VPC Architecture 1(18th Sep2024)

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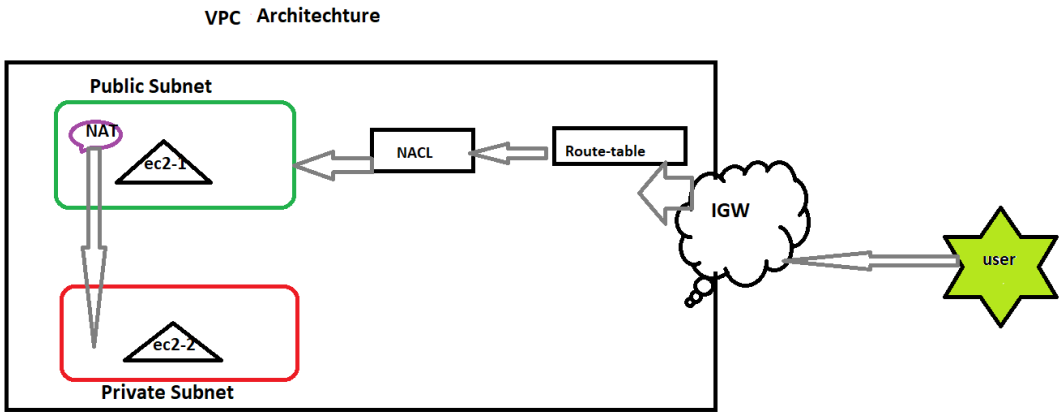
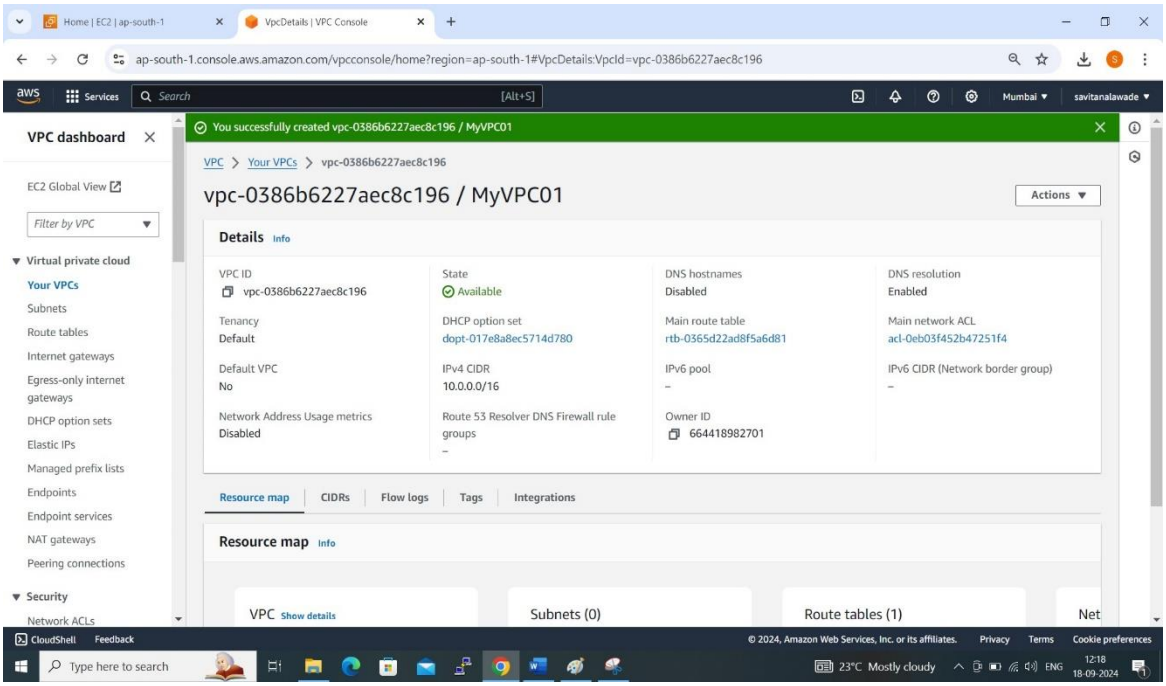
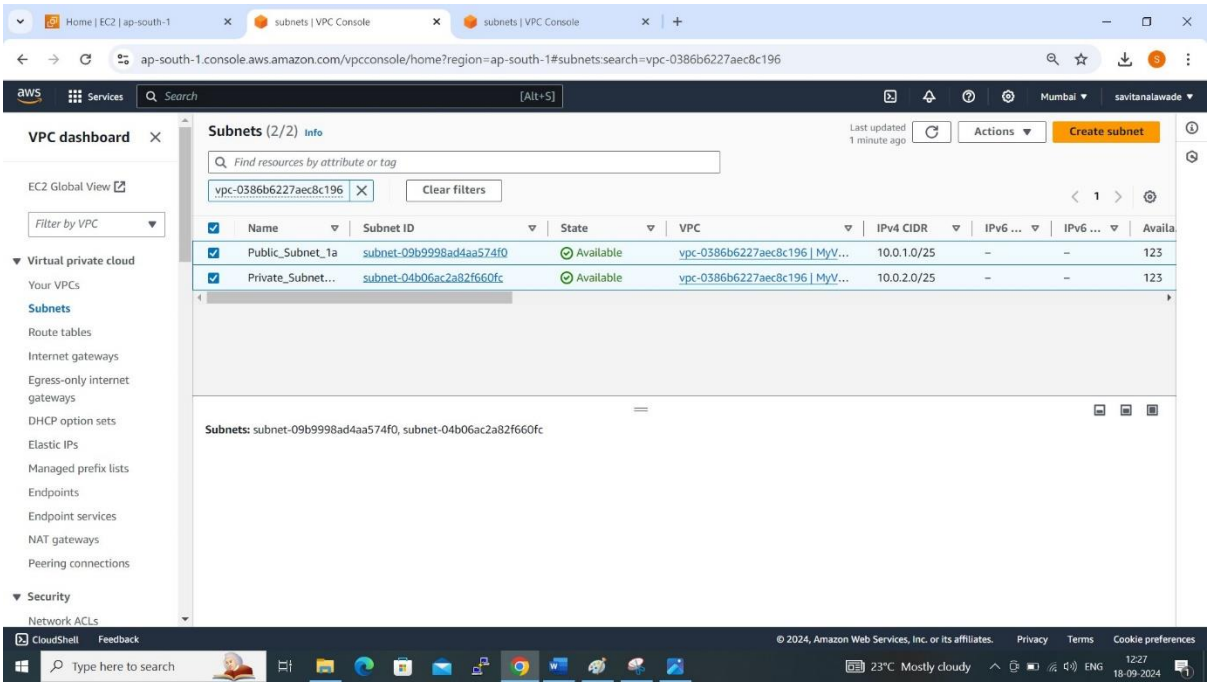


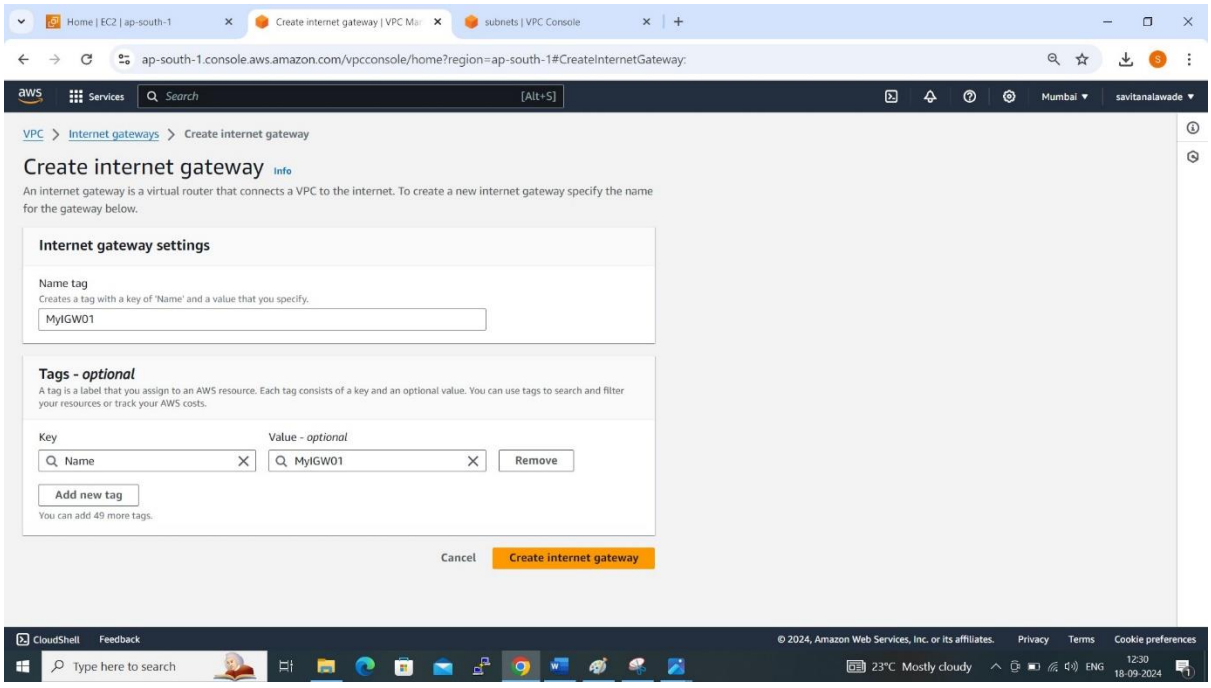
1) Create VPC “MyVPC01”



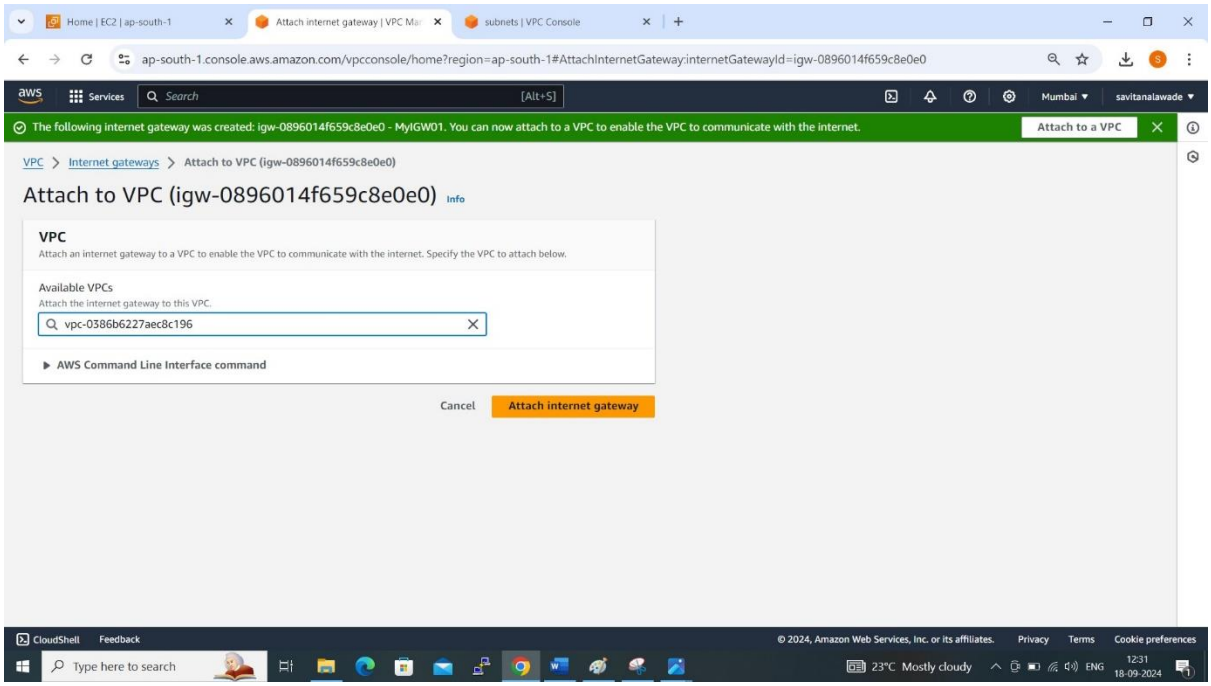
2) Create two subnet in different zone(Public_Subnet_1a & Private_Subnet_1b)



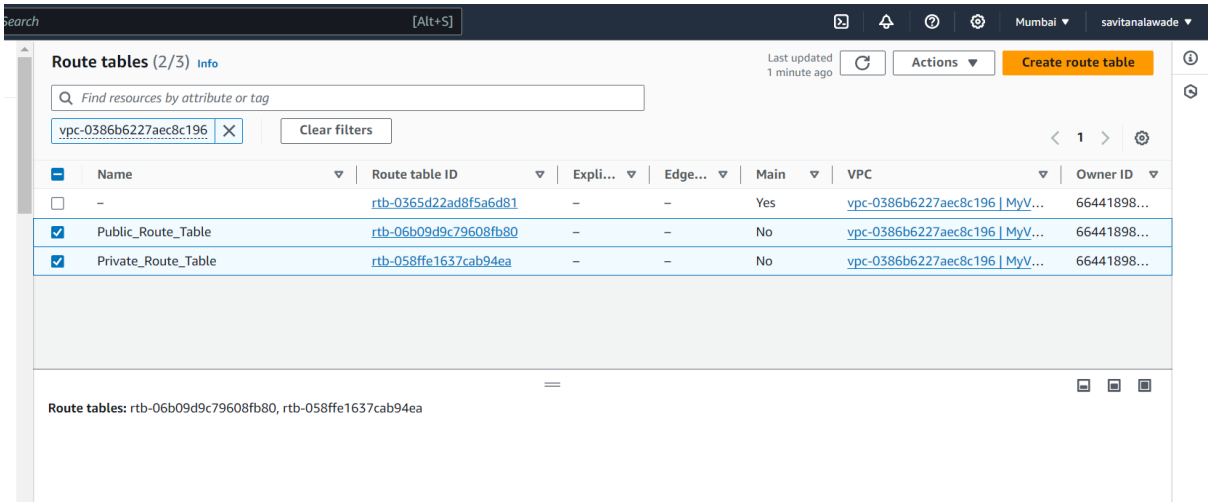
3) Create Internet Gateway as “MyIGW01”



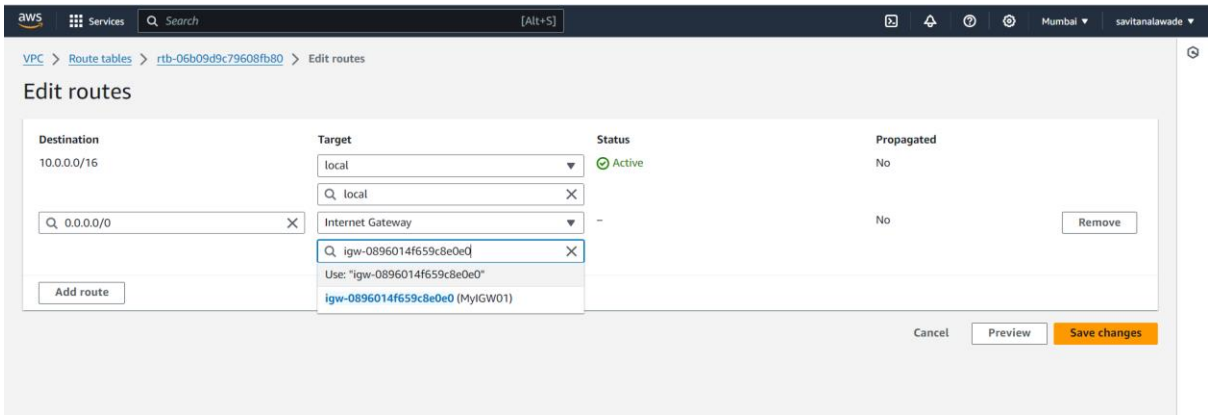
4) Attach Internet Gateway to VPC



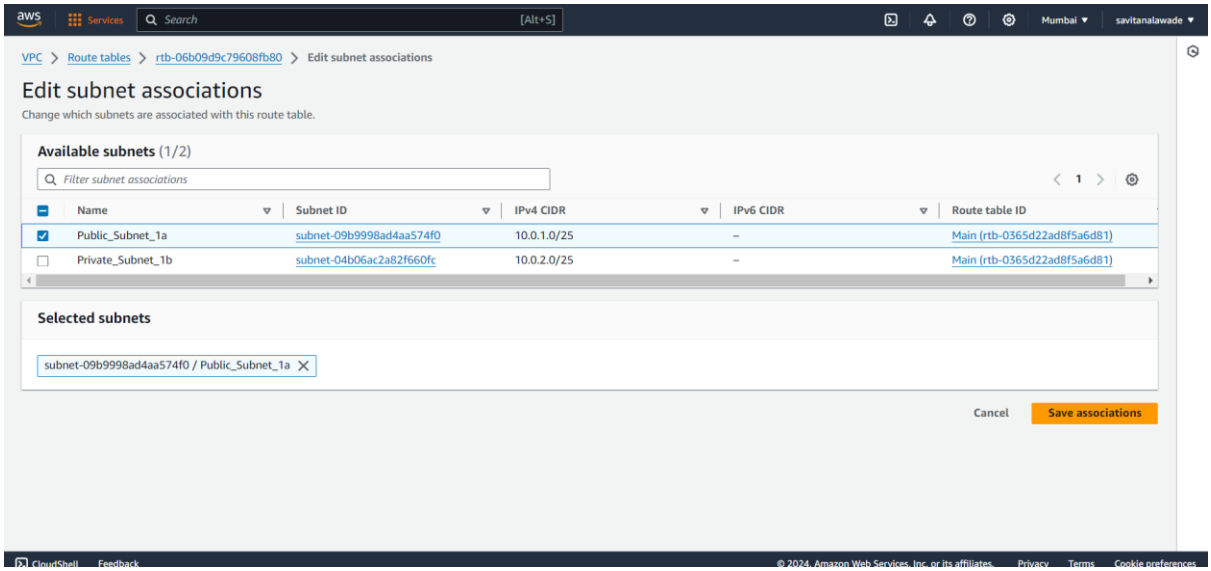
5) Create two Route Table



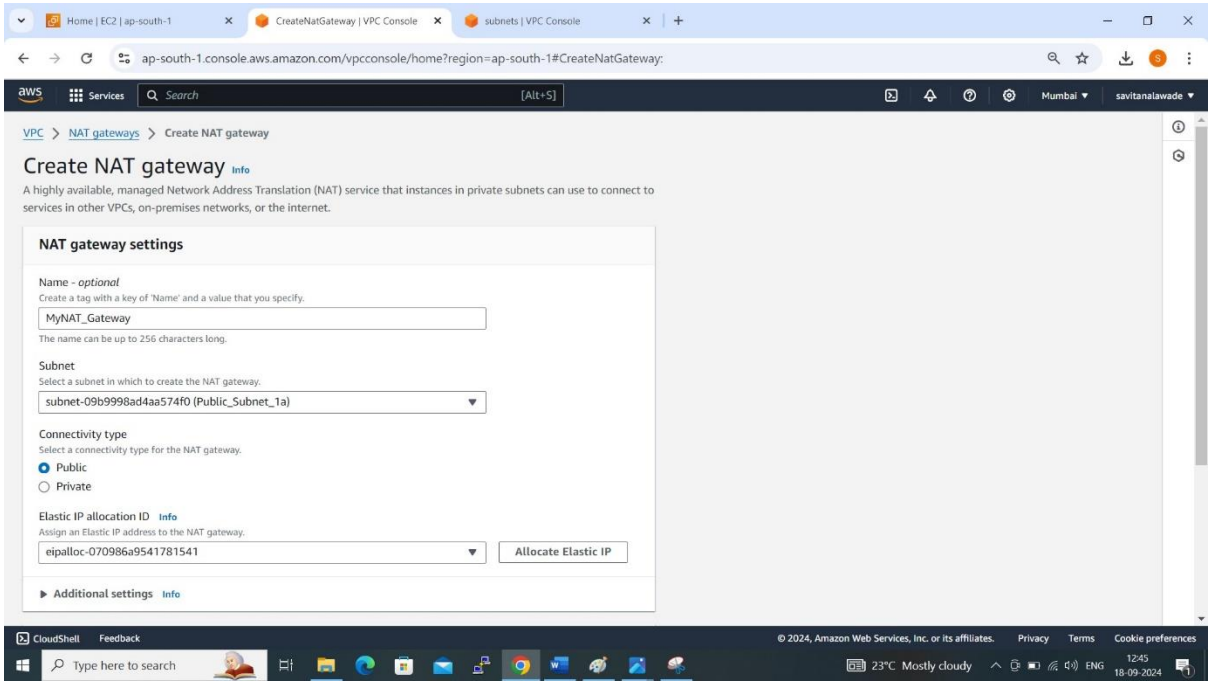
6) In Public_Route_Table add 1 Route-rule



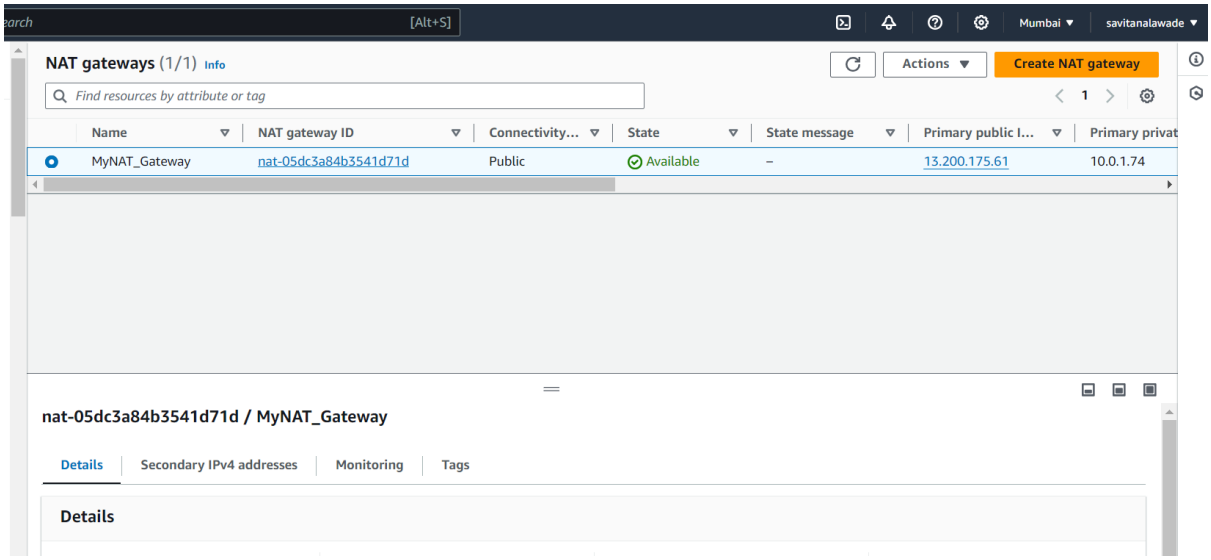
7) Add subnet association rule in Public_Route_Table



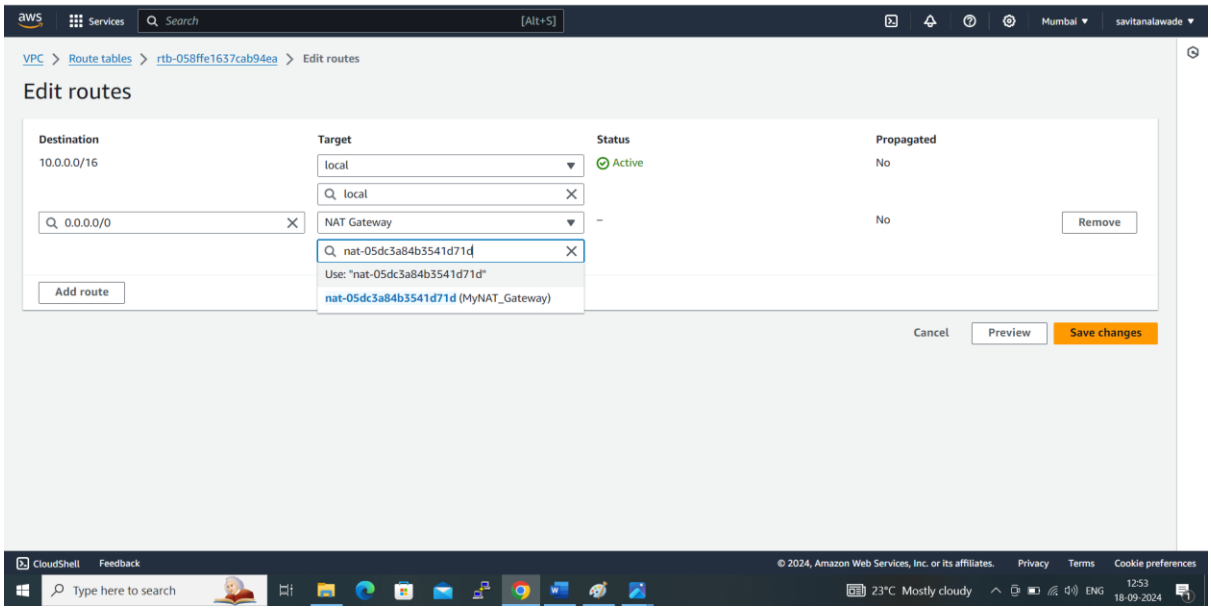
8) Create NAT Gateway as “MyNAT_Gateway” select Public subnet and assigned elastic IP



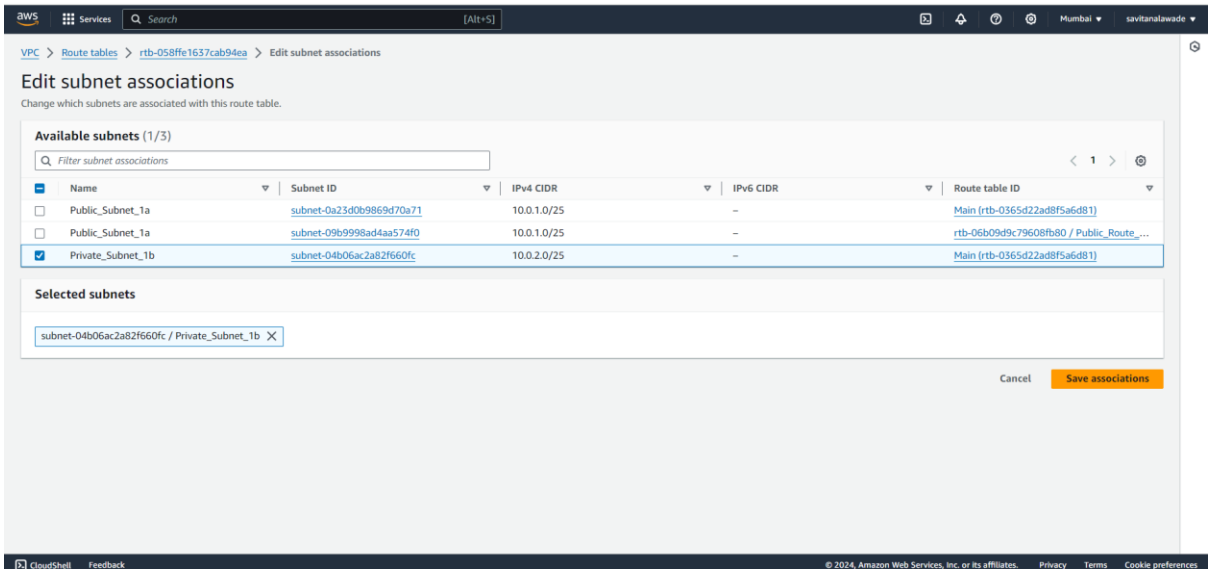
9) NAT Gateway is created successfully.



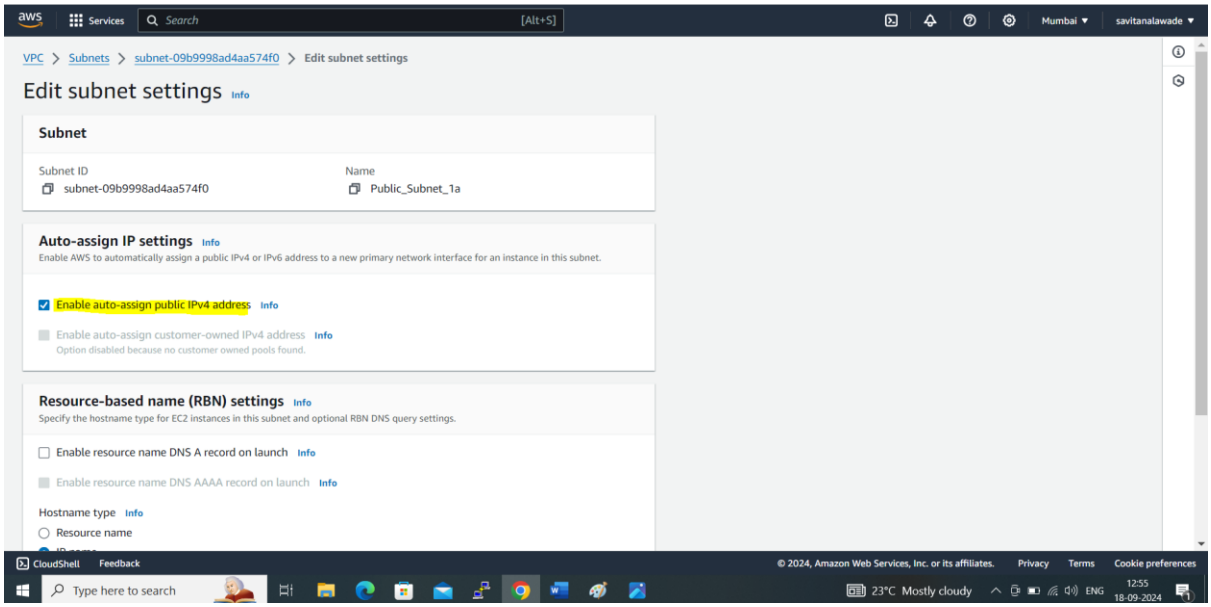
10) Add NAT Gateway to Private_Route_Table



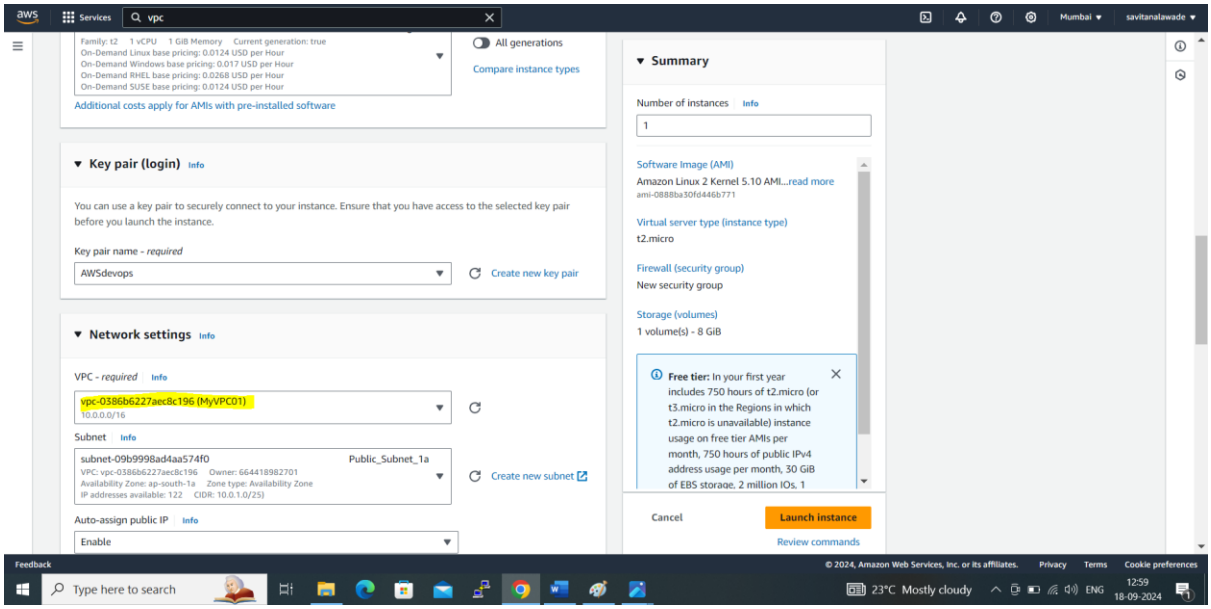
Also add association to private_route_table



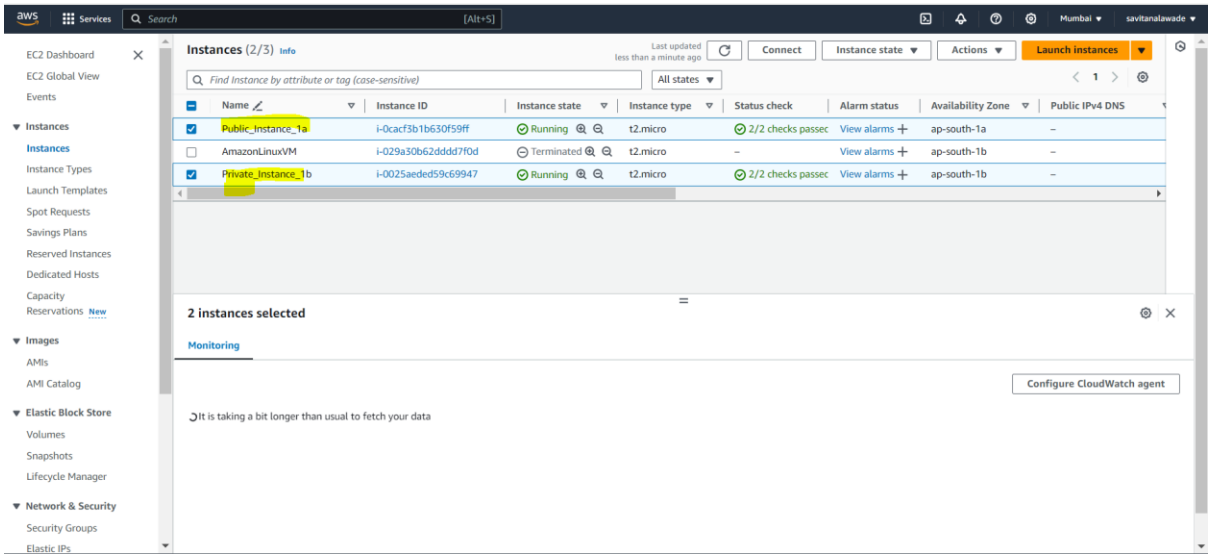
11) Go to Public_Subnet and enable the Auto-Assign setting



12)Create two instances (Public_Instance_1a & Private_Instance_1b) and make sure you select custom VPC which is newly created.
Also Select subnet accordingly

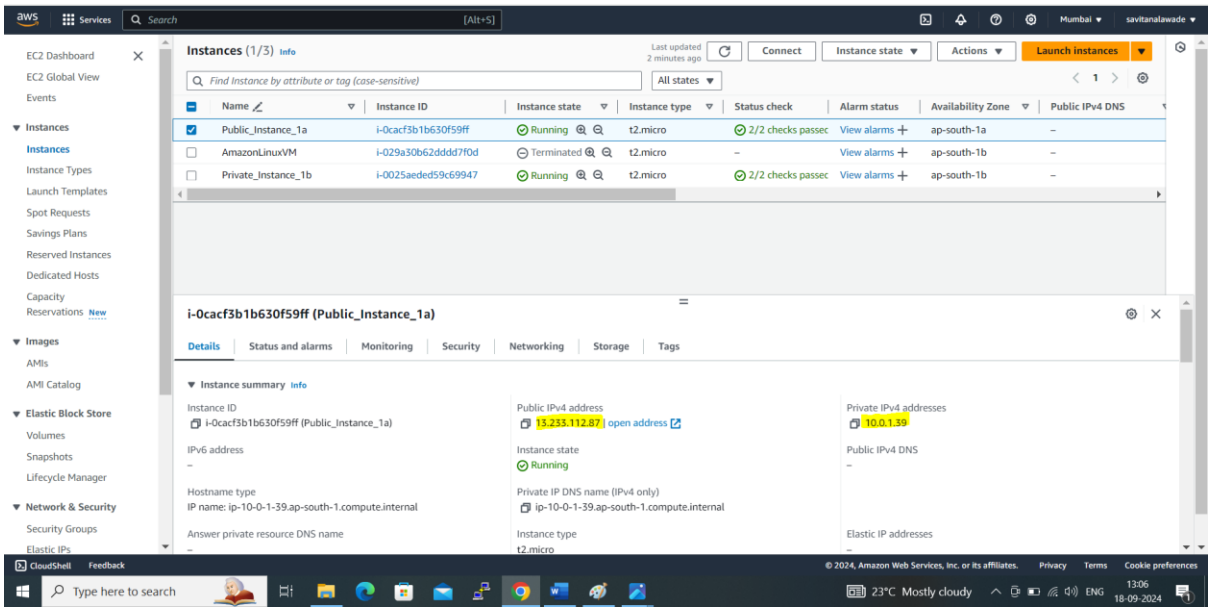


13)Both Instances are created successfully

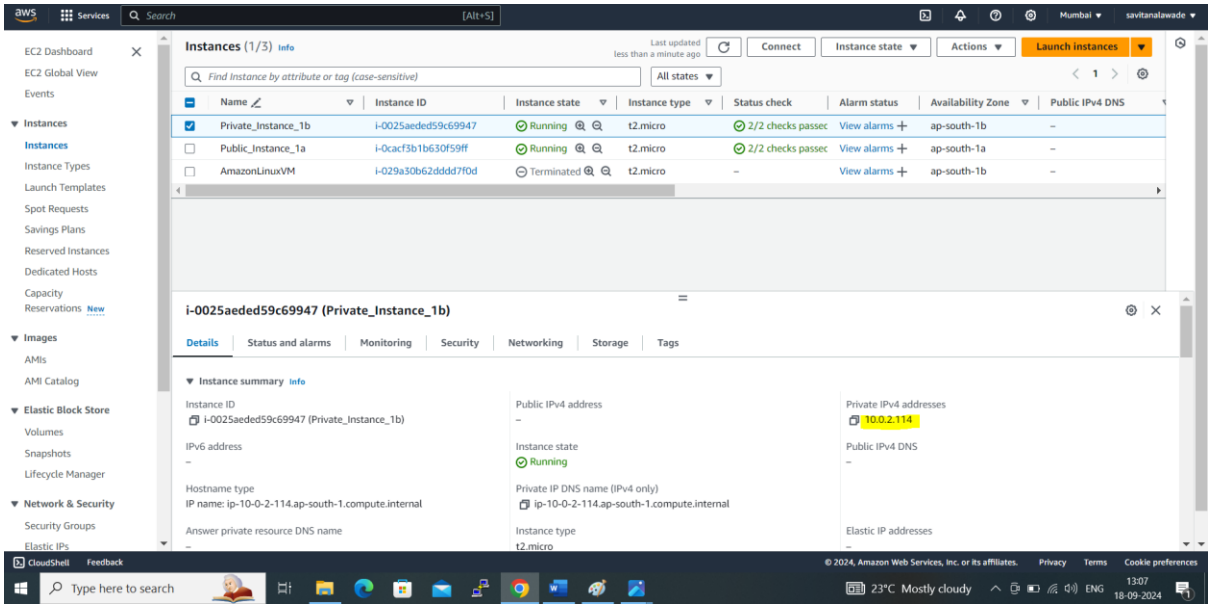


Validation

1)We can see in Public_Instance there are two IP’s (Public & Private)



2)In Private_Instance there is only private IP



3) We can connect Public_Instance via putty

```
root@ip-10-0-1-39:~
login as: ec2-user
Authenticating with public key "AWSdevops"
   ,     #_
   ~\_  ####_        Amazon Linux 2
  ~~  \_#####\
  ~~     \###|       AL2 End of Life is 2025-06-30.
  ~~       \#/ ___
   ~~       V~' '->
    ~~~         /    A newer version of Amazon Linux is available!
      ~~._.   _/
         _/ _/       Amazon Linux 2023, GA and supported until 2028-03-15.
       _/m/'           https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-10-0-1-39 ~]$ sudo su -
[root@ip-10-0-1-39 ~]# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=113 time=1.96 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=113 time=1.89 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=113 time=1.72 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=113 time=2.30 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=113 time=2.21 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=113 time=1.76 ms
64 bytes from 8.8.8.8: icmp_seq=7 ttl=113 time=1.86 ms
64 bytes from 8.8.8.8: icmp_seq=8 ttl=113 time=2.23 ms
64 bytes from 8.8.8.8: icmp_seq=9 ttl=113 time=2.21 ms
64 bytes from 8.8.8.8: icmp_seq=10 ttl=113 time=1.95 ms
64 bytes from 8.8.8.8: icmp_seq=11 ttl=113 time=1.85 ms
```

4) Try to install any package – Everything is OK in Public instance

```
[root@ip-10-0-1-39 ~]# yum install telnet
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core                                               | 3.6 kB     00:00
Resolving Dependencies
--> Running transaction check
---> Package telnet.x86_64 1:0.17-65.amzn2 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================
 Package        Arch           Version                 Repository          Size
================================================================================
Installing:
 telnet         x86_64         1:0.17-65.amzn2         amzn2-core          64 k

Transaction Summary
================================================================================
Install  1 Package

Total download size: 64 k
Installed size: 109 k
Is this ok [y/d/N]: Y
Downloading packages:
telnet-0.17-65.amzn2.x86_64.rpm                          |  64 kB   00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : 1:telnet-0.17-65.amzn2.x86_64                               1/1
  Verifying  : 1:telnet-0.17-65.amzn2.x86_64                               1/1

Installed:
  telnet.x86_64 1:0.17-65.amzn2

Complete!
[root@ip-10-0-1-39 ~]#
```

5) Now , We cant connect private_Instance via putty as we don’t have public IP so we can try to connect from Public_Instance to private

For this we required pem key

i. Open 1 file as “ec2.pem” copy content from pem key and paste in this file and hit enter

```
[root@ip-10-0-1-39 ~]# cat >ec2.pem
-----BEGIN RSA PRIVATE KEY-----
MIIEpAIBAAKCAQEA6biSt6pKEpRTsSjQWFrsMTMoDok1DabvIwxEKCm3Eo2Jfnic
vn8D9vUTyKFeADPDqe4IlkSG4ssmdpnC0OA4/SZHuXAQQBG55cMldOCnDWco6wZs
dxRDUeoFxuWCbemRk4NX/16HnC2heIYFTOEJ42npreVlQjNXvh8qYXXEDkgagzcv
idr+X2C2hmlISReA2GK47lkUueQLrbIAoy9KWNb7xo/seMpdSL0Kc+mXi8tNm8zh
wbDoCZ9cjXEBxM7VHNA8tucblV0X+70PF4/oMDp+8d+Xuy3MnB6R13aKzjzQmY5M
LR0LUAYcnrCiHRP1UAvpezF61vvQmA6QmPrwUwIDAQABAoIBAAfkYKftCyVHdvAD
hc2F/HXI2XBsN6tnWKnhTyfgCLuKpfrsTbatCVA8hFeBA3CUTuYdEJMqazebTogw
twBgoewCb+eWHiZbsuBMT6Z7s4hjVGFjTSRUPdW1Rk6qD1Zwzaaih8UiIggnDk3I
kMNA0hmoyOhDV8D9hNf5q2+xD1bADgVf5I4WPCofHe0uYt3jz8GDY5g//7y7tSXr
8a3M6QKTFhtVHx9ExNvsPRDMm0HYdgAmsZN96v+pHvxHKaDWfkT1O+/ZuQssDJTO
fsb8mnQOXjimyVFQ51uAtyvk5i/Wy0Rshb6C/Qhm5qdIDufc9Sf47PjjkGjm4Ik1
5fSqLAECgYEA/Y/kh+nD8KUDj9bwHVDpNKa3cbUMVVZuthBbvRNrvOYuWucgqasY
o3Ct8HX5vFxUtObHRmqKOnoeZ17B7xrhDfWFG2kF0rduUeltKIecqKBmt0A0qqCq
Gu9YpKGaj7KHClyO3iBOXFc3u3O4BfdxKwyVtzVuIryqau3sr7YELgECgYEA6/fY
KGEvM6E6jqW4UtjeZ1ddLoOSgRFjw8jwDIcFDKPPw+AaLvogw5jFTIot2que3vhE
c98/lug3bRiwAlpTrf+sMqV9O86m9wVY2yt+8FxBLmpoaekX6wFTrCCugl5YDqt/
HwleLfGGpslBPEHgrTxlUEFOICzoxY2f81SMBlMCgYEA8+DEU50Zool0RZLb27aI
tuVrJ2iVdjbtwRs2wUK+qy9RgokvN0GjLwAfrFosW2kK5/vXyviJ/viZ6Z6QNSPL
Npvg7J40xZk7+HjlTsgwe1fbs4GDpmFlewaeYaoleOSjUuAxYZ/8/n+80QTaCJMY
O+mczlwLlEmWN8ajkdUlbAECgYEAhTZoG3Ox+A2/RySbSHoSJHkXq9ivbpnonnDj
w869tQMNmeD8JyUiNgoa6Djh5h8ZE3tI+blBCwwRrk9PniRsNUCvb/ApIQhrDe1A
2opVoVATpCaCR7hFvnADUpsoqYSlZbK/kz/woTNG9wWLBH+UXXhJIeOcPWHdDxoD
AJXsbu0CgYB2I8I57AEsPykqSsJqreeCeHz1BW8lpqzwFZtMRaG38pX5LD8P0t52
afFrAYu96m6HKNCXxcdeP7HlyrikKCVK8dli0kHzyUrO6p4GSBYxVZws8xdJ4ouM
egNZ7+pnzFV3na3LtkUARO0MWTo1V+u5a6z3NlOYWs3Wl+0V6nSPtA==
-----END RSA PRIVATE KEY-----
```

ii. Change mode of ec2.pem file

```
[root@ip-10-0-1-39 ~]# chmod 400 ec2.pem
```

iii. Now connect Private_instace thorugh IP

```
[root@ip-10-0-1-39 ~]# ssh -i ec2.pem ec2-user@10.0.2.114
The authenticity of host '10.0.2.114 (10.0.2.114)' can't be established.
ECDSA key fingerprint is SHA256:dXuuDlyKTMAey1tJ9Oks2hdNCi3CAmcQG4VjpjozDDc.
ECDSA key fingerprint is MD5:41:df:43:e3:7b:be:d4:d9:e0:d4:f2:d0:27:3b:41:ea.
Are you sure you want to continue connecting (yes/no)? Yes
Warning: Permanently added '10.0.2.114' (ECDSA) to the list of known hosts.
   ,     #_
   ~\_  ####_        Amazon Linux 2
  ~~  \_#####\
  ~~     \###|       AL2 End of Life is 2025-06-30.
  ~~       \#/ ___
   ~~       V~' '->
    ~~~         /    A newer version of Amazon Linux is available!
      ~~._.   _/
         _/ _/       Amazon Linux 2023, GA and supported until 2028-03-15.
       _/m/'           https://aws.amazon.com/linux/amazon-linux-2023/

[ec2-user@ip-10-0-2-114 ~]$
```

iv. Check hostname

```
[ec2-user@ip-10-0-2-114 ~]$ hostname
ip-10-0-2-114.ap-south-1.compute.internal
```

v. Check network connectivity in private Instance

```
[ec2-user@ip-10-0-2-114 ~]$ hostname
ip-10-0-2-114.ap-south-1.compute.internal
[ec2-user@ip-10-0-2-114 ~]$ ping google.com
PING google.com (142.250.71.110) 56(84) bytes of data.
64 bytes from pnbomb-ad-in-f14.1e100.net (142.250.71.110): icmp_seq=1 ttl=53 time=3.24 ms
64 bytes from pnbomb-ad-in-f14.1e100.net (142.250.71.110): icmp_seq=2 ttl=53 time=2.38 ms
64 bytes from pnbomb-ad-in-f14.1e100.net (142.250.71.110): icmp_seq=3 ttl=53 time=2.77 ms
64 bytes from pnbomb-ad-in-f14.1e100.net (142.250.71.110): icmp_seq=4 ttl=53 time=2.81 ms
64 bytes from pnbomb-ad-in-f14.1e100.net (142.250.71.110): icmp_seq=5 ttl=53 time=2.98 ms
64 bytes from pnbomb-ad-in-f14.1e100.net (142.250.71.110): icmp_seq=6 ttl=53 time=2.53 ms
^Z
[1]+  Stopped                 ping google.com
[ec2-user@ip-10-0-2-114 ~]$
```

vi. Try to install some package, Successfully installed


[ec2-user@ip-10-0-2-114 ~]$ sudo java --version
openjdk 17.0.12 2024-07-16 LTS
OpenJDK Runtime Environment Corretto-17.0.12.7.1 (build 17.0.12+7-LTS)
OpenJDK 64-Bit Server VM Corretto-17.0.12.7.1 (build 17.0.12+7-LTS, mixed mode, sharing)
[ec2-user@ip-10-0-2-114 ~]$ rpm -qa | grep httpd
httpd-tools-2.4.62-1.amzn2.0.2.x86_64
httpd-filesystem-2.4.62-1.amzn2.0.2.noarch
httpd-2.4.62-1.amzn2.0.2.x86_64
generic-logos-httpd-18.0.0-4.amzn2.noarch
[ec2-user@ip-10-0-2-114 ~]$ rpm -qa | grep java
javapackages-tools-3.4.1-11.amzn2.noarch
java-17-amazon-corretto-17.0.12+7-1.amzn2.1.x86_64
python-javapackages-3.4.1-11.amzn2.noarch
java-17-amazon-corretto-headless-17.0.12+7-1.amzn2.1.x86_64
[ec2-user@ip-10-0-2-114 ~]$

Thank you !!