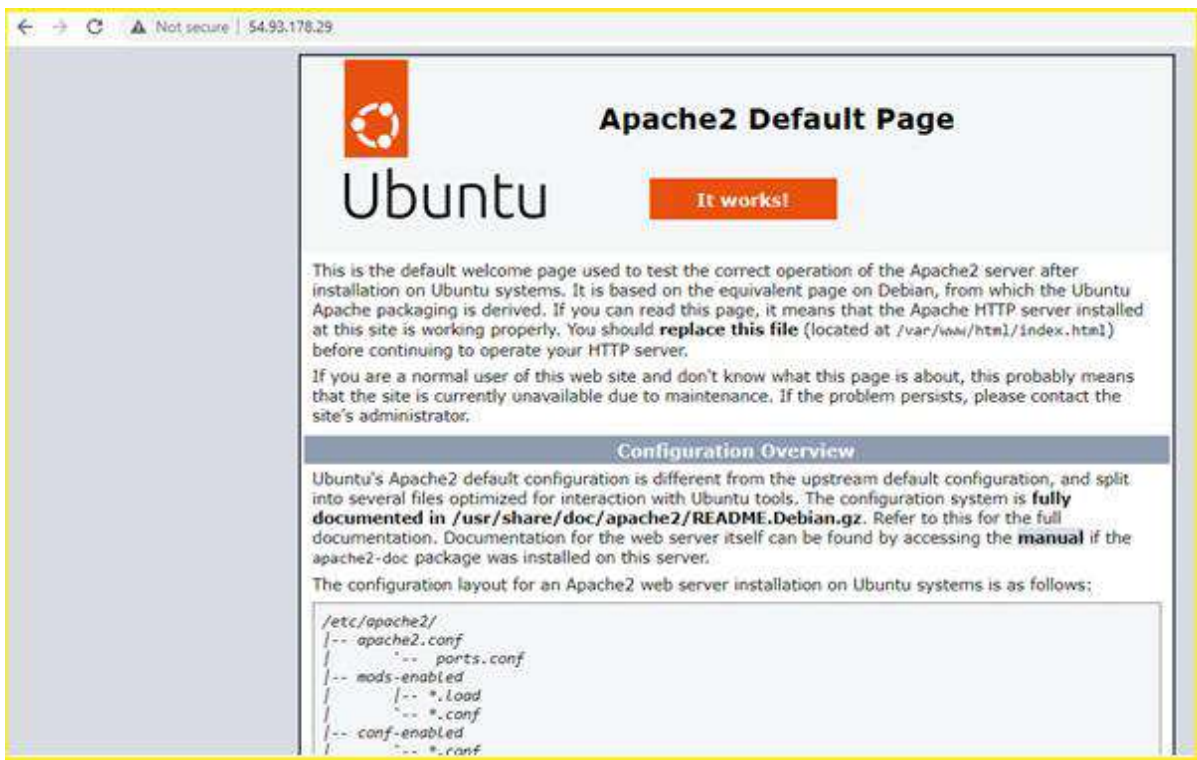
b. AMIs: Created AMIs with Apache and php



c. Created another EC2 instance from Image (AzeezMohammad-AMI-EC2)



d. AzeezMohammad-AMI-EC2 instance Apache



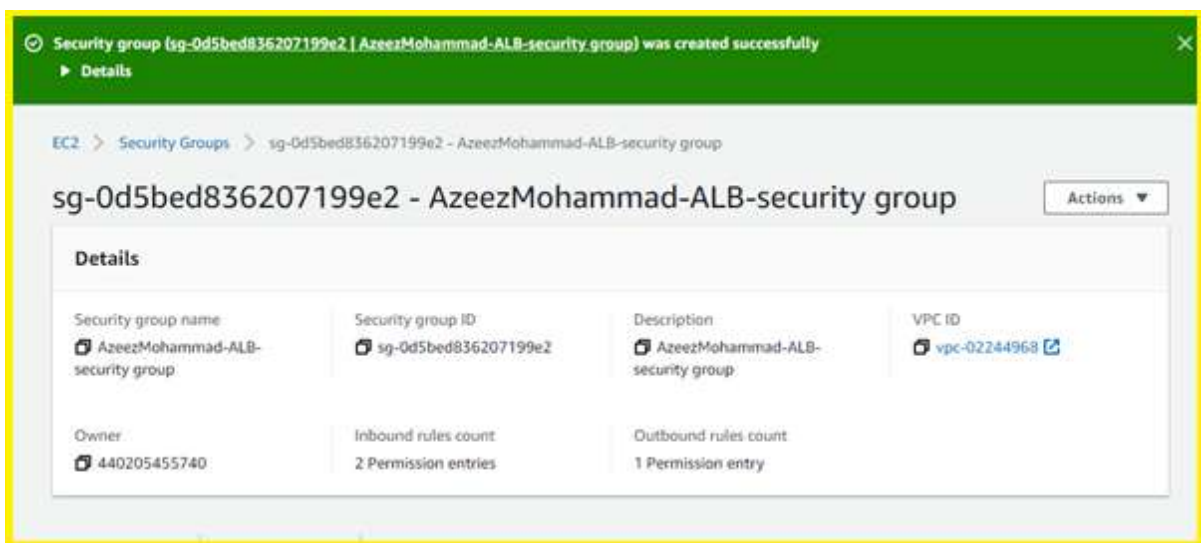
e. Two applications screenshots



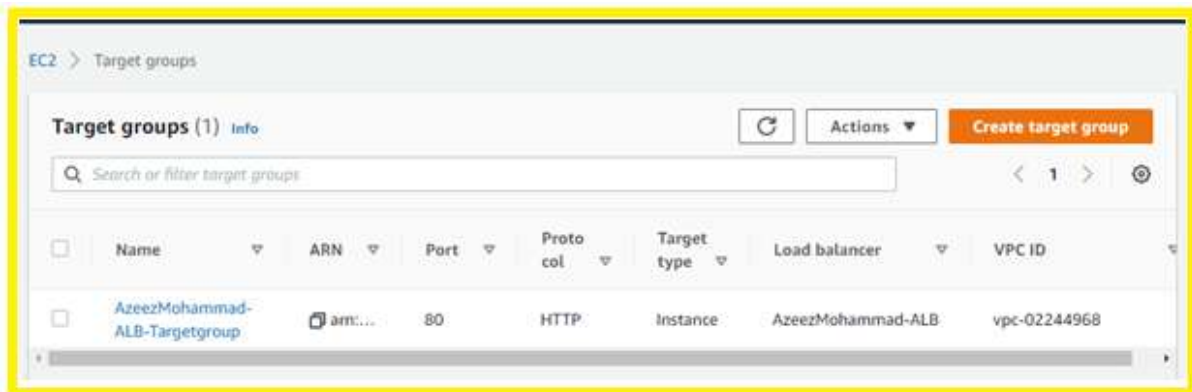
5. Load Balancer:

a. First Created the Security group

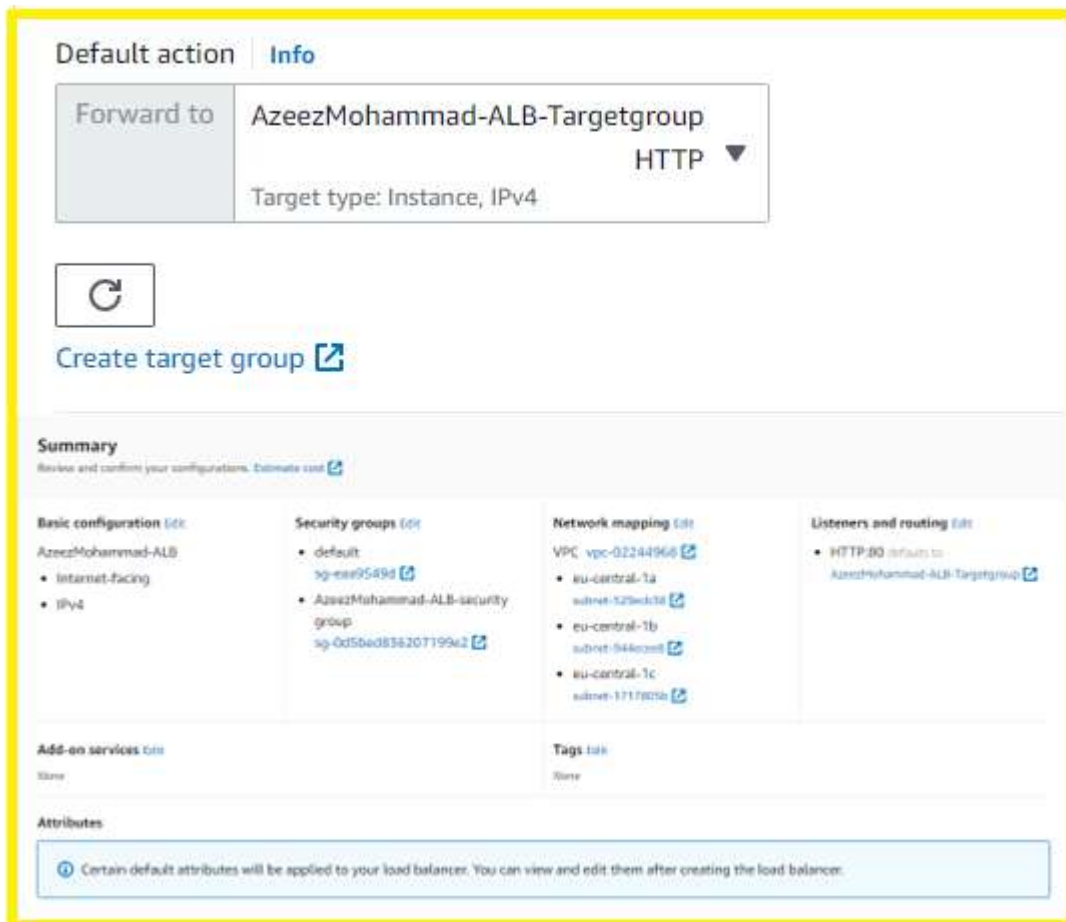
Name: AzeezMohammad-ALB-security group



b. Then Created the Target Group:



c. Added target group



d. Associate Azeez Mohammad-ALB

Successfully created target group: AzeezMohammad-ALB-Targetgroup

EC2 > Target groups

Target groups (1) info

Search or filter target groups

<input type="checkbox"/>	Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
<input type="checkbox"/>	AzeezMohammad-ALB-Targetgroup	arn:...	80	HTTP	Instance	AzeezMohammad-ALB	vpc-02244968

e. With Health status:

EC2 > Target groups

Target groups (1/1) info

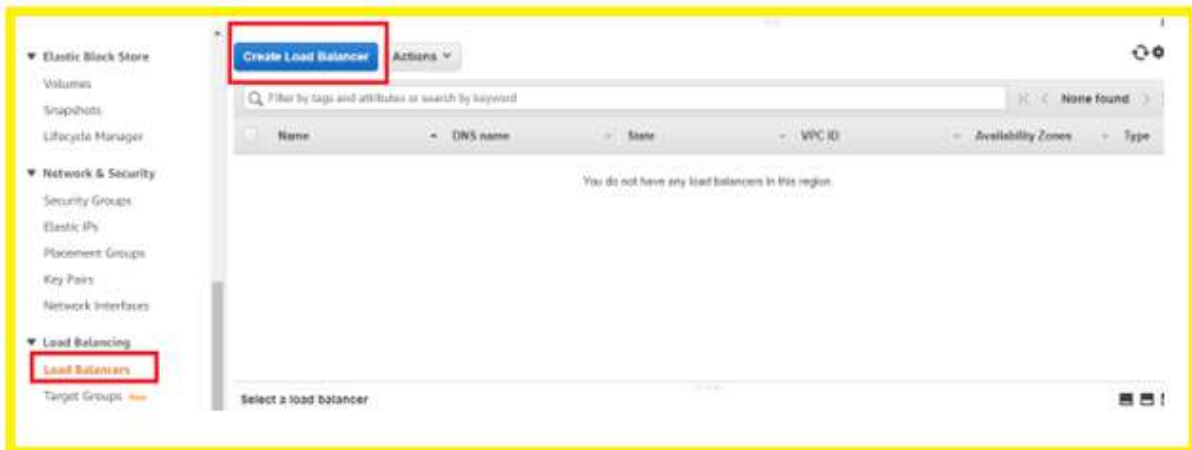
Search or filter target groups

<input checked="" type="checkbox"/>	Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
<input checked="" type="checkbox"/>	AzeezMohammad-ALB-Targetgroup	arn:...	80	HTTP	Instance	AzeezMohammad-ALB	vpc-02244968

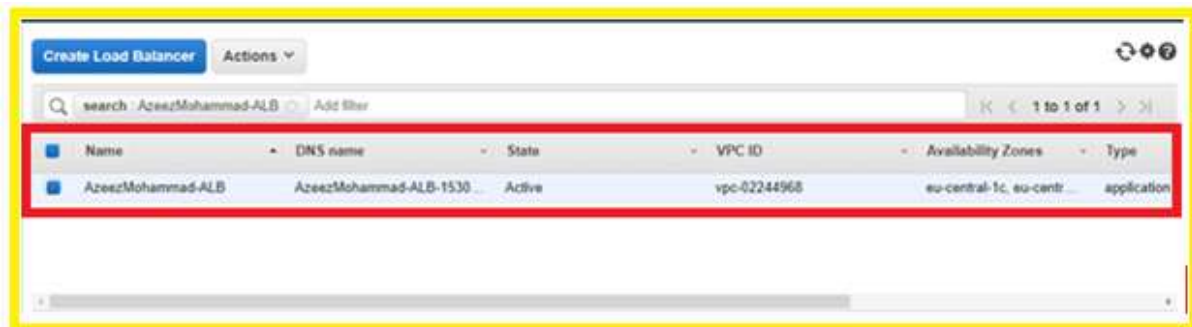
Target group: AzeezMohammad-ALB-Targetgroup

<input type="checkbox"/>	Instance ID	Name	Port	Zone	Health status	Health status details
<input type="checkbox"/>	i-06e6ddf064e3f46e5	AzeezMohammad-AMI-EC2	80	eu-central-1b	healthy	
<input type="checkbox"/>	i-05cec20c0c3785c45	AzeezMohammadlampapacheph	80	eu-central-1b	healthy	

f. Go to Load balancer and Select Create Load Balancer

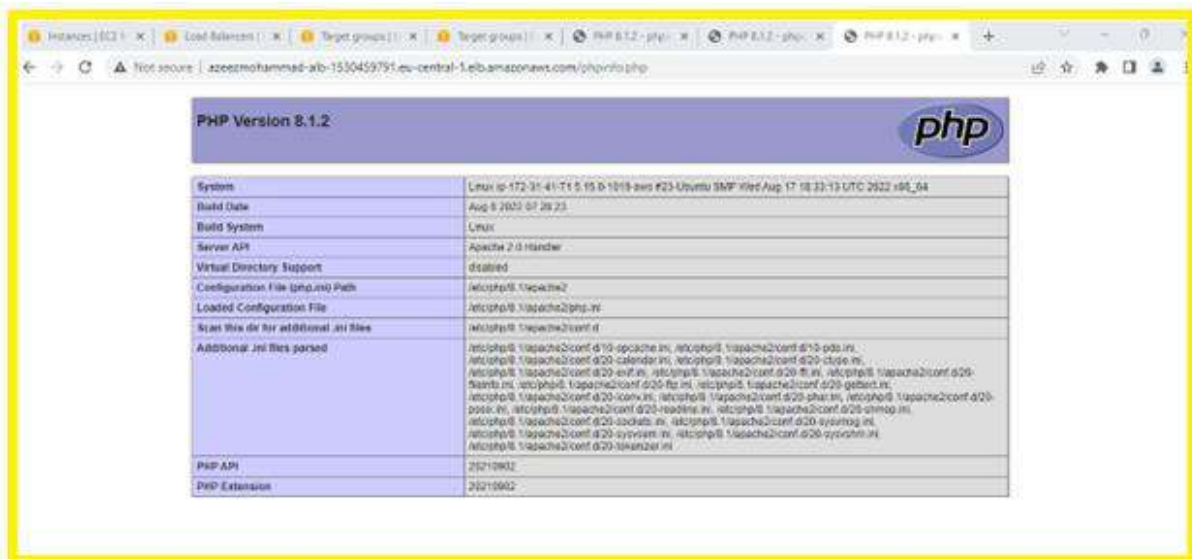


g. APLB:
Name: AzeezMohammad-ALB



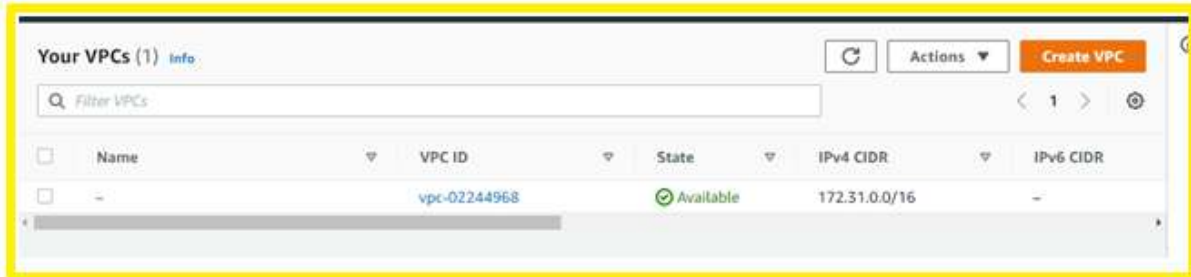
h. DNS:

<http://azeezmohammad-alb-1530459791.eu-central-1.elb.amazonaws.com/phpinfo.php>

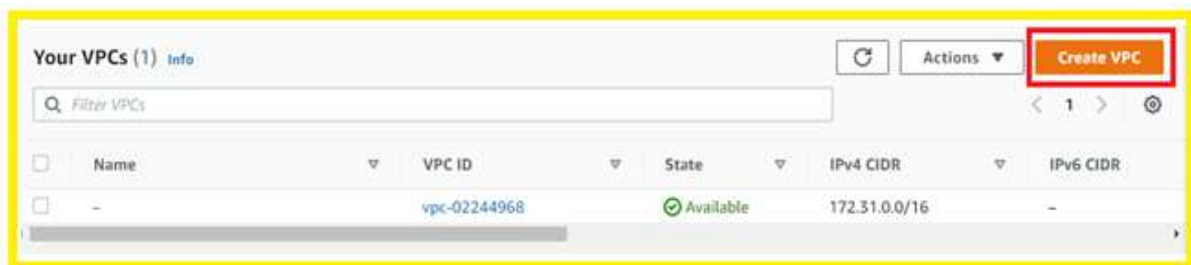


6. VPC with 2 public subnet & 2 Private subnet having internet gateway and NAT gateway

- a) Create VPC & provide of VPC as 192.168.0.0/16
- b) Before creating VPC

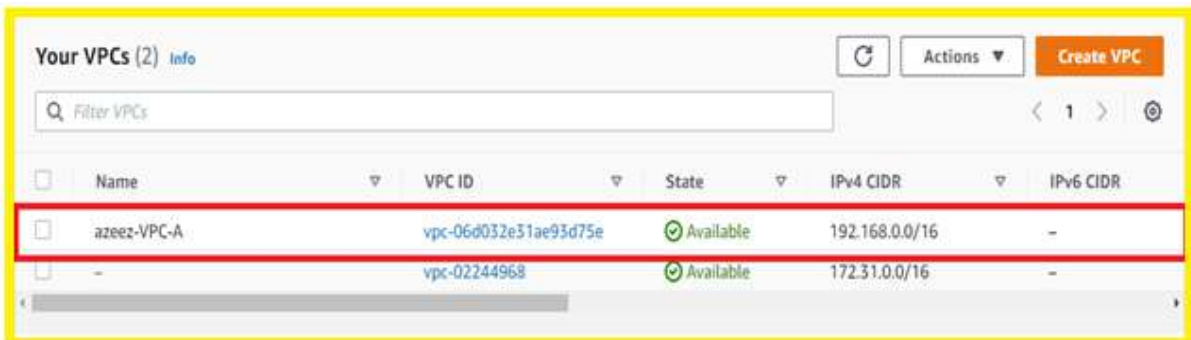


- c) Select Create VPC



Name: azeez-VPC-A

IPv4 CIDR: 192.168.0.0/16

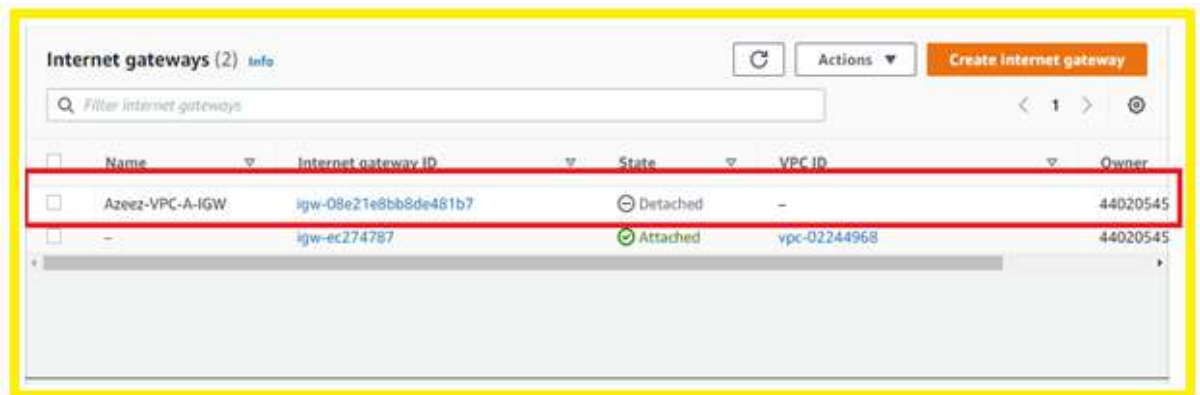


- d) Create an Internet gateway and attach it to the VPC

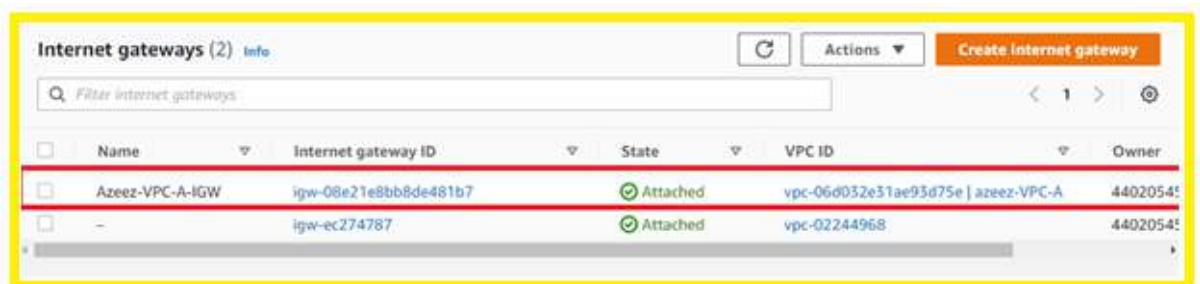
Before creating we have default internet gateway



- e) After creation IGW
Name: Azeez-VPC-A-IGW



- f) Assign Internet gateway to VPC:



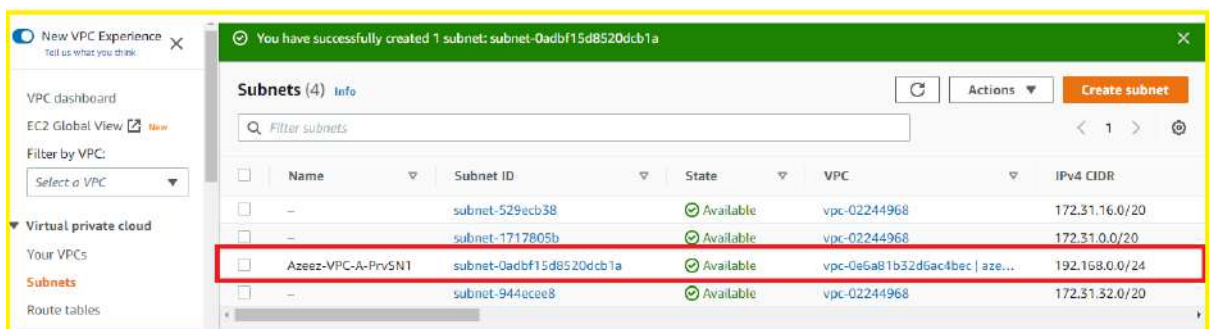
- g) Create 4 subnets of which of which 2 subnets are public subnets and 2 subnets are private subnets

- i). 2 private subnets
- ii). 2 public subnets

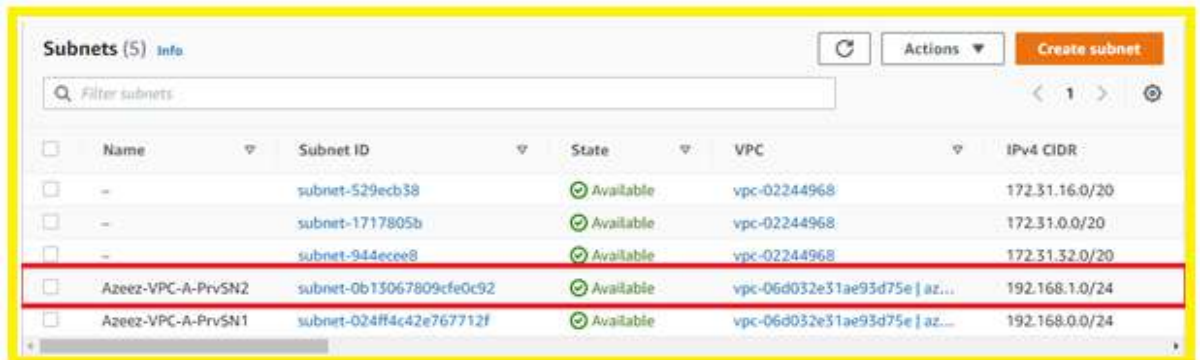
- i). 2 Private Subnets

first one Private Subnet name: Azeez-VPC-A-PrvSN1

IPv4 CIDR: 192.168.0.0/24

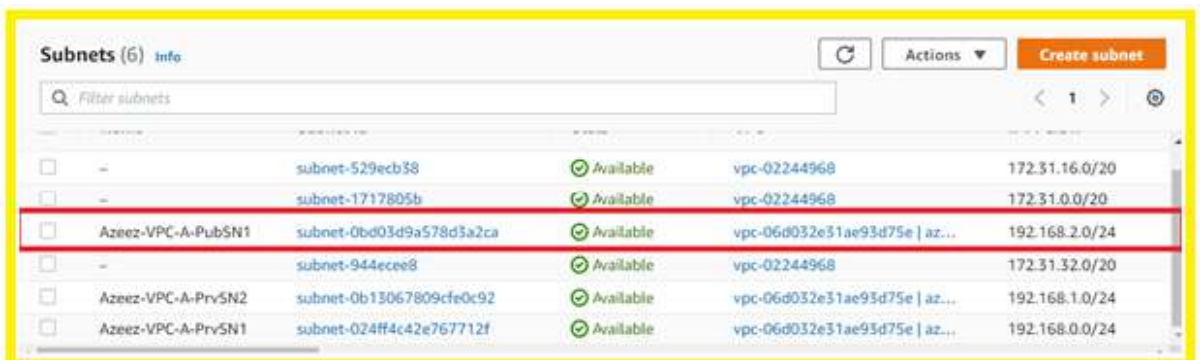


Second one Private Subnet Name: Azeez-VPC-A-PrvSN2
IPv4 CIDR: 192.168.1.0/24



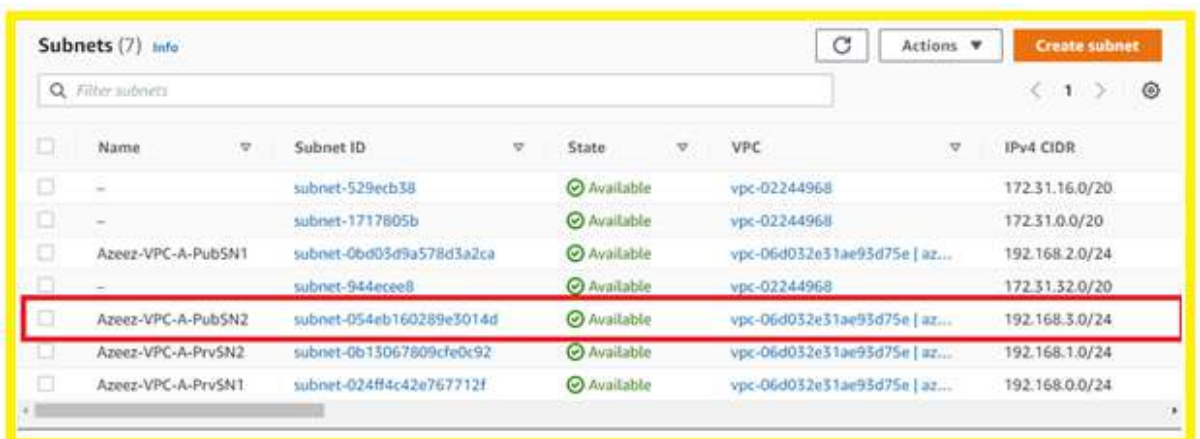
Name	Subnet ID	State	VPC	IPv4 CIDR
-	subnet-529ecb38	Available	vpc-02244968	172.31.16.0/20
-	subnet-1717805b	Available	vpc-02244968	172.31.0.0/20
-	subnet-944ecee8	Available	vpc-02244968	172.31.32.0/20
Azeez-VPC-A-PrvSN2	subnet-0b13067809cfe0c92	Available	vpc-06d032e31ae93d75e az...	192.168.1.0/24
Azeez-VPC-A-PrvSN1	subnet-024ff4c42e767712f	Available	vpc-06d032e31ae93d75e az...	192.168.0.0/24

ii) 2 public subnets
first one Subnet name: Azeez-VPC-A-PubSN1
IPv4 CIDR: 192.168.2.0/24



Name	Subnet ID	State	VPC	IPv4 CIDR
-	subnet-529ecb38	Available	vpc-02244968	172.31.16.0/20
-	subnet-1717805b	Available	vpc-02244968	172.31.0.0/20
Azeez-VPC-A-PubSN1	subnet-0bd03d9a578d5a2ca	Available	vpc-06d032e31ae93d75e az...	192.168.2.0/24
-	subnet-944ecee8	Available	vpc-02244968	172.31.32.0/20
Azeez-VPC-A-PrvSN2	subnet-0b13067809cfe0c92	Available	vpc-06d032e31ae93d75e az...	192.168.1.0/24
Azeez-VPC-A-PrvSN1	subnet-024ff4c42e767712f	Available	vpc-06d032e31ae93d75e az...	192.168.0.0/24

Second one Subnet name: Azeez-VPC-A-PubSN2
IPv4 CIDR: 192.168.3.0/24



Name	Subnet ID	State	VPC	IPv4 CIDR
-	subnet-529ecb38	Available	vpc-02244968	172.31.16.0/20
-	subnet-1717805b	Available	vpc-02244968	172.31.0.0/20
Azeez-VPC-A-PubSN1	subnet-0bd03d9a578d5a2ca	Available	vpc-06d032e31ae93d75e az...	192.168.2.0/24
-	subnet-944ecee8	Available	vpc-02244968	172.31.32.0/20
Azeez-VPC-A-PubSN2	subnet-054eb160289e3014d	Available	vpc-06d032e31ae93d75e az...	192.168.3.0/24
Azeez-VPC-A-PrvSN2	subnet-0b13067809cfe0c92	Available	vpc-06d032e31ae93d75e az...	192.168.1.0/24
Azeez-VPC-A-PrvSN1	subnet-024ff4c42e767712f	Available	vpc-06d032e31ae93d75e az...	192.168.0.0/24

All Subnets:

Subnets (7) Info

Filter subnets

<input type="checkbox"/>	Name	Subnet ID	State	VPC	IPv4 CIDR
<input type="checkbox"/>	-	subnet-529ecb38	Available	vpc-02244968	172.31.16.0/20
<input type="checkbox"/>	-	subnet-1717805b	Available	vpc-02244968	172.31.0.0/20
<input type="checkbox"/>	Azeez-VPC-A-PubSN1	subnet-0bd03d9a578d3a2ca	Available	vpc-06d032e31ae93d75e az...	192.168.2.0/24
<input type="checkbox"/>	Azeez-VPC-A-PubSN2	subnet-054eb160289e3014d	Available	vpc-06d032e31ae93d75e az...	192.168.3.0/24
<input type="checkbox"/>	Azeez-VPC-A-PrvSN2	subnet-0b13067809cfe0c92	Available	vpc-06d032e31ae93d75e az...	192.168.1.0/24
<input type="checkbox"/>	Azeez-VPC-A-PrvSN1	subnet-024f4c42e767712f	Available	vpc-06d032e31ae93d75e az...	192.168.0.0/24

h) Create 2 Route tables 1 for Public Route table and other one as Private Route table

Route tables (1/3) Info

Filter route tables

<input type="checkbox"/>	Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
<input type="checkbox"/>	-	rtb-ade502c0	-	-	Yes	vpc-02244968
<input checked="" type="checkbox"/>	Azeez-VPC-A-PubRT	rtb-04a2d1eddf1692ce7	-	-	No	vpc-06d032e31ae...
<input type="checkbox"/>	-	rtb-00a726cef7b845fd9	-	-	Yes	vpc-06d032e31ae...

Route tables (1/4) Info

Filter route tables

<input type="checkbox"/>	Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
<input type="checkbox"/>	-	rtb-ade502c0	-	-	Yes	vpc-02244968
<input checked="" type="checkbox"/>	Azeez-VPC-A-PrvRT	rtb-07191cc1ec4159b82	-	-	No	vpc-06d032e31a...
<input type="checkbox"/>	Azeez-VPC-A-PubRT	rtb-04a2d1eddf1692ce7	-	-	No	vpc-06d032e31a...
<input type="checkbox"/>	-	rtb-00a726cef7b845fd9	-	-	Yes	vpc-06d032e31a...

- i) Associate the public subnet to public route table and private subnet to private route table

Route tables (4) Info

Filter route tables

<input type="checkbox"/>	Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
<input type="checkbox"/>	-	rtb-ade502c0	-	-	Yes	vpc-02244968
<input type="checkbox"/>	Azeez-VPC-A-PrivRT	rtb-07191cc1ec4159b82	2 subnets	-	No	vpc-06d032e31
<input type="checkbox"/>	Azeez-VPC-A-PubRT	rtb-04a2d1eddf1692ce7	-	-	No	vpc-06d032e31

Route tables (1/4) Info

Filter route tables

<input checked="" type="checkbox"/>	Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
<input type="checkbox"/>	-	rtb-ade502c0	-	-	Yes	vpc-02244968
<input checked="" type="checkbox"/>	Azeez-VPC-A-PrivRT	rtb-07191cc1ec4159b82	2 subnets	-	No	vpc-06d032e31

Find subnet association

Subnet ID	IPv4 CIDR	IPv6 CIDR
subnet-0b13067809cfe0c92 / Azeez-VPC-A-PrivSN2	192.168.1.0/24	-
subnet-024ff4c42e767712f / Azeez-VPC-A-PrivSN1	192.168.0.0/24	-

Route tables (1/4) Info

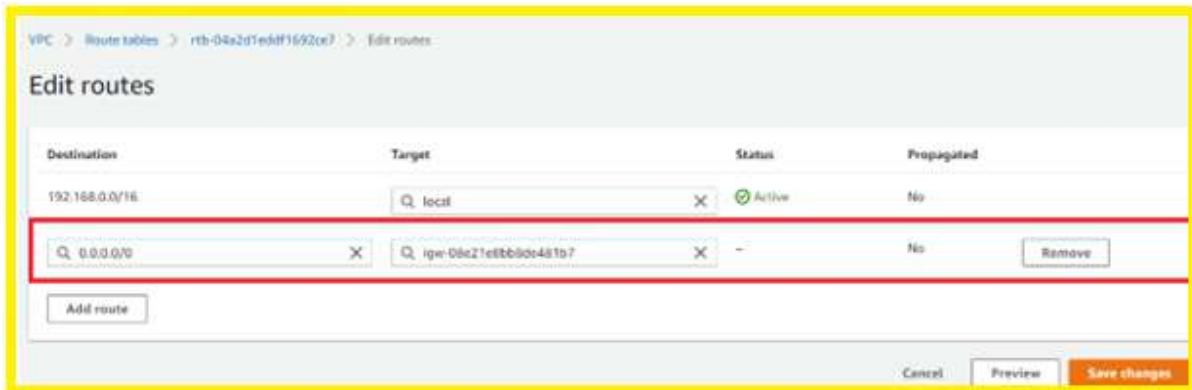
Filter route tables

<input checked="" type="checkbox"/>	Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
<input type="checkbox"/>	-	rtb-ade502c0	-	-	Yes	vpc-02244968
<input type="checkbox"/>	Azeez-VPC-A-PrivRT	rtb-07191cc1ec4159b82	2 subnets	-	No	vpc-06d032e31
<input checked="" type="checkbox"/>	Azeez-VPC-A-PubRT	rtb-04a2d1eddf1692ce7	2 subnets	-	No	vpc-06d032e31

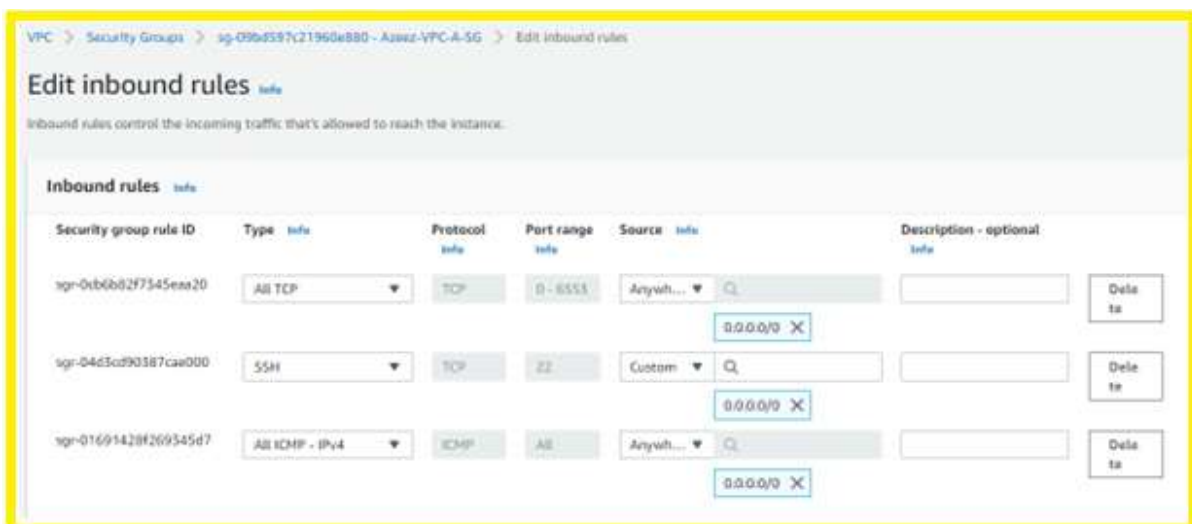
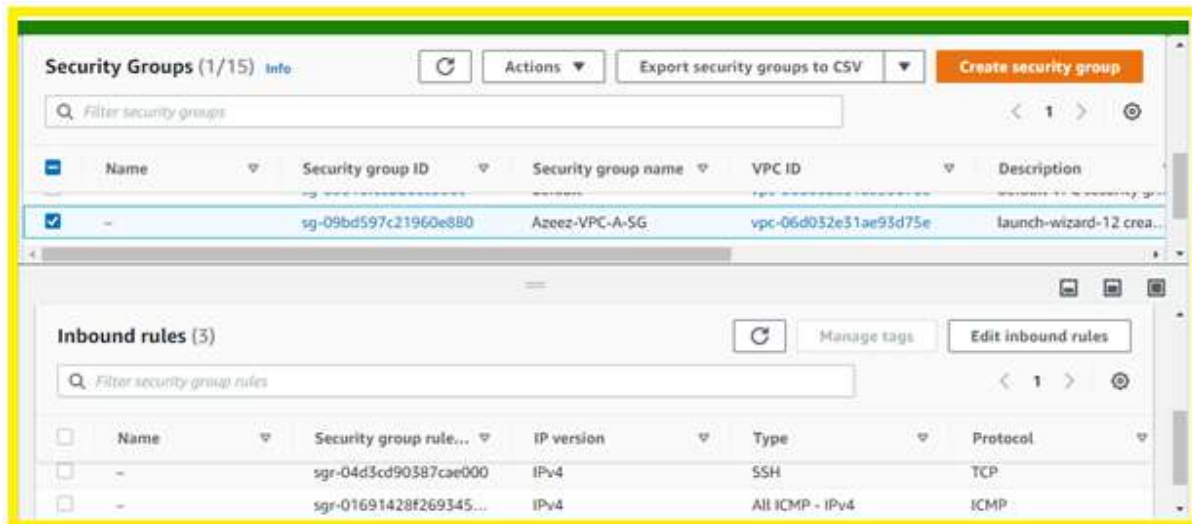
Subnet ID

Subnet ID	IPv4 CIDR	IPv6 CIDR
subnet-0bd03d9a578d5a2ca / Azeez-VPC-A-PubSN1	192.168.2.0/24	-
subnet-054eb160289e3014d / Azeez-VPC-A-PubSN2	192.168.3.0/24	-

j) Connect the public route table to the internet Gateway



k) Edit inbound rules add the TCP and ICMP in Security Group



l) Create 2 EC2 instance 1 in Private SN1 and another 1 is Public SN1

i). Create EC2 instance in Private SN1

Name: Azeez-EC2-PubSN1

Key pair: TestAzeez

Network Settings: azeez-VPC-A

Subnet: Azeez-VPC-A-PrvSN1

Auto-assign public IP: Enable

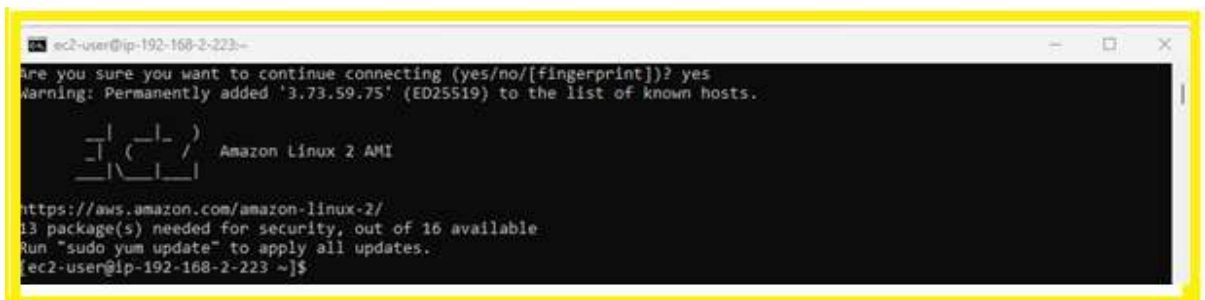
Security group name: Azeez-VPC-A-SG

Created EC2 instance: For PubSN1



m) Login to public subnet 1 machine try to ping and ssh (ping will get success and where ssh will fail as there is no key)

Public SN1 EC2 Console:



ii) Create another EC2 in Private Azeez-EC2-PrvSN1

Name: Azeez-EC2-PrvSN1

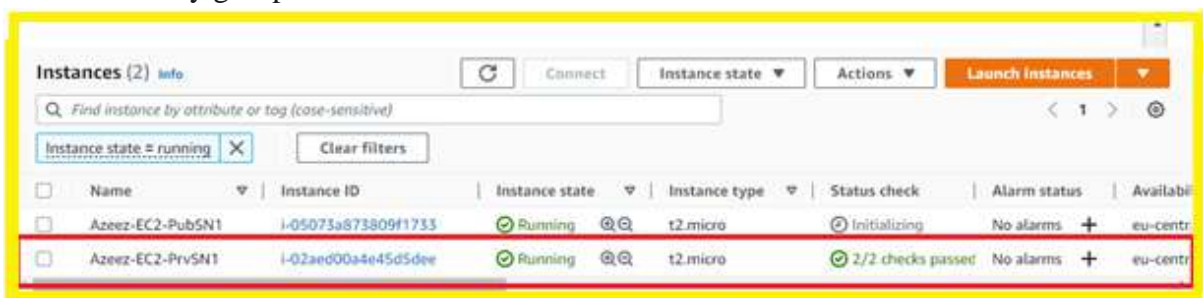
Key pair: TestAzeez

Network Settings: azeez-VPC-A

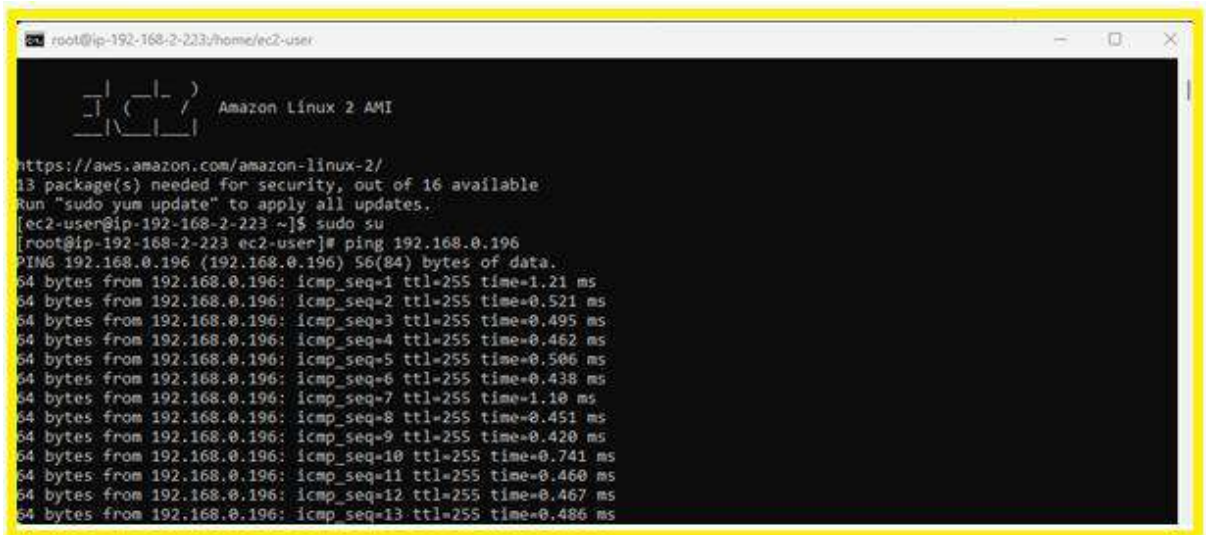
Subnet: Azeez-VPC-A-PrvSN1

Auto-assign public IP: Disabled

Security group name: Azeez-VPC-A-SG



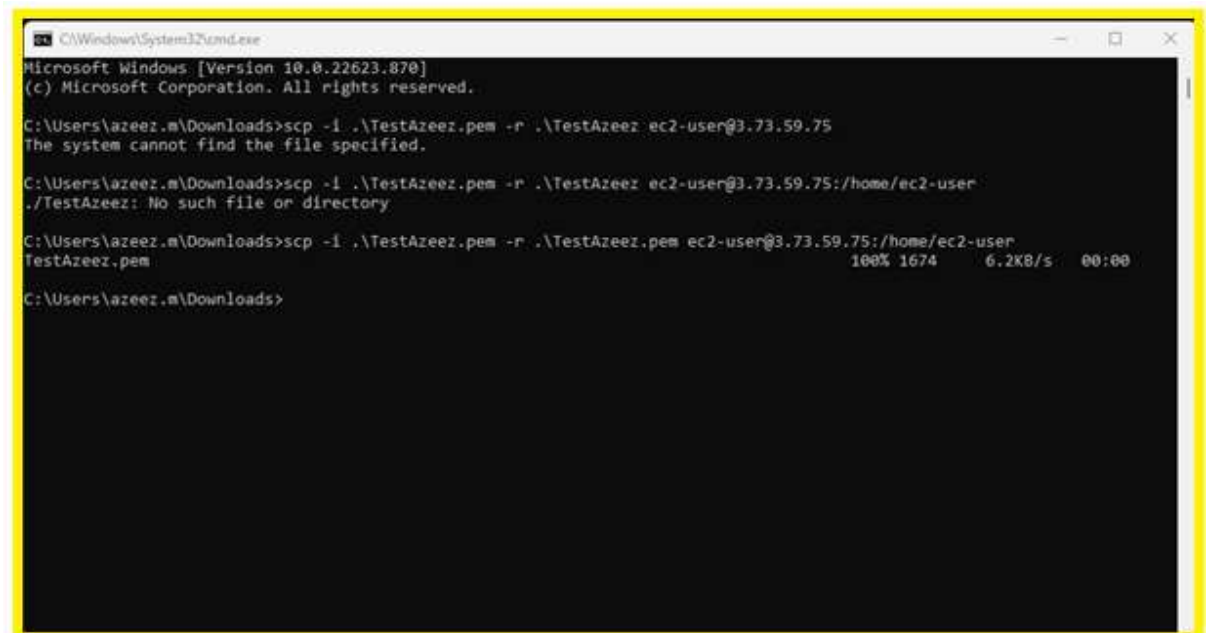
Ping from Azeez-EC2-PubSN1 to Azeez PrvSN1



```
root@ip-192-168-2-223:/home/ec2-user
┌───┴───┐
┌─┴─┐  Amazon Linux 2 AMI
└─┬─┘
  ┌─┴─┐
  └─┬─┘

https://aws.amazon.com/amazon-linux-2/
13 package(s) needed for security, out of 16 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-192-168-2-223 ~]$ sudo su
[root@ip-192-168-2-223 ec2-user]# ping 192.168.0.196
PING 192.168.0.196 (192.168.0.196) 56(84) bytes of data:
64 bytes from 192.168.0.196: icmp_seq=1 ttl=255 time=1.21 ms
64 bytes from 192.168.0.196: icmp_seq=2 ttl=255 time=0.521 ms
64 bytes from 192.168.0.196: icmp_seq=3 ttl=255 time=0.495 ms
64 bytes from 192.168.0.196: icmp_seq=4 ttl=255 time=0.462 ms
64 bytes from 192.168.0.196: icmp_seq=5 ttl=255 time=0.506 ms
64 bytes from 192.168.0.196: icmp_seq=6 ttl=255 time=0.438 ms
64 bytes from 192.168.0.196: icmp_seq=7 ttl=255 time=1.10 ms
64 bytes from 192.168.0.196: icmp_seq=8 ttl=255 time=0.451 ms
64 bytes from 192.168.0.196: icmp_seq=9 ttl=255 time=0.420 ms
64 bytes from 192.168.0.196: icmp_seq=10 ttl=255 time=0.741 ms
64 bytes from 192.168.0.196: icmp_seq=11 ttl=255 time=0.460 ms
64 bytes from 192.168.0.196: icmp_seq=12 ttl=255 time=0.467 ms
64 bytes from 192.168.0.196: icmp_seq=13 ttl=255 time=0.486 ms
```

- n) Copy the key pair on to public subnet machine and then from public subnet machine try to connect private subnet machine with ssh
 - i) Copied .pem file to Public SN1 EC2 instance



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22623.870]
(c) Microsoft Corporation. All rights reserved.

C:\Users\azeez.m\Downloads>scp -i .\TestAzeez.pem -r .\TestAzeez ec2-user@3.73.59.75
The system cannot find the file specified.

C:\Users\azeez.m\Downloads>scp -i .\TestAzeez.pem -r .\TestAzeez ec2-user@3.73.59.75:/home/ec2-user
./TestAzeez: No such file or directory

C:\Users\azeez.m\Downloads>scp -i .\TestAzeez.pem -r .\TestAzeez.pem ec2-user@3.73.59.75:/home/ec2-user
TestAzeez.pem
100% 1674 6.2KB/s 00:00

C:\Users\azeez.m\Downloads>
```

ii) Connecting from Azeez-EC2-Pub SN1 to Azeez-EC2-Prv SN1

```
[root@ip-192-168-2-223 ec2-user]# pwd
/home/ec2-user
[root@ip-192-168-2-223 ec2-user]# ls
TestAzeez.pem
[root@ip-192-168-2-223 ec2-user]# chmod 700 TestAzeez.pem
[root@ip-192-168-2-223 ec2-user]# ls
TestAzeez.pem
[root@ip-192-168-2-223 ec2-user]# ssh -i TestAzeez.pem ec2-user@192.168.0.196
The authenticity of host '192.168.0.196 (192.168.0.196)' can't be established.
ECDSA key fingerprint is SHA256:1X2fkFfrVpFcrNt5pCo/9iPYxgv83WTsXZozQT4yonY.
ECDSA key fingerprint is MD5:bb:77:50:b3:b2:45:4e:9f:d0:45:77:15:f9:60:9a:e1.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.0.196' (ECDSA) to the list of known hosts.
Permission denied (publickey,gssapi-keyex,gssapi-with-mic).
[root@ip-192-168-2-223 ec2-user]# ssh -i TestAzeez.pem ec2-user@192.168.0.196
Permission denied (publickey,gssapi-keyex,gssapi-with-mic).
[root@ip-192-168-2-223 ec2-user]# ssh -i TestAzeez.pem ec2-user@192.168.0.214
The authenticity of host '192.168.0.214 (192.168.0.214)' can't be established.
ECDSA key fingerprint is SHA256:eRjZ3L+d8ygi7sg9I2QrberHdZBPOdvNohJyNk3kn+w.
ECDSA key fingerprint is MD5:56:85:1e:8a:dd:56:1a:cf:68:e8:48:db:7b:67:c3:ad.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.0.214' (ECDSA) to the list of known hosts.

  _ | _ | _ |
  _ | ( _ | _ | /
  _ | \ _ | _ |

Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-192-168-0-214 ~]$
```

o) In order to get internet on our private subnet machine then we have to create a NAT gateway in public subnet 1

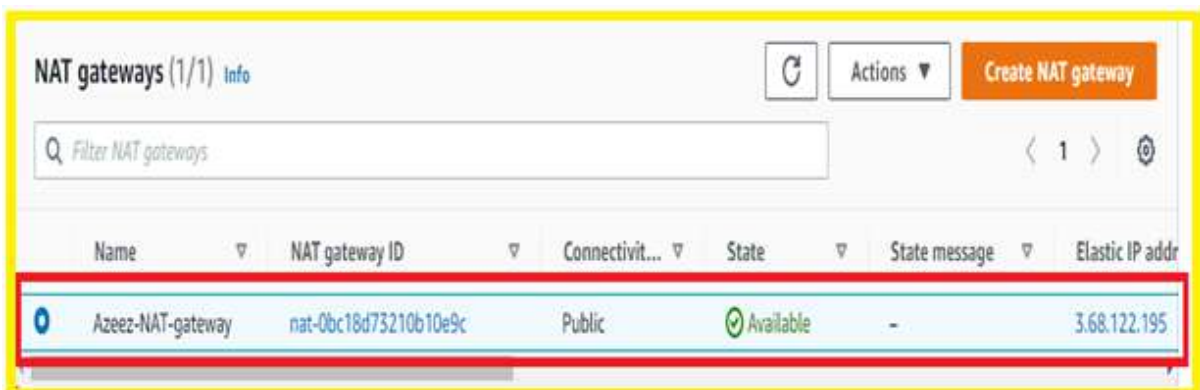
NAT gateways:

Create a NAT gateways:

Name: Azeez-NAT-gateway

Subnet: Azeez-VPC-A-PubSn1

Elastic IP allocation ID: allocated

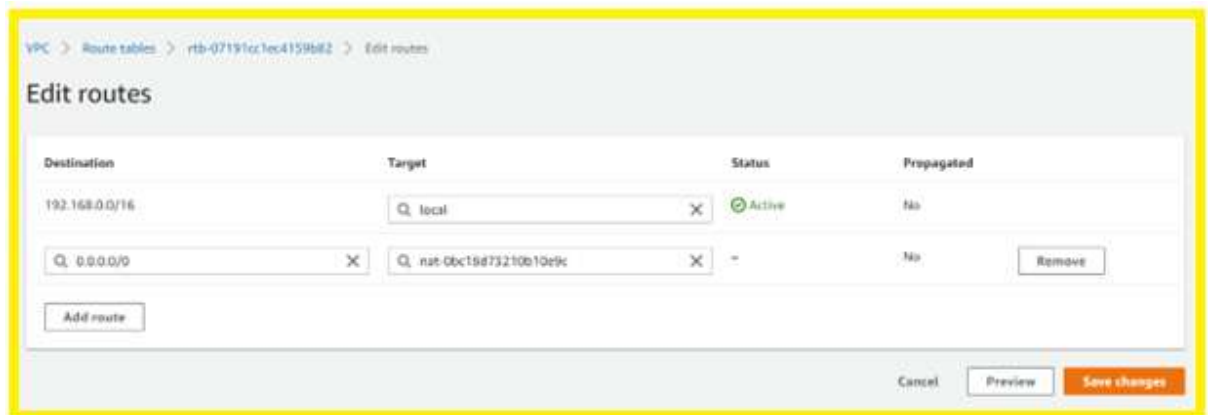


p) Edit the route table of private subnet with a route to NAT gateway

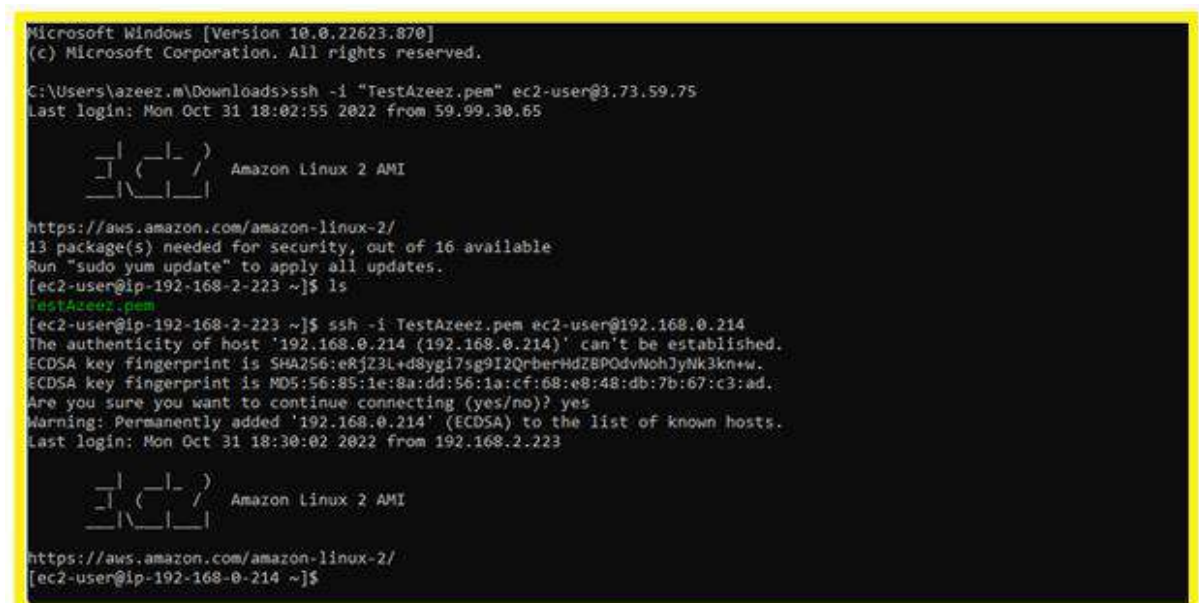
Know edit route table

Azeez-VPC-A-PrivRT

Click on Routes and Edit routes

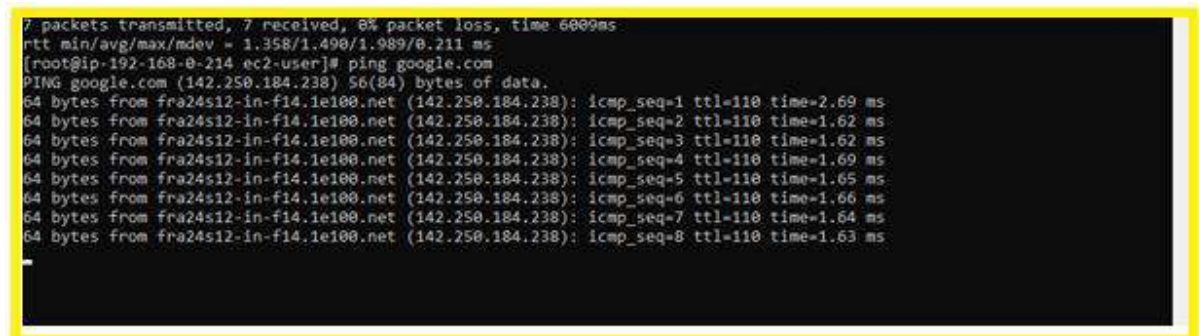


After adding NAT gateway to Public SN1 connection



q) Then login to Private subnet machine and try to ping google.com

r) I can ping google.com from Azeez EC2-Prv SN1



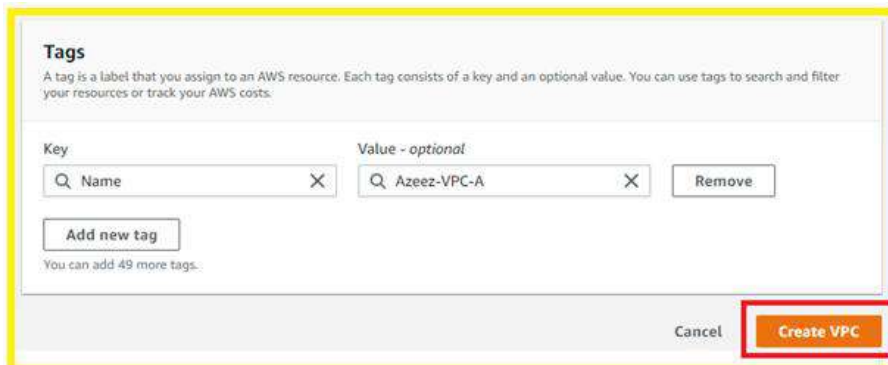
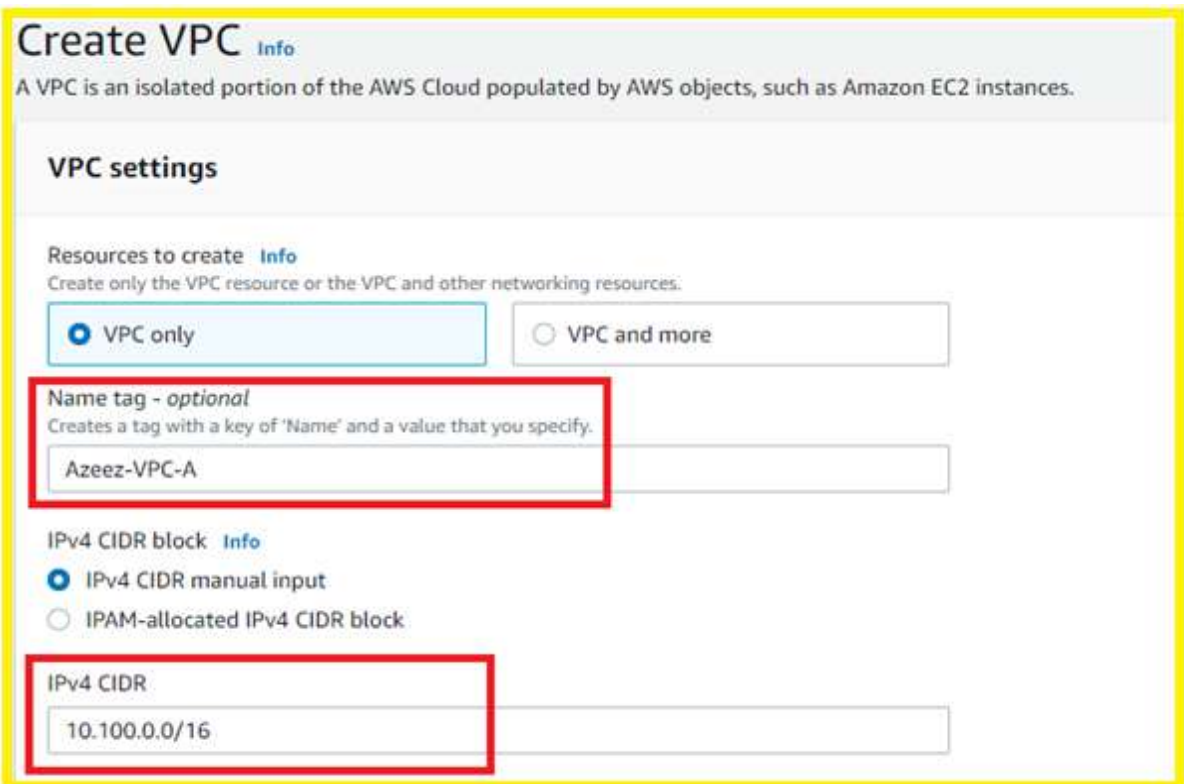
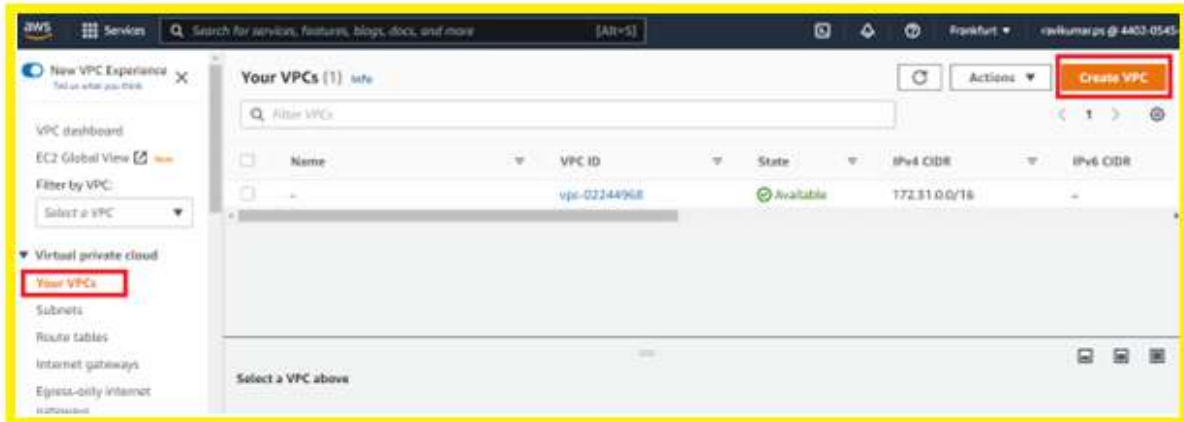

```
ssh -i <key> -r <key> username@public:/<destination>
```

Deletion:

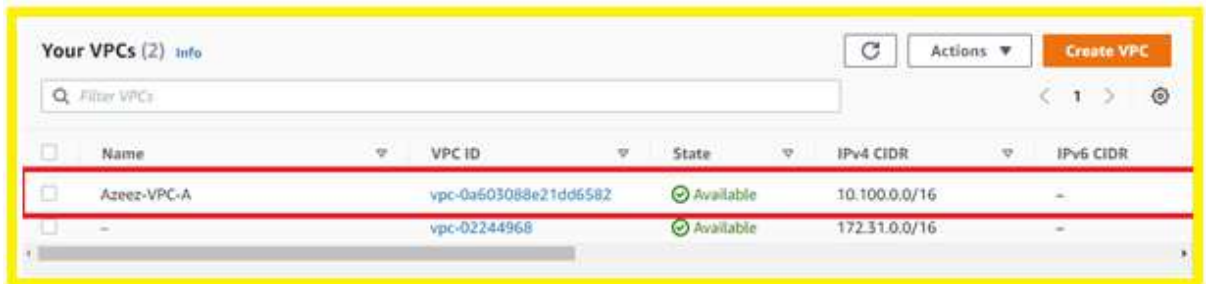
- 1) Route table deletion
- 2) Remove Subnet Associations (Public and private)
- 3) Delete EC2 instance
- 4) Delete NAT gateway
- 5) Internet gateways detach
- 6) Delete internet gateway
- 7) Delete subnets (Public and Private)
- 8) Delete Route Table
- 9) Delete VPC

7. VPC Peering

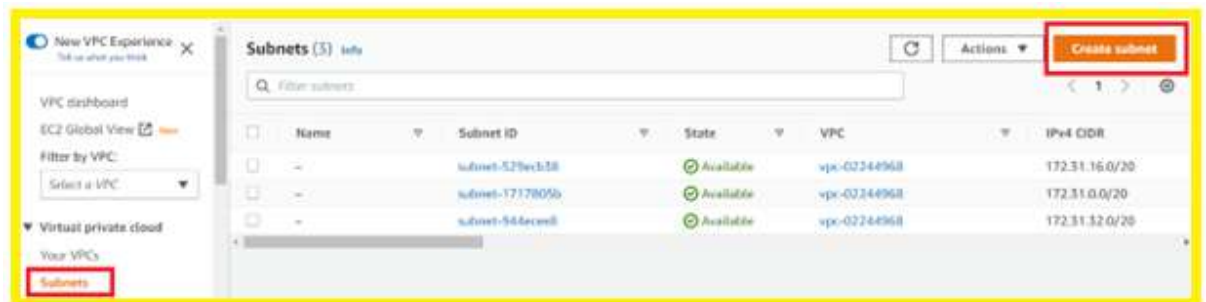
- a) **Create VPC:** Go to Your VPC and select Create VPC, Name: Azeez-VPC-A, IPv4 CIDR: 10.100.0.0/16 and select create



Screen shot of VPC



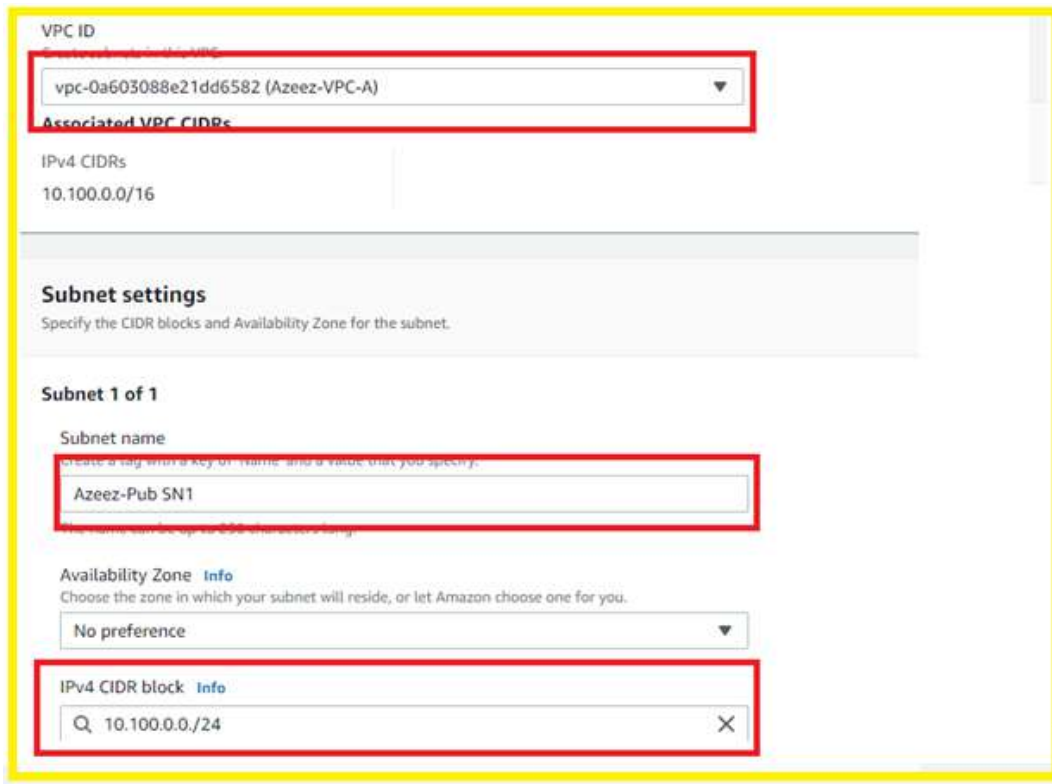
- b) Create 1 Pub SN1 and 1 Prv SN1:
Go to Subnet and create Pub SN1



VPC ID: Azeez-VPC-A

Subnet name: Azeez Pub SN1

IPv4 CIDR block: 10.100.0.0/24



Create Prv Sub N1:

VPC ID: Azeez-VPC-A

Subnet name: Azeez Prv SN1

IPv4 CIDR block: 10.100.1.0./24

VPC ID
Create subnets in this VPC.

vpc-0a603088e21dd6582 (Azeez-VPC-A) ▼

Associated VPC CIDRs

IPv4 CIDRs

10.100.0.0/16

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name
Create a tag with a key of 'Name' and a value that you specify.

Azeez-VPC-Prv SN1

The name can be up to 256 characters long.

Availability Zone [Info](#)
Choose the zone in which your subnet will reside, or let Amazon choose one for you.

No preference ▼

Key	Value - optional	
Q Name X	Q Azeez-VPC-Prv SN1 X	Remove

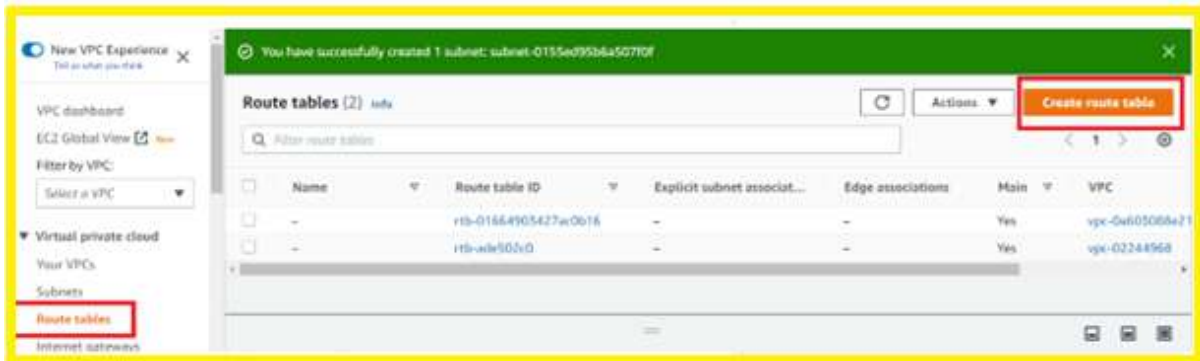
Add new tag
You can add 49 more tags.

Remove

Add new subnet

Cancel **Create subnet**

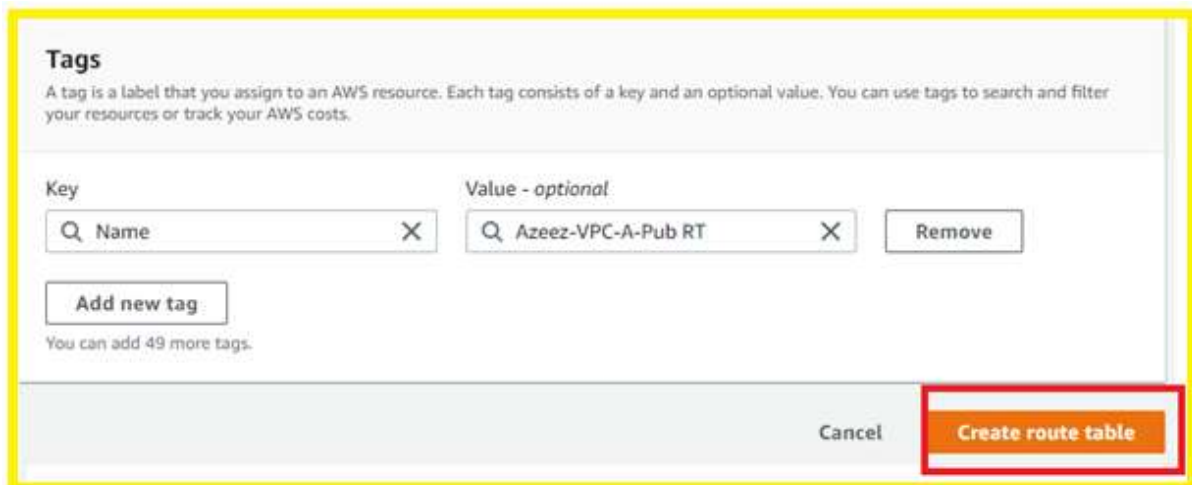
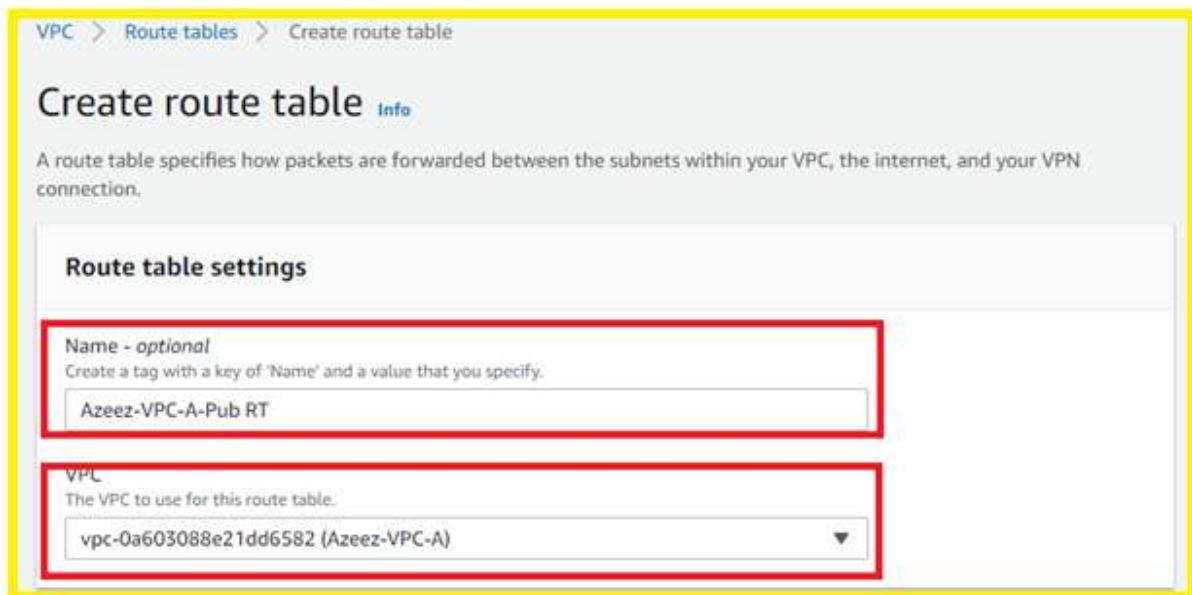
c) **Create Route Table:** Go to Route table and Create route tables



First, I am creating Public Route table

Name: Azeez-VPC-A-Pub RT

VPC: Azeez-VPC-A



Second, I am Creating Prv Route table

Azeez-VPC-A-Prv RT

Create route table Info

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

Route table settings

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

Azeez-VPC-A-Prv RT

VPC
The VPC to use for this route table.

vpc-0a603088e21dd6582 (Azeez-VPC-A)

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: Name Value - optional: Azeez-VPC-A-Prv RT

Add new tag

You can add 49 more tags.

Cancel Create route table

Edit subnet associations:

Edit the subnet Association and select the Prv SN1 and save associations

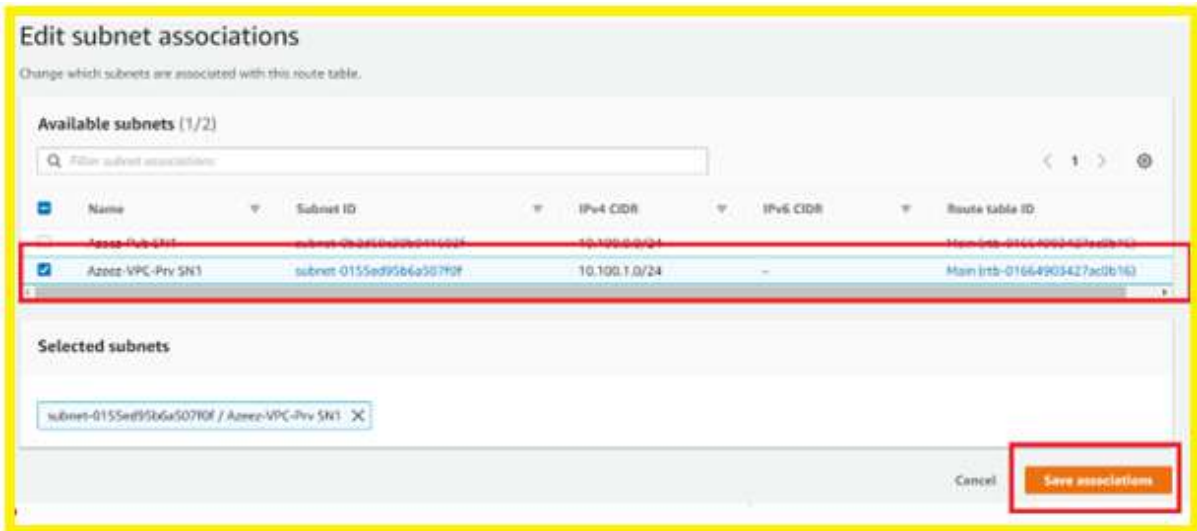
Route tables (1/4) Info

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
<input checked="" type="checkbox"/> Azeez-VPC-A-Prv RT	rtb-063ae8d5731b58628	-	-	No	vpc-0a603088e21
<input type="checkbox"/> -	rtb-01664903427ac0b16	-	-	Yes	vpc-0a603088e21
<input type="checkbox"/> -	rtb-ade502c0	-	-	Yes	vpc-02244968
<input type="checkbox"/> Azeez-VPC-A-Pub RT	rtb-062e0def0844f9f5f	-	-	No	vpc-0a603088e21

Explicit subnet associations (0)

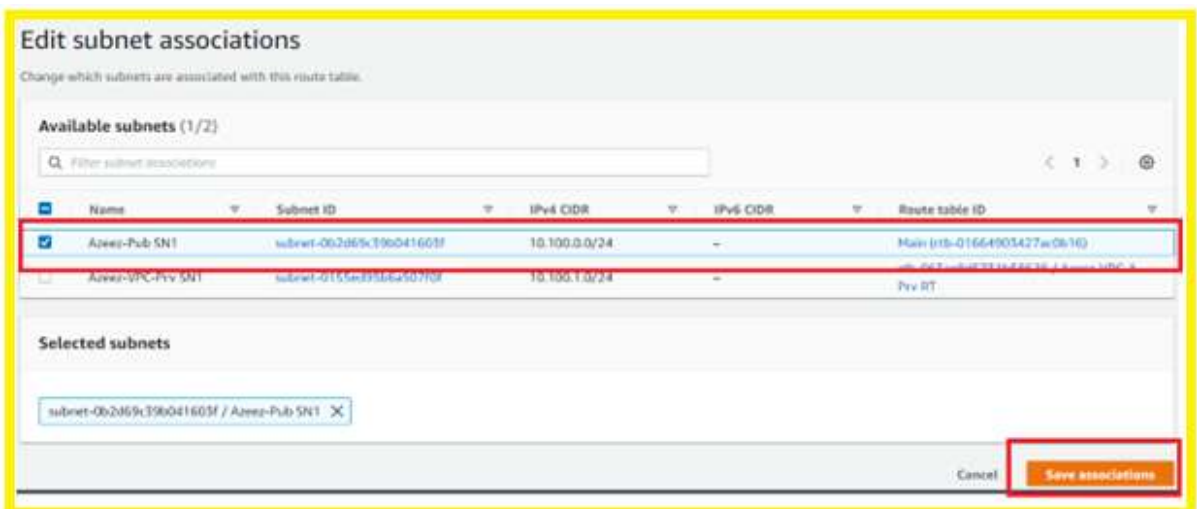
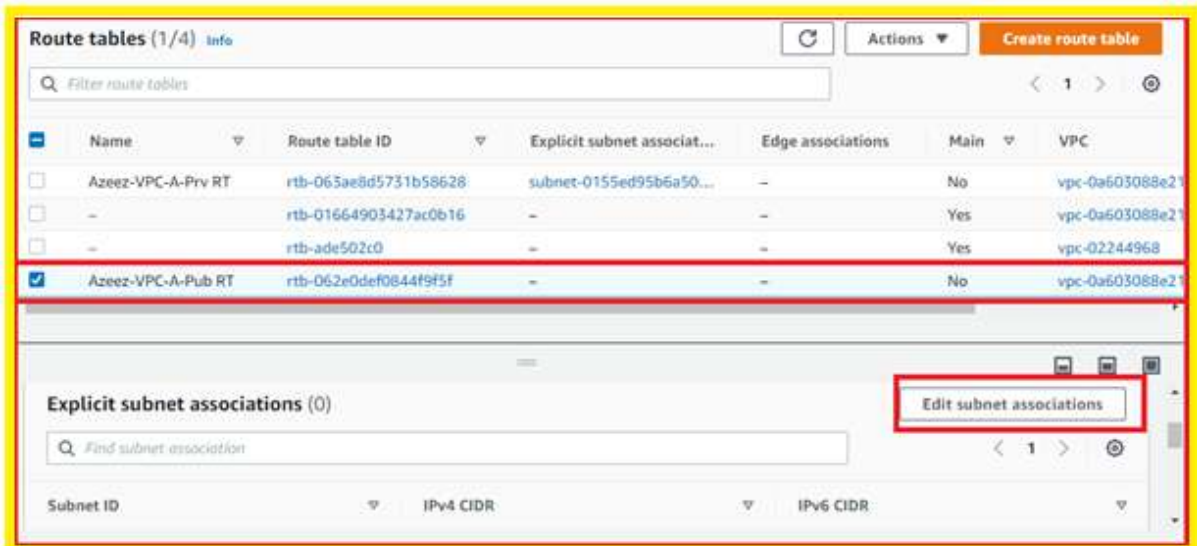
Find subnet association

Edit subnet associations



Edit subnet associations:

Edit the subnet Association and select the Pub SN1 and save associations



Route Table of Prv and Public

<input type="checkbox"/>	Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
<input type="checkbox"/>	Azeez-VPC-A-Priv RT	rtb-063ae8d5731b58628	subnet-0155ed95b6a50...	-	No	vpc-0a603088e21
<input type="checkbox"/>	-	rtb-01bb4905427ac0b1b	-	-	Yes	vpc-0a603088e21
<input type="checkbox"/>	-	rtb-ade502c0	-	-	Yes	vpc-02244968
<input type="checkbox"/>	Azeez-VPC-A-Pub RT	rtb-062e0def0844f9f5f	subnet-0b2d69c39b041...	-	No	vpc-0a603088e21

d) Internet gateway:

<input checked="" type="checkbox"/>	Name	Internet gateway ID	State	VPC ID	Owner
<input checked="" type="checkbox"/>	-	igw-ez274787	Attached	vpc-02244968	44020545

Create Internet gateway: Go to internet gateway and select create internet gateway

Name: Azeez-VPC-A-IGW

Create internet gateway Info

An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

Internet gateway settings

Name tag

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

Tags - optional

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

The following internet gateway was created: igw-026b44179255cde35 - Azeez-VPC-A-IGW. You can now attach to a VPC to enable the VPC to communicate with the internet.

Internet gateways (2) Info

<input type="checkbox"/>	Name	Internet gateway ID	State	VPC ID	Owner
<input type="checkbox"/>	Azeez-VPC-A-IGW	igw-026b44179255cde35	Detached	--	4402054
<input type="checkbox"/>	--	igw-ec274797	Attached	vpc-02344968	4402054

Attach to VPC: Azeez-VPC-A

VPC > Internet gateways > Attach to VPC (igw-026b44179255cde35)

Attach to VPC (igw-026b44179255cde35) Info

VPC

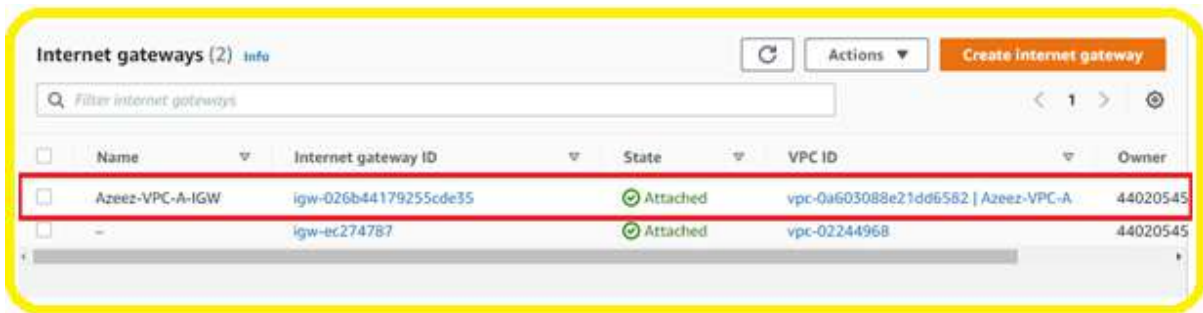
Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.

Available VPCs

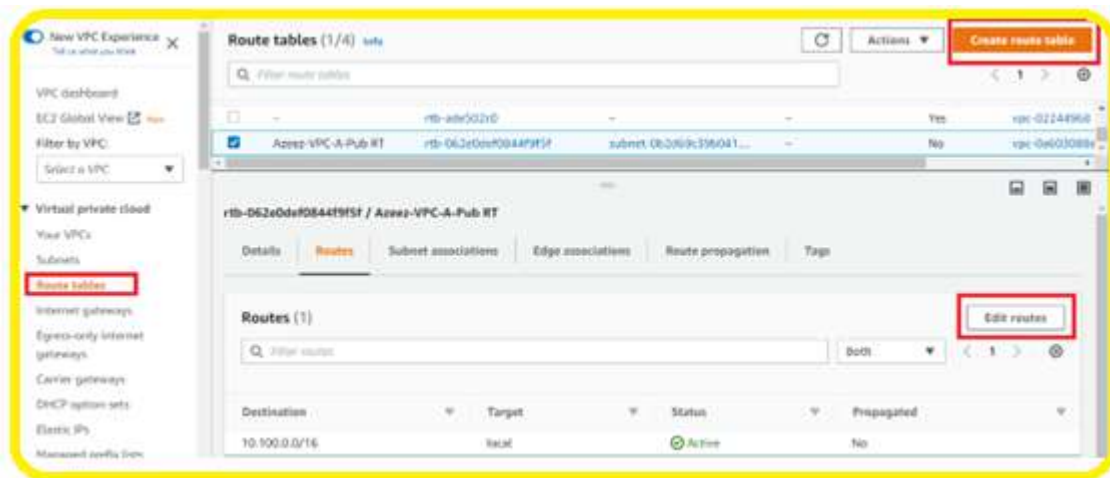
Attach the internet gateway to this VPC.

▶ AWS Command Line Interface command

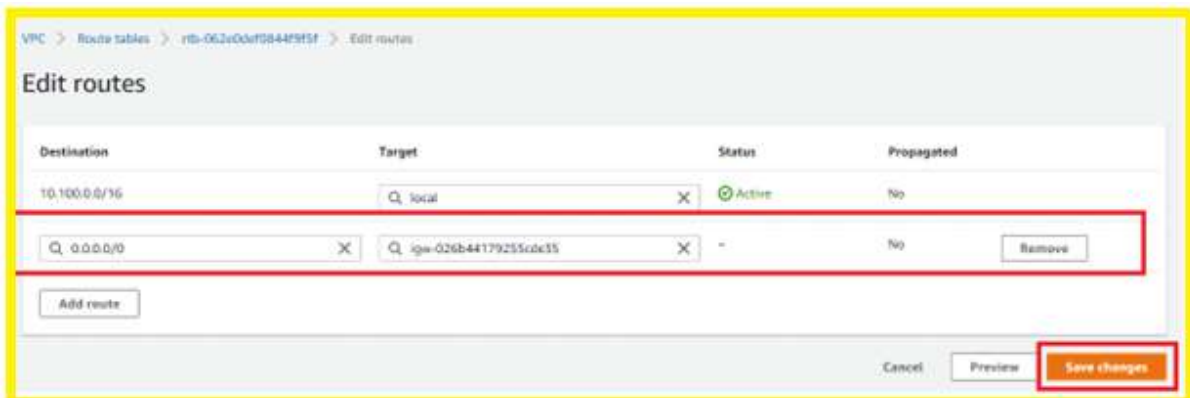
After attachment



Know edit the routes



Edit the route table and add internet gateway and save changes



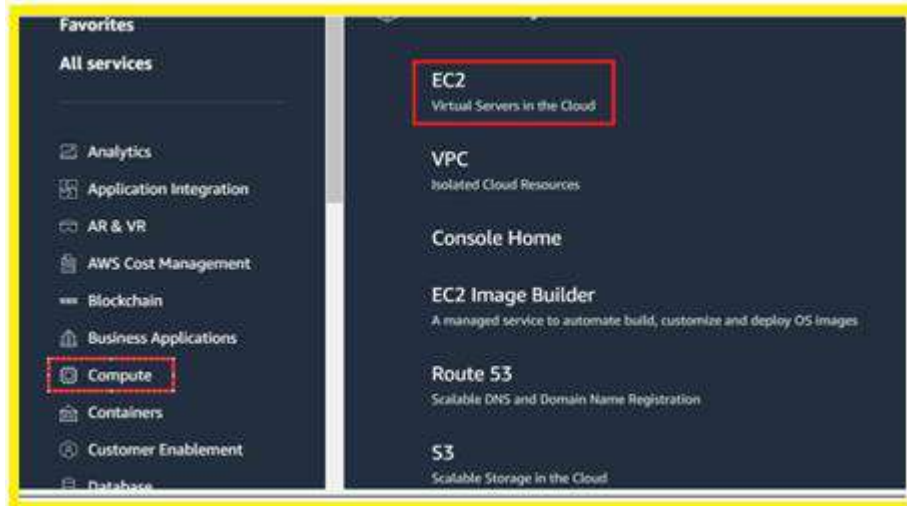
e) **Create EC2 Instance:**

Name: Azeez-EC2-VPC-A-Pub SN1

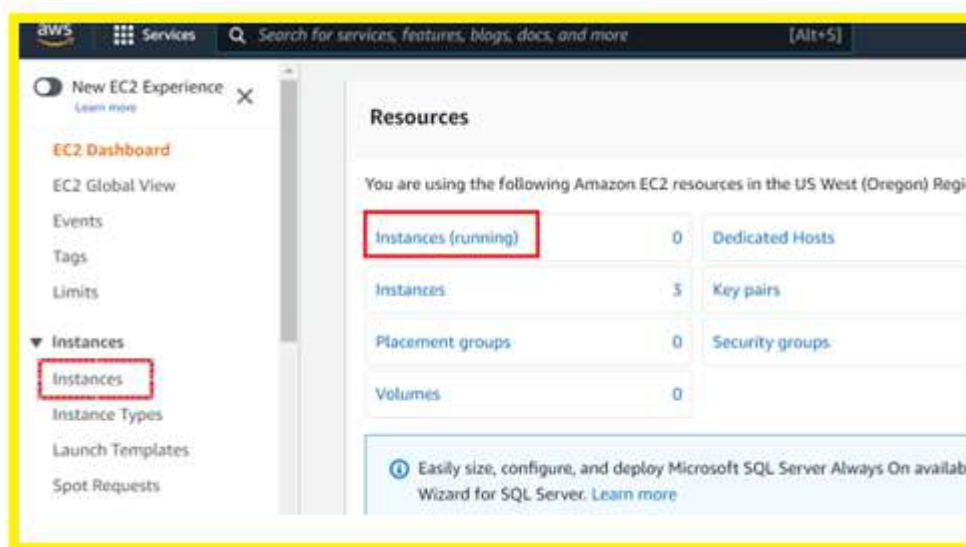
Login into the AWS console page

Once you login go to Services.

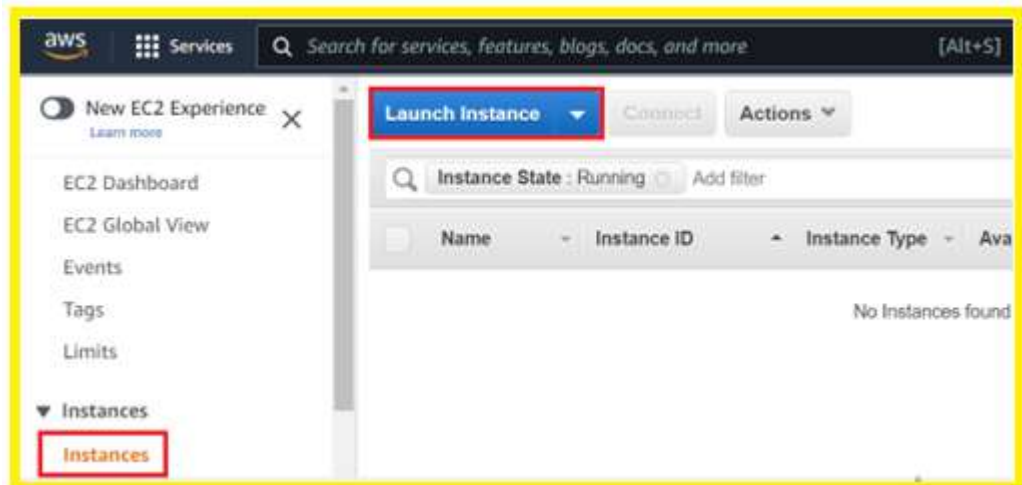
Services -> Compute -> EC2



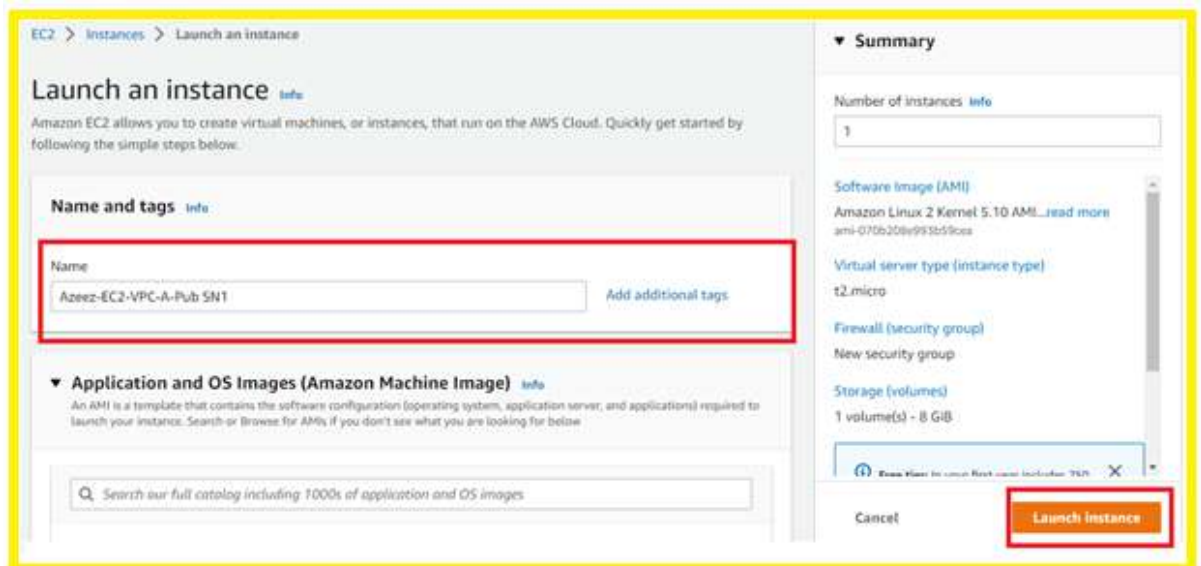
Then go to instances and click on Launch Instance:



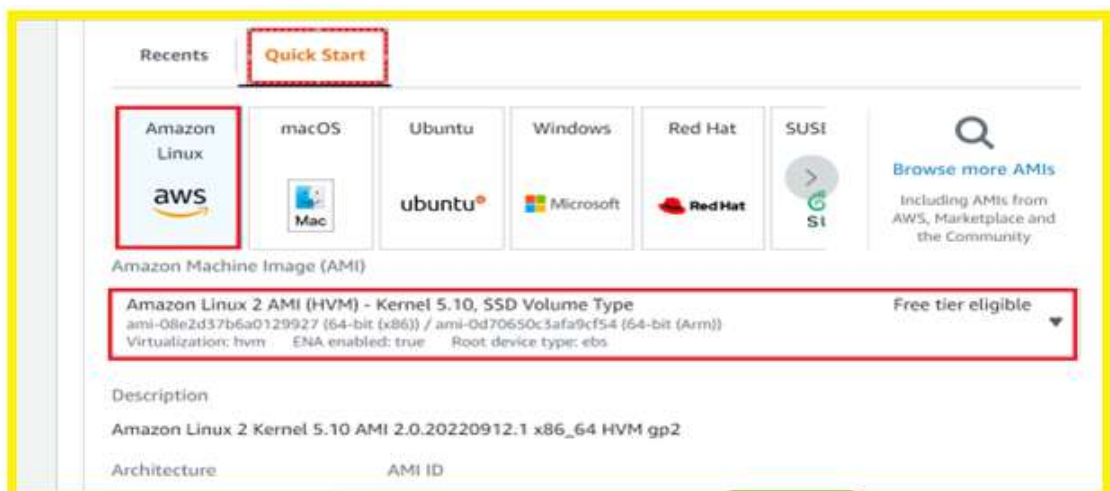
Then click on Launch instance option:



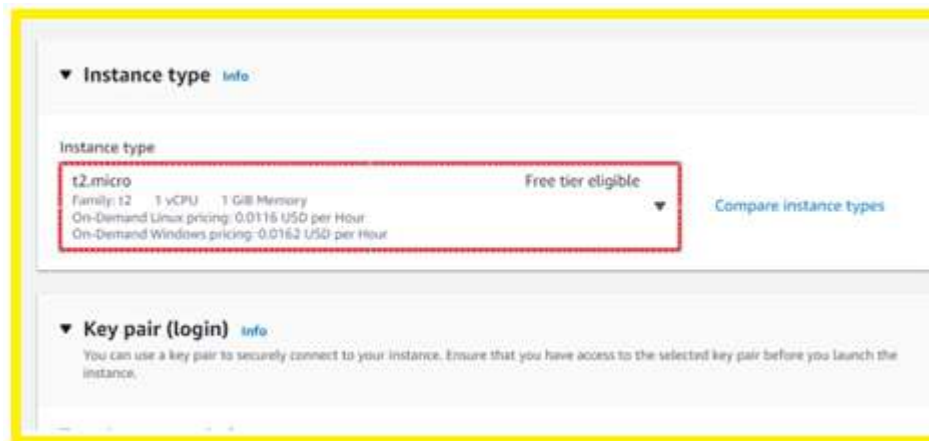
Then give the name to the instance machine:



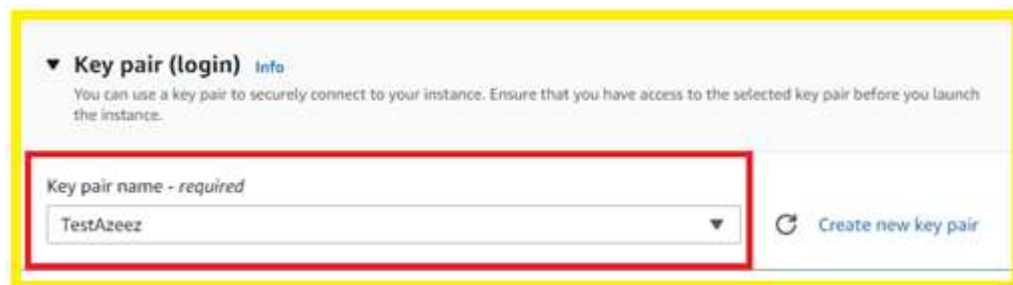
Then select OS Image and the version:



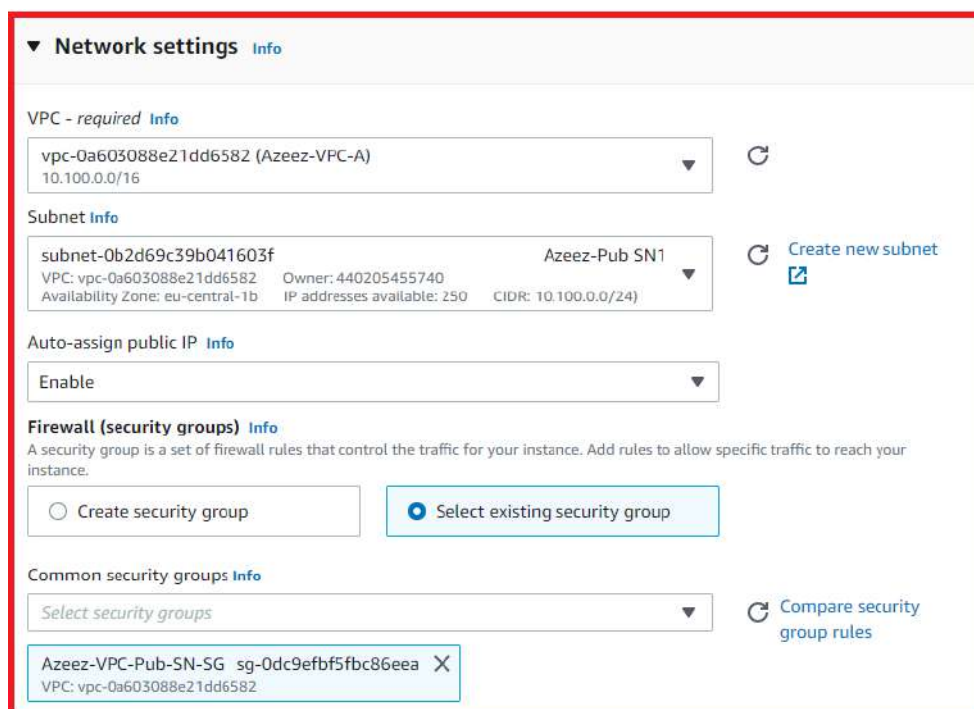
Under the Instance type: Select – t2.micro machine



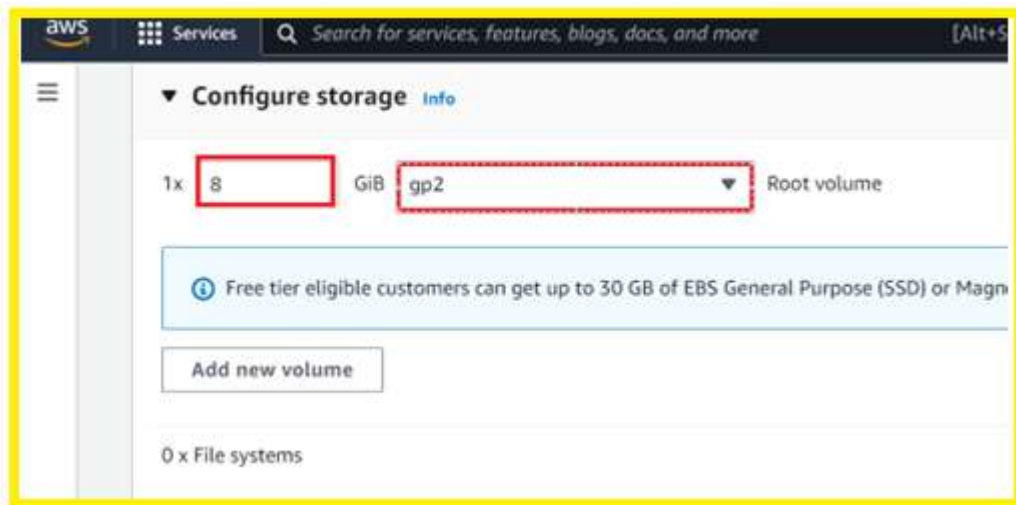
Then select the keypair, if you don't have the keypair please click on "create new keypair"



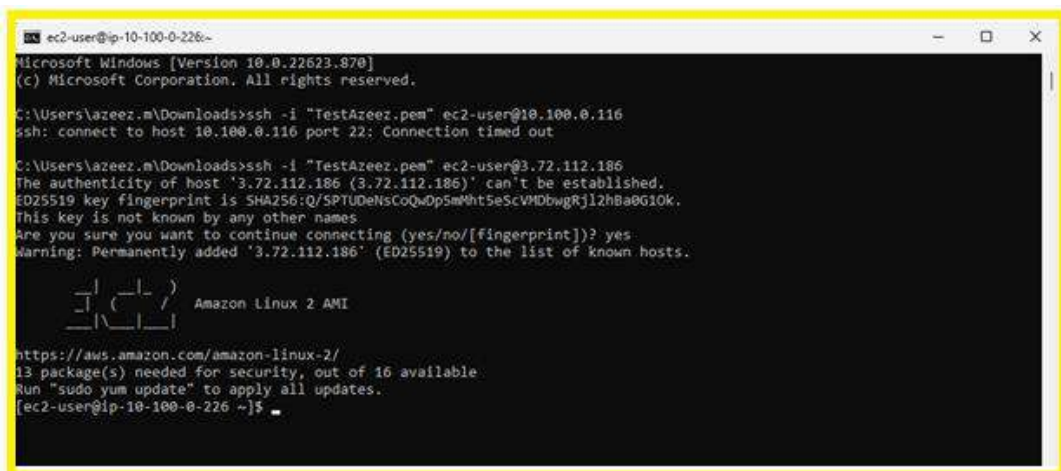
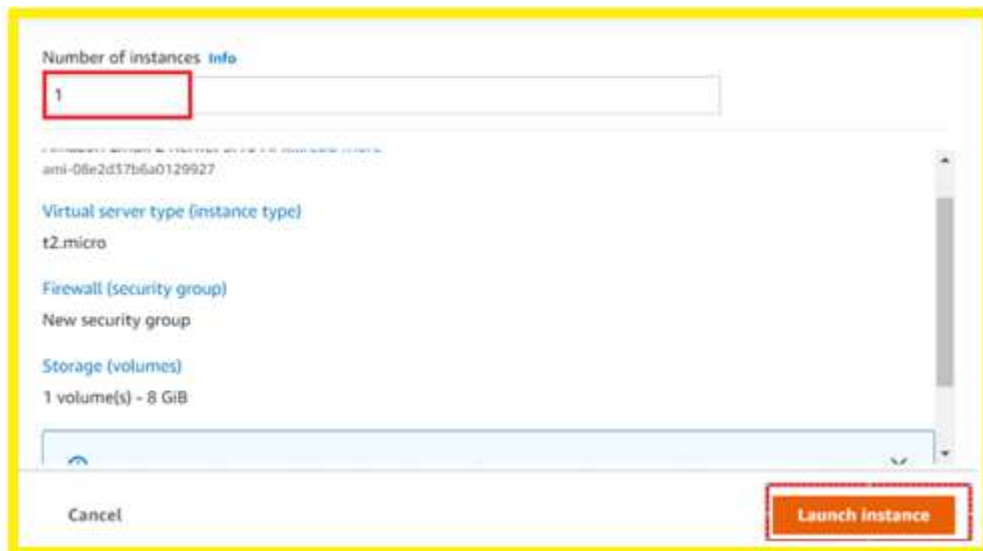
Edit the Network settings:



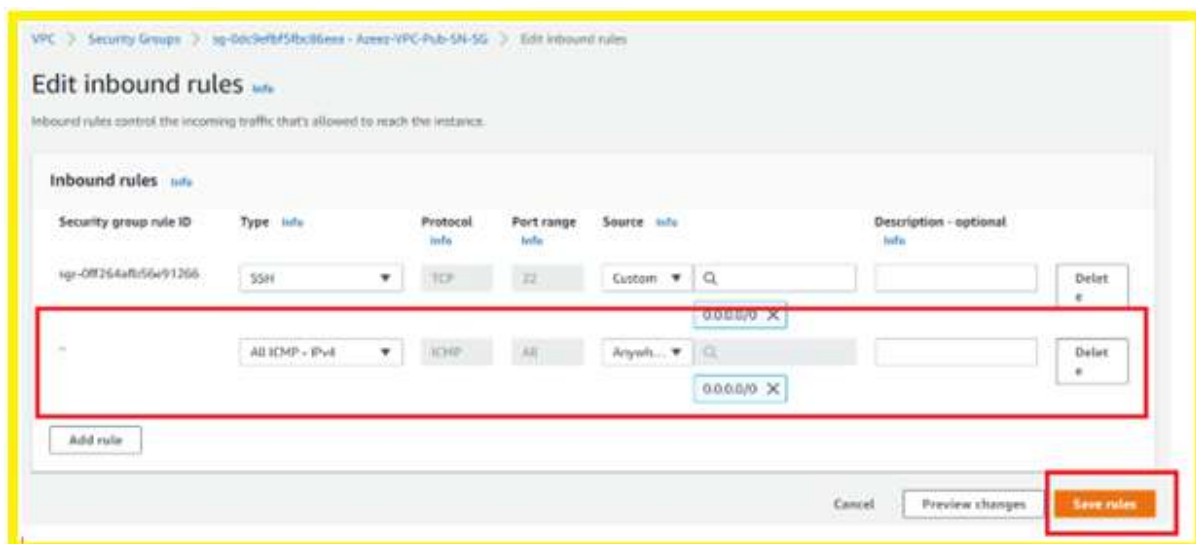
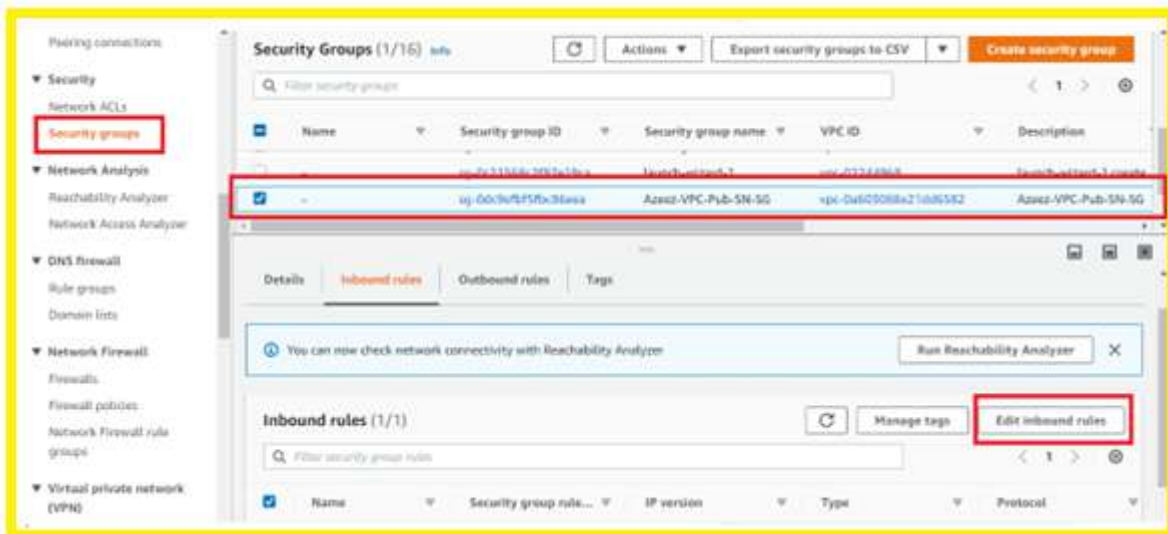
Under Configure storage, please provide your required configure storage:



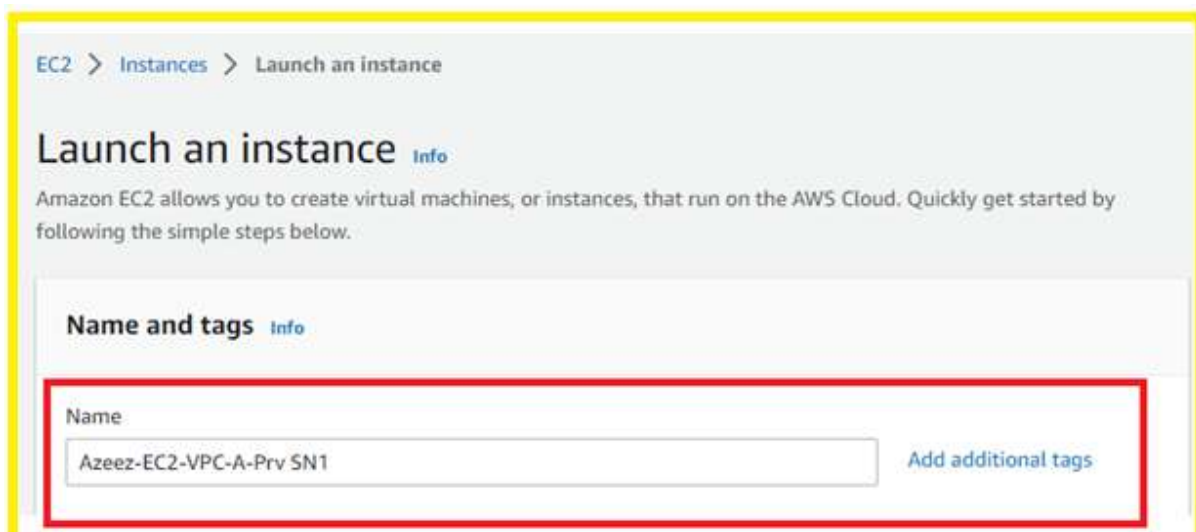
Provide the number of instances you required: 1 and launch instance



Once EC2 Instance created Edit Inbound rules in Security group:



Create another Private EC2 instance:



▼ Key pair (login) Info
You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

TestAzeez ▼ [Create new key pair](#)

Edit the Network settings:

▼ Network settings Info

VPC - *required* Info

vpc-0a603088e21dd6582 (Azeez-VPC-A)
10.100.0.0/16 ▼ [Refresh](#)

Subnet Info

subnet-0155ed95b6a507f0f Azeez-VPC-Prv SN1 ▼ [Create new subnet](#)

VPC: vpc-0a603088e21dd6582 Owner: 440205455740
Availability Zone: eu-central-1b IP addresses available: 251 CIDR: 10.100.1.0/24

Auto-assign public IP Info

Enable ▼

Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

Security group name - *required*

Azeez-VPC-Prv-SN-SG

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and _-:./()#,@[]+=&;{}!\$*

Edit Inbound rules in Security group for Azeez-VPC-Prv-Sn-SG: All ICMP-IPv4

The screenshot shows the AWS Management Console interface for Security Groups. At the top, there's a search bar and a 'Create security group' button. Below that, a table lists security groups. The 'Azeez-VPC-Prv-SN-SG' group is selected. The 'Inbound rules' tab is active, and the 'Edit inbound rules' button is highlighted with a red box.

Name	Security group ID	Security group name	VPC ID	Description
-	sg-0dc9efbf5fbc86eea	Azeez-VPC-Pub-SN-SG	vpc-0a603088e21dd6582	Azeez-VPC-Pub-SN-SG
-	sg-0eb29f620a0fc4d39	Azeez-VPC-Prv-SN-SG	vpc-0a603088e21dd6582	Azeez-VPC-Prv-SN-SG

The screenshot shows the 'Edit inbound rules' page in the AWS Management Console. It displays a table of existing rules and a form to add a new rule. A new rule for 'All ICMP - IPv4' is being added, with the 'Source' field set to '0.0.0.0'. The 'Save rules' button is highlighted with a red box.

Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sg-09e4c0f670b254522	SSH	TCP	22	Custom	
-	All ICMP - IPv4	ICMP	All	Anywh...	

Copy. pem Local to Azeez-EC2-VPC-A-Pub SN1

```
Microsoft Windows [Version 10.0.22623.870]
(c) Microsoft Corporation. All rights reserved.

C:\Users\azeez.m\Downloads>scp -i TestAzeez.pem -r TestAzeez.pem ec2-user@10.100.1.129:/home/ec2-user
ssh: connect to host 10.100.1.129 port 22: Connection timed out
lost connection

C:\Users\azeez.m\Downloads>scp -i .\TestAzeez.pem -r .\TestAzeez.pem ec2-user@10.100.1.129:/home/ec2-user
ssh: connect to host 10.100.1.129 port 22: Connection timed out
lost connection

C:\Users\azeez.m\Downloads>scp -i .\TestAzeez.pem -r .\TestAzeez.pem ec2-user@3.72.112.186:/home/ec2-user
TestAzeez.pem
100% 1674 9.2KB/s 00:00

C:\Users\azeez.m\Downloads>
```

```

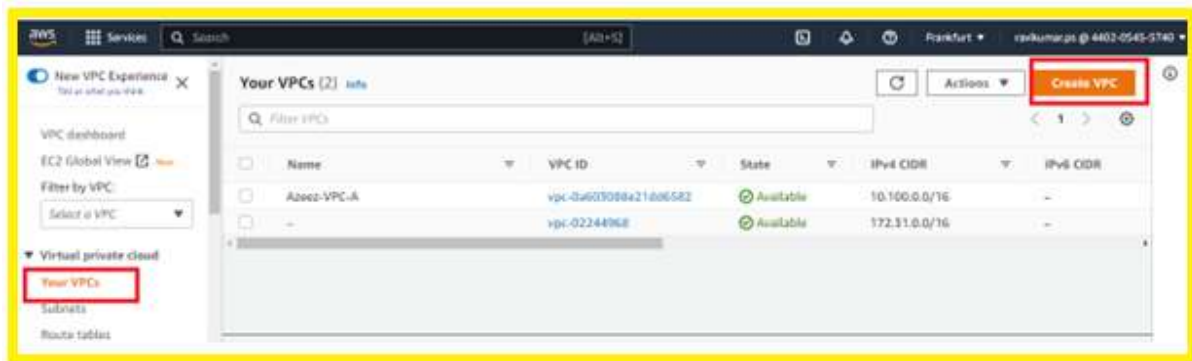
ec2-user@ip-10-100-1-129:~
64 bytes from 10.100.1.129: icmp_seq=8 ttl=255 time=0.528 ms
64 bytes from 10.100.1.129: icmp_seq=9 ttl=255 time=0.585 ms
64 bytes from 10.100.1.129: icmp_seq=10 ttl=255 time=1.26 ms
^Z
[1]+  Stopped                  ping 10.100.1.129
[ec2-user@ip-10-100-0-226 ~]$ ^C
[ec2-user@ip-10-100-0-226 ~]$ sudo su
[root@ip-10-100-0-226 ec2-user]# pwd
/home/ec2-user
[root@ip-10-100-0-226 ec2-user]# ls
TestAzeez.pem
[root@ip-10-100-0-226 ec2-user]# chmod 777 TestAzeez.pem
[root@ip-10-100-0-226 ec2-user]# ls -ltr
total 4
-rwxr-xr-x 1 ec2-user ec2-user 1674 Nov  1 10:00 TestAzeez.pem
[root@ip-10-100-0-226 ec2-user]# ssh -i TestAzeez.pem ec2-user@10.100.1.129
The authenticity of host '10.100.1.129 (10.100.1.129)' can't be established.
ECDSA key fingerprint is SHA256:1L11xZRPHT5KZS6CrAtuRUDwT8uZUZ+emGC2ickCd4g.
ECDSA key fingerprint is MD5:a7:2e:83:6c:77:2d:2c:ce:02:9c:c7:3f:01:6f:40:1e.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.100.1.129' (ECDSA) to the list of known hosts.

  _ | _ | _ |
  _ | ( _ | _ | /
  _ | \ _ | _ | _ |
                                Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-100-1-129 ~]$ ping google.com
PING google.com (216.58.212.142) 56(84) bytes of data.

```

Create VPC B:



Name tag – optional: Azeez-VPC-B

IPv4 CIDR: 10.200.0.0/16

The screenshot shows the 'Create VPC' wizard. The 'Name tag - optional' field is highlighted with a red box and contains the text 'Azeez-VPC-B'. The 'IPv4 CIDR' field is also highlighted with a red box and contains the text '10.200.0.0/16'. The 'Resources to create' section has 'VPC only' selected. The 'IPv4 CIDR block' section has 'IPv4 CIDR manual input' selected.

Create VPC [Info](#)

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances.

VPC settings

Resources to create [Info](#)
Create only the VPC resource or the VPC and other networking resources.

VPC only VPC and more

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

Azeez-VPC-B

IPv4 CIDR block [Info](#)

IPv4 CIDR manual input IPAM-allocated IPv4 CIDR block

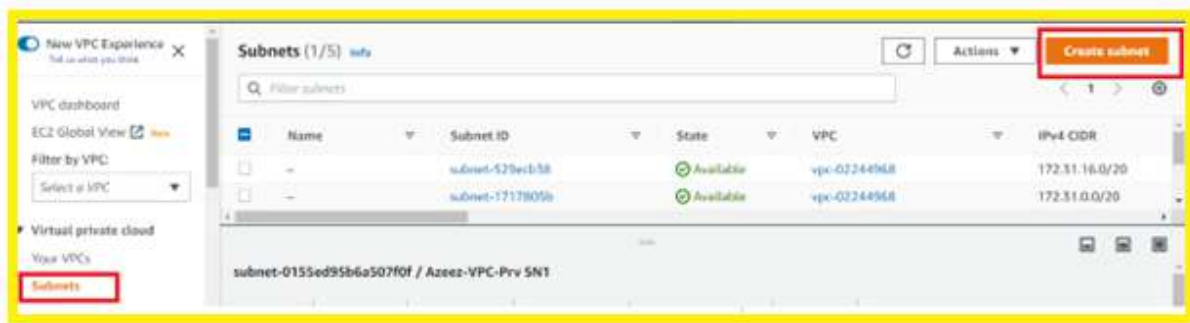
IPv4 CIDR

10.200.0.0/16

IPv6 CIDR block [Info](#)

No IPv6 CIDR block IPAM-allocated IPv6 CIDR block

Create subnet: Create a subnet for Azeez-VPC-B



Subnet name: Azeez-VPC-B-SN1

IPv4 CIDR block: 10.200.1.0/24

The screenshot shows the 'Create Subnet' wizard in the AWS Management Console. The page title is 'Subnet 1 of 1'. The 'Subnet name' field is filled with 'Azeez-VPC-B-SN1'. The 'Availability Zone' dropdown is set to 'No preference'. The 'IPv4 CIDR block' field is filled with '10.200.1.0/24'. Below this, there is a 'Tags - optional' section with a table of tags. The table has two columns: 'Key' and 'Value - optional'. The first row has 'Name' as the key and 'Azeez-VPC-B-SN1' as the value. There are buttons for 'Add new tag', 'Remove', and 'Add new subnet'.

Subnet name
Create a tag with a key of 'Name' and a value that you specify.
Azeez-VPC-B-SN1

Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
No preference

IPv4 CIDR block Info
10.200.1.0/24

Tags - optional

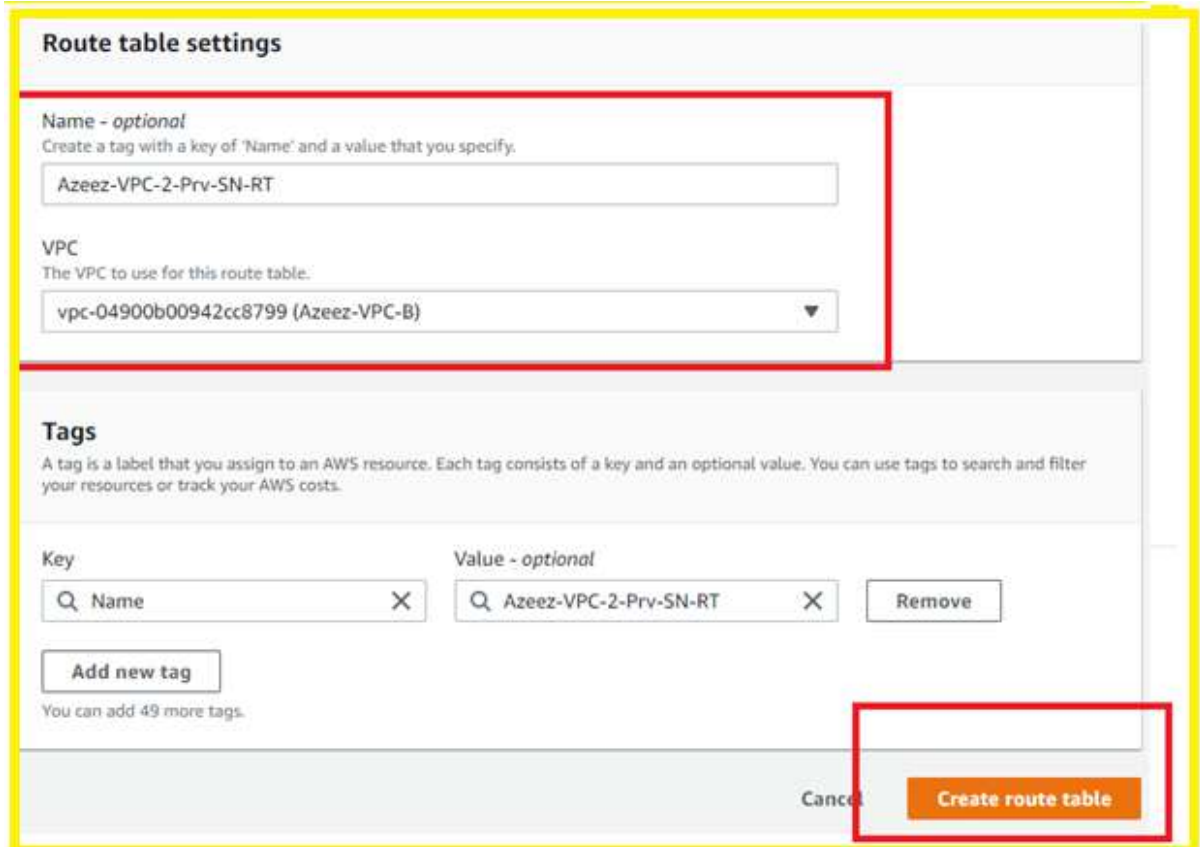
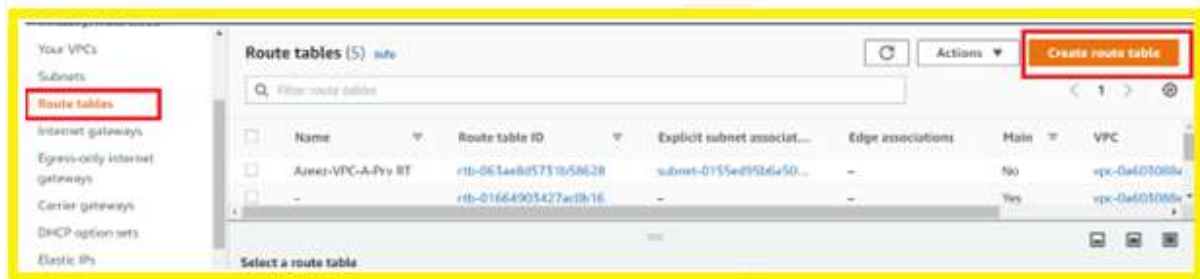
Key	Value - optional
Name	Azeez-VPC-B-SN1

Add new tag
You can add 49 more tags.

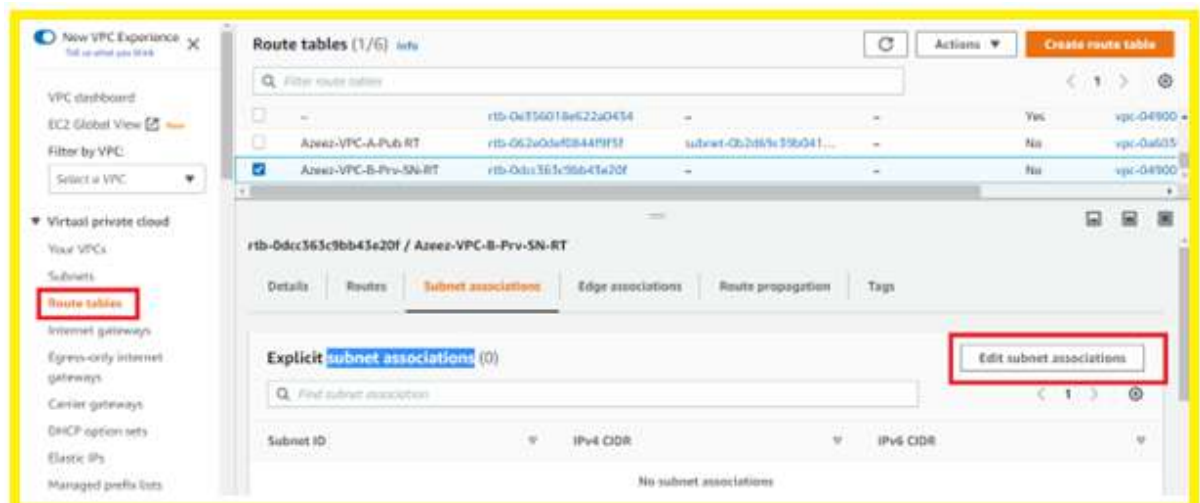
Remove

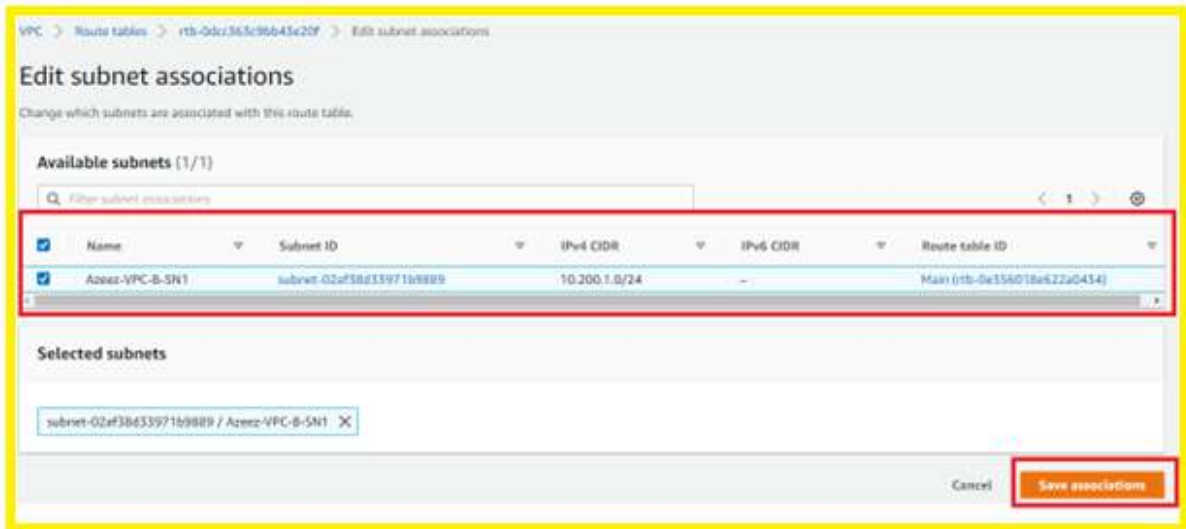
Add new subnet

Create Route table: Create route table for Azeez-VPC-B

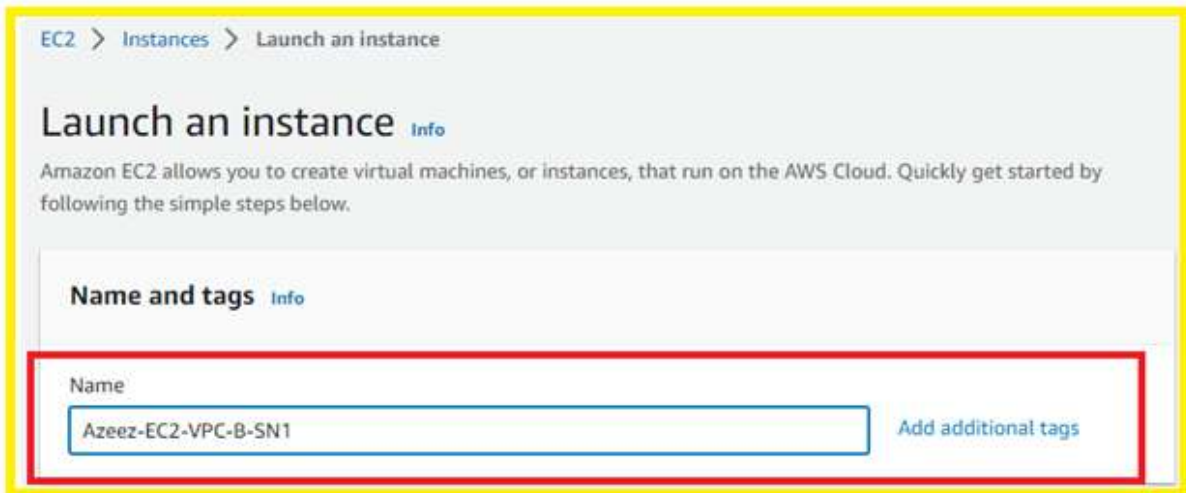


Edit subnet associations: Edit subnet association in Azeez-VPC-B-Priv SN-RT





Create EC2 instance: Create EC2 instance in Azeez-VPC-B-Prv SN1



Edit Network settings: Edit network settings and create Security group then Launch instance.

Network settings Info

VPC - required Info
vpc-04900b00942cc8799 (Azeez-VPC-B)
10.200.0.0/16

Subnet Info
subnet-02af38d33971b9889 Azeez-VPC-B-SN1
VPC: vpc-04900b00942cc8799 Owner: 440205455740
Availability Zone: eu-central-1c IP addresses available: 251 CIDR: 10.200.1.0/24

Auto-assign public IP Info
Enable

Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

Security group name - required
Azeez-VPC-B-SN1-SG

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and _-./()@*[]+=&:{}|~*

Description - required Info
Azeez-VPC-B-SN1-SG

Edit Security Group:

Inbound security group rules successfully modified on security group (sg-0eb29f620a0fc4d39 | Azeez-VPC-Priv-SN-SG) X

Details

Security Groups (1/18) Info

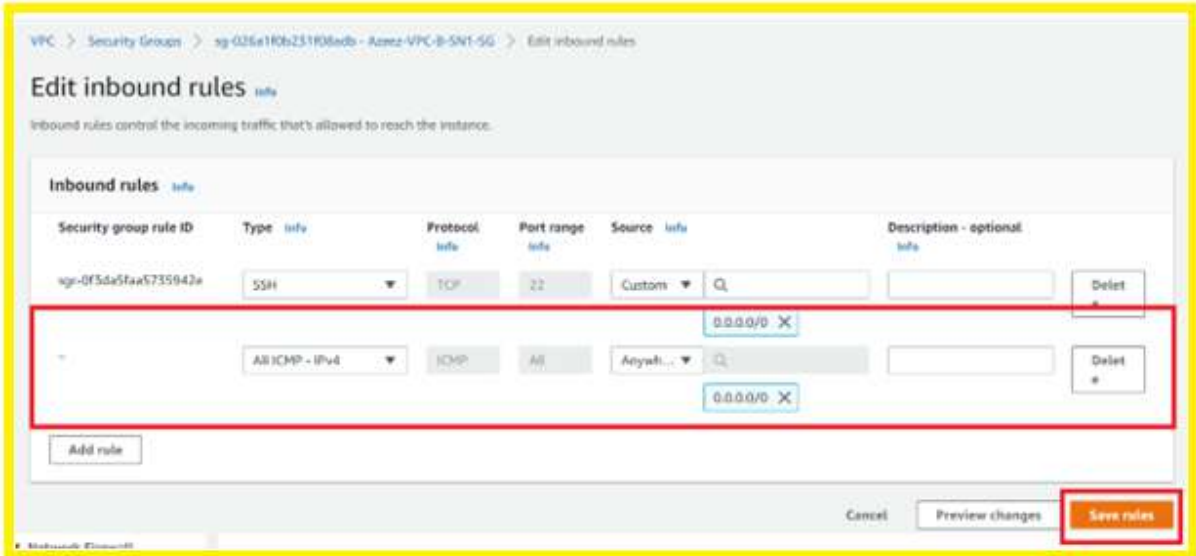
Filter security groups

Name	Security group ID	Security group name	VPC ID	Description
-	sg-09e4d5c6eb451843	launch-wizard-3	vpc-02244069	launch-wizard-3 create
<input checked="" type="checkbox"/>	sg-026a1f0b231f08adb	Azeez-VPC-B-SN1-SG	vpc-04900b00942cc8799	Azeez-VPC-B-SN1-SG

Inbound rules (1/1)

Filter security group rules

Name	Security group rule...	IP version	Type	Protocol	
<input checked="" type="checkbox"/>	-	sg-r-0f3da5faa5735942e	IPv4	SSH	TCP



Save rule

VPC Peering: Go to peering and select Create peering connection. Connect Azeez-VPC-A to Azeez-VPC-B. Create peering connection



Peering connection settings

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

Select a local VPC to peer with

VPC ID (Requester)

VPC CIDRs for vpc-0a603088e21dd6582 (Azeez-VPC-A)

CIDR	Status	Status reason
10.100.0.0/16	✔ Associated	-

Select another VPC to peer with

Account

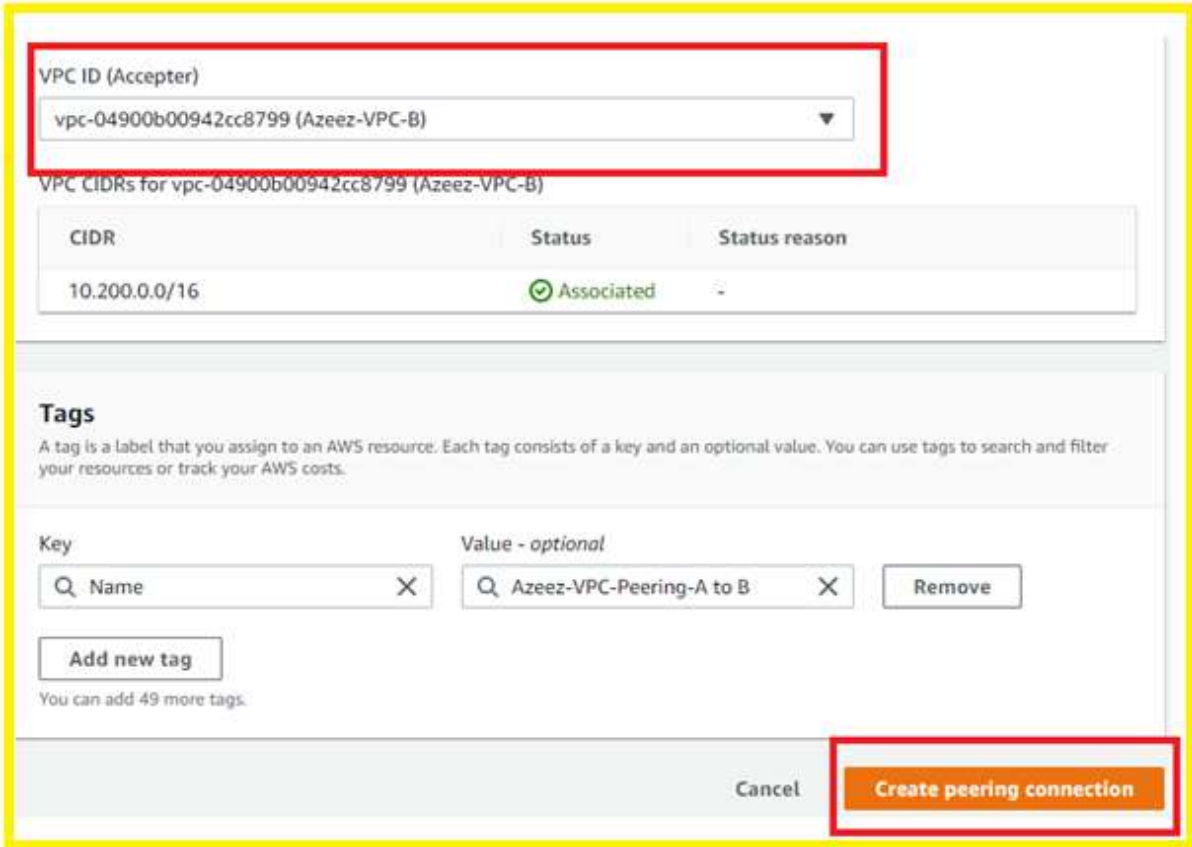
My account

Another account

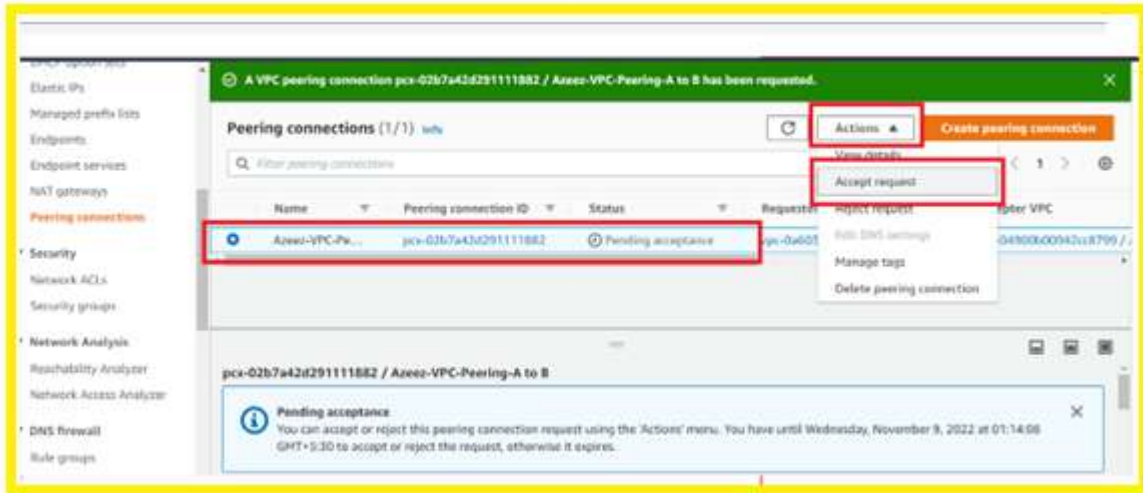
Region

This Region (eu-central-1)

Another Region



Then select Peering machine and go to action and accept the request



Know connect:

EC2-VPC-A-PubSN1 to EC2-VPC-A PrvSN1 to EC2-VPC-B-SN1

Connected local to EC2-VPC-A-PubSN1

```
ec2-user@ip-10-100-0-226~
Microsoft Windows [Version 10.0.22623.870]
(c) Microsoft Corporation. All rights reserved.

C:\Users\azeez.m\Downloads>ssh -i "TestAzeez.pem" ec2-user@3.72.112.186
Last login: Tue Nov  1 19:00:18 2022 from 117.200.11.173

  _|_ ( _|_ / )
  _|_ \|_ \|_ |   Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
13 package(s) needed for security, out of 16 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-10-100-0-226 ~]$
```

Next EC2-VPC-A-PubSN1 to EC2-VPC-A PrvSN1

```
ec2-user@ip-10-100-1-129:~
Microsoft Windows [Version 10.0.22623.870]
(c) Microsoft Corporation. All rights reserved.

C:\Users\azeez.m\Downloads>ssh -i "TestAzeez.pem" ec2-user@3.72.112.186
Last login: Tue Nov  1 19:00:18 2022 from 117.200.11.173

  _|_ ( _|_ / )
  _|_ \|_ \|_ |   Amazon Linux 2 AMI

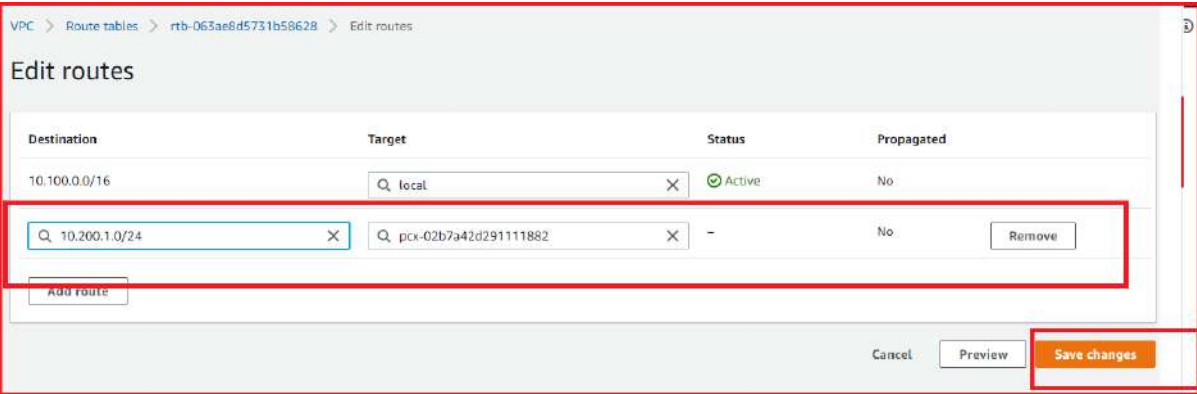
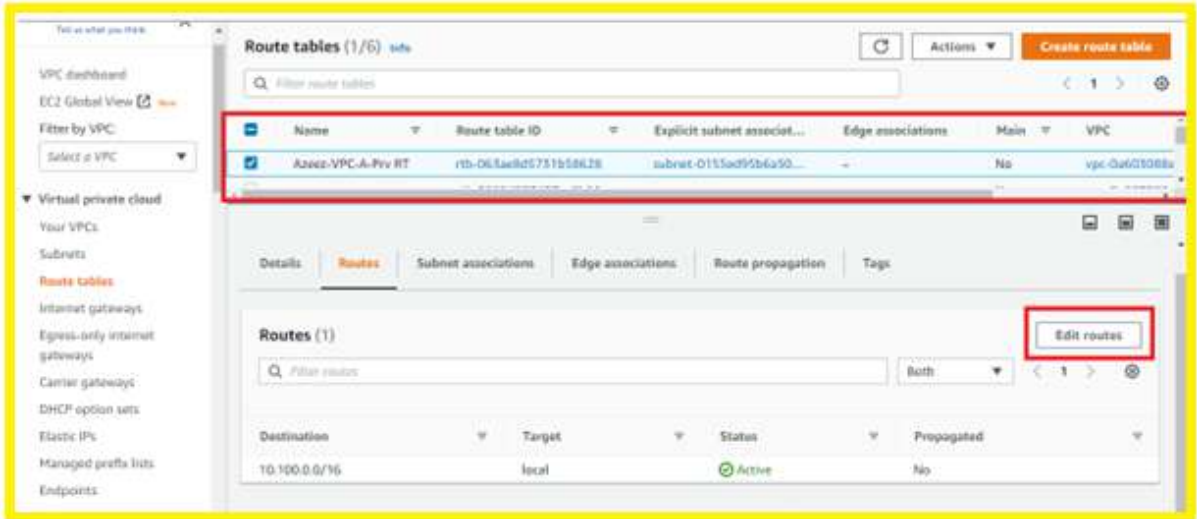
https://aws.amazon.com/amazon-linux-2/
13 package(s) needed for security, out of 16 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-10-100-0-226 ~]$ ls
TestAzeez.pem
[ec2-user@ip-10-100-0-226 ~]$ sudo su
[root@ip-10-100-0-226 ec2-user]# ssh -i TestAzeez.pem ec2-user@10.100.1.129
Last login: Tue Nov  1 19:13:55 2022 from 10.100.0.226

  _|_ ( _|_ / )
  _|_ \|_ \|_ |   Amazon Linux 2 AMI

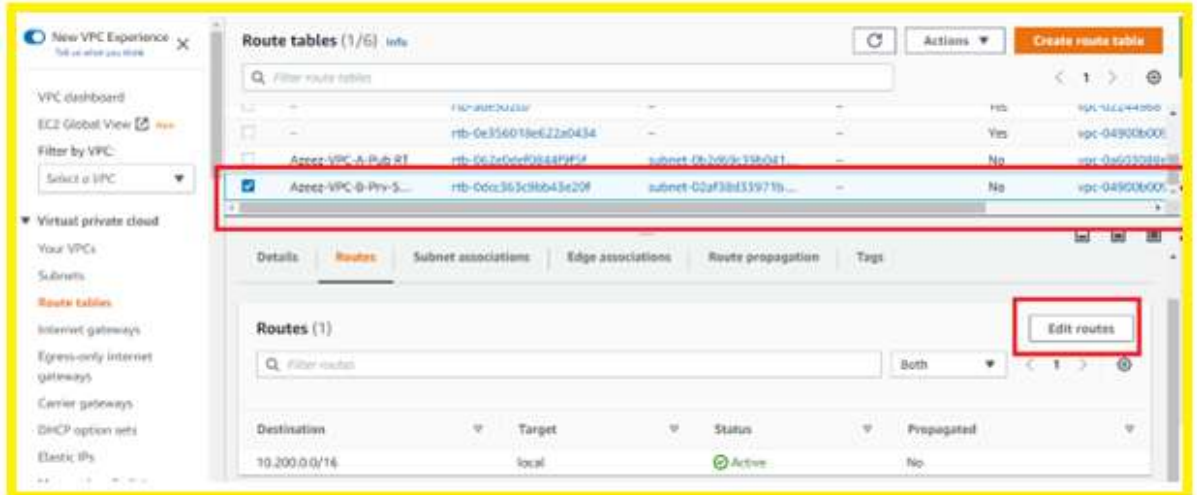
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-100-1-129 ~]$
```

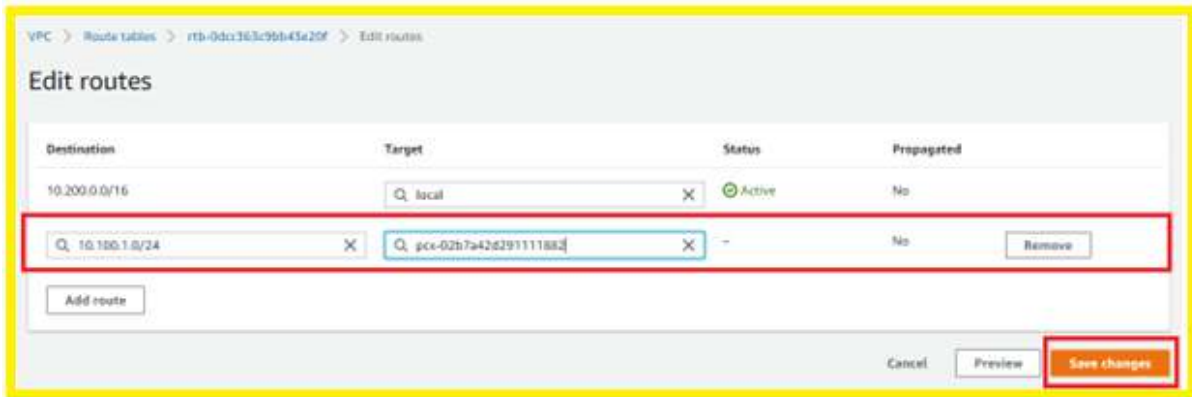
Next ping EC2-VPC-A PrvSN1 to Azeez-EC2-VPC-B-SN1

Without edit the route table we cant ping so Know we have to Both Route tables has to update



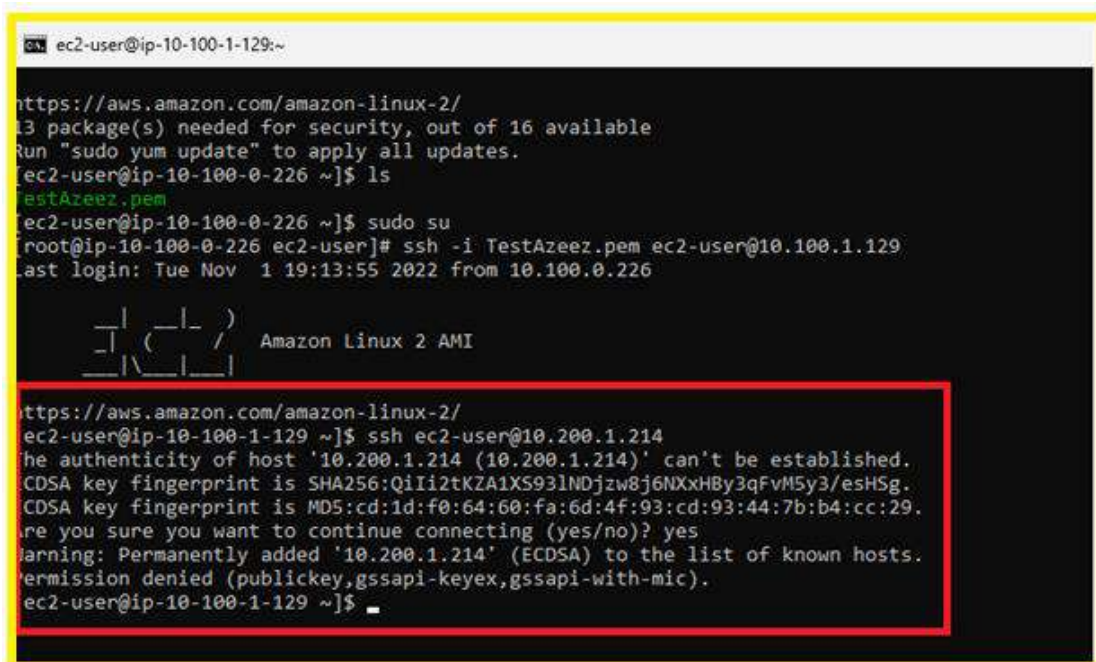
Next edit Azeez-VPC-B-Priv-SN





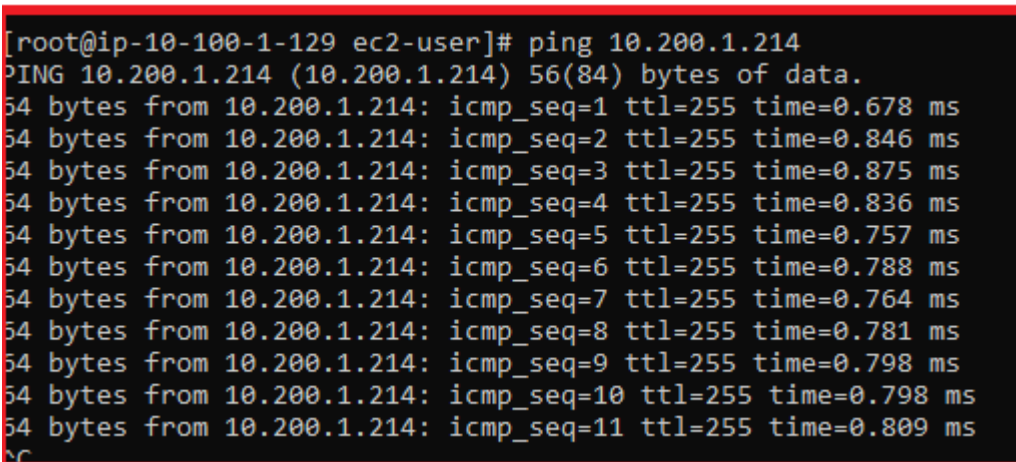
Know we have to do ssh

EC2-VPC-A PrvSN1 to Azeez-EC2-VPC-B-SN1



Know we have to do ping

Unable to ping



Know we have copy .pem file Azeez-EC2-VPC-A-Pub SN1 to Azeez-EC2-VPC-A-Prv SN1

```
[[user@]host1:]file1 ... [[user@]host2:]file2
[root@ip-10-100-0-226 ec2-user]# scp -l TestAzeez.pem -r TestAzeez.pem ec2-user@10.100.1.129:/home/ec2-user
TestAzeez.pem
100% 1674 1.0MB/s 00:00
[root@ip-10-100-0-226 ec2-user]#
```

Know connect Azeez-EC2-VPC-A-Prv SN1 to Azeez-EC@-VPC-B-SN1

```
[root@ip-10-100-0-226 ec2-user]# sudo su
[root@ip-10-100-0-226 ec2-user]# ssh -i TestAzeez.pem ec2-user@10.100.1.129
Last login: Tue Nov 1 19:54:51 2022 from 10.100.0.226

  _|_ ( _|_ )
  _|_ ( _|_ /
  _|\_|_|_|

Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-100-1-129 ~]$
```