AWS-Virtual Private Cloud (VPC) Peering

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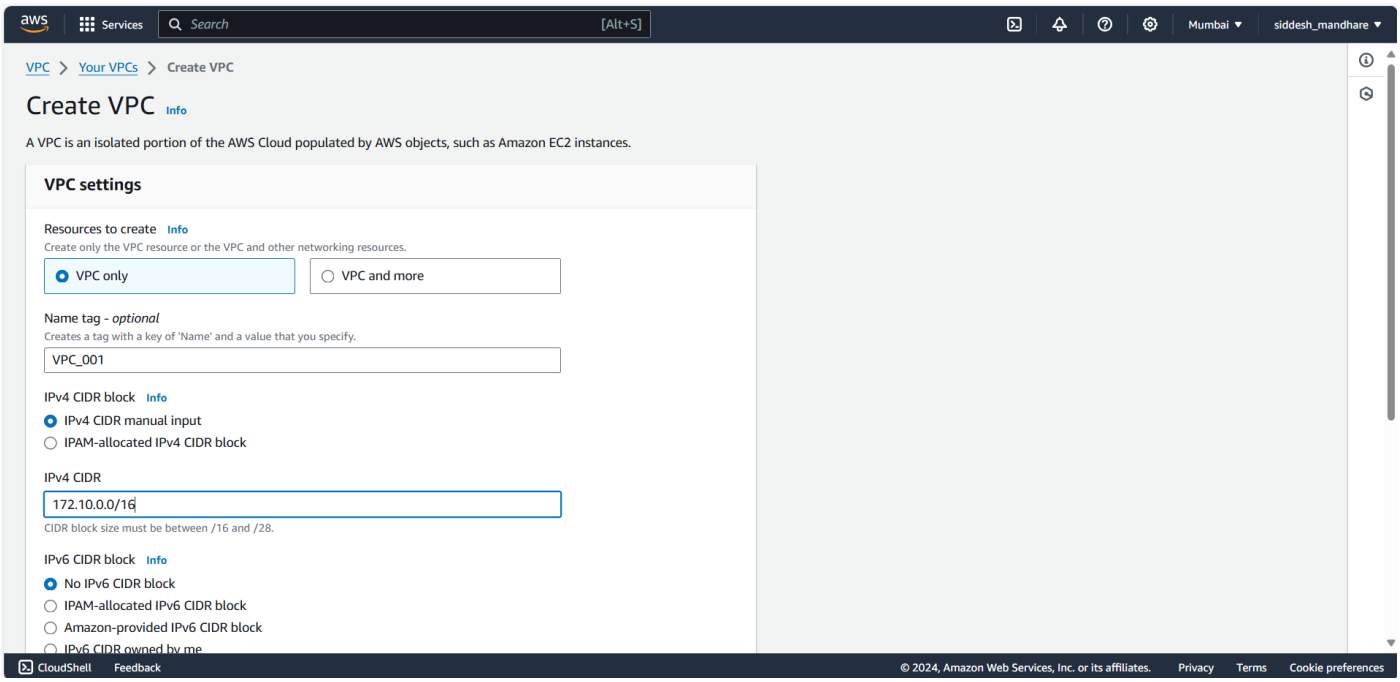
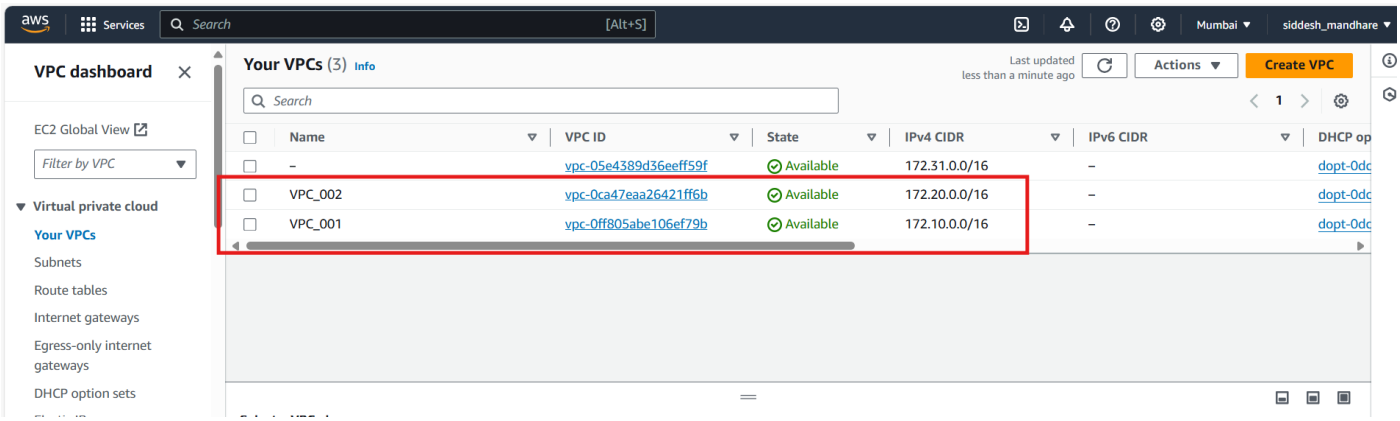
Name: - Virtual Private Cloud (VPC) peering

Step 1: - Create 2 VPC as per be;ow

Name	VPC_001	VPC_002
IP	172.10.0.0/16	172.20.0.0/16

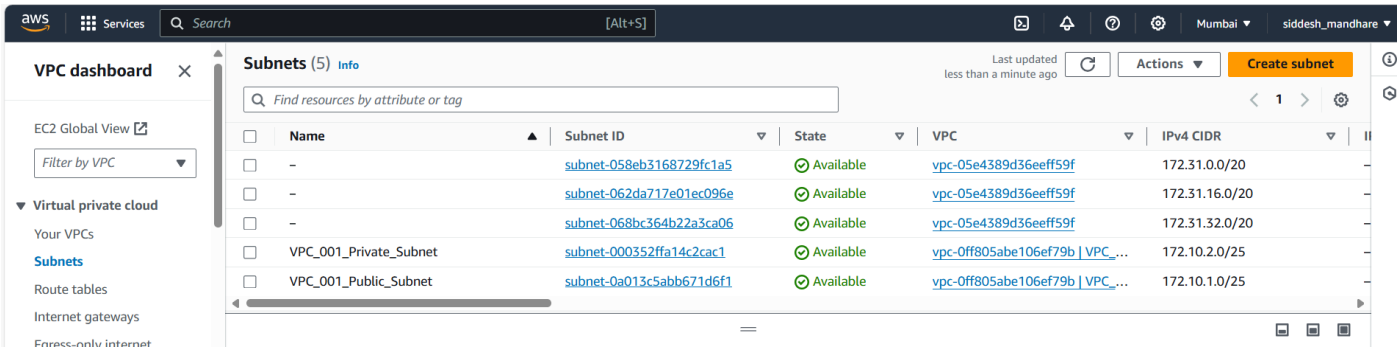




Step 2: - Create Subnets in both VPC's

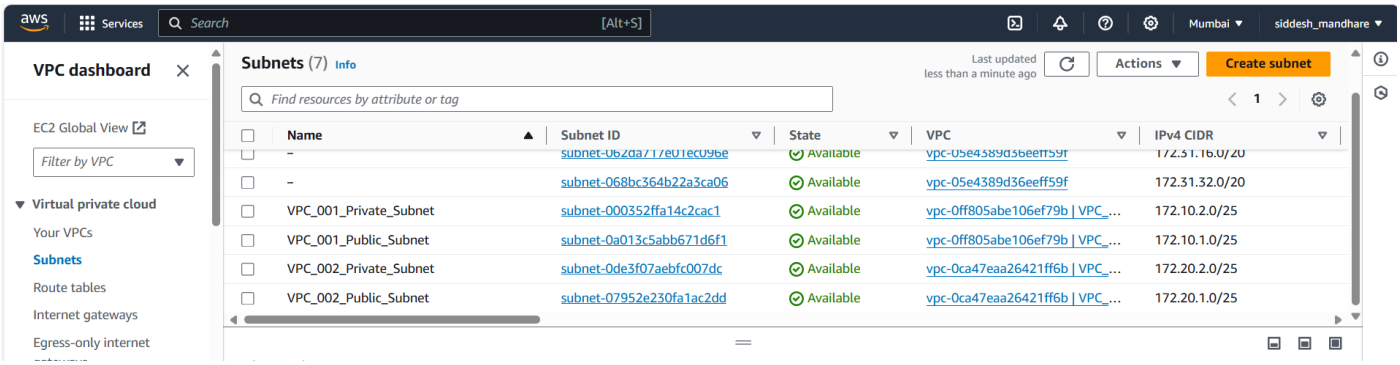
- Create two subnets in VPC_001 as per below

Name	VPC_001_Public_Subnet	VPC_001_Private_Subnet
CIDR IP	172.10.1.0/25	172.10.2.0/25
Availability Zone	ap-south-1a	ap-south-1a



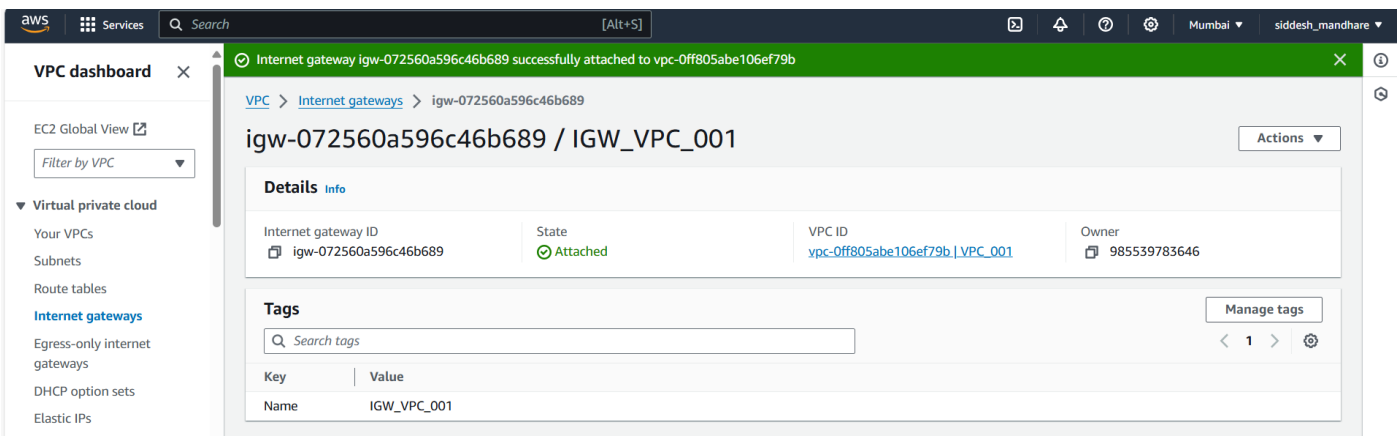
- Create two subnets in VPC_002 as per below

Name	VPC_002_Public_Subnet	VPC_002_Private_Subnet
CIDR IP	172.20.1.0/25	172.20.2.0/25
Availability Zone	ap-south-1a	ap-south-1a

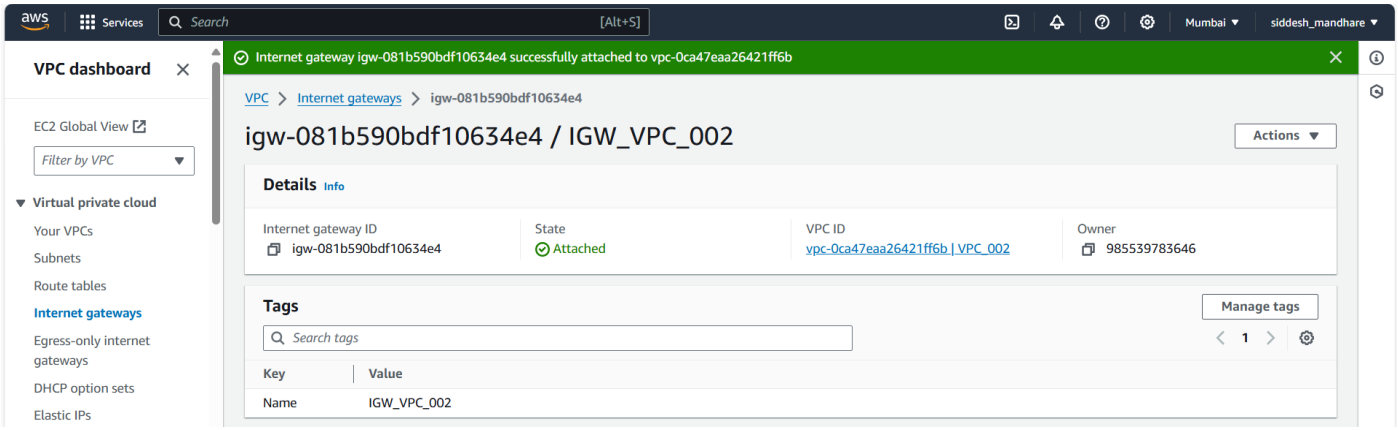


Step: -3 Create 2 Internet Gateway

- Create one Internet Gateway as "IGW_VPC_001" and attached this to "VPC_001"

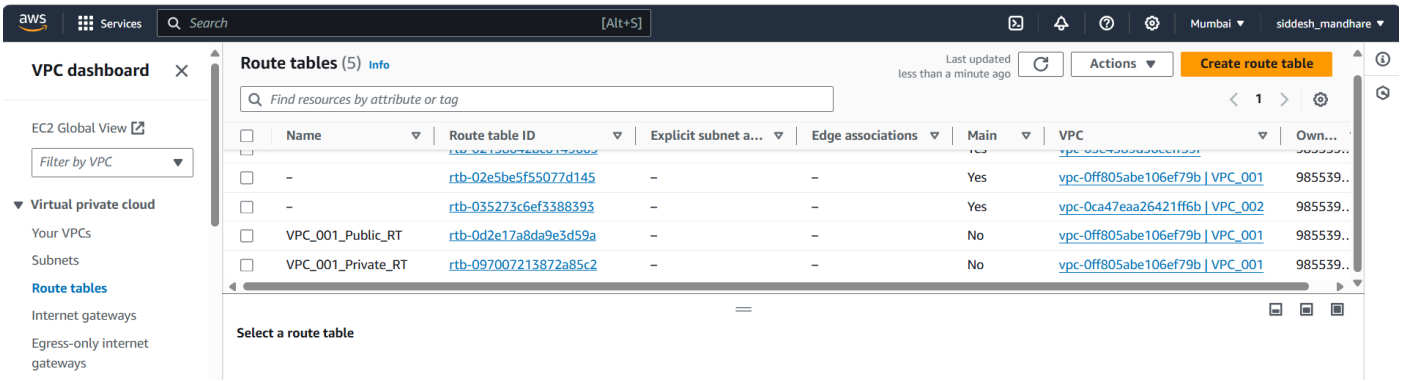


- Create one Internet Gateway as “IGW_VPC_002” and attached this to “VPC_002”

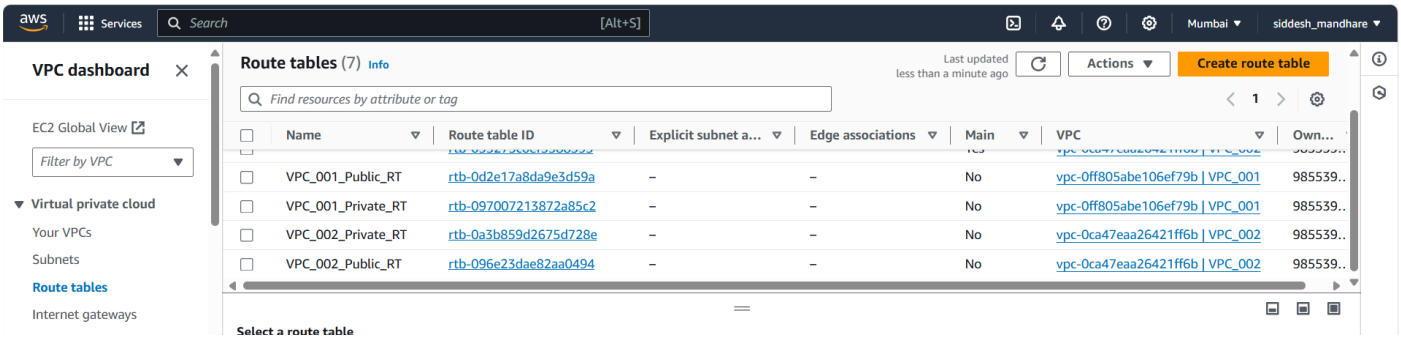


Step 4: - Create 2 Route Table

- Create 2 Route Table in VPC_001 as per below

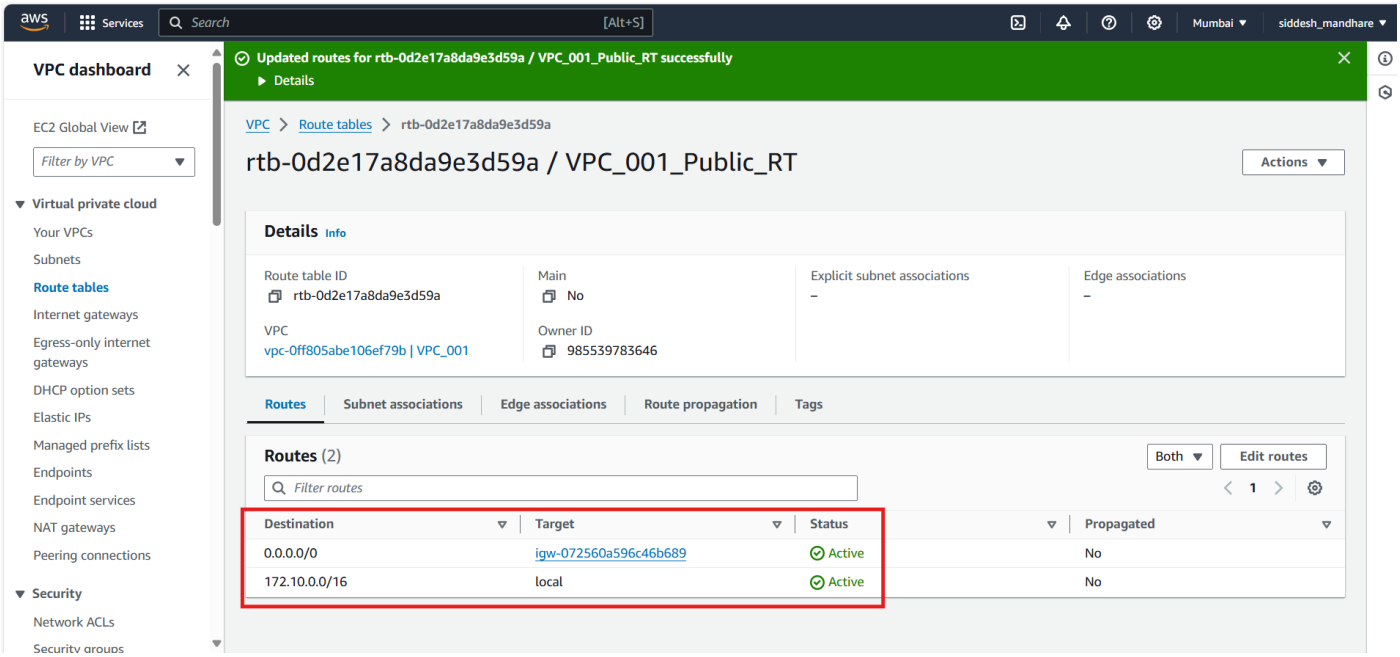


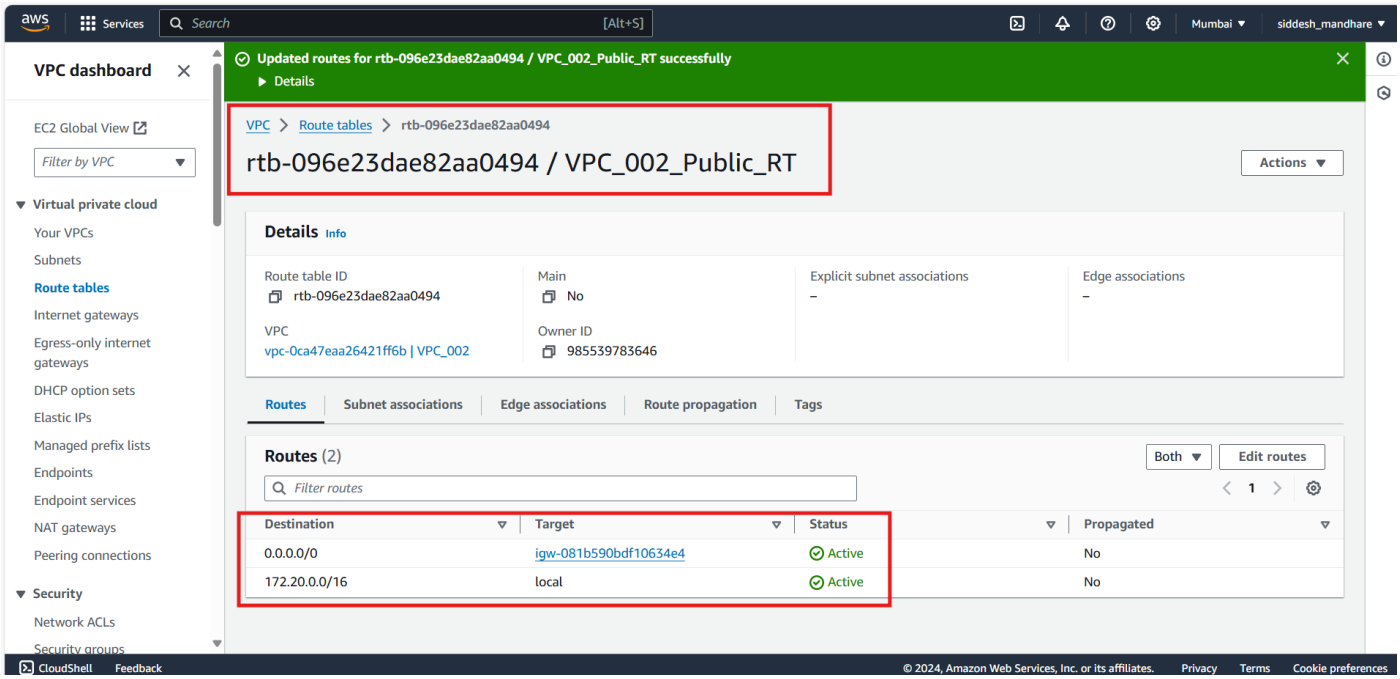
- Create 2 Route Table in VPC_002 as per below



Step 5: - Add Route in Routs table

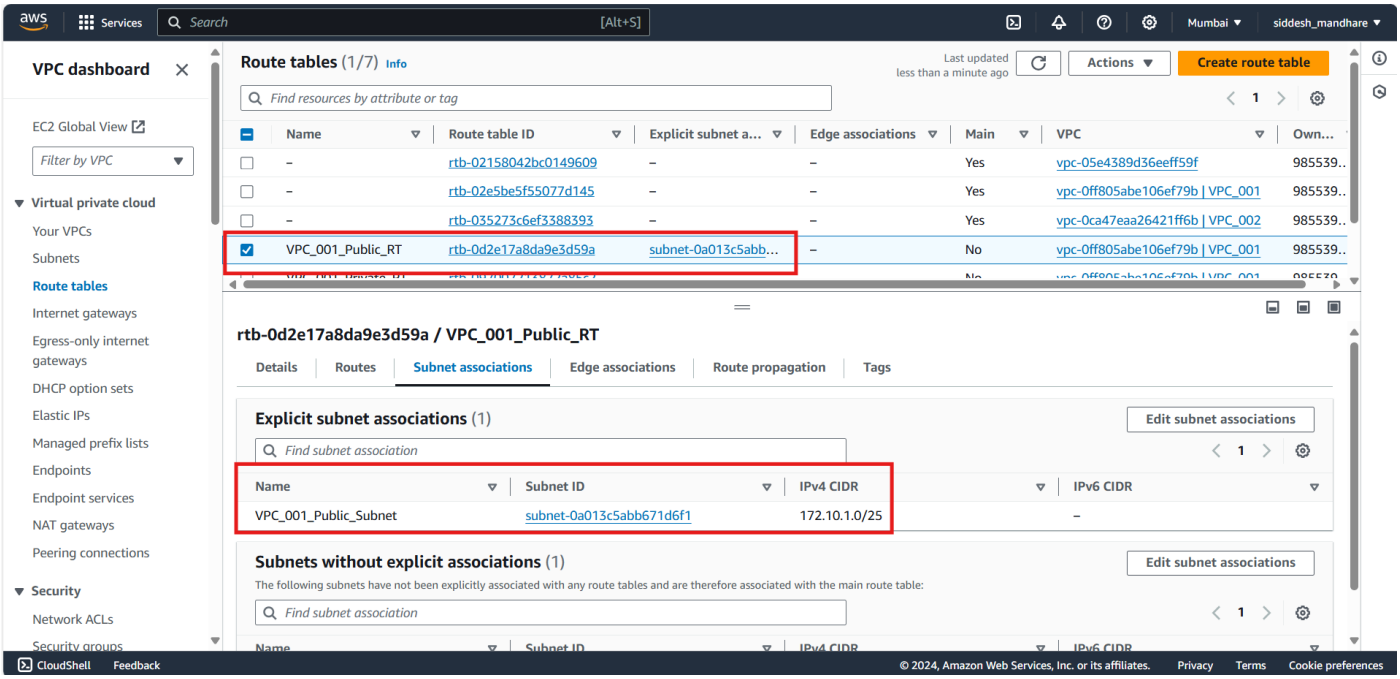
- Select VPC_001_Public_RT & VPC_002_Public_RT
- Go to Route then go to “Edit Route”
- Go to “Add route”
- Search for “0.0.0.0/0” and “Internet Gateway” and then search which we have created “IGW”

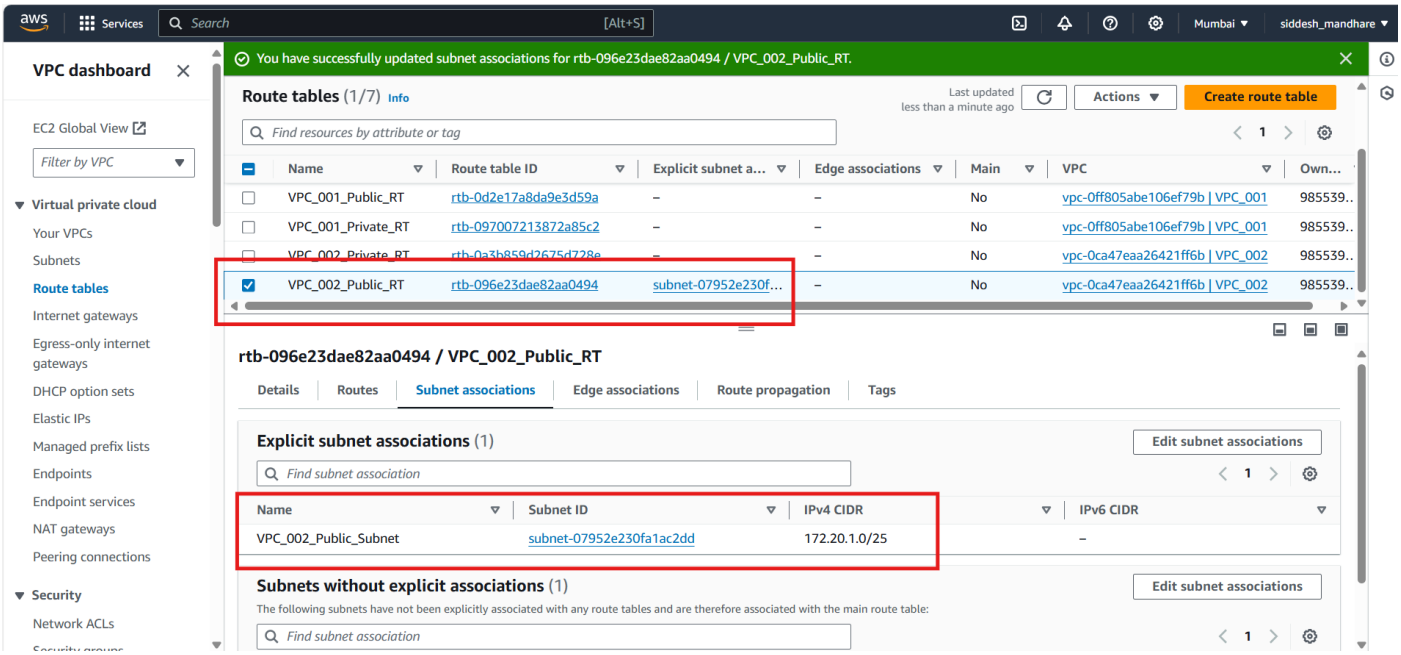




Step 6: - Associate Subnet to internet Gateway

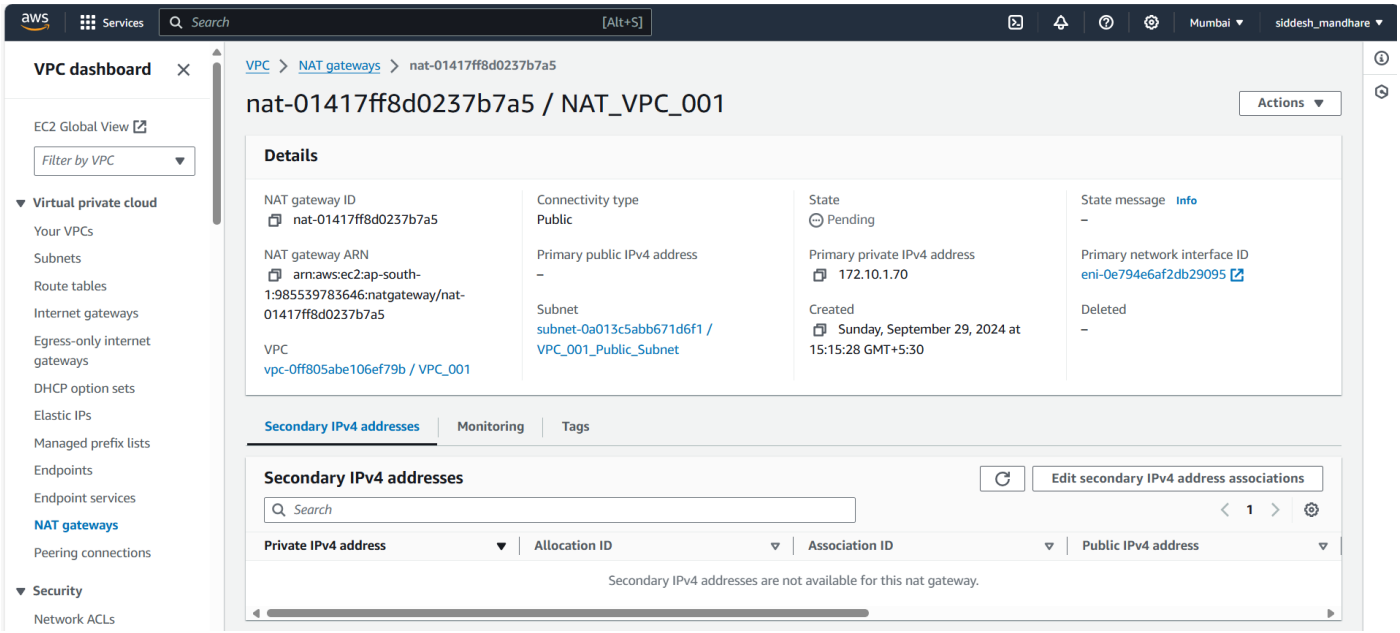
- In VPC_001_Public_RT & VPC_002_Public_RT, go to the “subnet association”
- Go to the “Edit subnet association” and select our “VPC_001_Public_Subnet & ” VPC_002_Public_Subnet”

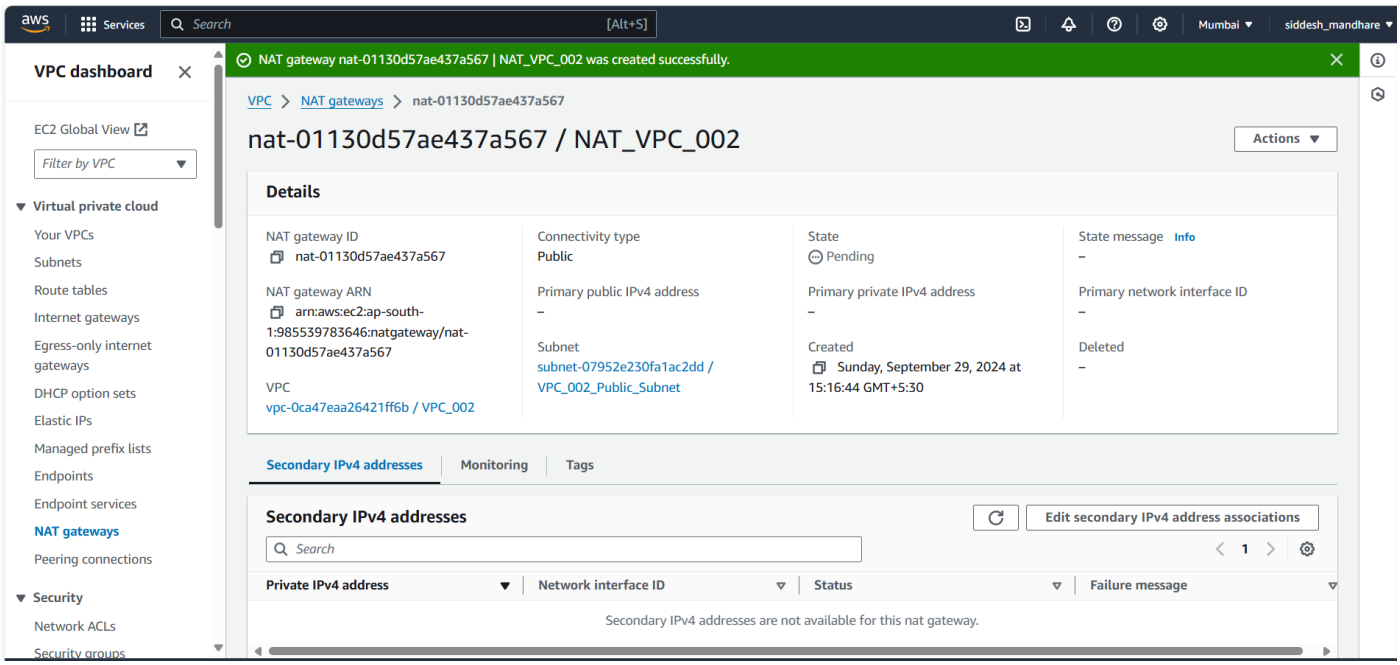




Step 7: - Create NAT Gateway

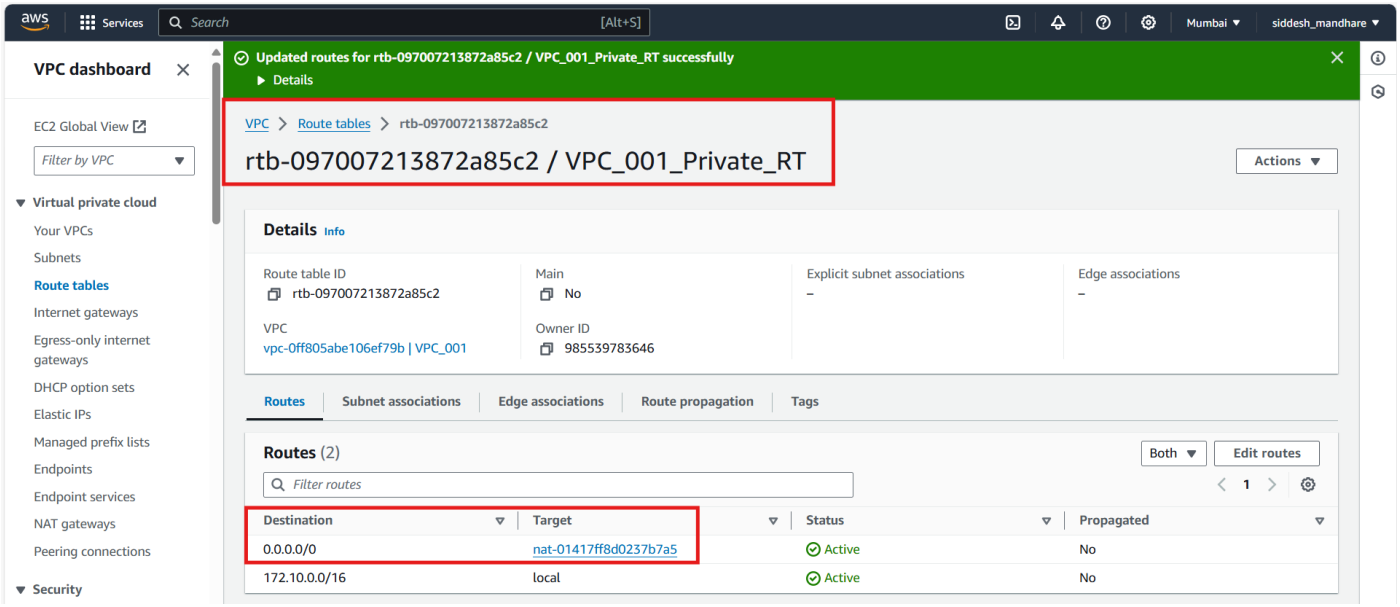
- Give NAT Gateway name as “NAT_VPC_001” & “NAT_VPC_002”
- assignee public subnet
- Allocate Elastic IP

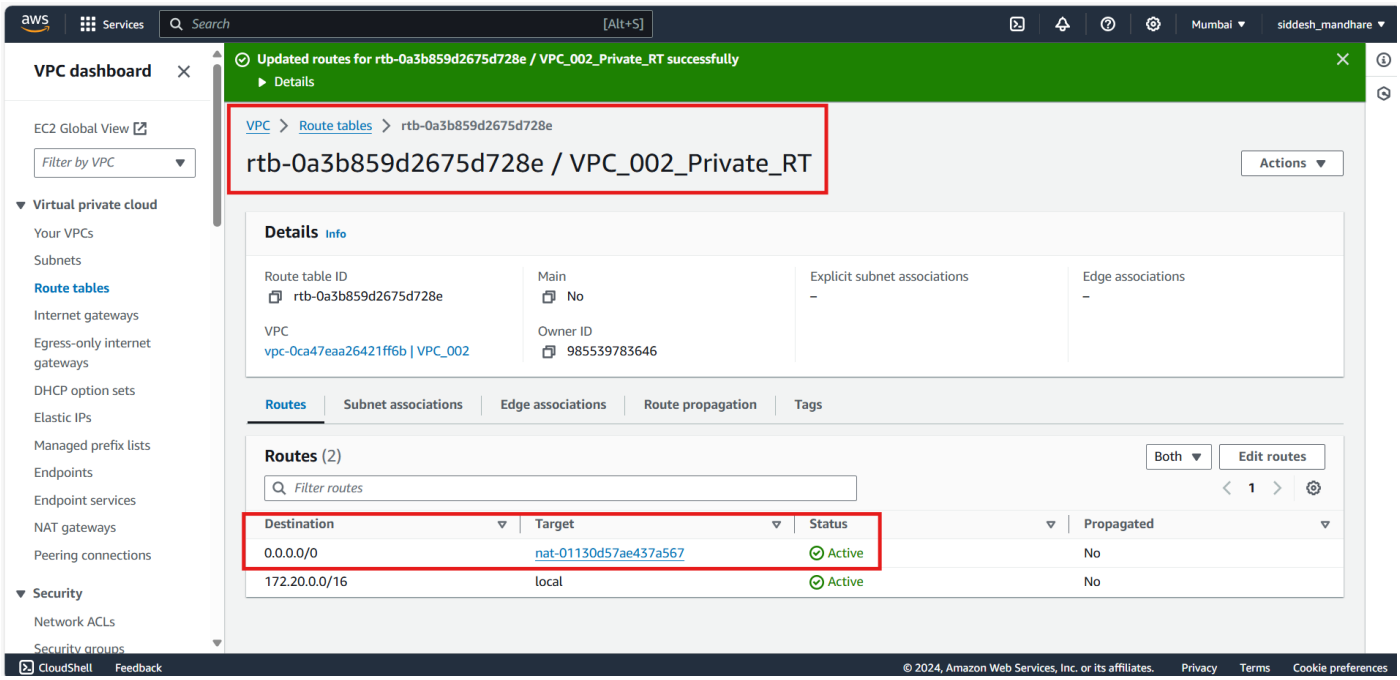




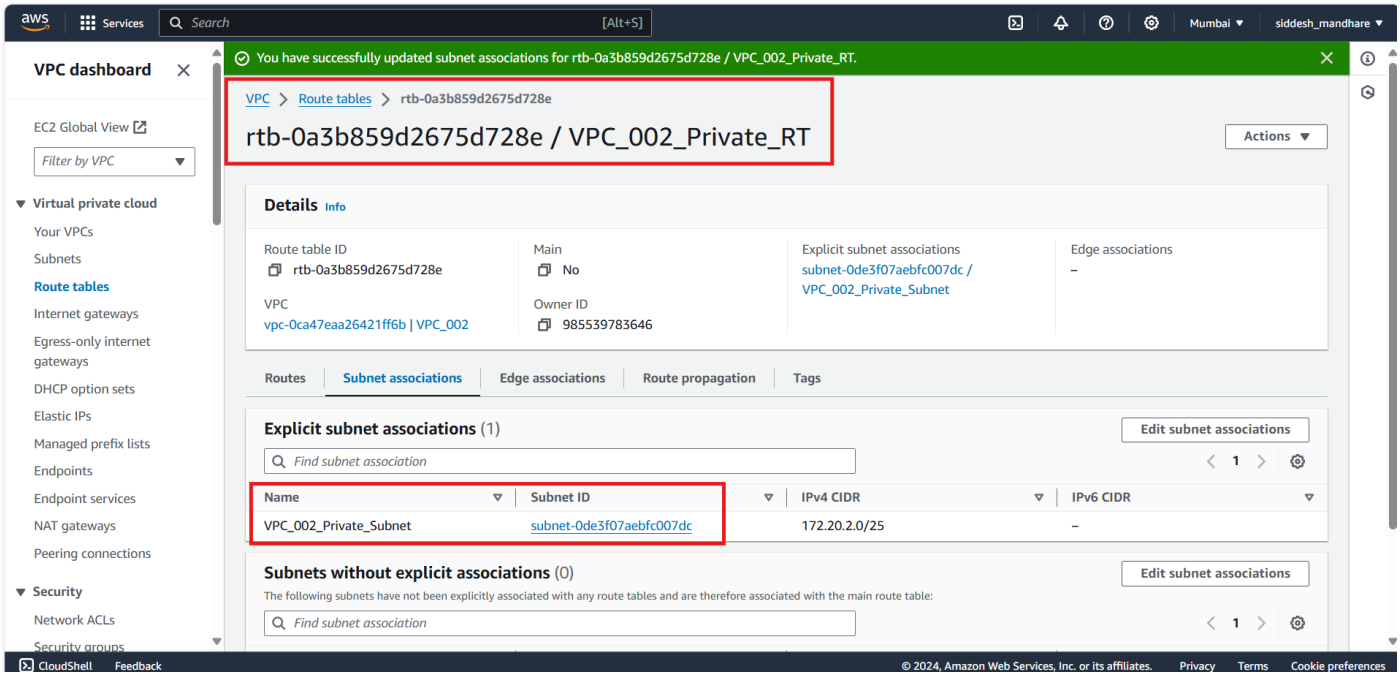
Step 8: - Configure Private Route Table

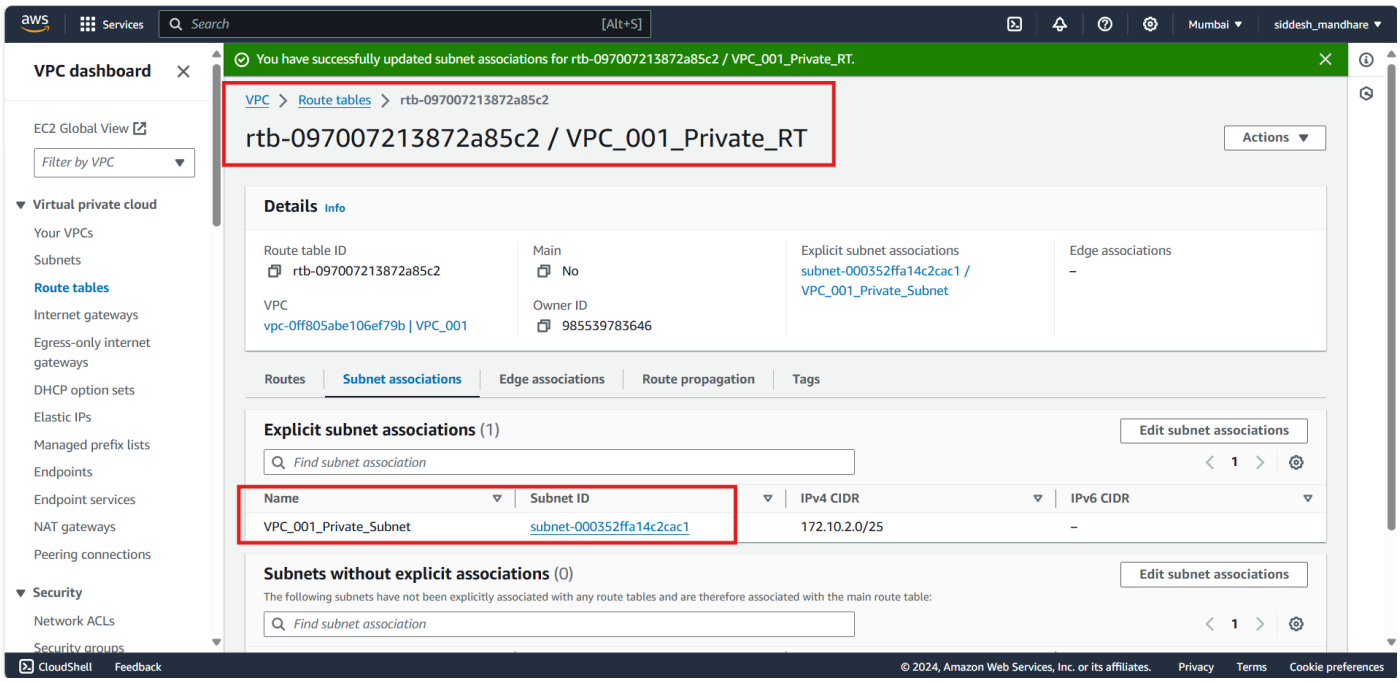
- In “VPC_001_Private_RT” & “VPC_002_Private_RT”, Go to Route then go to “Edit Route”
- Go to “Add route”
- Search for “0.0.0.0/0” and “NAT Gateway” and then search which we have created “NAT”





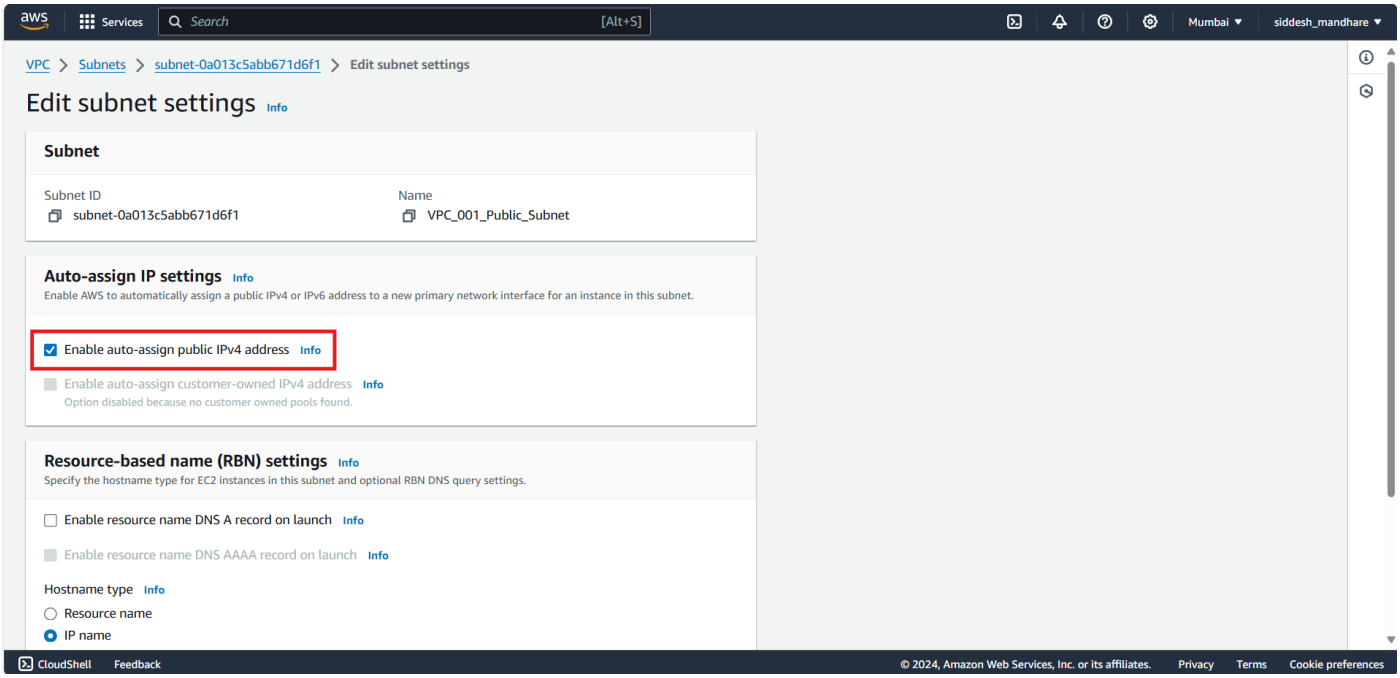
- In “VPC_001_Private_RT” & “VPC_002_Private_RT”, go to the “subnet association”
- Go to the “Edit subnet association” and select our “VPC_001_Private_Subnet” & VPC_002_Private_subnet”





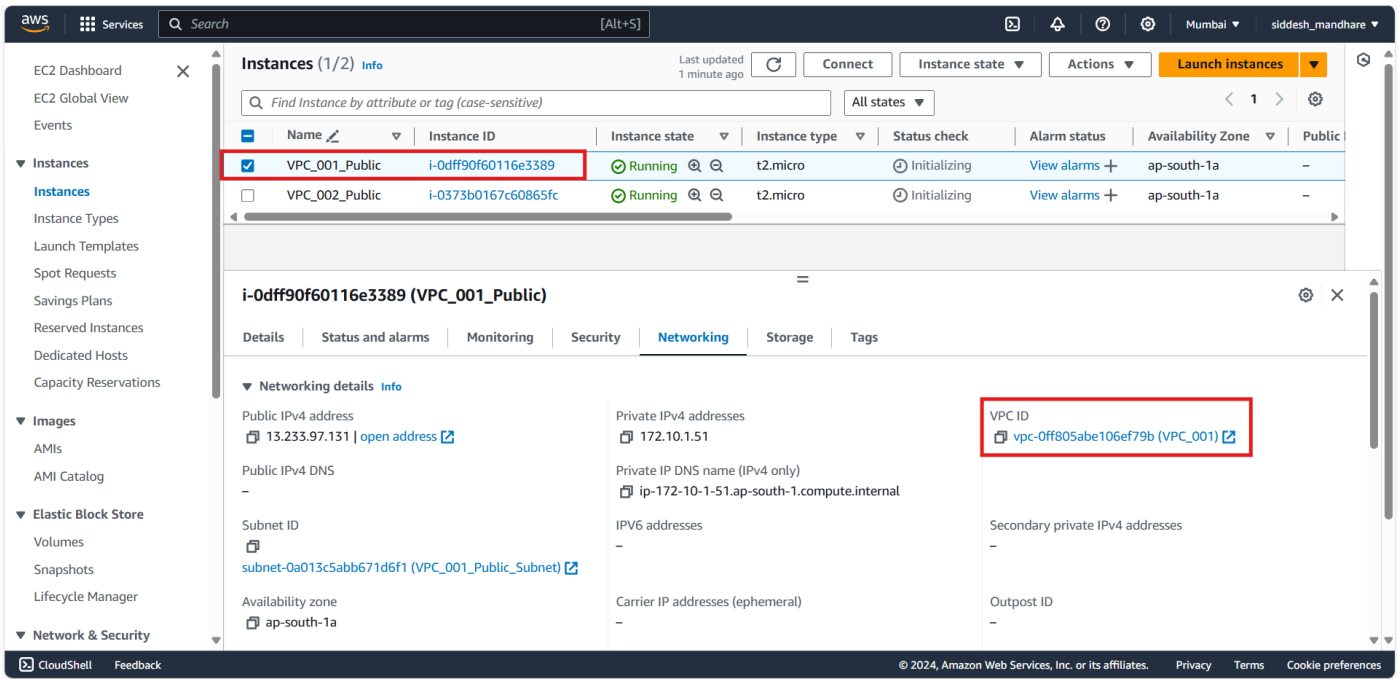
Step 9: -

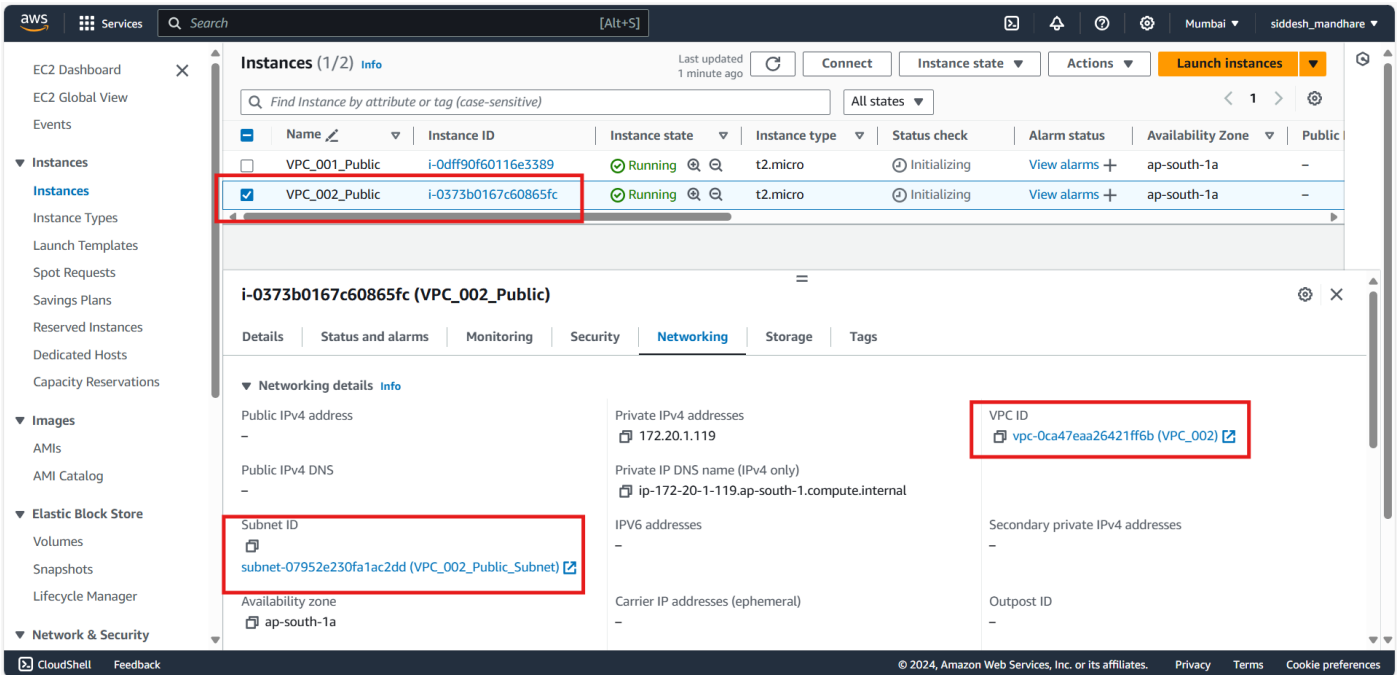
- In subnet, select “VPC_001_Public_Subnet” & “VPC_002_Public_Subnet” and go to “action” and select “edit subnet settings”
- Click on “Enable auto-assign public IPv4 address”



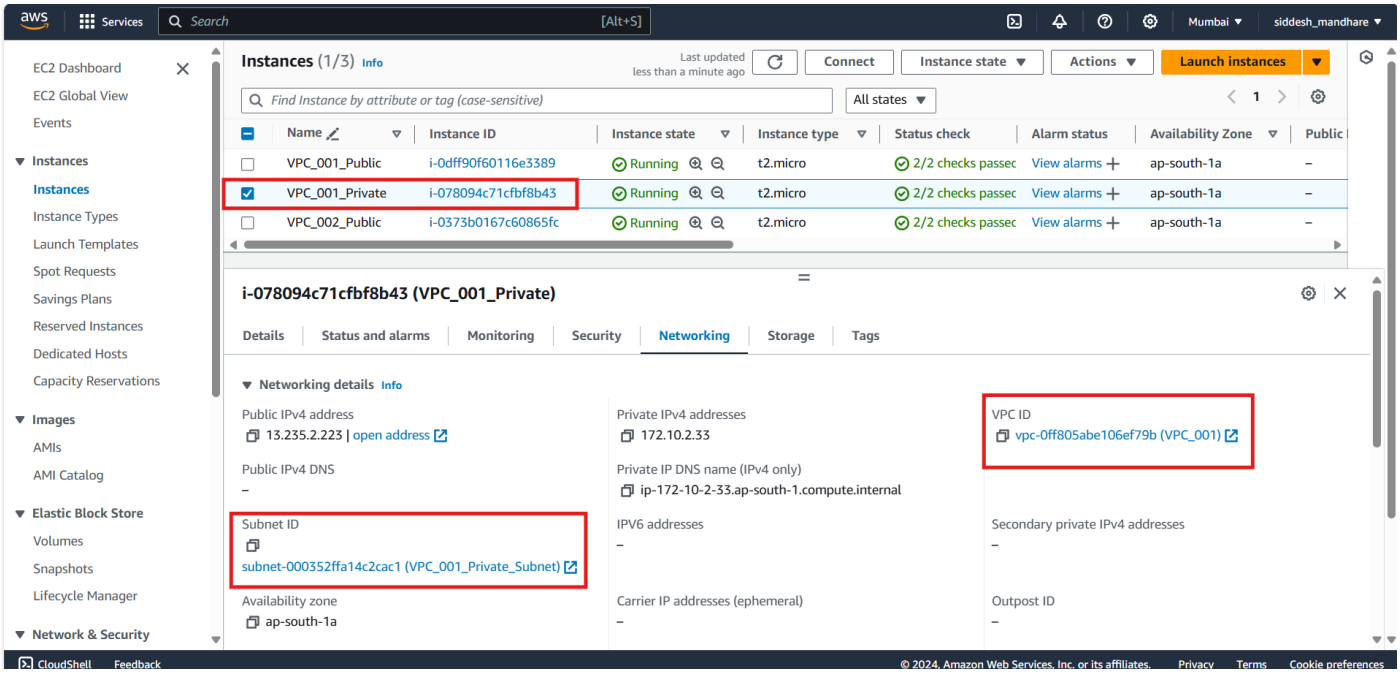
Step 10: - Create 4 instances

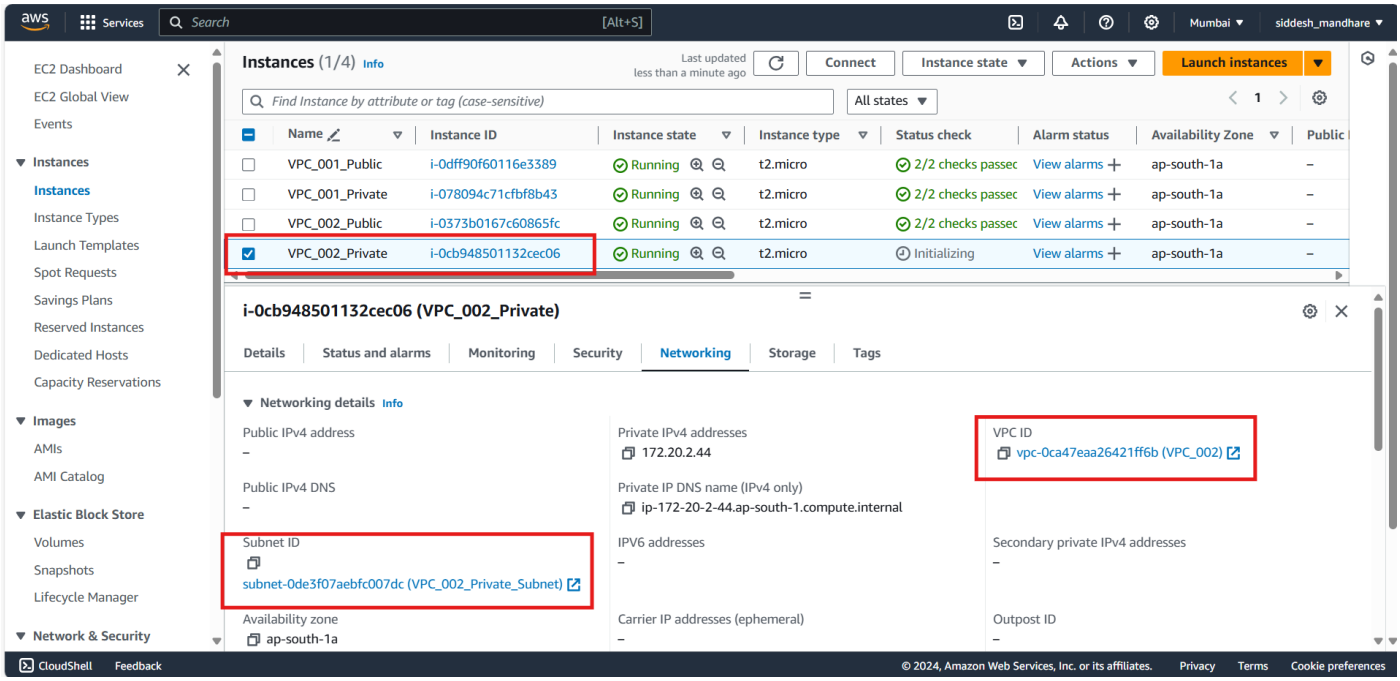
- Go to EC2 and give 1st instance name as “VPC_001_Public” and 2nd as “VPC_002_Public”
- In Network Setting, assigned VPC which we created earlier (VPC_001& VPC_002)
- Assigned subnet which is we created earlier (VPC_001_Public_Subnet & VPC_002_Public_Subnet)





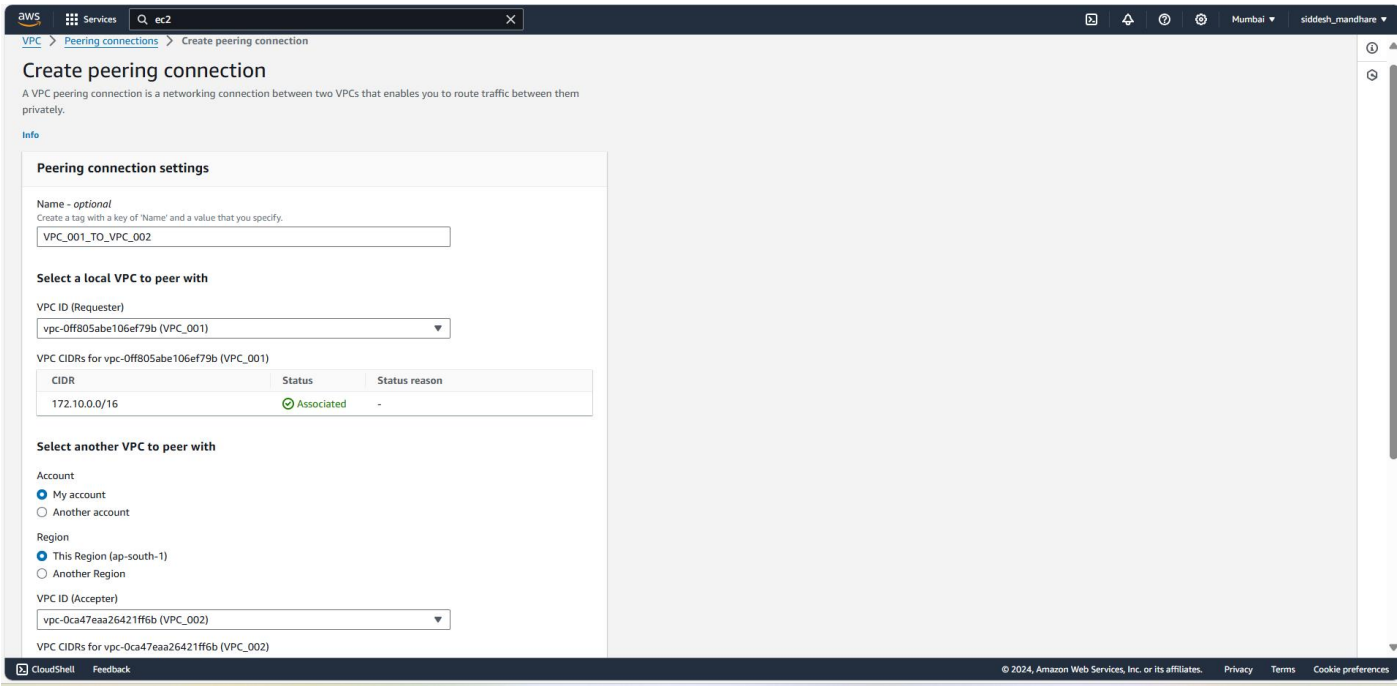
- Go to EC2 and give 3rd instance name as “VPC_001_Private” & “VPC_002_Private”
- In Network Setting, assigned VPC which we created earlier (VPC_001 & VPC_002)
- Assigned subnet which is we created earlier (“VPC_001_Private_Subnet” & “VPC_002_Private_Subnet”)



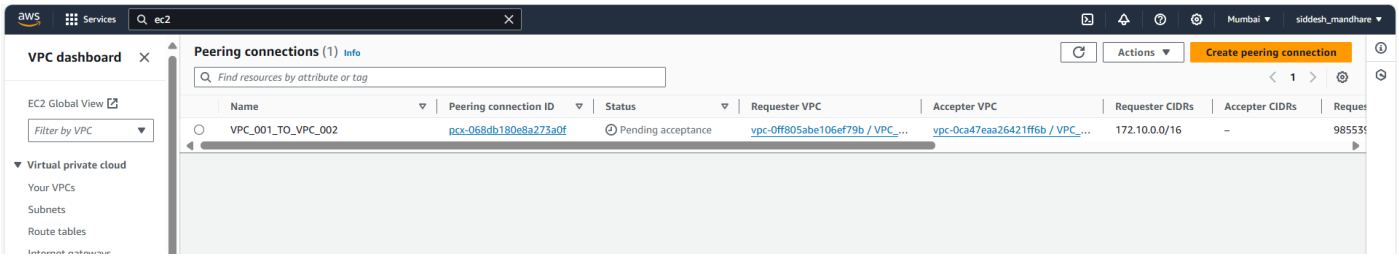


- **Note**- In Public subnet we get public as well as private Ips
- **Note**- In Private subnet we only get private IP

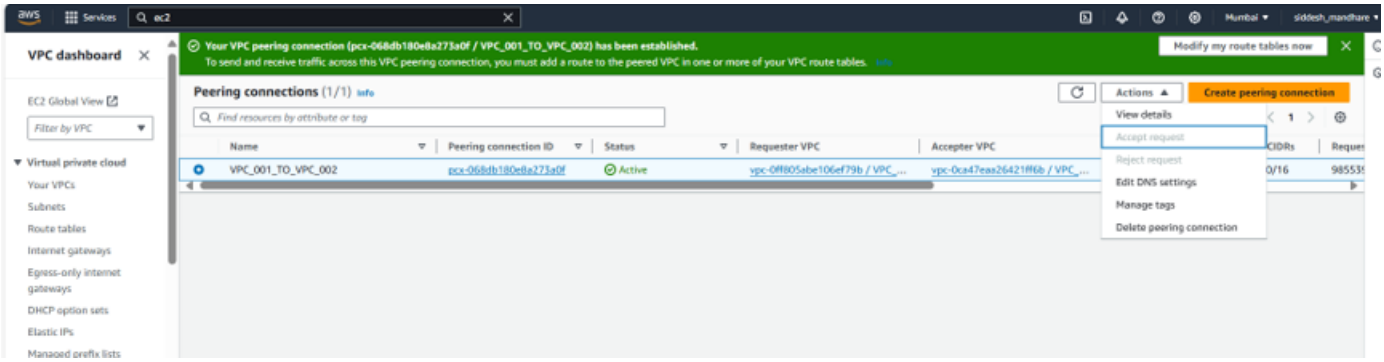
Step 11 : - Creat peering connection betwee VPC_001 & VPC_002



- Peering connection is in pending state ., i.e yet to accept request from VPC002

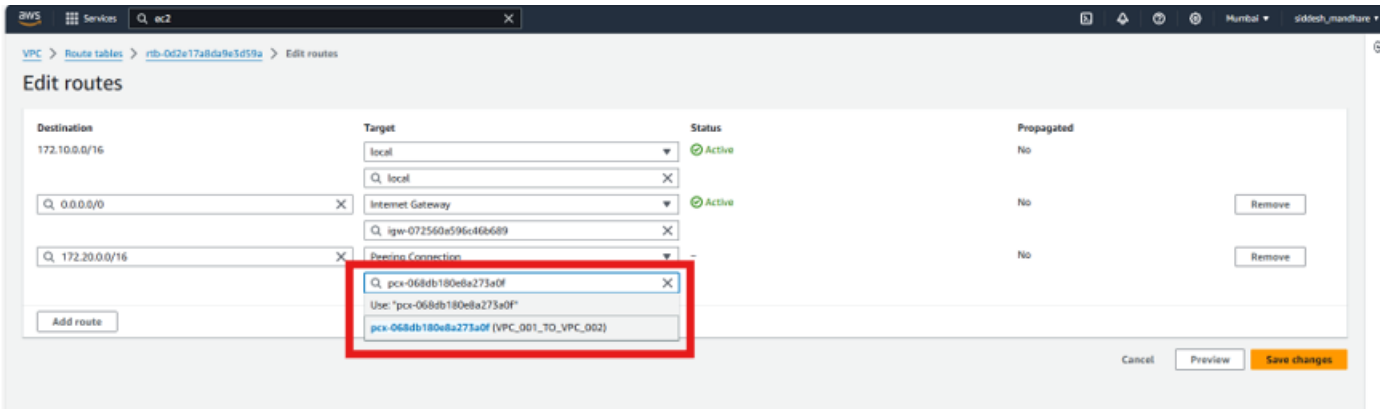


- After Accepting request it should change state to in “Active”

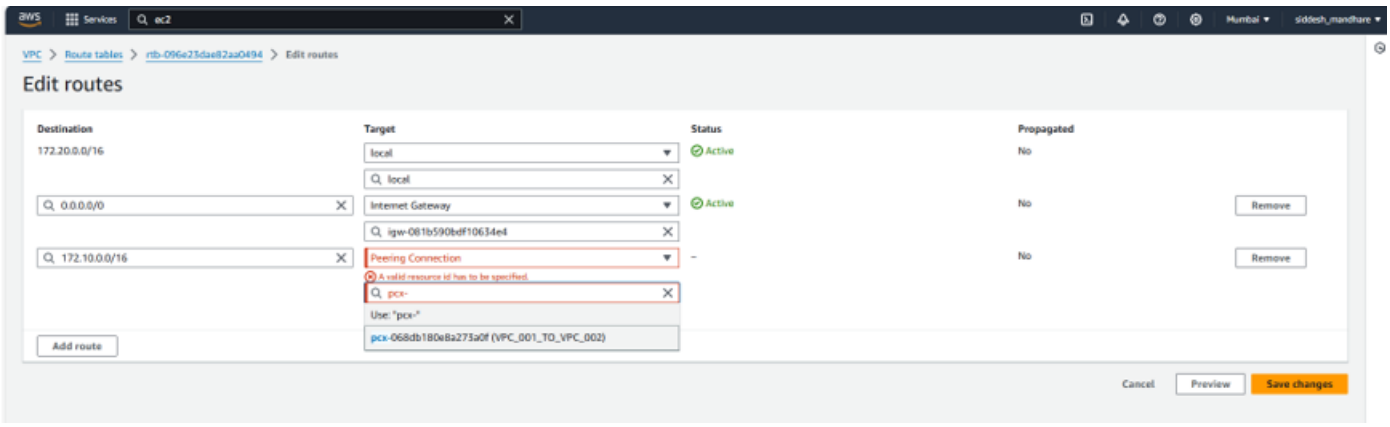


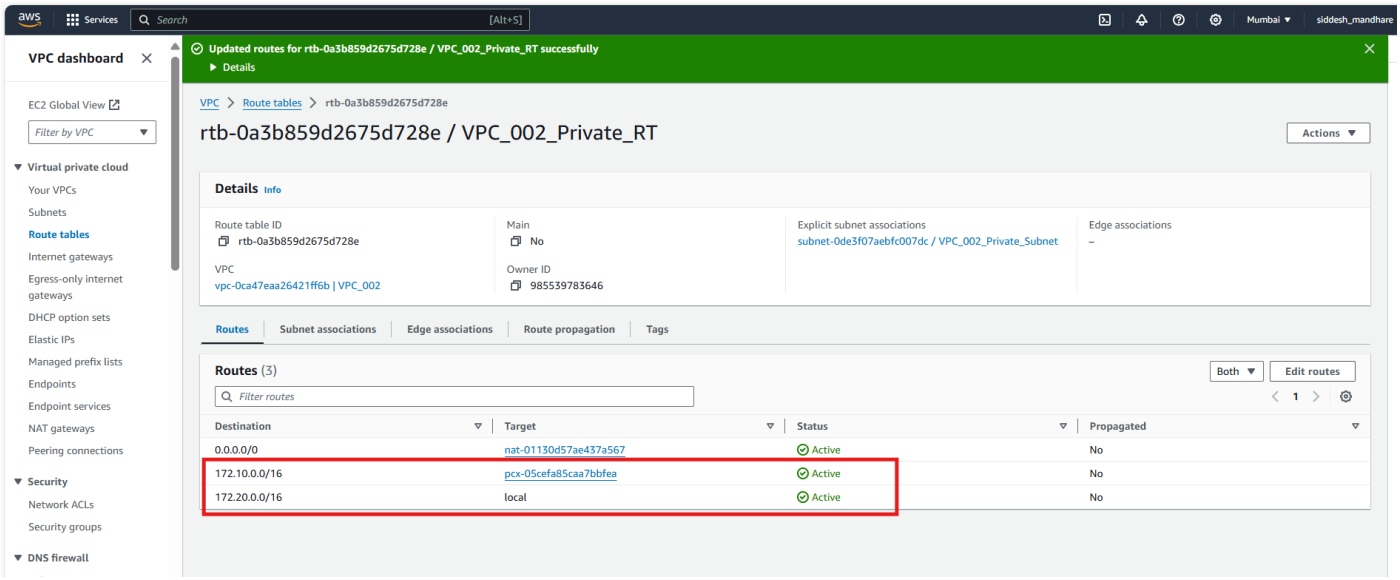
Step 12 : - Modify Route tables

- Change “VPC001_Public_RT” Route setting -> Add route-> enter IP of VPC002 and select Peering connection(VPC001_to_VPC002)



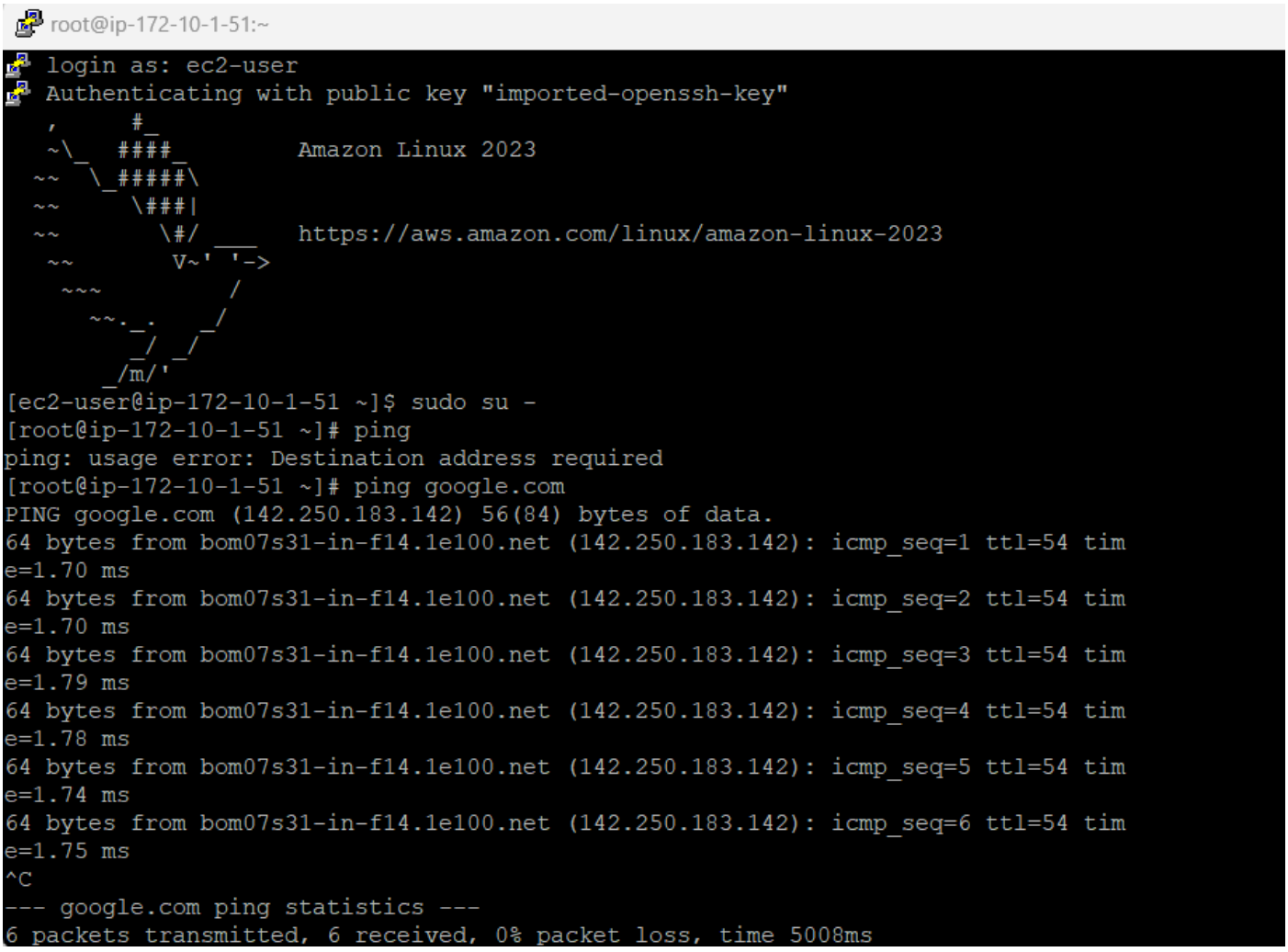
- Change VPC002_Private_RT Route setting -> Add route-> enter IP of VPC001 and select Peering connection (VPC001_to_VPC002)





Step 13: - Launch instance

- Using public IP launch public instance (VPC_001_Public)
- Check ping response



- Checking if package is installing or not ? (yum install httpd)

```
root@ip-172-10-1-51:~
rtt min/avg/max/mdev = 1.699/1.743/1.793/0.035 ms
[root@ip-172-10-1-51 ~]# sudo yum install httpd -y
Last metadata expiration check: 0:57:57 ago on Sun Sep 29 10:16:53 2024.
Dependencies resolved.
================================================================================
 Package                Architecture       Version                  Repository          Size
================================================================================
Installing:
 httpd                  x86_64             2.4.62-1.amzn2023        amazonlinux         48 k
Installing dependencies:
 apr                    x86_64             1.7.2-2.amzn2023.0.2     amazonlinux        129 k
 apr-util               x86_64             1.6.3-1.amzn2023.0.1     amazonlinux         98 k
 generic-logos-httpd    noarch             18.0.0-12.amzn2023.0.3   amazonlinux         19 k
 httpd-core             x86_64             2.4.62-1.amzn2023        amazonlinux        1.4 M
 httpd-filesystem       noarch             2.4.62-1.amzn2023        amazonlinux         14 k
 httpd-tools            x86_64             2.4.62-1.amzn2023        amazonlinux         81 k
 libbrotli              x86_64             1.0.9-4.amzn2023.0.2     amazonlinux        315 k
 mailcap                noarch             2.1.49-3.amzn2023.0.3    amazonlinux         33 k
Installing weak dependencies:
 apr-util-openssl       x86_64             1.6.3-1.amzn2023.0.1     amazonlinux         17 k
 mod_http2              x86_64             2.0.27-1.amzn2023.0.3    amazonlinux        166 k
 mod_lua                x86_64             2.4.62-1.amzn2023        amazonlinux         61 k

Transaction Summary
================================================================================
Install  12 Packages

Total download size: 2.3 M
Installed size: 6.9 M
Downloading Packages:
(1/12): apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64.rpm   302 kB/s |  17 kB  00:00
(2/12): apr-1.7.2-2.amzn2023.0.2.x86_64.rpm                1.9 MB/s | 129 kB  00:00
```

Step 12: - Access Private instance using public instance

- Create pem file in public instance (cat > ec2.pem) press enter and then pest. pem key in that file manually.

```
root@ip-172-10-1-51:~
Complete!
[root@ip-172-10-1-51 ~]# cat > VPC001.pem
-----BEGIN RSA PRIVATE KEY-----
MIIEpgIBAAKCAQEA4os4QbDto/aH7VQo5IV4haToDC0OKDWUOJJsKV/pIju7z+HU
zT/+A1JNF9CAJAbK9fla3f4C4o55DxzOKnH0x1VY6lniHpl9d07Kf39ogb9zhNYn
iAwIXZxqsXfbjSYa0Eo7FDgxkIjPTT4g897bgci5tw29CqKHs39w4cEKhf9R0nMK
EKUrTXtytgNQtPY+iQj7H9kgYg1aJ7p30V8B+/xoY7zgp8opunqmZ8rYoCf3Zm/w
905ua5MaxYzOmYaa0kt/hGTvt9k73AcyTPXlvWVEMURLFx38DHflaQ87/Rgu9J+U
vd5qcjOFZnODlQIWJl/gWg4X2W3vTWC6Me02rwIDAQABAoIBAQC3mdE8HCJcsh6z
j3Oc0Tc+SMnvpExG9jVsK+8RETQmlHbAIeyPc/9vvbHRTR+tEvxGoZKtO4InDwS5
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nwWh38nSw1UQMEg3aEXGidB4hjT7Js1HrzIQWGHdhORoyu4eDWKFf/3+bED3Wjp9
gj4izbzEvOx2kXI6kqfh+2Q+m8xpXlgOLrKXoOp90+kIRF5yfVoE4WKCsxP2Kkgi
uy1U39TEFq7MAxJg4ZxUL9ROPDR7fRF451O96/JHb5ENI6sefNCeeS28hNF65CoM
j1zU5QrBAoGBAPTdVV5z8IE4CEx5So+UnLYwmKhpkxJ+csphBMWzZFl3Cpu4XbuQ
J+xMzYeLzivPB5TOnqxzFQByZvGBjXKeVAPz0e8uwCcvIX59r3MpJjdhDr75obML
VRlsWezwr9nIRn4m+OrclP+9/O3Y8tSDKPu3/0XERv8+SAIU1q91S0Q/AoGBAOzY
mXuvoE3wXMkmD+Rzb6wOWwqMMgapRzVZFY3ZBIp9UjCsbD3Hg7CSJYJK0FPqG9t2
RJLFAU6Xu6mT+wIlMFm5QlJrMLWOp5KVOXzMs6uG6z8EoeXi6aUChI2ks+3xrmBB
LaT3qXIrA1D/LfSIQIp55dAk9lmC26OW+00Q5LGRAoGBAJXoMu1iWWkinqIC14zT
VKWNVsgz6iA2XZxcjQlj7BmBcXMoCepcNLTLyEAlbREQ6/lEDYxR4Ben8jIEOE5l
c9X/nRSrMGRMzFqeI52DIaxhtR9hwIbWd0DbPqp6J45SuCVfQqC2blmrPH94hCFq
Mtr4KEXUBgsZXAg6Lby5OF0NAoGBAMwIF8hWVmlt2/Coal5qF1SIFWOzvFDCuQY7
FPdacbAAH7Kwhpp96nNMoyVn36m6bn8TliU9s0+KJO8D/OMvOETC9GBd2Ns+5hq/
lINvMIReOP/TtMh+PrqYvanrrdkYLxjabUDE3WLtrPC0s1kJm1fvhMtXXCVmNmHp
6djM6cYRAoGBANdIFmjYyeINFJKNbn+gTlZVW5iyru8LoVltYGVPCnyQInKjdBdr
pENRKrz1s+4XBWsQArFnbB+2Zl2CdXi9aY/yE8tSWfLUl28yR+EE5z25FCFXTce4
2OR8gwQ1YL5tpDACWekrc2BToE+JrmQ75R8VHl/Z24PnwtRDjMOq+Fuz
-----END RSA PRIVATE KEY-----[root@ip-172-10-1-51 ~]# ls -lrt
total 4
-rw-r--r--. 1 root root 1678 Sep 29 11:17 VPC001.pem
[root@ip-172-10-1-51 ~]#
```

- Change mode of this file (chmod 400 ec2.pem)
- Change mode for VPC002.pem file and login to VPC002_Private_Subnet_VM (Use command- ssh -i VPC002.pem ec2_user@<another instance's private IP>

```
ec2-user@ip-172-20-1-59:~
QcPs2T9R4BjCYyLAToh5V+tHveyQ+qc7oOBov2v6aGnZ96i+7Ca+HkShL7FESJnm
TWVh06u4JI8xR7vWjtMjkv/pBu8A/6OpcMnD7sneNZ/iWKxpy/jiJyApvYXor2gd
yA5cpBvY0ZQqpGUrOnHQwlKxmRKcrgenMPOO7t3TH9k4o3dw73B/rTsiocTy9LhV
uU2MOWNyVqxXmxQYEUZHSKNGMV9FulZE7gslRxHvIYELPDGSxoti+Pq3MFDMOXeD
pH/qED2UQMuqzCd/BETo7Rn1qZhZq8u8Z7udLq7wK4YaG/xFEFHt1euHcJdqLP4j
pZhCrnECgYEAyqnel8H1uyJ5YojmttHlupS97GX6LLD0G+gFRKDnXY1jQydQWmdt
LKmlKu+6DgHhnqIjkQmLTrxi9qReiPl8CgVuu1wGnvWTWwPXQZ6W00cndTwN8Q+g
akTcW4qisTelP4u7Z9xbK3YHl+DOtDJdSl+00HZ1d3swamkN4zbTvPMCgYEAxjLU
b8GDkYSueSpXETKMe+N2WxuTjBxeVjswiq5ZV21XfDVWG6Ga+ixsYo4NVdy6WtF/
cwB9Op67W7kp37ZlBPK469xxC8GxF1Y0aDvTIug0cQFh2D/0hHE2ym2DmgmsDm81
QXtK2dLCVDXlTjLaVCx+J+lYEJsS01bkegCovhkCgYAR/pE4Ek26Ru5WNGef1fU6
4tgWNFvJOhECpVBKbqr8YIBuxv/YdxR3gbybmlt/wOUCi8zypNFMtWdoFOIb8WL1
FNRnKF2iIZXq3+Vt+yHTMp8rRqDKRaPtq52RNzcI2zL9+G80Yplpu3ojHx/bWhl0
cBkC5XG6oSKEYD2ObiDQxwKBgA0ASpUmIYZLKNLD50A2i6aYziu9zFj1h26qpU2D
kFK+1m1MZmCbojnk7hss7E0ElKjeczjNAGn2/Z1PsSJ+qXPApEa8iCHYS9CXFAr+
WaRBjScYix2PXG/PqWNv+aECH2o2+0xXVRqiy6KQgoE1rsK0xHXDxcYZFgwM+CHU
pz0JAoGAMSsAFveHHguSMCjnP1RVrMxTbg/z3+0G5KLlgXlpWqFqZAwQci36QFMa
tqh/dgOl8BTrR6TfPp3OB3afhKI0+m98jGEWmaD2g7QhCEZmJEmmihK6D8fKcmaO
vkBzeiYY+7HNwAnCVoxe25aA7UKAvEh+8CBNu8jbVInKZpPou9A=
-----END RSA PRIVATE KEY-----
[ec2-user@ip-172-20-1-59 ~]$ chmod 400 VPC001.pem
[ec2-user@ip-172-20-1-59 ~]$ ssh -i VPC001.pem ec2-user@172.10.2.33
ssh: connect to host 172.10.2.33 port 22: Connection timed out
[ec2-user@ip-172-20-1-59 ~]$
```

```
[ec2-user@ip-172-10-1-89 ~]$ chmod 400 VPC002.pem
[ec2-user@ip-172-10-1-89 ~]$ ssh -i VPC002.pem ec2-user@172.20.2.69
The authenticity of host '172.20.2.69 (172.20.2.69)' can't be established.
ECDSA key fingerprint is SHA256:NroZExXgxcJxm7HkHbxSEZMA2Xa3fgKChyPBkDaaMwk.
ECDSA key fingerprint is MD5:1a:d9:19:7d:c7:68:11:7c:02:33:9c:83:c4:fc:51:56.
Are you sure you want to continue connecting (yes/no)? Yes
Warning: Permanently added '172.20.2.69' (ECDSA) to the list of known hosts.
       __|  __|_  )
       _|  (     /   Amazon Linux 2
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
AL2 End of Life is 2025-06-30.

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/

3 package(s) needed for security, out of 6 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-20-2-69 ~]$
```

- Check Hostname

```
[ec2-user@ip-172-20-2-69 ~]$ hostname
ip-172-20-2-69.ap-south-1.compute.internal
[ec2-user@ip-172-20-2-69 ~]$ ping chrome.com
PING chrome.com (216.239.32.27) 56(84) bytes of data.
64 bytes from any-in-201b.1e100.net (216.239.32.27): icmp_seq=1 ttl=112 time=1.57 ms
64 bytes from any-in-201b.1e100.net (216.239.32.27): icmp_seq=2 ttl=112 time=1.36 ms
64 bytes from any-in-201b.1e100.net (216.239.32.27): icmp_seq=3 ttl=112 time=1.34 ms
64 bytes from any-in-201b.1e100.net (216.239.32.27): icmp_seq=4 ttl=112 time=1.30 ms
64 bytes from any-in-201b.1e100.net (216.239.32.27): icmp_seq=5 ttl=112 time=1.67 ms
64 bytes from any-in-201b.1e100.net (216.239.32.27): icmp_seq=6 ttl=112 time=1.37 ms
```