



Assignment-07 (VPC).

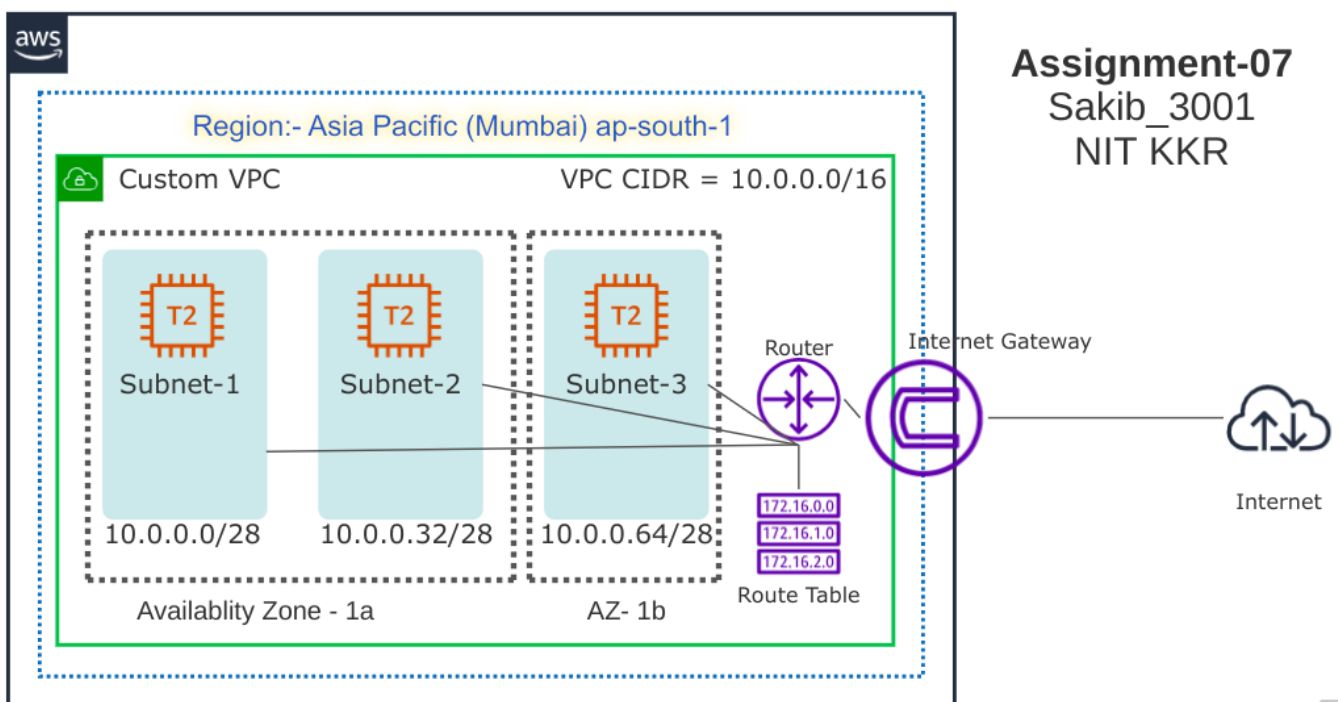
Sakib

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A high-level design for the assignment-07

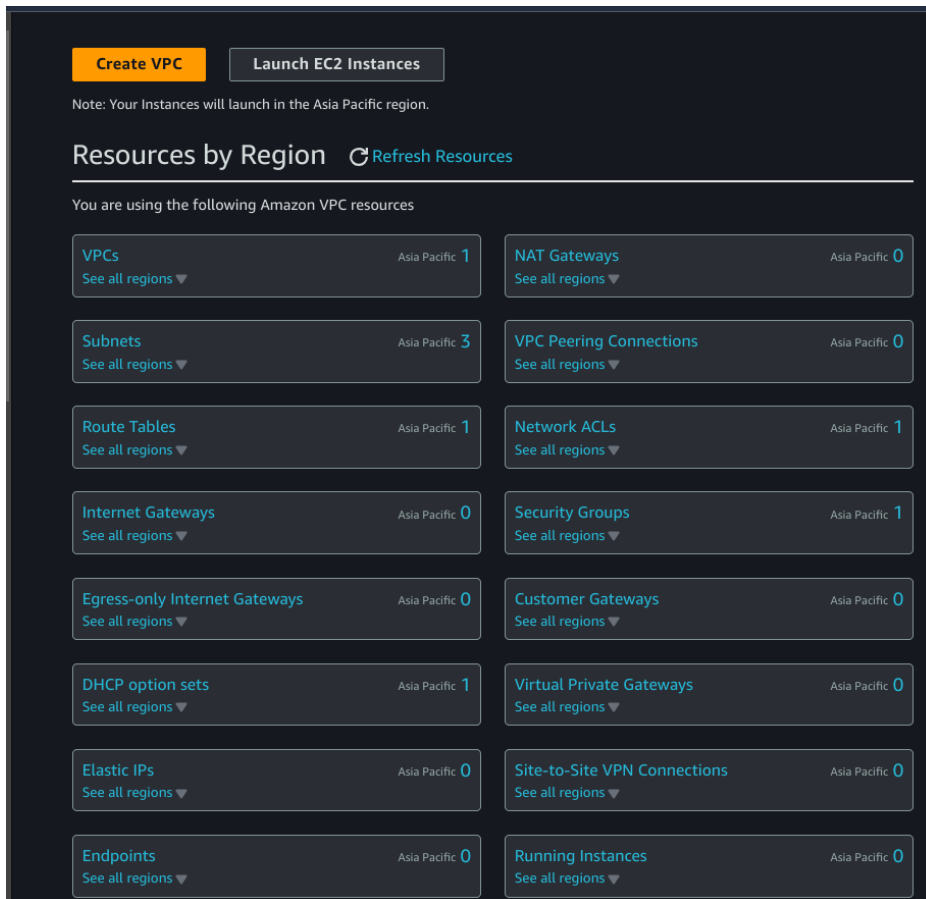
- And configure your EC2 linux instance inside your custom VPC
- and then create 3 subnets of that VPC
- Attach an internet gateway to your custom VPC



Setup Procedure

Step 1: Create a Custom VPC

1. Log in to the AWS Management Console.
2. Open the Amazon VPC service.
3. Click on "Your VPCs" in the left navigation pane



4. Click on "Create VPC" button.
5. Provide a name for your VPC, e.g., "Sakib_3001_VPC".
6. Specify the IPv4 CIDR block "10.0.0.0/16" and 7. Click on "Create"

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.

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.

Sakib_3001_VPC

IPv4 CIDR block [Info](#)

☒ IPv4 CIDR manual input
 ☐ IPAM-allocated IPv4 CIDR block

IPv4 CIDR

10.0.0.0/16

IPv6 CIDR block [Info](#)

☒ No IPv6 CIDR block
 ☐ IPAM-allocated IPv6 CIDR block
 ☐ Amazon-provided IPv6 CIDR block
 ☐ IPv6 CIDR owned by me

Tenancy [Info](#)

Default

Tags

VPC has been created successfully.

You successfully created vpc-02092ff456a5b4a5f / Sakib_3001_VPC

VPC > Your VPCs > vpc-02092ff456a5b4a5f

vpc-02092ff456a5b4a5f / Sakib_3001_VPC

Actions

Details Info			
VPC ID vpc-02092ff456a5b4a5f	State Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP option set dopt-01d8e61246ecba6ef	Main route table rtb-039306fed5cf7acd8	Main network ACL acl-03c7f1bd902e28bc4
Default VPC No	IPv4 CIDR 10.0.0.0/16	IPv6 pool -	IPv6 CIDR (Network border group) -
Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID 437884810907	

Resource map New CIDRs Flow logs Tags

Resource map Info

VPC Show details
Your AWS virtual network

Sakib_3001_VPC

Subnets (0)
Subnets within this VPC

Route tables (1)
Route network traffic to resources

rtb-039306fed5cf7acd8

Network connections (0)
Connections to other networks

Introducing the VPC resource map

Step 2: Create 3 Subnets in the Custom VPC

1. In the Amazon VPC service, click on "Subnets" in the left navigation pane.
2. Click on "Create subnet".
3. Provide a name for the subnet,"Subnet-1,SUBnet-2,Subnet-3".
4. Select the VPC you created in Step 1.
5. Choose an availability zone for the subnet.
6. Specify the IPv4 CIDR block for the subnet, e.g., "10.0.0.0/28,10.0.0.32/28,10.0.0.64/28" and Click on "Create".

Create subnet Info

VPC

VPC ID
Create subnets in this VPC.

vpc-02092ff456a5b4a5f (Sakib_3001_VPC)

Associated VPC CIDRs

IPv4 CIDRs
10.0.0.0/16

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.

Subnet-1
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.

Asia Pacific (Mumbai) / ap-south-1a

IPv4 CIDR block Info
10.0.0.0/28

Repeat Steps 3.2 to 3.7 twice more to create two additional subnets with different names and CIDR blocks for your VPC.

Create subnet

Info

VPC

VPC ID

Create subnets in this VPC.

vpc-02092ff456a5b4a5f (Sakib_3001_VPC)

Associated VPC CIDRs

IPv4 CIDRs

10.0.0.0/16

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.

Subnet-2

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.

Asia Pacific (Mumbai) / ap-south-1a

IPv4 CIDR block

Info

10.0.0.32/28

Create subnet

Info

VPC

VPC ID

Create subnets in this VPC.

vpc-02092ff456a5b4a5f (Sakib_3001_VPC)

Associated VPC CIDRs

IPv4 CIDRs

10.0.0.0/16

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.

Subnet-3

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.

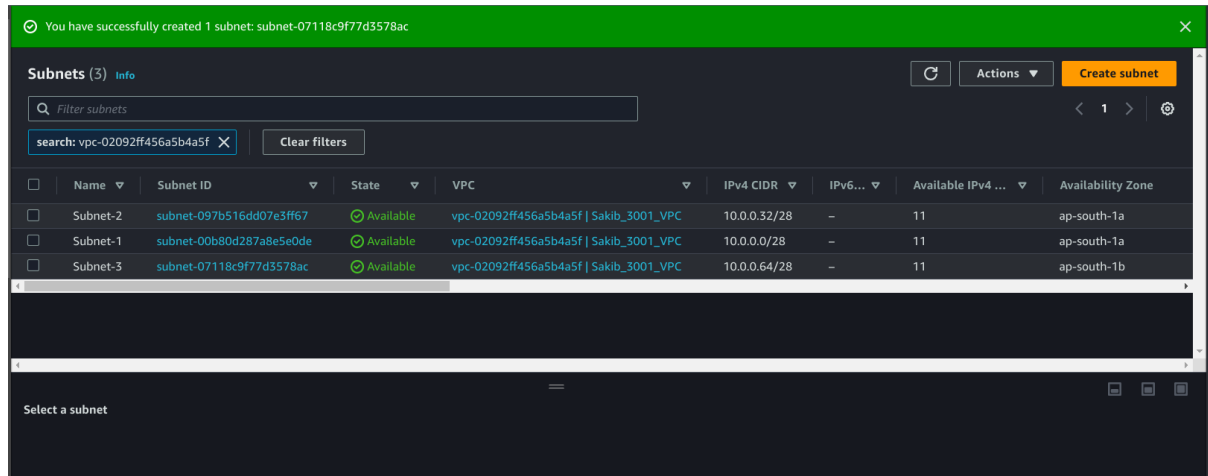
Asia Pacific (Mumbai) / ap-south-1b

IPv4 CIDR block

Info

10.0.0.64/28

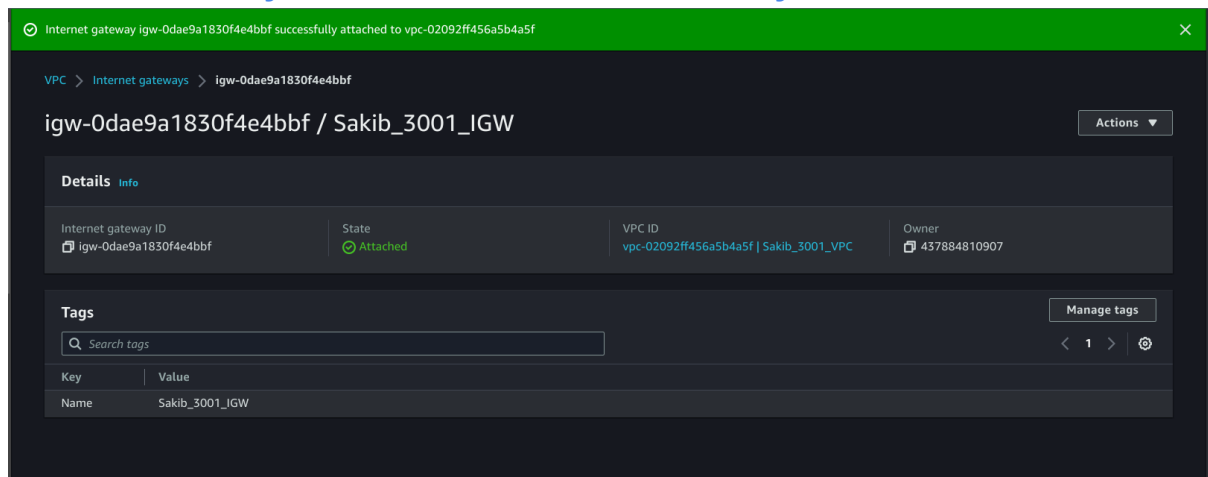
3 subnets have been created successfully.



Step 3: Attach an Internet Gateway to the Custom VPC

1. Click on "Internet Gateways" in the left navigation pane.
2. Click on "Create internet gateway".
3. Provide a name for the internet gateway, e.g., "Sakib_3001_IGW".
4. Click on "Create".
5. Select the internet gateway you created and click on "Actions".
6. Choose "Attach to VPC" from the dropdown menu.
7. Select the VPC created in Step 1 and click on "Attach".

Internet Gateway has been created successfully.



Step 4: Create and Update the route table for accessing internet.

Step 1: Create a Route Table

1. In the Amazon VPC service, click on "Route Tables" in the left navigation pane.
2. Click on "Create route table".

3. Select the VPC you created in the previous steps.
4. Provide a name for the route table, e.g., "Sakib_3001_RT".
5. Click on "Create".

Route table rtb-0ccc5c1d3e12c7b4a | Sakib_3001_RT was created successfully.

VPC > Route tables > rtb-0ccc5c1d3e12c7b4a

rtb-0ccc5c1d3e12c7b4a / Sakib_3001_RT

[Actions](#)

[You can now check network connectivity with Reachability Analyzer](#) [Run Reachability Analyzer](#)

Details [Info](#)

Route table ID rtb-0ccc5c1d3e12c7b4a	Main No	Explicit subnet associations -	Edge associations -
VPC vpc-02092ff456a5b4a5f Sakib_3001_VPC	Owner ID 437884810907		

[Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (1) [Edit routes](#)

[Both](#) [<](#) [1](#) [>](#) [⌕](#)

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No

Step 2: Associate Subnets with the Route Table

1. "Subnet Associations" tab of the route table, click on "Edit subnet associations".
2. Select the subnet(s) you want to associate with the route table. These subnets should be the ones where you want to enable internet access.
3. Click on "Save".

You have successfully updated subnet associations for rtb-0ccc5c1d3e12c7b4a / Sakib_3001_RT.

VPC > Route tables > rtb-0ccc5c1d3e12c7b4a

rtb-0ccc5c1d3e12c7b4a / Sakib_3001_RT

[Actions](#)

[You can now check network connectivity with Reachability Analyzer](#) [Run Reachability Analyzer](#)

Details [Info](#)

Route table ID rtb-0ccc5c1d3e12c7b4a	Main No	Explicit subnet associations 3 subnets	Edge associations -
VPC vpc-02092ff456a5b4a5f Sakib_3001_VPC	Owner ID 437884810907		

[Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Explicit subnet associations (3) [Edit subnet associations](#)

[<](#) [1](#) [>](#) [⌕](#)

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
Subnet-2	subnet-097b516dd07e3ff67	10.0.0.32/28	-
Subnet-1	subnet-00b80d287a8e5e0de	10.0.0.0/28	-
Subnet-3	subnet-07118c9f77d3578ac	10.0.0.64/28	-

Step 3: Edit the Route Table

1. Select the route table you just created from the list.
2. In the "Routes" tab, click on "Edit routes".

3. Click on "Add route".
4. In the "Destination" field, enter "0.0.0.0/0" to represent the default route for all internet traffic.
5. In the "Target" field, select the internet gateway you attached to the VPC in the previous steps.
6. Click on "Save routes".

Updated routes for rtb-0ccc5c1d3e12c7b4a / Sakib_3001_RT successfully

VPC > Route tables > rtb-0ccc5c1d3e12c7b4a

rtb-0ccc5c1d3e12c7b4a / Sakib_3001_RT

You can now check network connectivity with Reachability Analyzer [Run Reachability Analyzer](#)

Details info

Route table ID rtb-0ccc5c1d3e12c7b4a	Main No	Explicit subnet associations 3 subnets	Edge associations -
VPC vpc-02092ff456a5b4a5f Sakib_3001_VPC	Owner ID 437884810907		

Routes Subnet associations Edge associations Route propagation Tags

Routes (2) [Edit routes](#)

Filter routes Both

Destination	Target	Status	Propagated
0.0.0.0/0	igw-0dae9a1830f4e4bbf	Active	No
10.0.0.0/16	local	Active	No

This is the final outcome for the custom VPC

vpc-02092ff456a5b4a5f / Sakib_3001_VPC

Details info

VPC ID vpc-02092ff456a5b4a5f	State Available	DNS hostnames Enabled	DNS resolution Enabled
Tenancy Default	DHCP option set dopt-01d8e61246ecba6ef	Main route table rtb-039306fed5cf7acd8	Main network ACL acl-03c7f1bd902e28bc4
Default VPC No	IPv4 CIDR 10.0.0.0/16	IPv6 pool -	IPv6 CIDR (Network border group) -
Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID 437884810907	

Resource map New CIDRs Flow logs Tags

Resource map info

VPC [Show details](#)
Your AWS virtual network

Sakib_3001_VPC

Subnets (3)
Subnets within this VPC

ap-south-1a
Subnet-1
Subnet-2
ap-south-1b
Subnet-3

Route tables (2)
Route network traffic to resources

rtb-039306fed5cf7acd8
Sakib_3001_RT

Network connections (1)
Connections to other networks

Sakib_3001_IGW

Introducing the VPC resource map
Solid lines represent relationships between resources in your VPC. Dotted lines

Step 5 : Configure EC2 Linux Instance

1. Open the Amazon EC2 service in the AWS Management Console.
2. Click on "Launch Instances".
3. Select an Amazon Machine Image (AMI) for your EC2 instance.
4. Choose an instance type and configure other details as needed.
5. In the "Configure Instance" section, select the VPC you created in Step 1 for the "Network" setting.
6. Configure other settings, such as storage, tags, security groups, and key pairs.
7. Review the configuration and launch the instance.

Name

Sakib_3001_EC2

Add additional tags

► Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

► Instance type Info

► 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.

▼ Network settings Info

VPC - required Info

vpc-02092ff456a5b4a5f (Sakib_3001_VPC)
10.0.0.0/16

Subnet Info

subnet-00b80d287a8e5e0de Subnet-1
VPC: vpc-02092ff456a5b4a5f Owner: 437884810907
Availability Zone: ap-south-1a IP addresses available: 11 CIDR: 10.0.0.0/28

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.

▼ Summary

Number of instances Info
1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.0.2...read more
ami-057752b3f1d6c4d6c

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Launch instance

Review commands

An EC2 instance created in the Custom VPC and within the subnet-1

Instance summary for i-087a2e226dd6dda82 (Sakib_3001_EC2) Info			Refresh	Connect	Instance state ▼	Actions ▼
Updated less than a minute ago						
Instance ID i-087a2e226dd6dda82 (Sakib_3001_EC2)	Public IPv4 address 43.205.177.143 open address	Private IPv4 addresses 10.0.0.14				
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-43-205-177-143.ap-south-1.compute.amazonaws.com open address				
Hostname type IP name: ip-10-0-0-14.ap-south-1.compute.internal	Private IP DNS name (IPv4 only) ip-10-0-0-14.ap-south-1.compute.internal	Elastic IP addresses -				
Answer private resource DNS name -	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more				
Auto-assigned IP address 43.205.177.143 [Public IP]	VPC ID vpc-02092ff456a5b4a5f (Sakib_3001_VPC)	Auto Scaling Group name -				
IAM Role -	Subnet ID subnet-00b80d287a8e5e0de (Subnet-1)					
IMDSv2 Required						

From the instance Internet is accessible via Internet Gateway:

Curl is working from terminal:

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

[ec2-user@ip-10-0-0-14 ~]$ hostname
ip-10-0-0-14.ap-south-1.compute.internal
[ec2-user@ip-10-0-0-14 ~]$ whoami
ec2-user
[ec2-user@ip-10-0-0-14 ~]$ curl google.com
<HTML><HEAD><meta http-equiv="content-type" content="text/html; charset=utf-8">
<TITLE>301 Moved</TITLE></HEAD><BODY>
<H1>301 Moved</H1>
The document has moved
<A HREF="http://www.google.com/">here</A>.
</BODY></HTML>
[ec2-user@ip-10-0-0-14 ~]$
```

i-087a2e226dd6dda82 (Sakib_3001_EC2)

PublicIPs: 43.205.177.143 PrivateIPs: 10.0.0.14

Ping is also working from terminal:

```
[ec2-user@ip-10-0-0-14 ~]$ ping google.com
PING google.com (142.250.183.142): 56(84) bytes of data.
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=1 ttl=51 time=1.49 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=2 ttl=51 time=1.58 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=3 ttl=51 time=1.39 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=4 ttl=51 time=1.39 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=5 ttl=51 time=1.43 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=6 ttl=51 time=1.42 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=7 ttl=51 time=1.42 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=8 ttl=51 time=1.44 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=9 ttl=51 time=1.43 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=10 ttl=51 time=1.44 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=11 ttl=51 time=1.44 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=12 ttl=51 time=1.70 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=13 ttl=51 time=1.51 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=14 ttl=51 time=1.42 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=15 ttl=51 time=1.51 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=16 ttl=51 time=1.40 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=17 ttl=51 time=1.43 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=18 ttl=51 time=1.45 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=19 ttl=51 time=1.46 ms
64 bytes from bom07s31-in-f14.1e100.net (142.250.183.142): icmp_seq=20 ttl=51 time=1.46 ms
^C
--- google.com ping statistics ---
20 packets transmitted, 20 received, 0% packet loss, time 19026ms
rtt min/avg/max/mdev = 1.392/1.459/1.702/0.070 ms
[ec2-user@ip-10-0-0-14 ~]$
```

i-087a2e226dd6dda82 (Sakib_3001_EC2)

PublicIPs: 43.205.177.143 PrivateIPs: 10.0.0.14

Hence the whole system is working and an instance can access internet from the newly created VPC under any subnet of three.

Thanks

End of the Assignment.