

# 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?

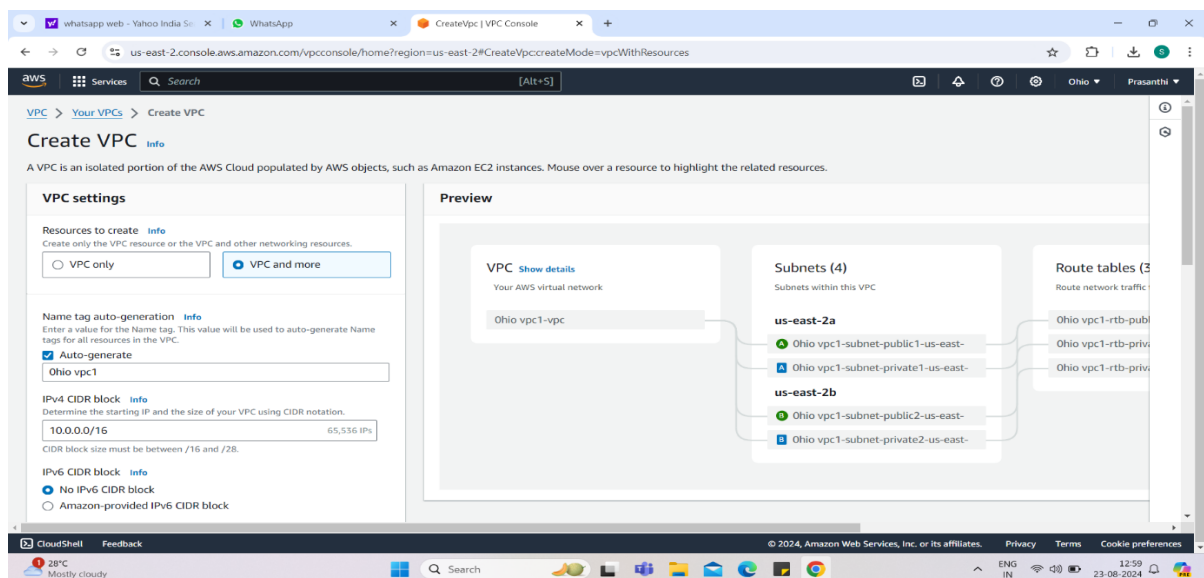
A transit gateway is a network transit hub that you can use to interconnect your virtual private clouds (VPCs) and on-premises networks. As your cloud infrastructure expands globally, interregion peering connects transit gateways together using the AWS global infrastructure.

## Create VPCs in THREE DIFFERENT REGIONS (Ohio California Oregon):

**Regions:** ohio, California, Oregon.

## STEPS:

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.



us-west-1.console.aws.amazon.com/vpcconsole/home?region=us-west-1#CreateVpccreateMode=vpcWithResources

aws Services Search [Alt+S]

VPC > Your VPCs > Create VPC

### Create VPC Info

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances. Mouse over a resource to highlight the related resources.

#### 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 auto-generation** Info  
Enter a value for the Name tag. This value will be used to auto-generate Name tags for all resources in the VPC.

☒ Auto-generate  
california

**IPv4 CIDR block** Info  
Determine the starting IP and the size of your VPC using CIDR notation.

20.0.0.0/16 65,536 IPs  
CIDR block size must be between /16 and /28.

**IPv6 CIDR block** Info  
☒ No IPv6 CIDR block  
☐ Amazon-provided IPv6 CIDR block

#### Preview

**VPC** Show details  
Your AWS virtual network  
california-vpc

**Subnets (4)**  
Subnets within this VPC

- us-west-1b
  - california-subnet-public1-us-west-
  - california-subnet-private1-us-west-
- us-west-1c
  - california-subnet-public2-us-west-
  - california-subnet-private2-us-west-

**Route tables (3)**  
Route network traffic

- california-rtb-public
- california-rtb-private
- california-rtb-private

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

28°C Mostly cloudy

us-west-2.console.aws.amazon.com/vpcconsole/home?region=us-west-2#CreateVpccreateMode=vpcWithResources

aws Services Search [Alt+S]

Oregon > Your VPCs > Create VPC

### Create VPC Info

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances. Mouse over a resource to highlight the related resources.

#### 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 auto-generation** Info  
Enter a value for the Name tag. This value will be used to auto-generate Name tags for all resources in the VPC.

☒ Auto-generate  
oregon vpc 3

**IPv4 CIDR block** Info  
Determine the starting IP and the size of your VPC using CIDR notation.

30.0.0.0/16 65,536 IPs  
CIDR block size must be between /16 and /28.

**IPv6 CIDR block** Info  
☒ No IPv6 CIDR block  
☐ Amazon-provided IPv6 CIDR block

#### Preview

**VPC** Show details  
Your AWS virtual network  
oregon vpc 3-vpc

**Subnets (4)**  
Subnets within this VPC

- us-west-2a
  - oregon vpc 3-subnet-public1-us-
  - oregon vpc 3-subnet-private1-us-
- us-west-2b
  - oregon vpc 3-subnet-public2-us-
  - oregon vpc 3-subnet-private2-us-

**Route tables (3)**  
Route network traffic

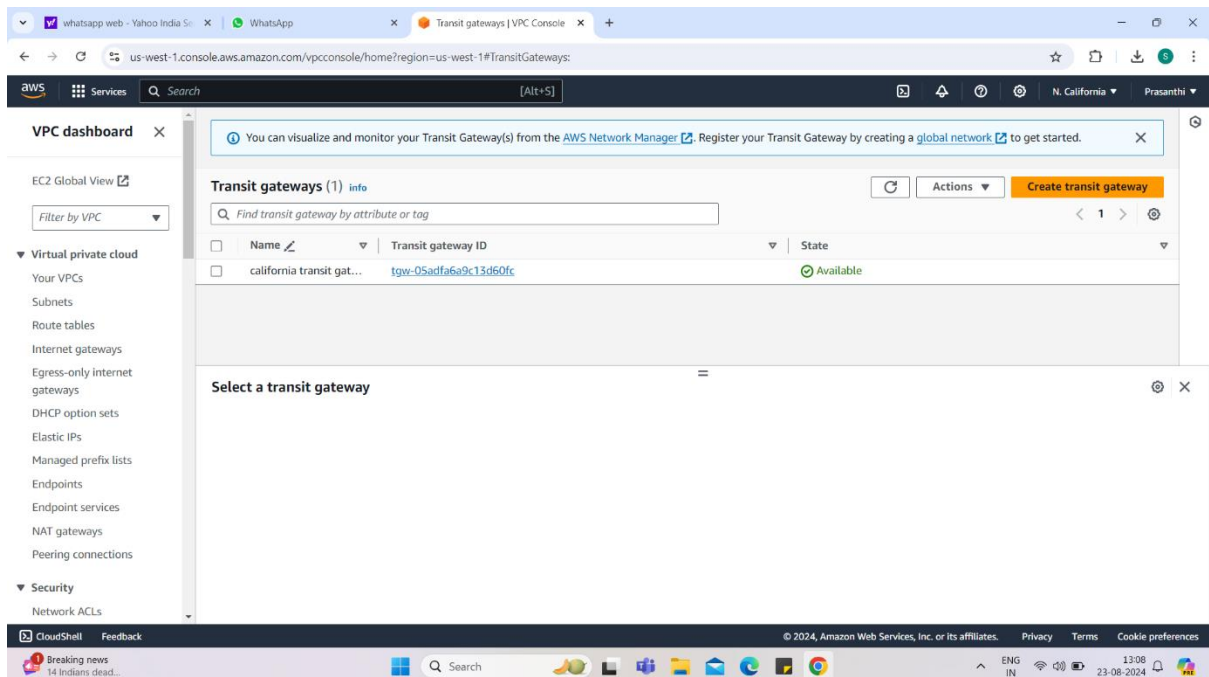
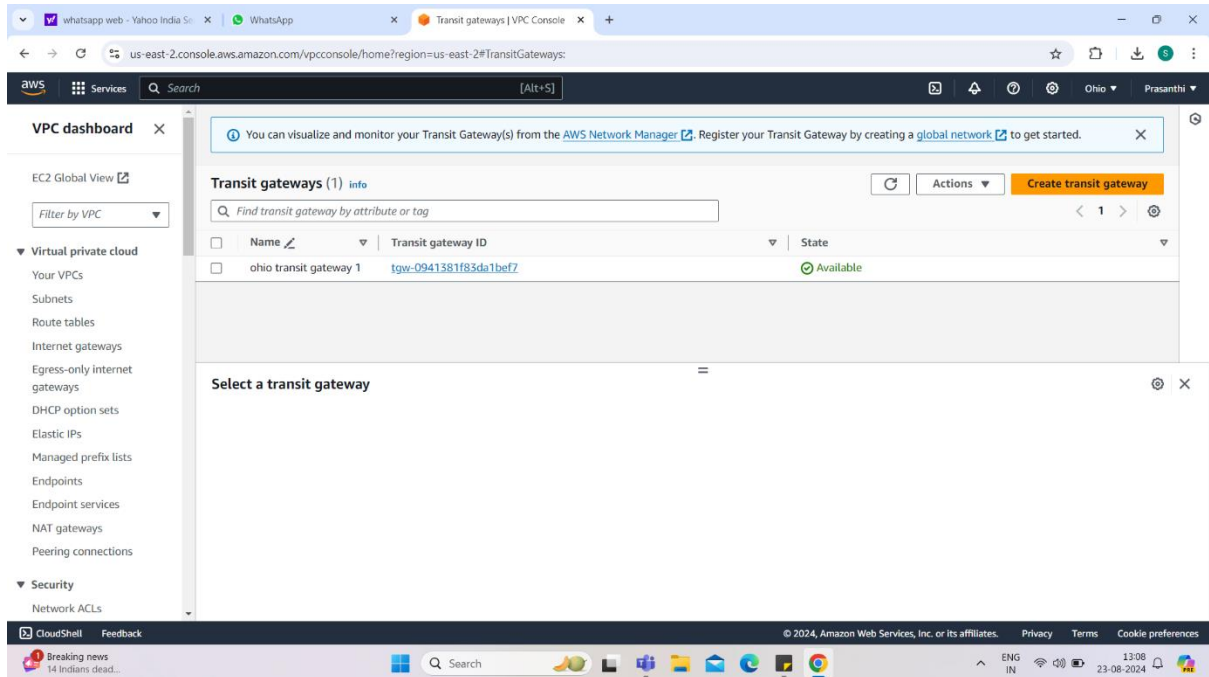
- oregon vpc 3-rtb-public
- oregon vpc 3-rtb-private
- oregon vpc 3-rtb-private

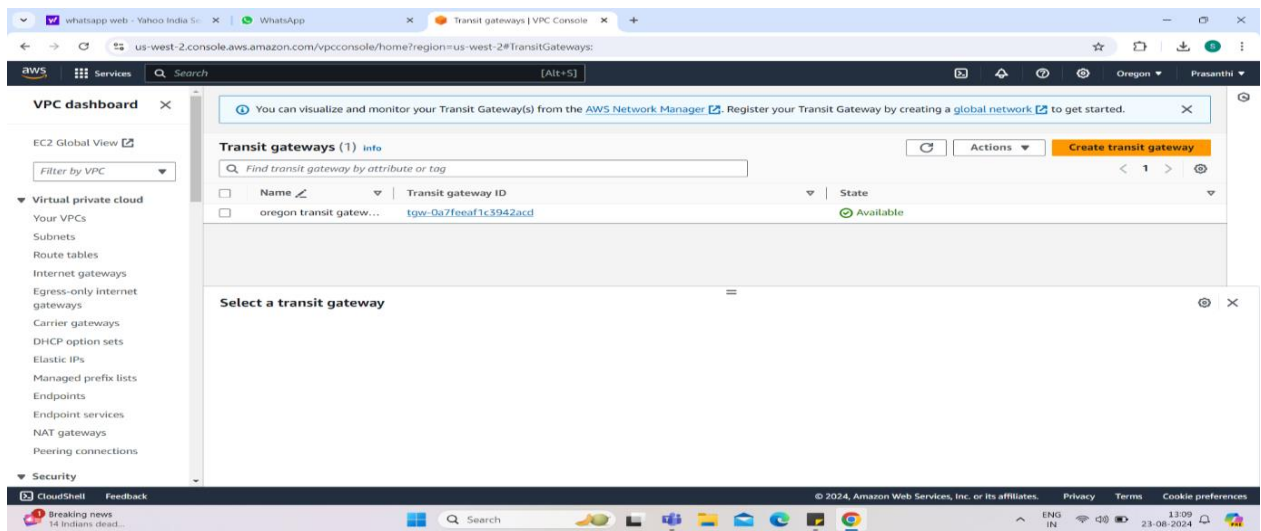
CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

28°C Mostly cloudy

## Create Transit Gateway in three regions:

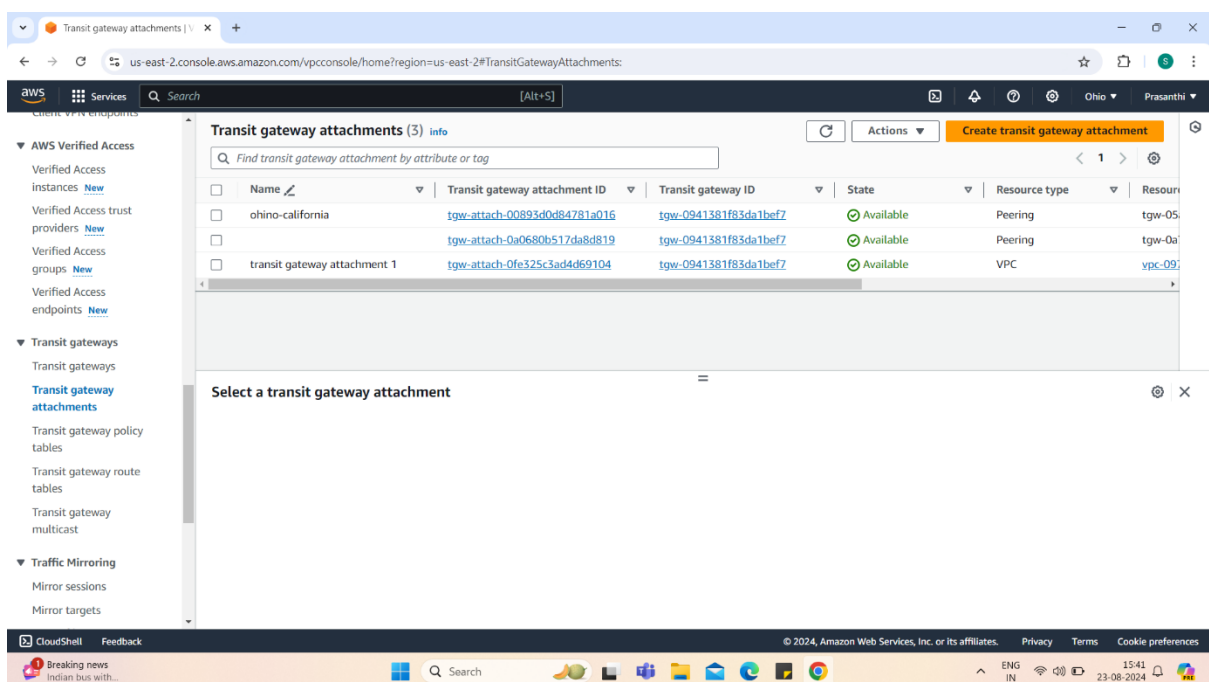
1. Go to transit gateway and select “Create Transit Gateway”.
2. Now create transit gateway in another two regions also.
3. Snapshots of transit gateway are attached below.





## 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.



5. Below snapshots shows that transit gateway attachment from region – region. i.e., Ohio-California, California-Oregon, Oregon-Ohio.

The screenshot displays the AWS Management Console interface for the us-west-1 region. The left-hand navigation pane shows the 'VPC dashboard' with various network-related options. The main content area is titled 'Transit gateway attachments (3)' and includes a search bar and a 'Create transit gateway attachment' button. A table lists three attachments:

Name	Transit gateway attachment ID	Transit gateway ID	State	Resource type	Resource
	tgw-attach-00893d0d84781a016	tgw-05adfa6a9c13d60fc	Available	Peering	tgw-05adfa6a9c13d60fc
california-oregon	tgw-attach-07741f7397d39b135	tgw-05adfa6a9c13d60fc	Available	Peering	tgw-05adfa6a9c13d60fc
transit gateway attachment 2	tgw-attach-0c41962c3a6aaf3f8	tgw-05adfa6a9c13d60fc	Available	VPC	vgp-0ad1b7aa79f6202783

Below the table, there is a 'Select a transit gateway attachment' dialog box.

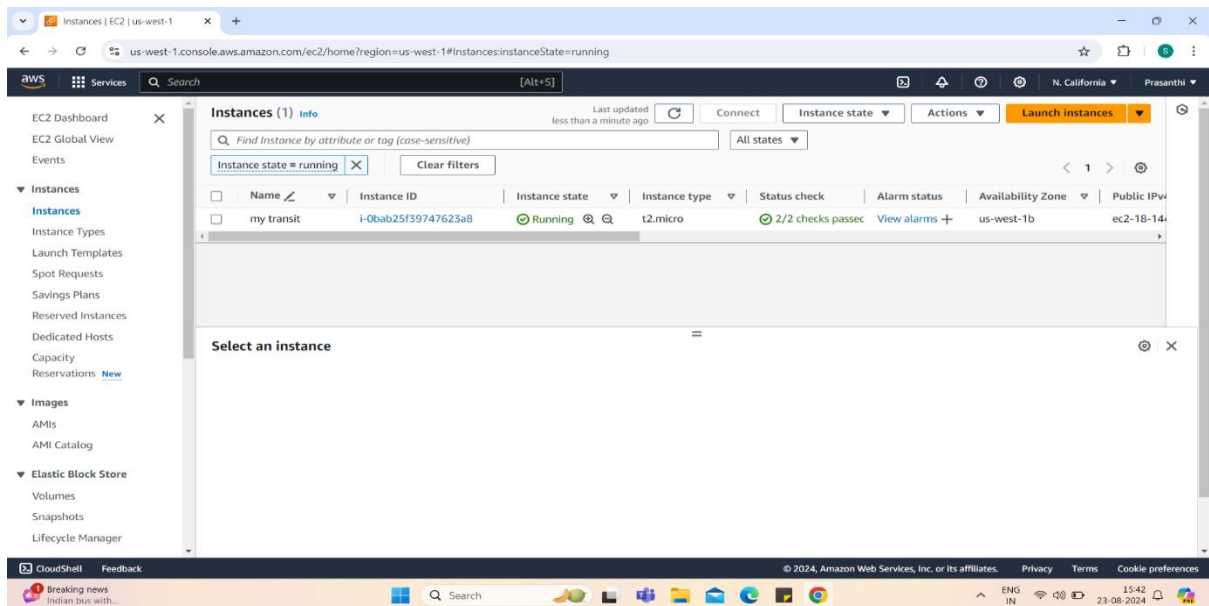
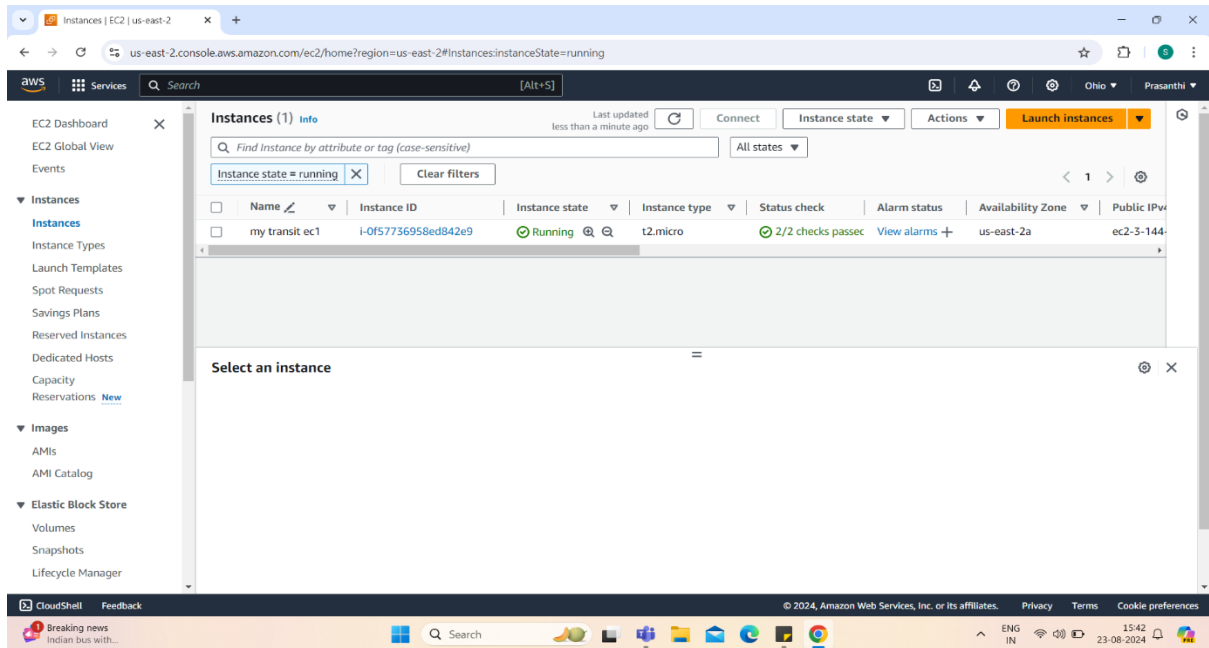
The screenshot displays the AWS Management Console interface for the us-west-2 region. The left-hand navigation pane shows the 'VPC dashboard' with various network-related options. The main content area is titled 'Transit gateway attachments (3)' and includes a search bar and a 'Create transit gateway attachment' button. A table lists three attachments:

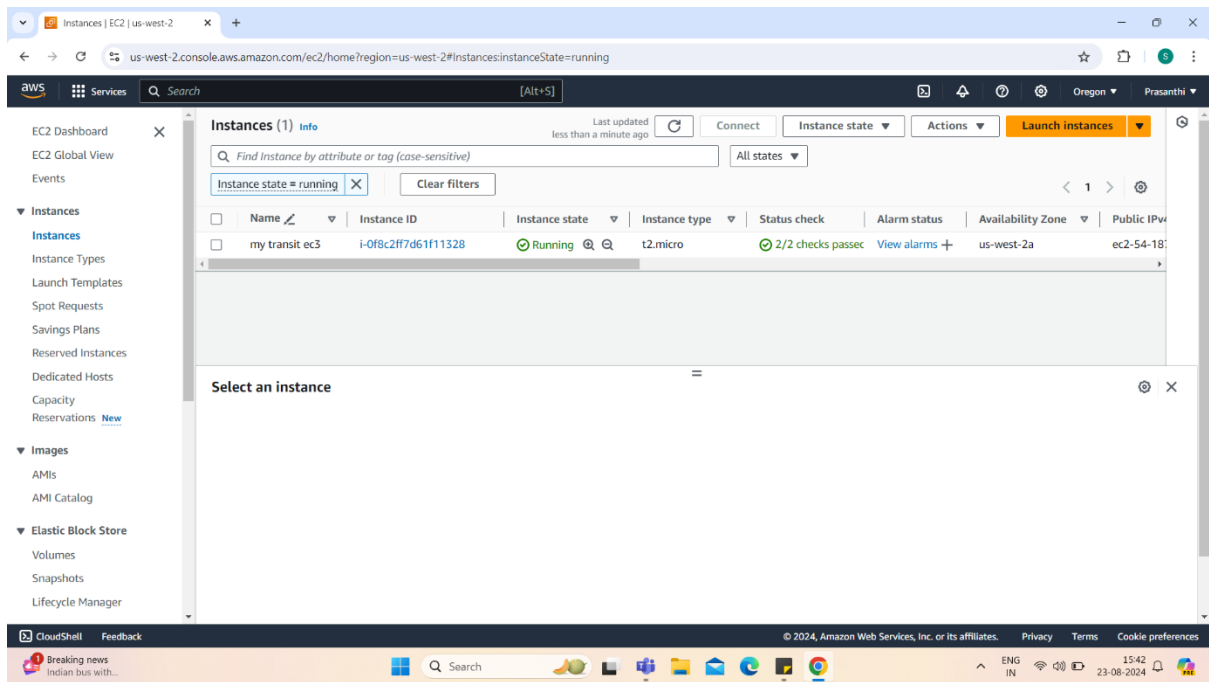
Name	Transit gateway attachment ID	Transit gateway ID	State	Resource type	Resource
	tgw-attach-07741f7397d39b135	tgw-0a7f7eeaf1c3942acd	Available	Peering	tgw-05adfa6a9c13d60fc
oregon -ohio	tgw-attach-0a0680b517da8d819	tgw-0a7f7eeaf1c3942acd	Available	Peering	tgw-09a0d1b7aa79f6202783
transit gateway attachment 3	tgw-attach-0d1b7aa79f6202783	tgw-0a7f7eeaf1c3942acd	Available	VPC	vgp-0ad1b7aa79f6202783

Below the table, there is a 'Select a transit gateway attachment' dialog box.

## Create EC2 instance:

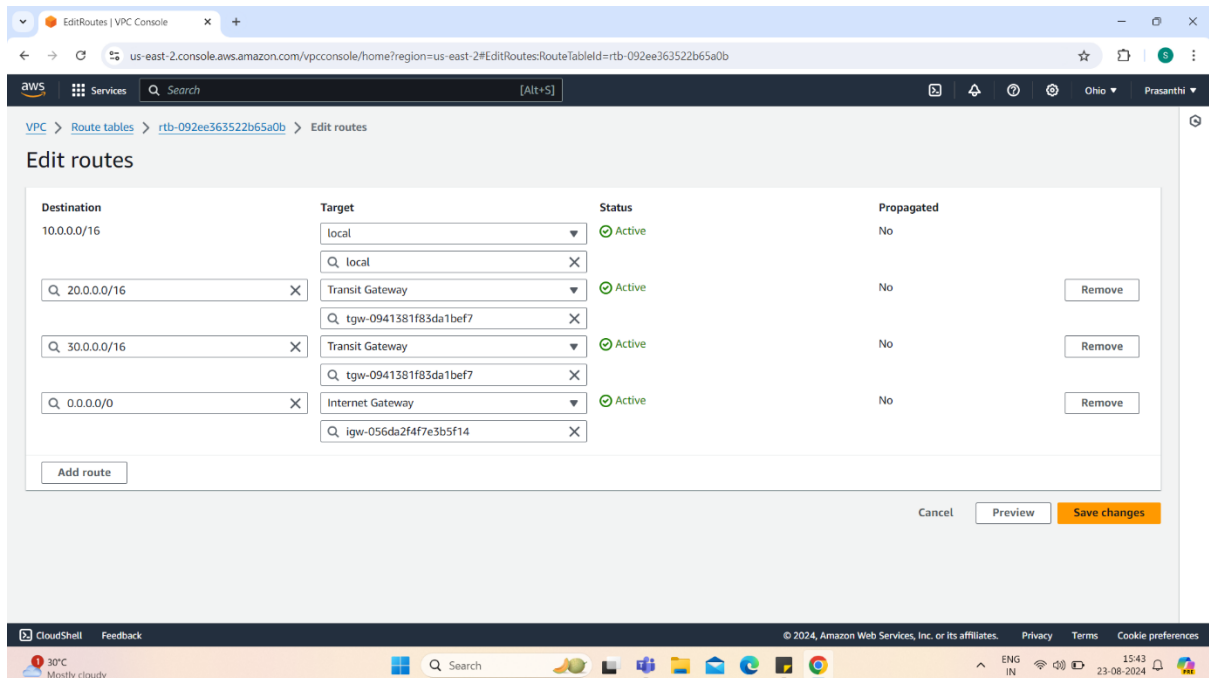
1. create three EC2 Instance for three VPCs.
2. Go to instance –launch instance – create key pair—network(edit)—select security group – launch instance.
3. some EC2 snapshots are attached below.





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

5. Some snapshots of route tables are given below.



us-west-1.console.aws.amazon.com/vpcconsole/home?region=us-west-1#EditRoutes:RouteTableId=rtb-00f6de401ce46d7bb

Services

Search

[Alt+S]

N. California

Prasanthi

VPC > Route tables > rtb-00f6de401ce46d7bb > Edit routes

Edit routes

Destination	Target	Status	Propagated
20.0.0.0/16	local	Active	No
10.0.0.0/16	local		
	Transit Gateway	Active	No
	tgw-05adfa6a9c13d60fc		
30.0.0.0/16	Transit Gateway	Active	No
	tgw-05adfa6a9c13d60fc		
0.0.0.0/0	Internet Gateway	Active	No
	igw-0b75bf654982112a8		

Add route

Cancel Preview Save changes

CloudShell Feedback

© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

30°C Mostly cloudy

Search

ENG IN 15:43 23-08-2024

us-west-2.console.aws.amazon.com/vpcconsole/home?region=us-west-2#EditRoutes:RouteTableId=rtb-0d22513b315871326

Services

Search

[Alt+S]

Oregon

Prasanthi

VPC > Route tables > rtb-0d22513b315871326 > Edit routes

Edit routes

Destination	Target	Status	Propagated
30.0.0.0/16	local	Active	No
10.0.0.0/16	local		
	Transit Gateway	Active	No
	tgw-0a7feeaf1c3942acd		
20.0.0.0/16	Transit Gateway	Active	No
	tgw-0a7feeaf1c3942acd		
0.0.0.0/0	Internet Gateway	Active	No
	igw-029b1360d988c5caf		

Add route

Cancel Preview Save changes

CloudShell Feedback

© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

30°C Mostly cloudy

Search

ENG IN 15:44 23-08-2024



- OUTPUT:**

[illegible]

```
root@ip-20-0-5-241:-  
[root@ip-20-0-5-241:~]# ssh -i "ec2-user@ec2-18-144-84-181.us-west-1.compute.amazonaws.com"  
Warning: Permanently added 'ec2-18-144-84-181.us-west-1.compute.amazonaws.com' (ED25519) to the list of known hosts.  
Amazon Linux 2023  
#####  
https://aws.amazon.com/linux/amazon-linux-2023  
  
Last login: Fri Aug 23 08:31:42 2024 from 13.52.6.115  
[ec2-user@ip-20-0-5-241 ~]$ sudo -i  
[root@ip-20-0-5-241 ~]# systemctl status nginx  
● nginx.service - The nginx HTTP and reverse proxy server  
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; disabled; preset: disabled)  
   Active: active (running) since Fri 2024-08-23 08:34:01 UTC; 1h 50min ago  
     Process: 26180 ExecStartPre=/usr/bin/rm -f /run/nginx.pid (code=exited, status=0/SUCCESS)  
     Process: 26181 ExecStartPre=/usr/sbin/nginx -t (code=exited, status=0/SUCCESS)  
     Process: 26182 ExecStart=/usr/sbin/nginx (code=exited, status=0/SUCCESS)  
    Main PID: 26183 (nginx)  
      Tasks: 2 (limit: 1112)  
     Memory: 2.2M  
        CPU: 59ms  
    CGroup: /system.slice/nginx.service  
            └─26183 "nginx: master process /usr/sbin/nginx"  
              └─26184 "nginx: worker process"  
  
Aug 23 08:34:01 ip-20-0-5-241.us-west-1.compute.internal systemd[1]: Starting nginx.service - The nginx HTTP and reverse proxy server...  
Aug 23 08:34:01 ip-20-0-5-241.us-west-1.compute.internal nginx[26181]: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok  
Aug 23 08:34:01 ip-20-0-5-241.us-west-1.compute.internal nginx[26181]: nginx: configuration file /etc/nginx/nginx.conf test is successful  
Aug 23 08:34:01 ip-20-0-5-241.us-west-1.compute.internal systemd[1]: Started nginx.service - The nginx HTTP and reverse proxy server.  
[root@ip-20-0-5-241 ~]# curl 18.144.84.181  
this is california  
[root@ip-20-0-5-241 ~]# curl 3.144.251.202  
this is ohio server  
[root@ip-20-0-5-241 ~]# curl 54.187.202.0  
this is oregon server  
[root@ip-20-0-5-241 ~]# |
```

```
[root@ip-30-0-0-131:~]#
[ILLDRKSTW-S3I8Z53 MINGW64 ~/OneDrive/Desktop
$ ssh -i "ec2.pem" ec2-user@ec2-54-187-202-0.us-west-2.compute.amazonaws.com
The authenticity of host 'ec2-54-187-202-0.us-west-2.compute.amazonaws.com (54.187.202.0)' can't be established.
ED25519 key fingerprint is SHA256:07ff1791IKqCAnnpSN9mNEw6z6UyGf8Pcwe+8XV.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-54-187-202-0.us-west-2.compute.amazonaws.com' (ED25519) to the list of known hosts.

#####
Amazon Linux 2023
#####
https://aws.amazon.com/linux/amazon-linux-2023

Last login: Fri Aug 23 08:35:29 2024 from 18.237.140.164
[ec2-user@ip-30-0-0-131 ~]$ sudo -l
[root@ip-30-0-0-131 ~]# systemctl status nginx
● nginx.service - The nginx HTTP and reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; disabled; preset: disabled)
   Active: active (running) since Fri 2024-08-23 08:39:34 UTC; 1h 47min ago
   Process: 26246 ExecStartPre=/usr/bin/rm -f /run/nginx.pid (code=exited, status=0/SUCCESS)
   Process: 26248 ExecStartPre=/usr/sbin/nginx -t (code=exited, status=0/SUCCESS)
   Process: 26259 ExecStart=/usr/sbin/nginx (code=exited, status=0/SUCCESS)
   Main PID: 26275 (nginx)
   Tasks: 2 (limit: 1112)
   Memory: 2.2M
   CPU: 63ms
   CGroup: /system.slice/nginx.service
           └─26275 nginx: master process /usr/sbin/nginx
             └─26276 nginx: worker process

Aug 23 08:39:34 ip-30-0-0-131.us-west-2.compute.internal systemd[1]: Starting nginx.service - The nginx HTTP and reverse proxy server...
Aug 23 08:39:34 ip-30-0-0-131.us-west-2.compute.internal nginx[26248]: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
Aug 23 08:39:34 ip-30-0-0-131.us-west-2.compute.internal nginx[26248]: nginx: configuration file /etc/nginx/nginx.conf test is successful
Aug 23 08:39:34 ip-30-0-0-131.us-west-2.compute.internal systemd[1]: Started nginx.service - The nginx HTTP and reverse proxy server.
[root@ip-30-0-0-131 ~]# curl 54.187.202.0
this is oregon server
[root@ip-30-0-0-131 ~]# curl 3.144.251.202
this is ohio server
[root@ip-30-0-0-131 ~]# curl 18.144.84.181
this is california
[root@ip-30-0-0-131 ~]#
```