CREATE THREE VPCs IN THREE DIFFERENT REGIONS AND CONNECT THE VPCs USING TRANSIT GATEWAY

❖ What is Amazon VPC?

With Amazon Virtual Private Cloud (Amazon VPC), you can launch AWS resources in a logically isolated virtual network that you've defined. This virtual network closely resembles a traditional network that you'd operate in your own data centre, with the benefits of using the scalable infrastructure of AWS.

❖ What is Transit Gateway?

A transit gateway is a network transit hub that you can use to interconnect your virtual private clouds (VPCs) and on-premises networks. As your cloud infrastructure expands globally, inter region peering connects transit gateways together using the AWS global infrastructure.

❖ Create VPCs in THREE DIFFERENT REGIONS:

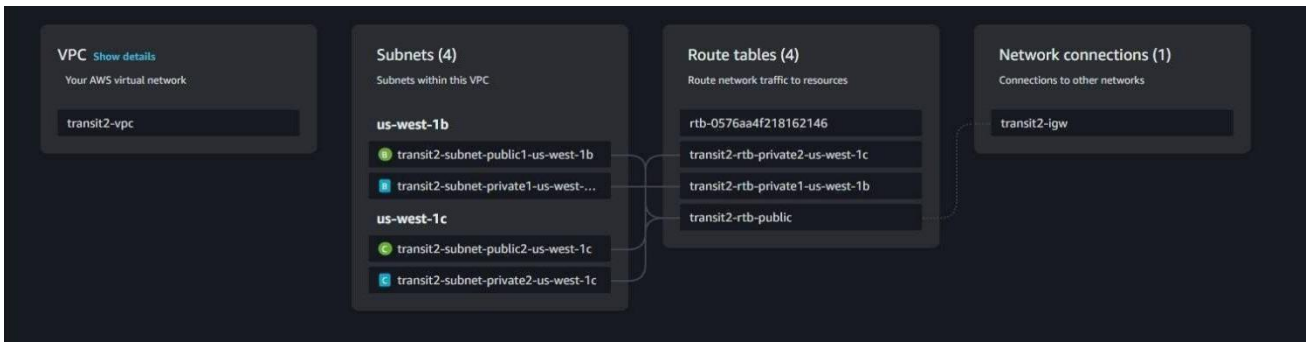
1. Log in to your AWS account & select Ohio region & do search for VPC in the search box.

2. Click on create VPC & select VPC AND MORE, go down click on create VPC.

3. After that choose CALIFORNIA & OREGON and create VPCs in those regions.

4. Follow the steps mentioned in below snapshots.

3. Below snapshots shows the VPCs that are created in CALIFORNIA & OREGON.

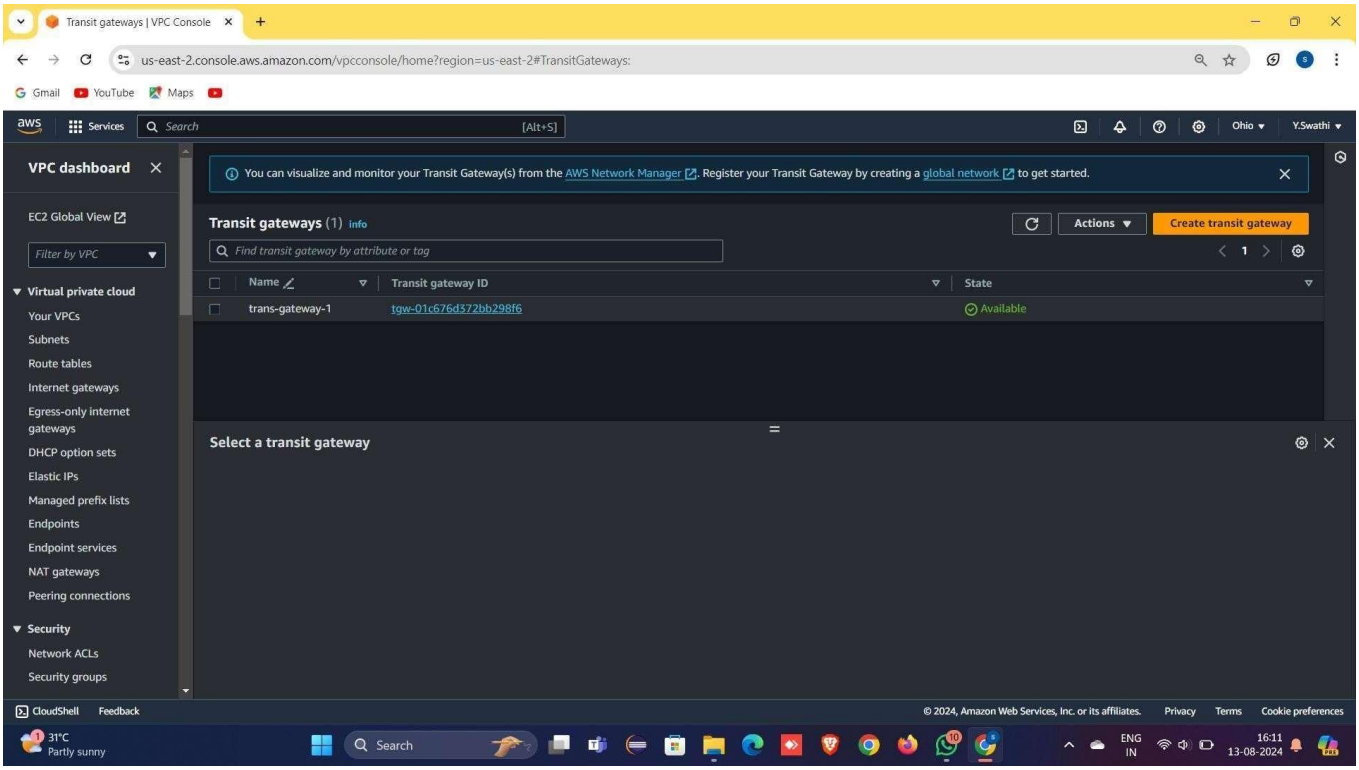


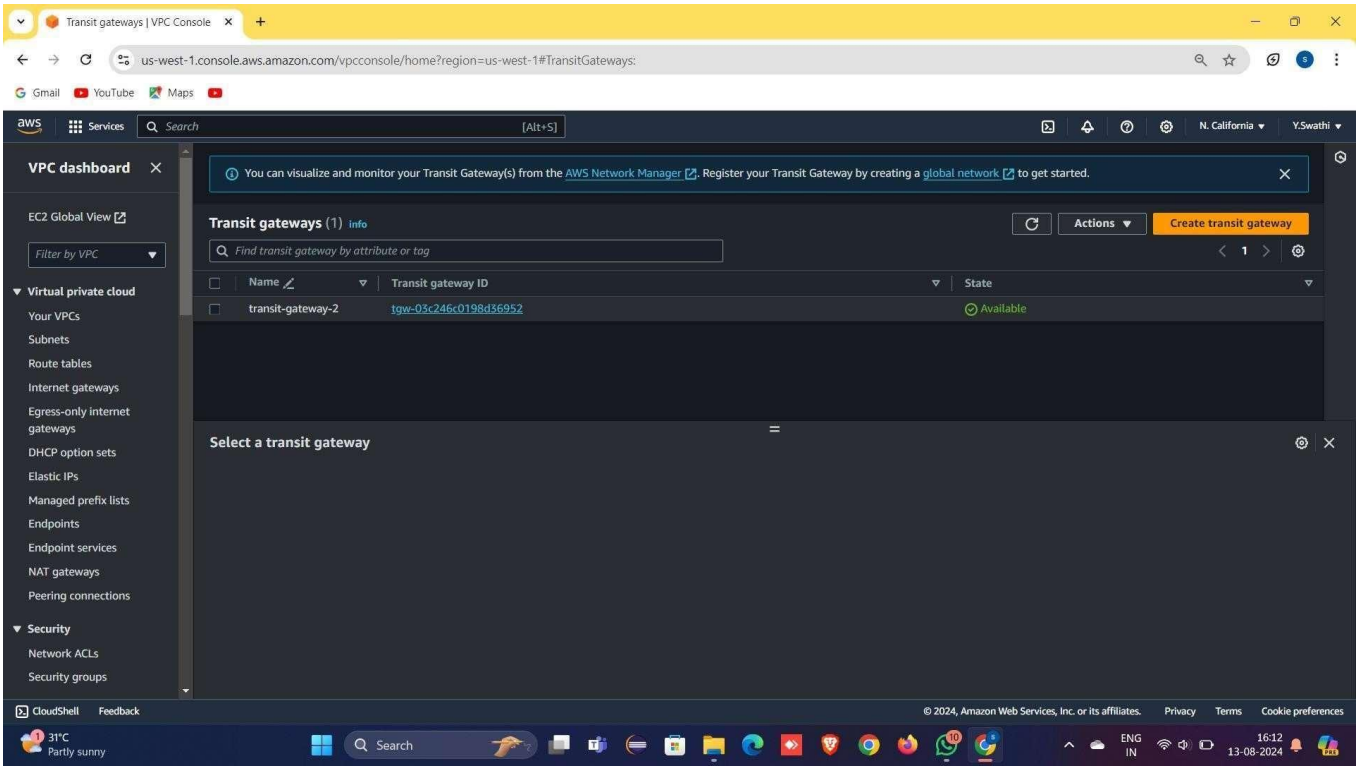
❖ Create Transit Gateway in three regions:

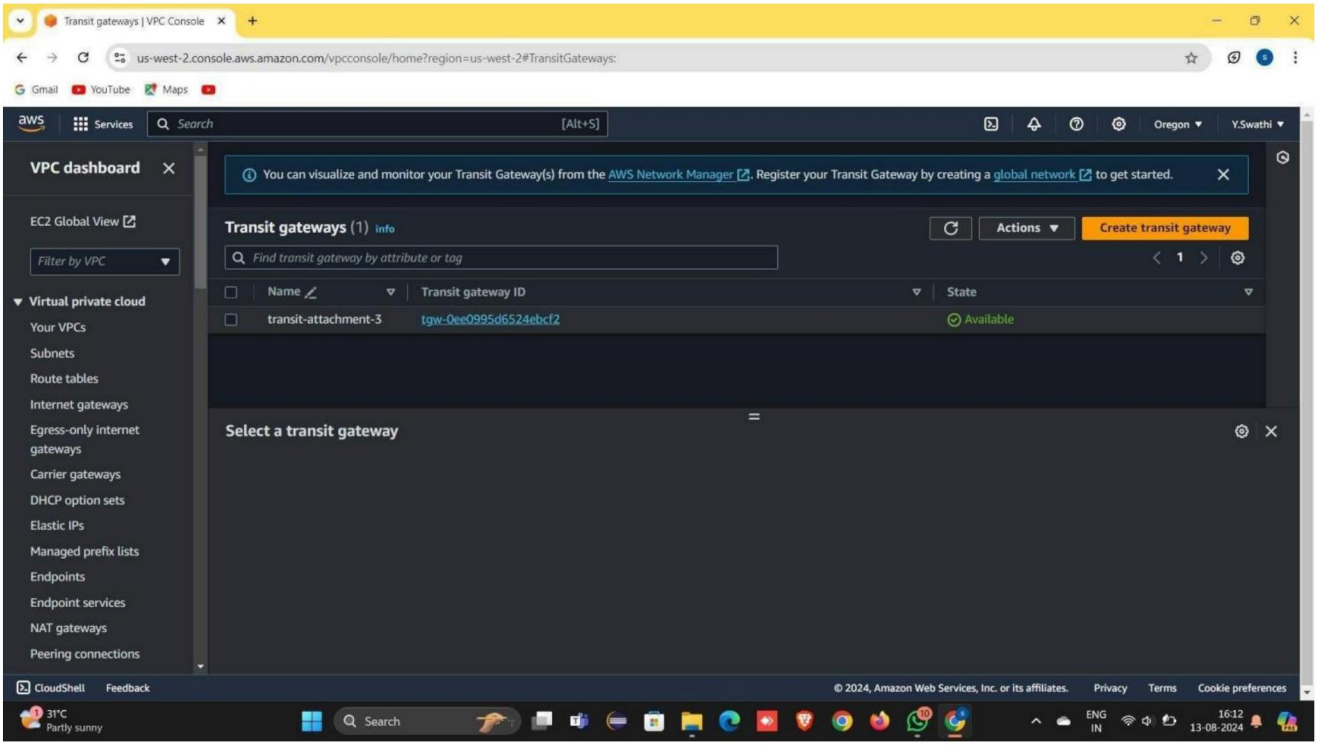
1. Go to transit gateway and select “Create Transit Gateway”.

2. Now create transit gateway in three different regions.

3. Snapshots of transit gateway are attached below.


Transit gateways | VPC Console
us-east-2.console.aws.amazon.com/vpcconsole/home?region=us-east-2#TransitGateways:
Gmail YouTube Maps
Services Search [Alt+S] Ohio Y.Swathi
VPC dashboard
You can visualize and monitor your Transit Gateway(s) from the AWS Network Manager. Register your Transit Gateway by creating a global network to get started.
EC2 Global View
Transit gateways (1) info
Actions Create transit gateway
Filter by VPC
Find transit gateway by attribute or tag
Name Transit gateway ID State
trans-gateway-1 tgw-01c676d372bb298f6 Available
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
Endpoints
Endpoint services
NAT gateways
Peering connections
Security
Network ACLs
Security groups
Select a transit gateway
CloudShell Feedback
© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
31°C Partly sunny
Search
ENG IN
16:11 13-08-2024


Transit gateways | VPC Console
us-west-1.console.aws.amazon.com/vpcconsole/home?region=us-west-1#TransitGateways:
Gmail YouTube Maps
Services Search [Alt+S] N. California Y.Swathi
VPC dashboard
You can visualize and monitor your Transit Gateway(s) from the AWS Network Manager. Register your Transit Gateway by creating a global network to get started.
EC2 Global View
Transit gateways (1) info
Actions Create transit gateway
Filter by VPC
Find transit gateway by attribute or tag
Name Transit gateway ID State
transit-gateway-2 tgw-03c246c0198d36952 Available
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
Endpoints
Endpoint services
NAT gateways
Peering connections
Security
Network ACLs
Security groups
Select a transit gateway
CloudShell Feedback
© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
31°C Partly sunny
Search
ENG IN
16:12 13-08-2024



❖ Create Transit Gateway Attachment in THREE Regions:

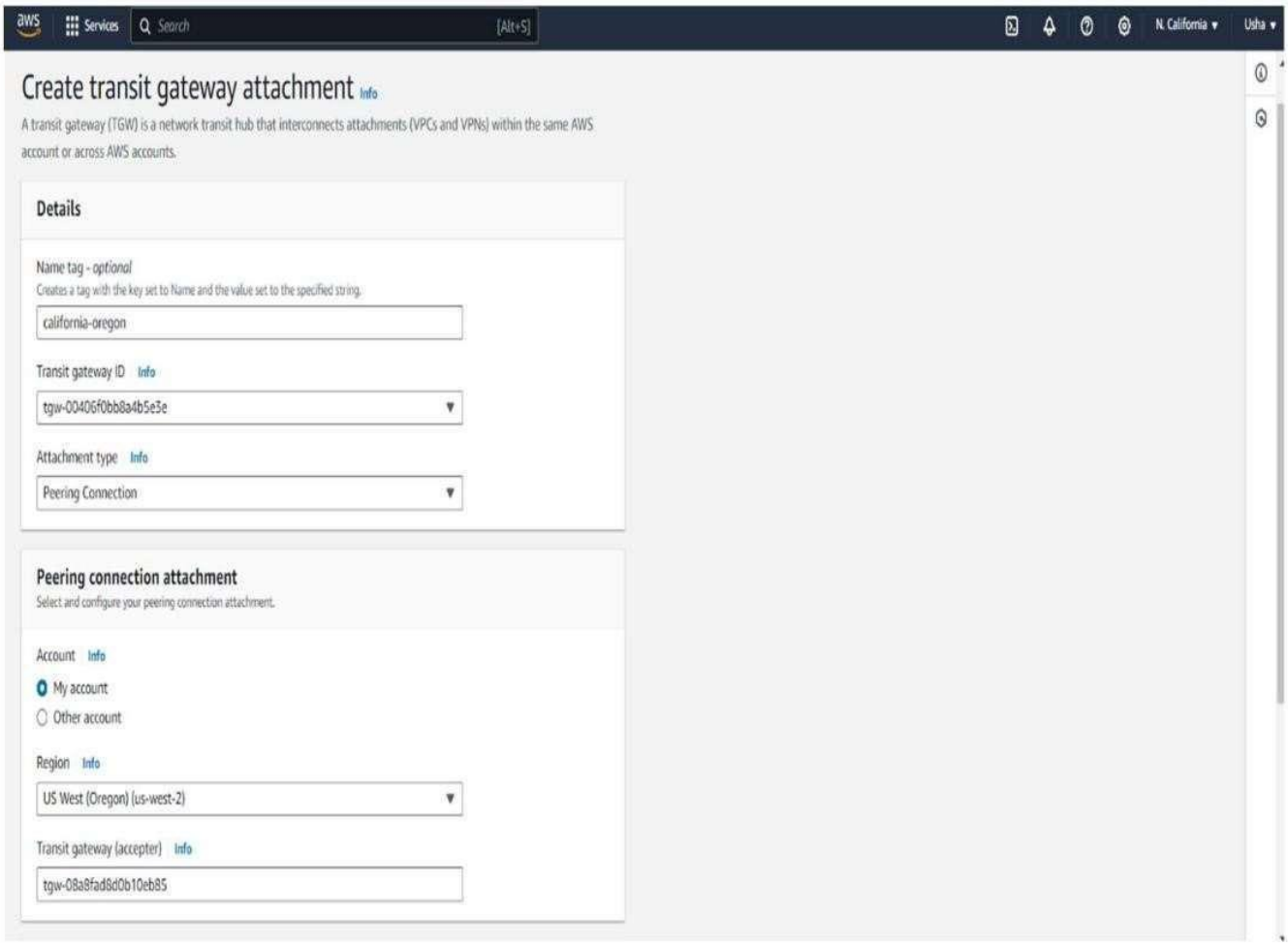
1. Go to transit gateway attachment & Create "Transit Gateway Attachment" & attach to transit gateway.

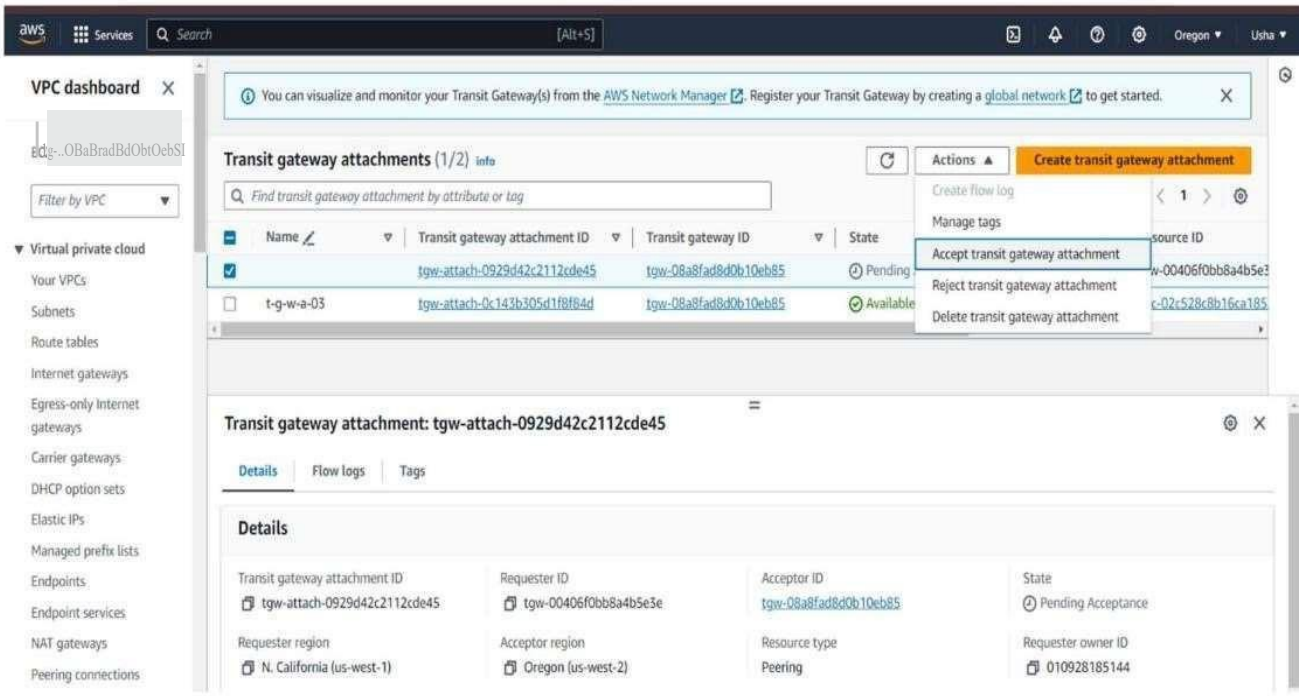
2. while creating transit gateway attachment for single region, select attachment

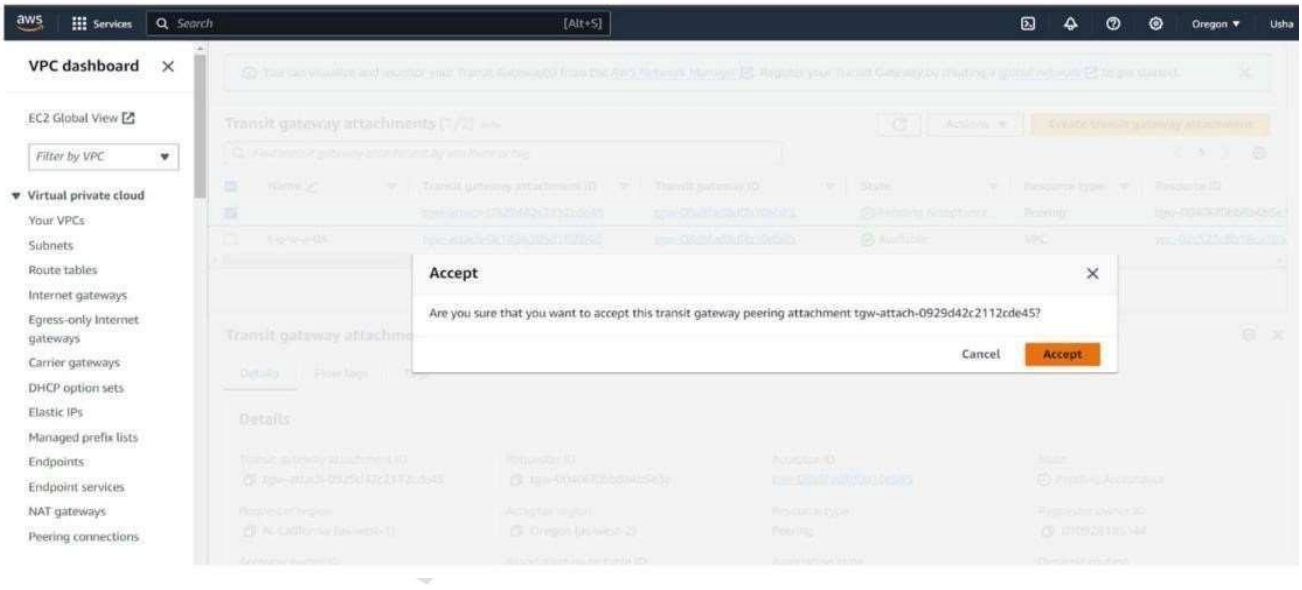
Type attach VPC & for two or more regions give PEERING CONNECTION.

3. After sending a request from one region to another region, you must accept the transit gateway attachment request then only it will be available.

4. some snapshots attached below.

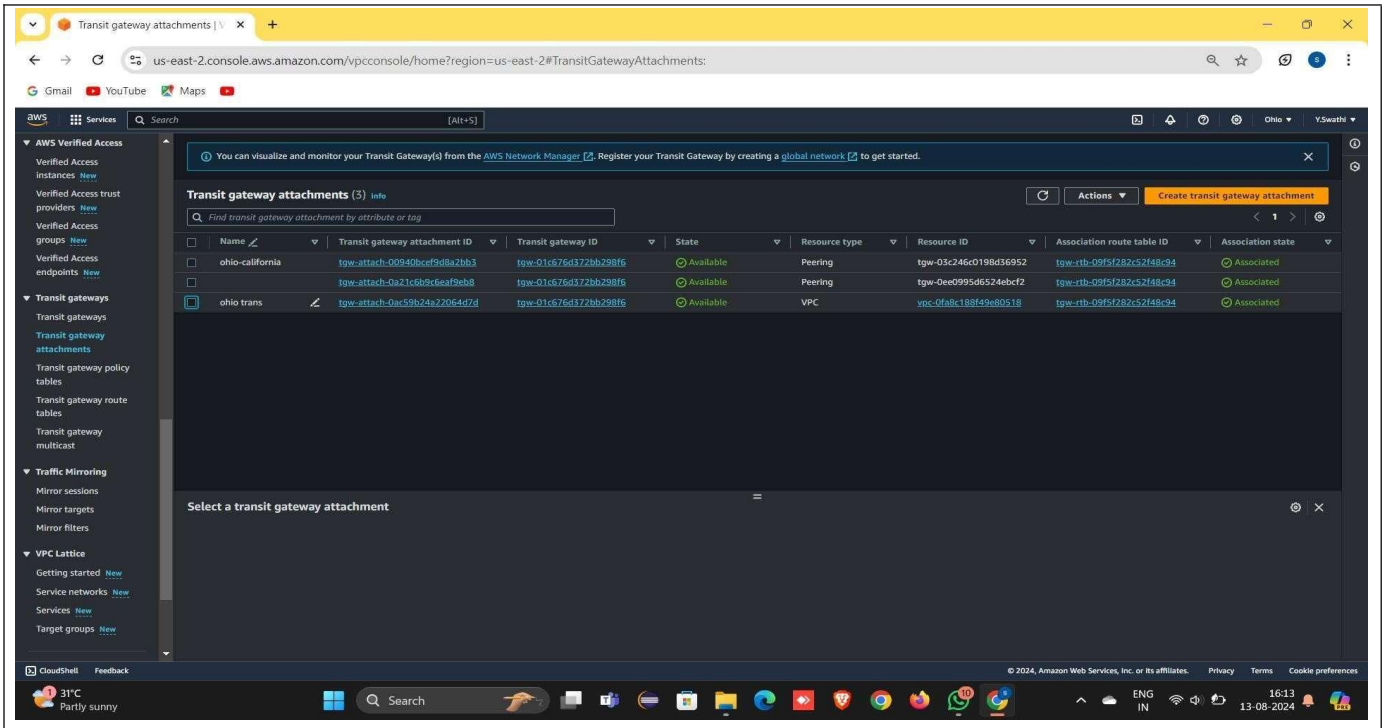

aws
Services
Search
[Alt+S]
N. California
Usha
Create transit gateway attachment Info
A transit gateway (TGW) is a network transit hub that interconnects attachments (VPCs and VPNs) within the same AWS account or across AWS accounts.
Details
Name tag - optional
Creates a tag with the key set to Name and the value set to the specified string.
california-oregon
Transit gateway ID Info
tgw-00406f0bb8a4b5e3e
Attachment type Info
Peering Connection
Peering connection attachment
Select and configure your peering connection attachment.
Account Info
My account
Other account
Region Info
US West (Oregon) (us-west-2)
Transit gateway (accepter) Info
tgw-08a8fad8d0b10eb85

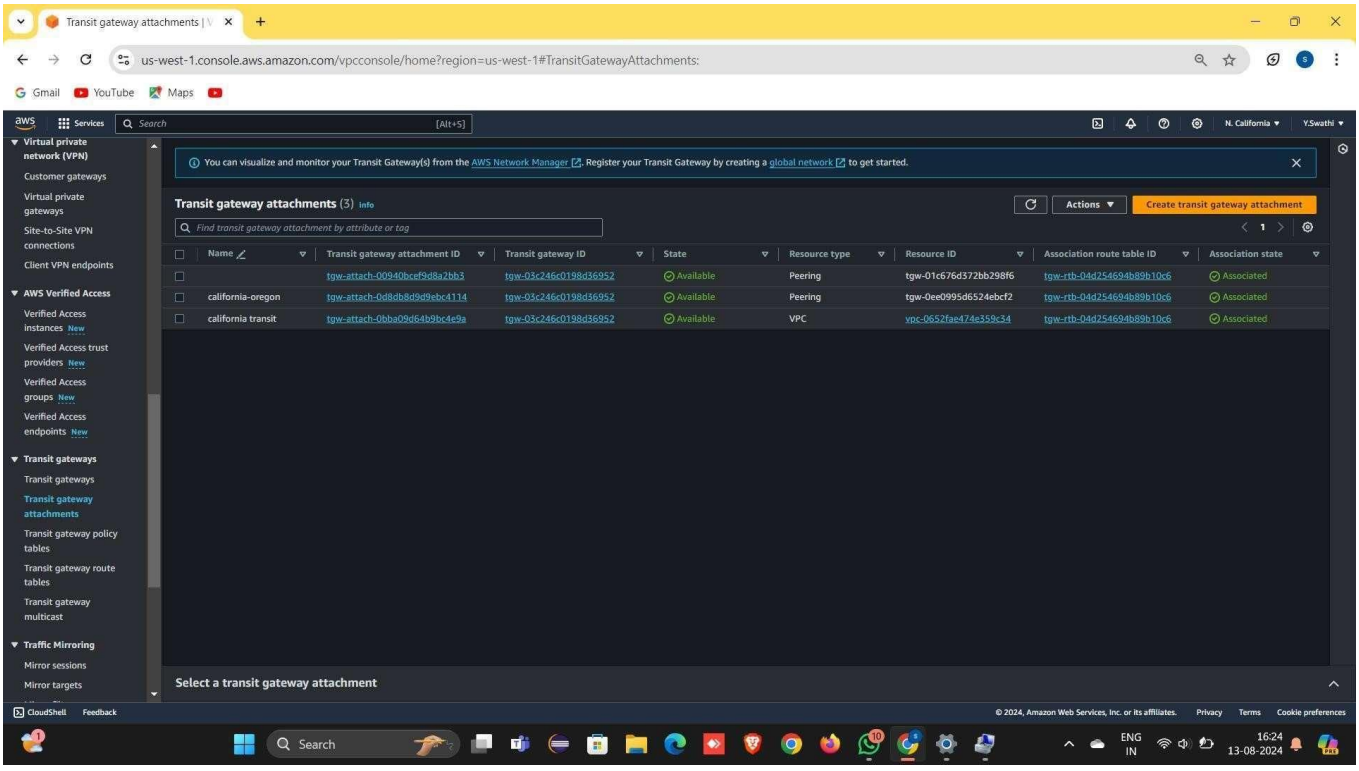


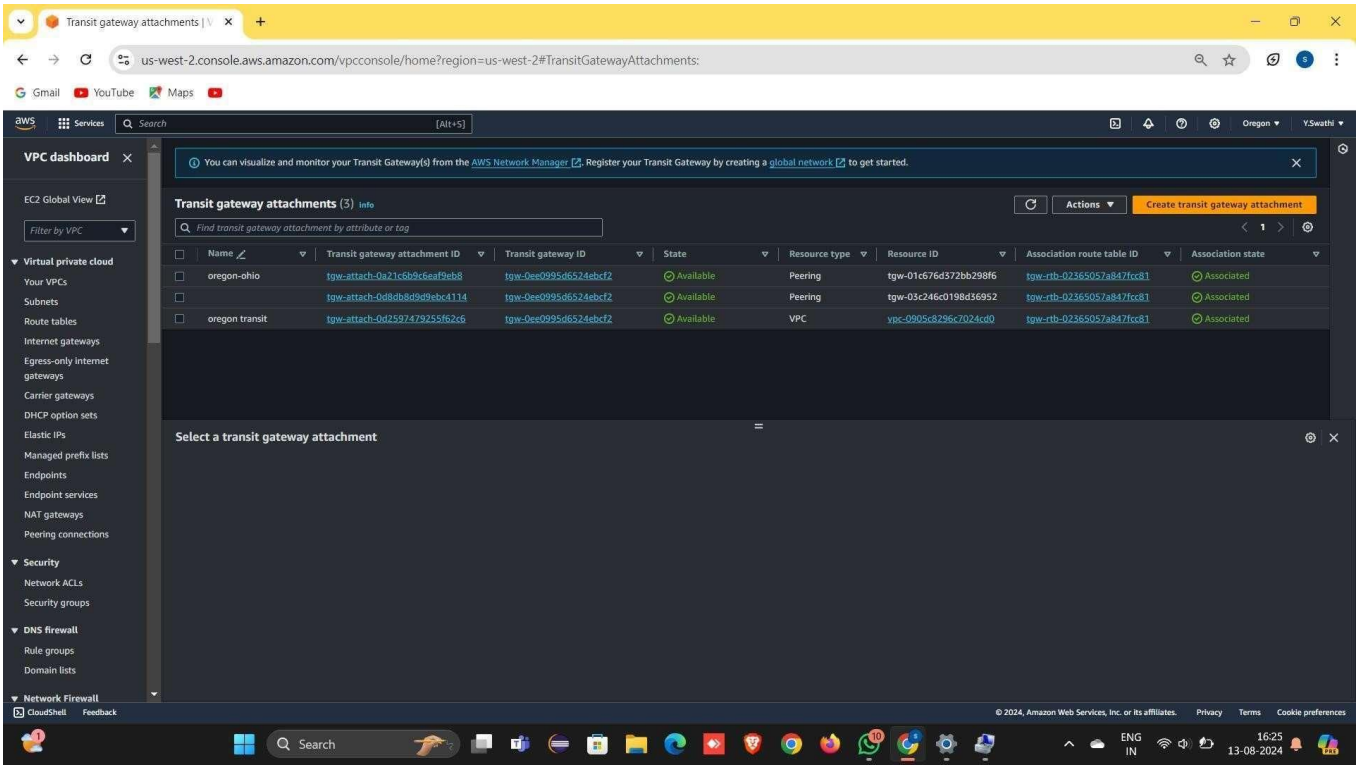


5. Below snapshots shows that transit gateway attachment from region – region.

i.e., Ohio-California,California-Oregon,Oregon-Ohio.

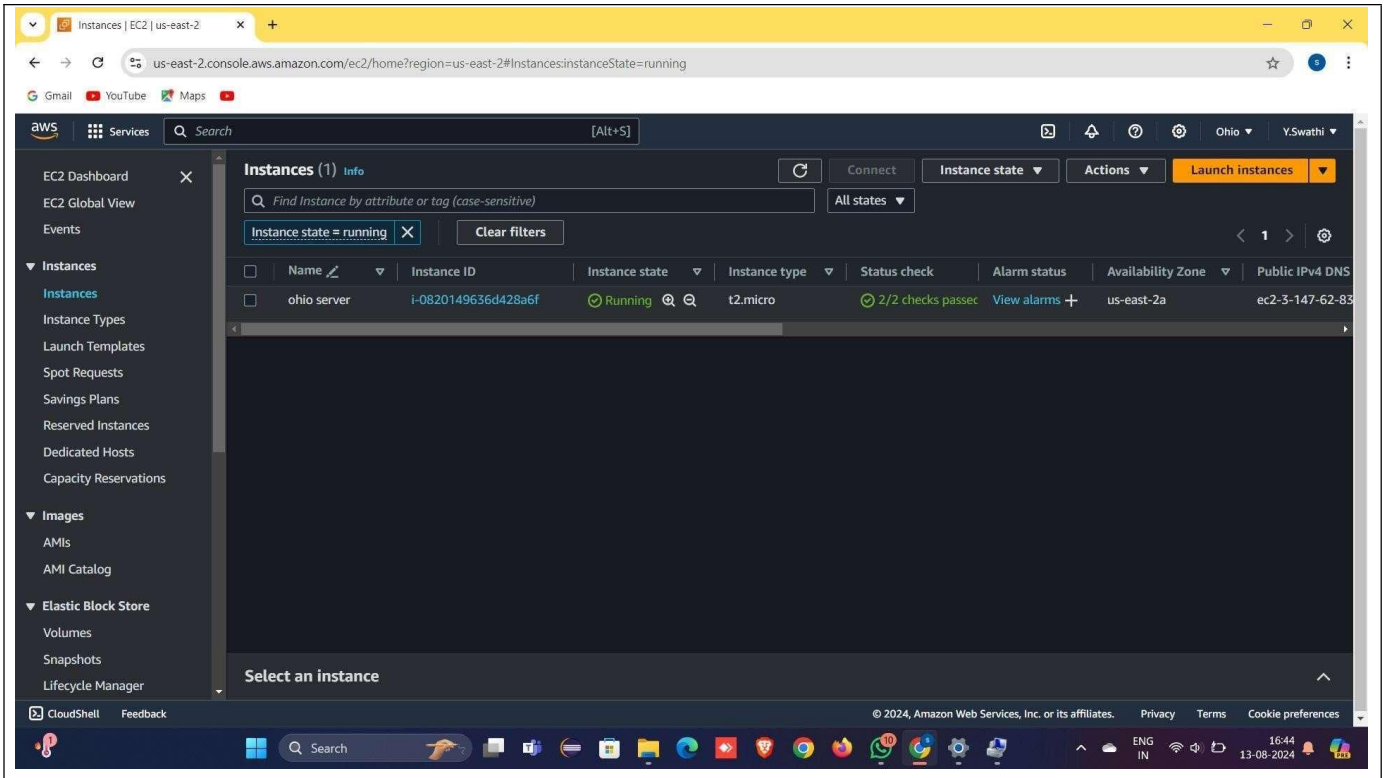

Transit gateway attachments | \
us-east-2.console.aws.amazon.com/vpcconsole/home?region=us-east-2#TransitGatewayAttachments:
Gmail YouTube Maps
aws Services Search [Alt+S] Ohio Y.Swathi
AWS Verified Access
Verified Access instances New
Verified Access trust providers New
Verified Access groups New
Verified Access endpoints New
Transit gateways
Transit gateways
Transit gateway attachments
Transit gateway policy tables
Transit gateway route tables
Transit gateway multicast
Traffic Mirroring
Mirror sessions
Mirror targets
Mirror filters
VPC Lattice
Getting started New
Service networks New
Services New
Target groups New
You can visualize and monitor your Transit Gateway(s) from the AWS Network Manager. Register your Transit Gateway by creating a global network to get started.
Transit gateway attachments (3) info
Actions
Create transit gateway attachment
Find transit gateway attachment by attribute or tag
Name
Transit gateway attachment ID
Transit gateway ID
State
Resource type
Resource ID
Association route table ID
Association state
ohio-california tgw-attach-00940bcef9d8a2bb3 tgw-01c676d372bb298f6 Available Peering tgw-03c246c0198d36952 tgw-rtb-09f5f282c52f48c94 Associated
tgw-attach-0a21c6b9c6eaf9eb8 tgw-01c676d372bb298f6 Available Peering tgw-0ee0995d6524ebcf2 tgw-rtb-09f5f282c52f48c94 Associated
ohio trans tgw-attach-0ac59b24a22064d7d tgw-01c676d372bb298f6 Available VPC vpc-0fa8c188f49e80518 tgw-rtb-09f5f282c52f48c94 Associated
Select a transit gateway attachment
CloudShell Feedback
© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
31°C Partly sunny
Search
ENG IN
16:13 13-08-2024

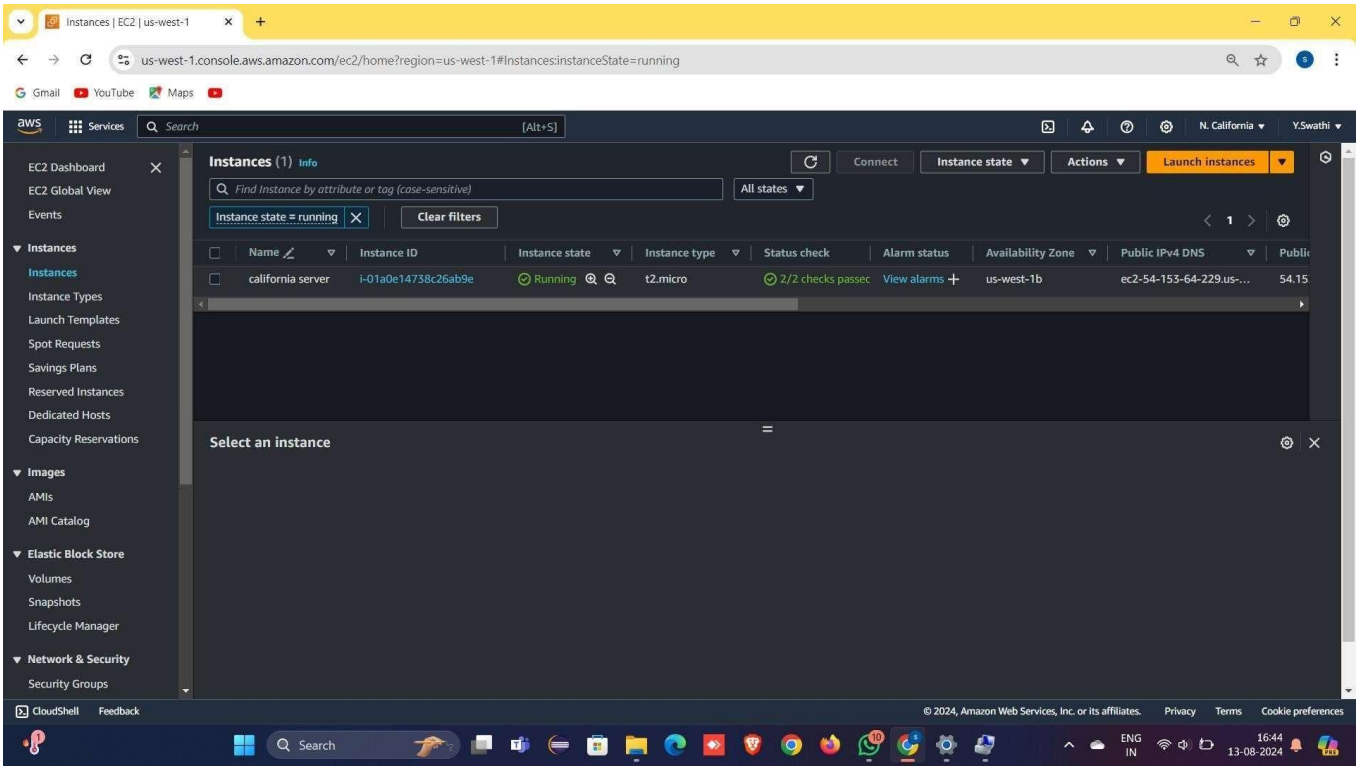

Transit gateway attachments | \
us-west-1.console.aws.amazon.com/vpcconsole/home?region=us-west-1#TransitGatewayAttachments:
Gmail YouTube Maps
aws Services Search [Alt+S] N. California Y.Swathi
Virtual private network (VPN)
Customer gateways
Virtual private gateways
Site-to-Site VPN connections
Client VPN endpoints
AWS Verified Access
Verified Access instances New
Verified Access trust providers New
Verified Access groups New
Verified Access endpoints New
Transit gateways
Transit gateways
Transit gateway attachments
Transit gateway policy tables
Transit gateway route tables
Transit gateway multicast
Traffic Mirroring
Mirror sessions
Mirror targets
You can visualize and monitor your Transit Gateway(s) from the AWS Network Manager. Register your Transit Gateway by creating a global network to get started.
Transit gateway attachments (3) info
Actions
Create transit gateway attachment
Find transit gateway attachment by attribute or tag
Name
Transit gateway attachment ID
Transit gateway ID
State
Resource type
Resource ID
Association route table ID
Association state
tgw-attach-00940bcef9d8a2bb3 tgw-03c246c0198d36952 Available Peering tgw-01c676d372bb298f6 tgw-rtb-04d254694b89b10c6 Associated
california-oregon tgw-attach-0d8db8d9d9ebc4114 tgw-03c246c0198d36952 Available Peering tgw-0ee0995d6524ebcf2 tgw-rtb-04d254694b89b10c6 Associated
california transit tgw-attach-0bba09d64b9bc4e9a tgw-03c246c0198d36952 Available VPC vpc-0652fae474e359c34 tgw-rtb-04d254694b89b10c6 Associated
Select a transit gateway attachment
CloudShell Feedback
© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
Search
ENG IN
16:24 13-08-2024

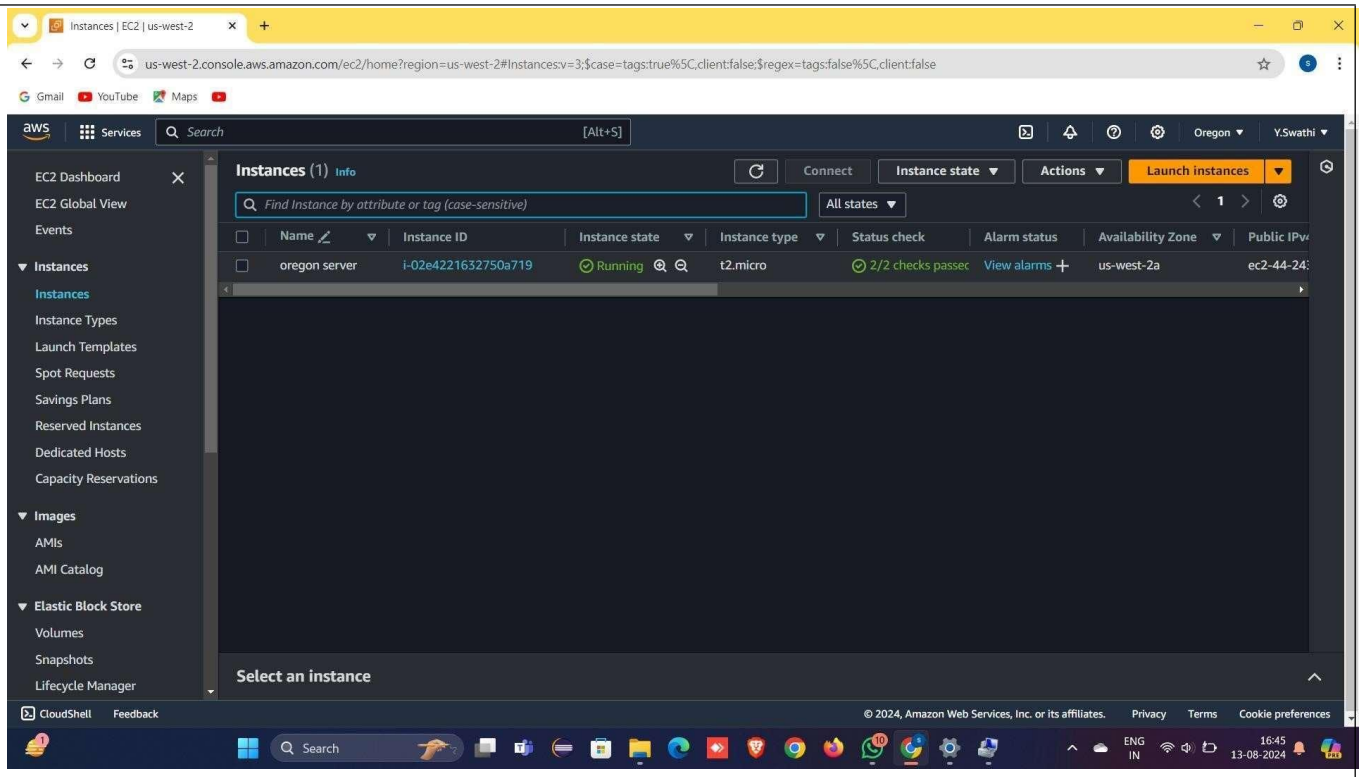


❖ Create EC2 instance:

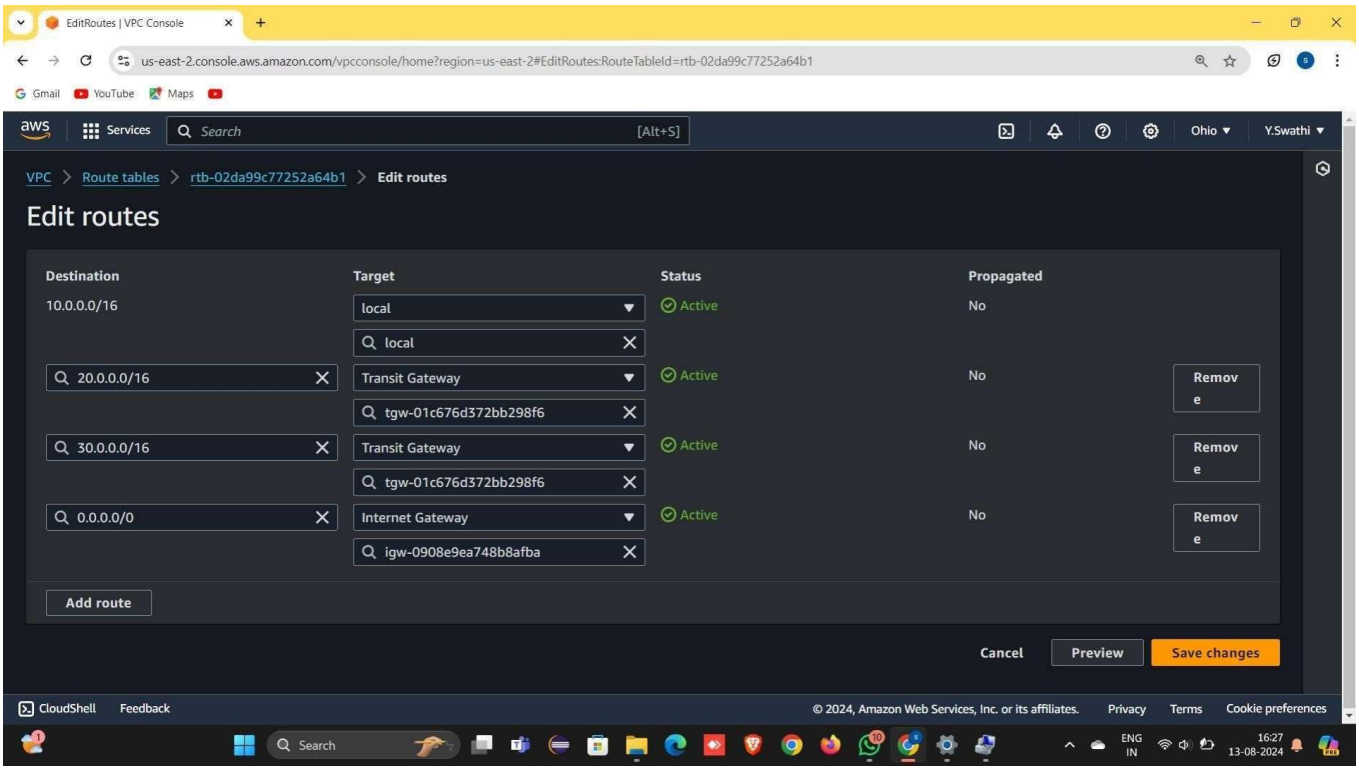
1. create three EC2 Instance for three VPCs.
2. Go to instance -launch instance - create key pair - network(edit) - select security group - launch instance.
3. some EC2 snapshots are attached below.

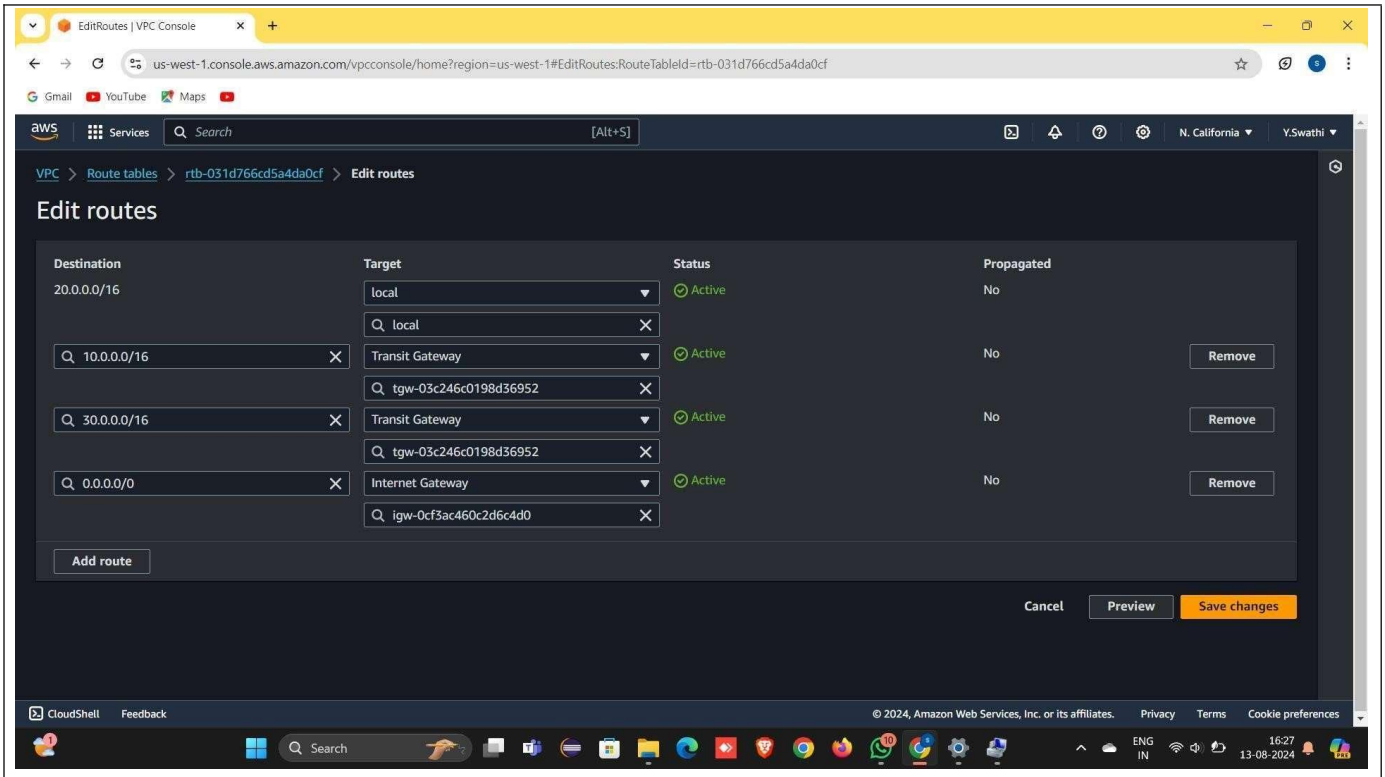

Instances | EC2 | us-east-2
us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2#Instances:instanceState=running
Gmail YouTube Maps
Services Search [Alt+S]
Ohio Y.Swathi
EC2 Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Instances (1) Info
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Instance state = running
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
ohio server
i-0820149636d428a6f
Running
t2.micro
2/2 checks passed
View alarms
us-east-2a
ec2-3-147-62-83
Select an instance
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
Search
ENG
IN
16:44
13-08-2024

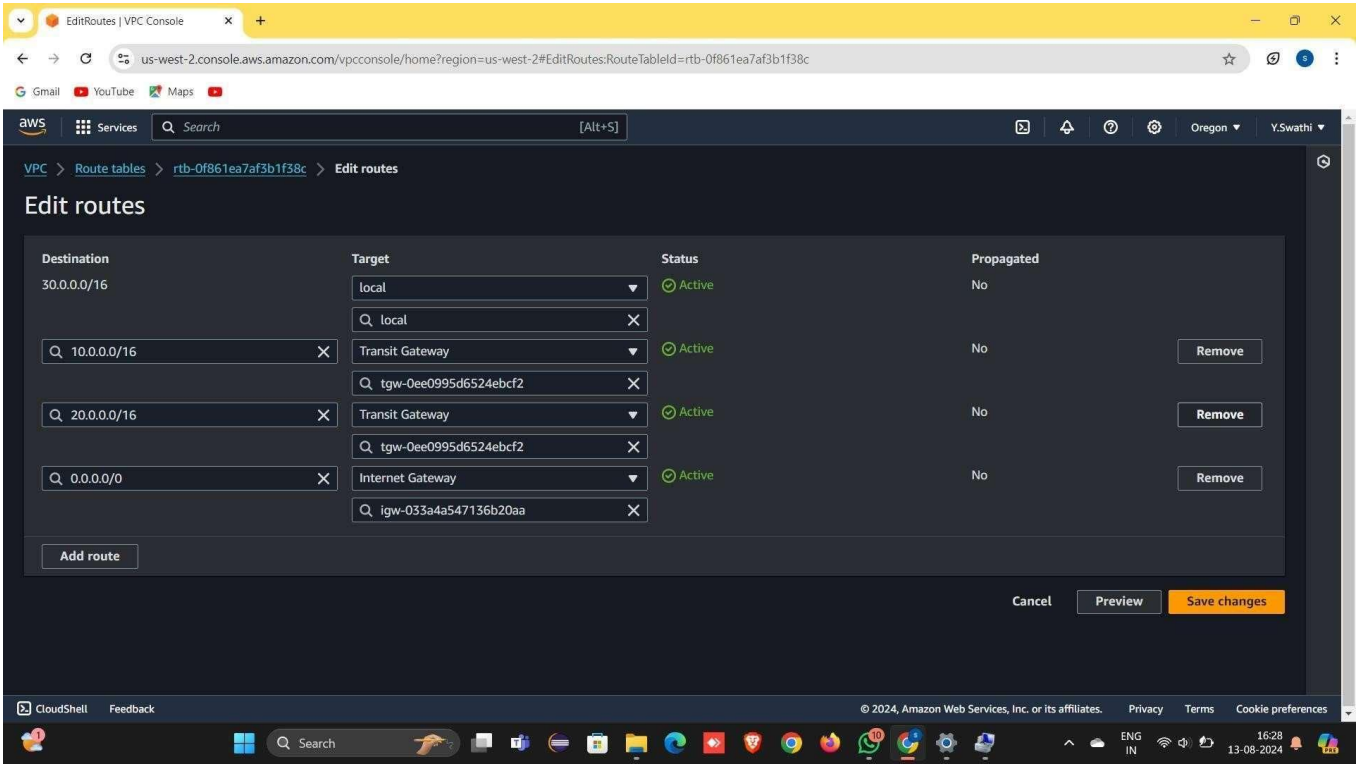

Instances | EC2 | us-west-1
us-west-1.console.aws.amazon.com/ec2/home?region=us-west-1#Instances:instanceState=running
Gmail YouTube Maps
Services Search [Alt+S]
N. California Y.Swathi
EC2 Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Instances (1) Info
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Instance state = running
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
california server
i-01a0e14738c26ab9e
Running
t2.micro
2/2 checks passed
View alarms
us-west-1b
ec2-54-153-64-229.us-...
54.15
Select an instance
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
Search
ENG
IN
16:44
13-08-2024



4. After creating EC2 Instances ,goto route tables & edit the routes and save changes.
5. Some snapshots are route tables are given below.



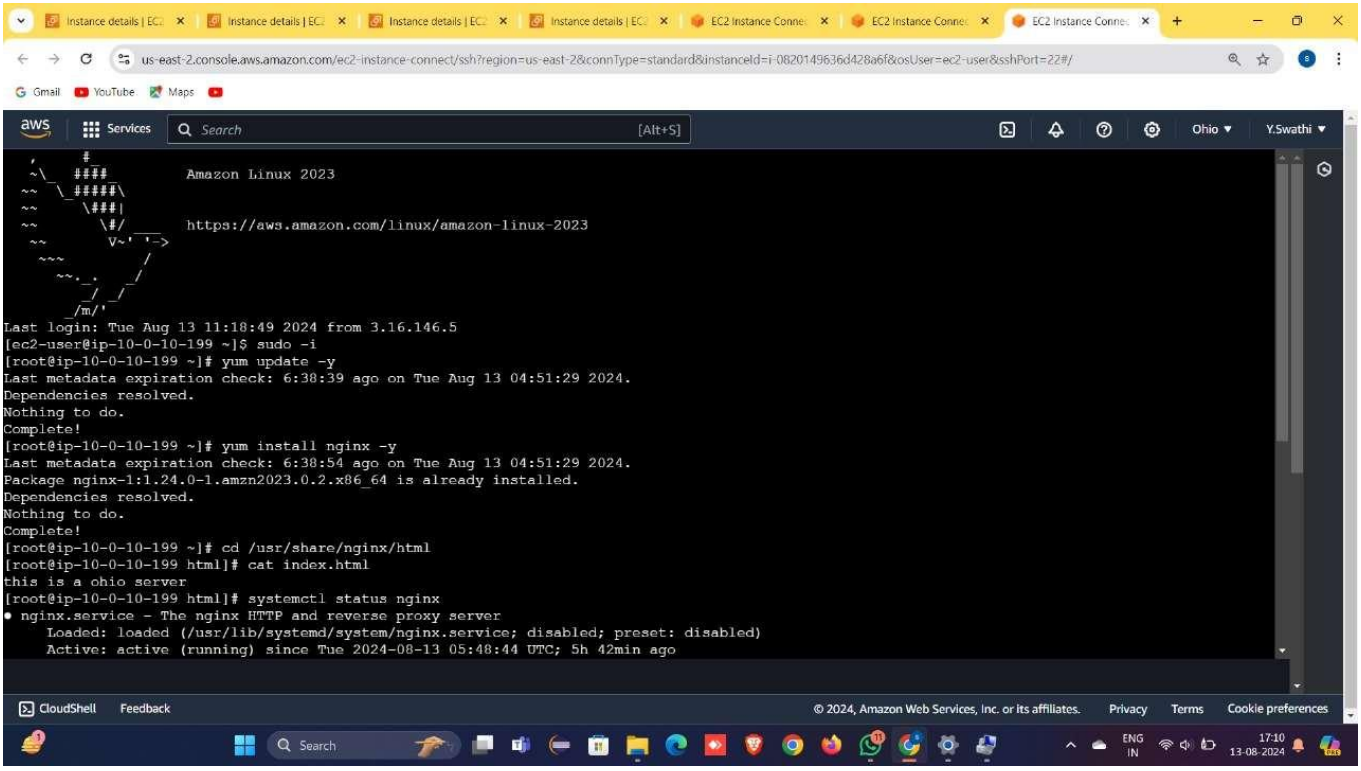

EditRoutes | VPC Console
us-west-1.console.aws.amazon.com/vpcconsole/home?region=us-west-1#EditRoutes:RouteTableId=rtb-031d766cd5a4da0cf
Gmail YouTube Maps
aws Services Search [Alt+S] N. California Y.Swathi
VPC > Route tables > rtb-031d766cd5a4da0cf > Edit routes
Edit routes
Destination Target Status Propagated
20.0.0.0/16 local Active No
local
10.0.0.0/16 Transit Gateway Active No Remove
tgw-03c246c0198d36952
30.0.0.0/16 Transit Gateway Active No Remove
tgw-03c246c0198d36952
0.0.0.0/0 Internet Gateway Active No Remove
igw-0cf3ac460c2d6c4d0
Add route
Cancel Preview Save changes
CloudShell Feedback
© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
Search
ENG IN
16:27 13-08-2024

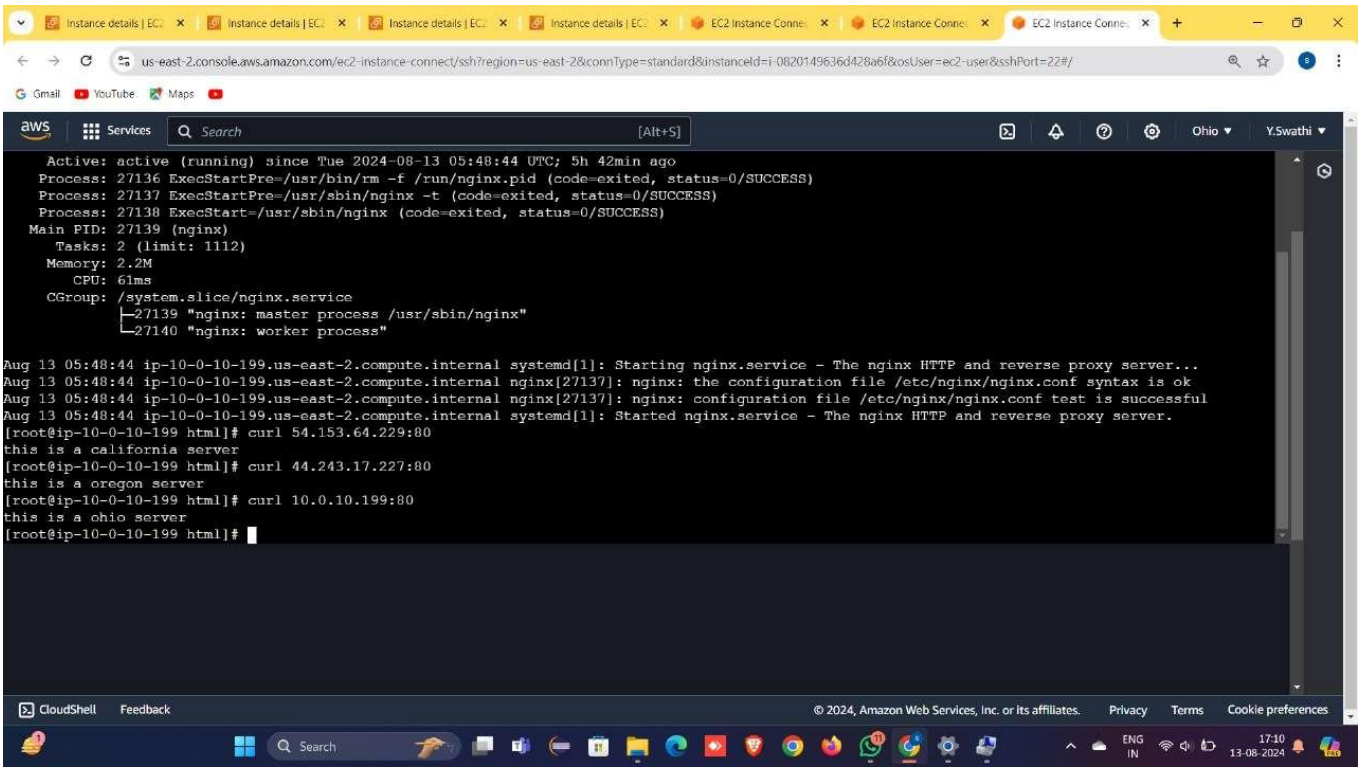

EditRoutes | VPC Console
us-west-2.console.aws.amazon.com/vpcconsole/home?region=us-west-2#EditRoutes:RouteTableId=rtb-0f861ea7af3b1f38c
Gmail YouTube Maps
aws Services Search [Alt+S] Oregon Y.Swathi
VPC > Route tables > rtb-0f861ea7af3b1f38c > Edit routes
Edit routes
Destination Target Status Propagated
30.0.0.0/16 local Active No
local
10.0.0.0/16 Transit Gateway Active No Remove
tgw-0ee0995d6524ebcf2
20.0.0.0/16 Transit Gateway Active No Remove
tgw-0ee0995d6524ebcf2
0.0.0.0/0 Internet Gateway Active No Remove
igw-033a4a547136b20aa
Add route
Cancel Preview Save changes
CloudShell Feedback
© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
Search
ENG IN
16:28 13-08-2024

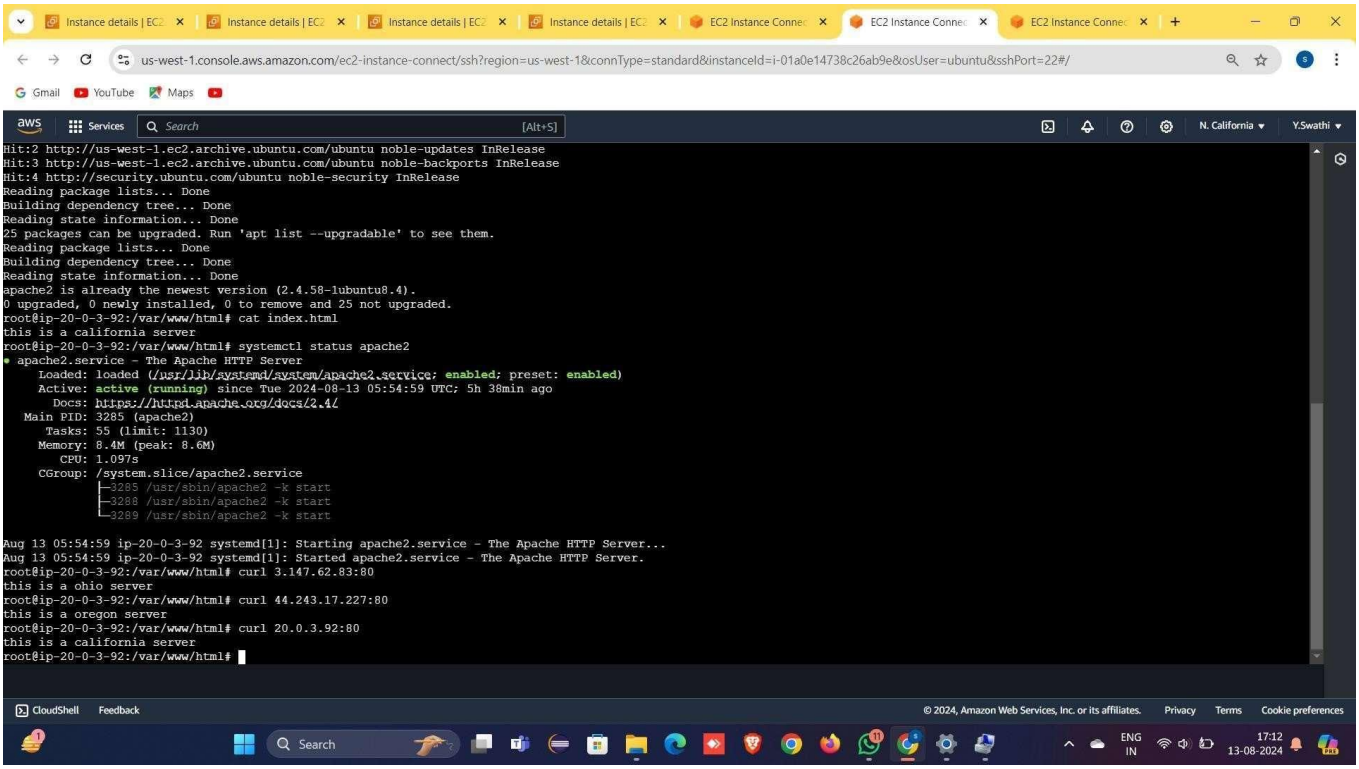
6. After creating EC2 Instances, go to route tables & edit the routes &save changes.

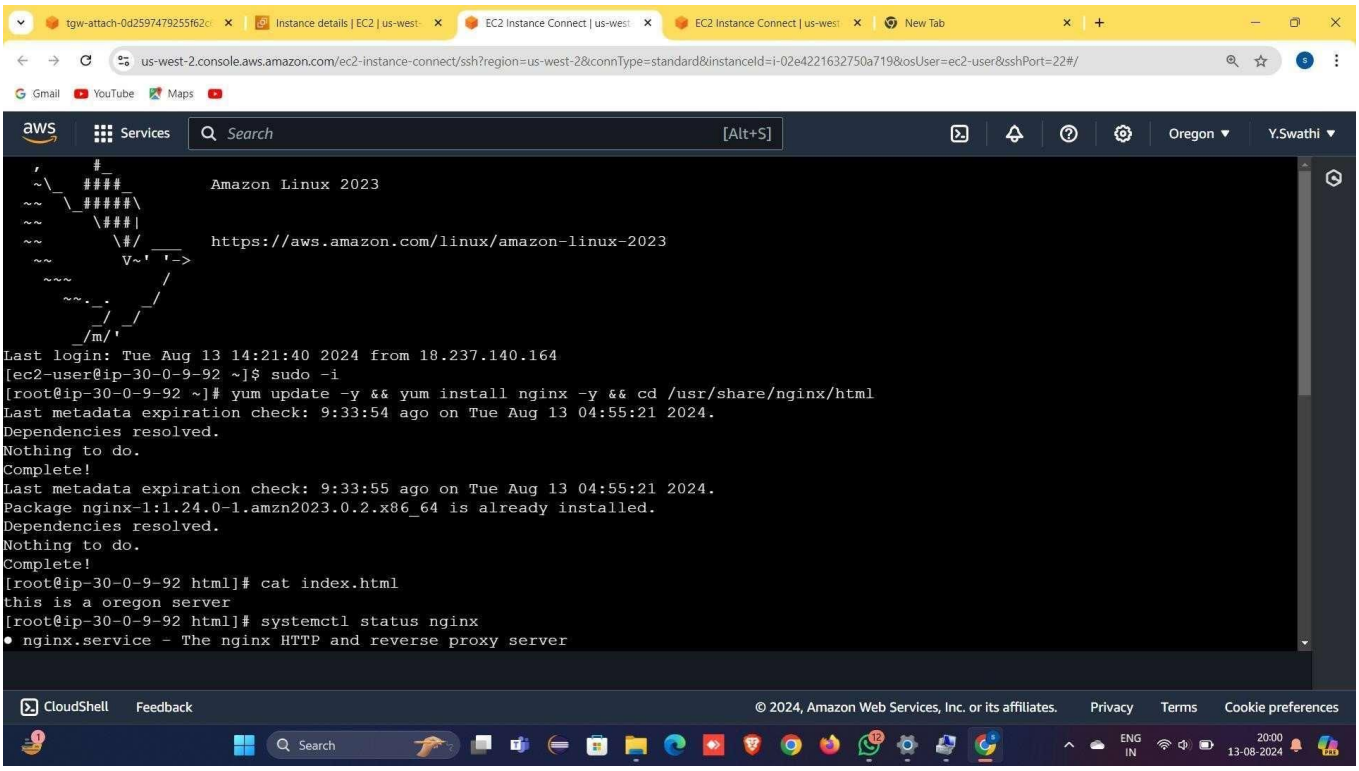
7. Some snapshots of route tables are given below.

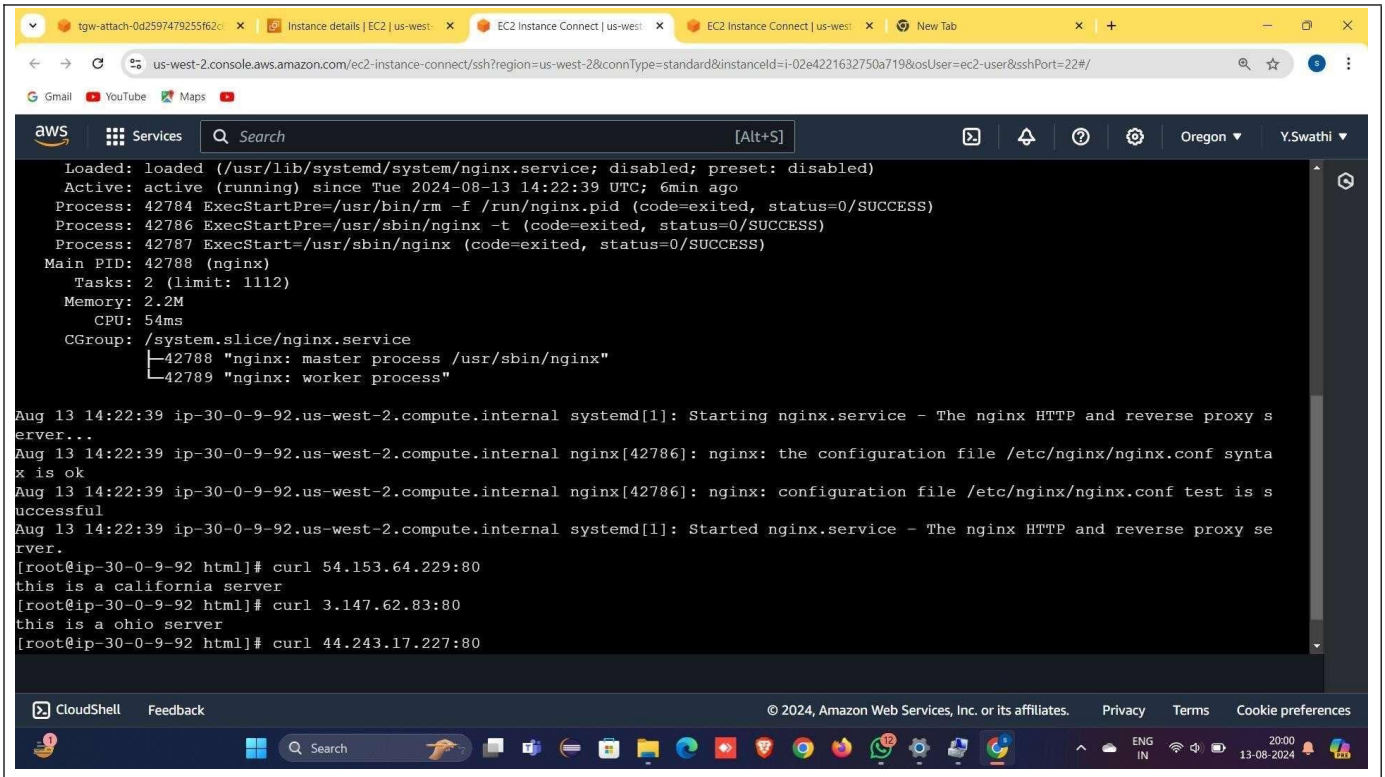
❖ OUTPUT:






us-west-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-west-1&connType=standard&instanceId=i-01a0e14738c26ab9e&osUser=ubuntu&sshPort=22#/
Hit:2 http://us-west-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-west-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
25 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.4).
0 upgraded, 0 newly installed, 0 to remove and 25 not upgraded.
root@ip-20-0-3-92:/var/www/html# cat index.html
this is a california server
root@ip-20-0-3-92:/var/www/html# systemctl status apache2
apache2.service - The Apache HTTP Server
Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
Active: active (running) since Tue 2024-08-13 05:54:59 UTC; 5h 38min ago
Docs: https://httpd.apache.org/docs/2.4/
Main PID: 3285 (apache2)
Tasks: 55 (limit: 1130)
Memory: 8.4M (peak: 8.6M)
CPU: 1.097s
CGroup: /system.slice/apache2.service
├─3285 /usr/sbin/apache2 -k start
├─3288 /usr/sbin/apache2 -k start
└─3289 /usr/sbin/apache2 -k start
Aug 13 05:54:59 ip-20-0-3-92 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Aug 13 05:54:59 ip-20-0-3-92 systemd[1]: Started apache2.service - The Apache HTTP Server.
root@ip-20-0-3-92:/var/www/html# curl 3.147.62.83:80
this is a ohio server
root@ip-20-0-3-92:/var/www/html# curl 44.243.17.227:80
this is a oregon server
root@ip-20-0-3-92:/var/www/html# curl 20.0.3.92:80
this is a california server
root@ip-20-0-3-92:/var/www/html#
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


us-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-west-2&connType=standard&instanceId=i-02e4221632750a719&osUser=ec2-user&sshPort=22#/
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023
Last login: Tue Aug 13 14:21:40 2024 from 18.237.140.164
[ec2-user@ip-30-0-9-92 ~]$ sudo -i
[root@ip-30-0-9-92 ~]# yum update -y && yum install nginx -y && cd /usr/share/nginx/html
Last metadata expiration check: 9:33:54 ago on Tue Aug 13 04:55:21 2024.
Dependencies resolved.
Nothing to do.
Complete!
Last metadata expiration check: 9:33:55 ago on Tue Aug 13 04:55:21 2024.
Package nginx-1:1.24.0-1.amzn2023.0.2.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-30-0-9-92 html]# cat index.html
this is a oregon server
[root@ip-30-0-9-92 html]# systemctl status nginx
nginx.service - The nginx HTTP and reverse proxy server
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


tgw-attach-0d2597479255f62c
Instance details | EC2 | us-west-
EC2 Instance Connect | us-west-
EC2 Instance Connect | us-west-
New Tab
us-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-west-2&connType=standard&instanceId=i-02e4221632750a719&osUser=ec2-user&sshPort=22#/
Gmail
YouTube
Maps
aws
Services
Search
[Alt+S]
Oregon
Y.Swathi
Loaded: loaded (/usr/lib/systemd/system/nginx.service; disabled; preset: disabled)
Active: active (running) since Tue 2024-08-13 14:22:39 UTC; 6min ago
Process: 42784 ExecStartPre=/usr/bin/rm -f /run/nginx.pid (code=exited, status=0/SUCCESS)
Process: 42786 ExecStartPre=/usr/sbin/nginx -t (code=exited, status=0/SUCCESS)
Process: 42787 ExecStart=/usr/sbin/nginx (code=exited, status=0/SUCCESS)
Main PID: 42788 (nginx)
Tasks: 2 (limit: 1112)
Memory: 2.2M
CPU: 54ms
CGroup: /system.slice/nginx.service
├─42788 "nginx: master process /usr/sbin/nginx"
└─42789 "nginx: worker process"
Aug 13 14:22:39 ip-30-0-9-92.us-west-2.compute.internal systemd[1]: Starting nginx.service - The nginx HTTP and reverse proxy server...
Aug 13 14:22:39 ip-30-0-9-92.us-west-2.compute.internal nginx[42786]: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
Aug 13 14:22:39 ip-30-0-9-92.us-west-2.compute.internal nginx[42786]: nginx: configuration file /etc/nginx/nginx.conf test is successful
Aug 13 14:22:39 ip-30-0-9-92.us-west-2.compute.internal systemd[1]: Started nginx.service - The nginx HTTP and reverse proxy server.
[root@ip-30-0-9-92 html]# curl 54.153.64.229:80
this is a california server
[root@ip-30-0-9-92 html]# curl 3.147.62.83:80
this is a ohio server
[root@ip-30-0-9-92 html]# curl 44.243.17.227:80
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences
Search
ENG
IN
20:00
13-08-2024