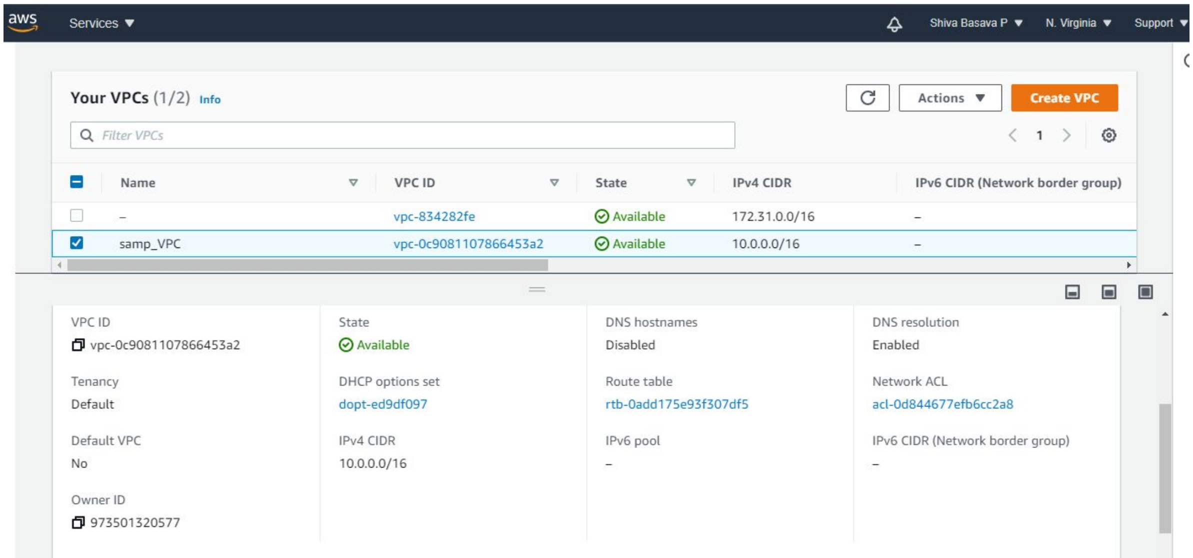
Assessment Project - 1

Project Title:

Deploying a Highly Available Web Application and Bastion Host in AWS

Following are the sequence of steps & screenshots for the solution,

I. Created **VPC** - **samp_VPC** (IPV4 CIDR - **10.0.0.0/16**)

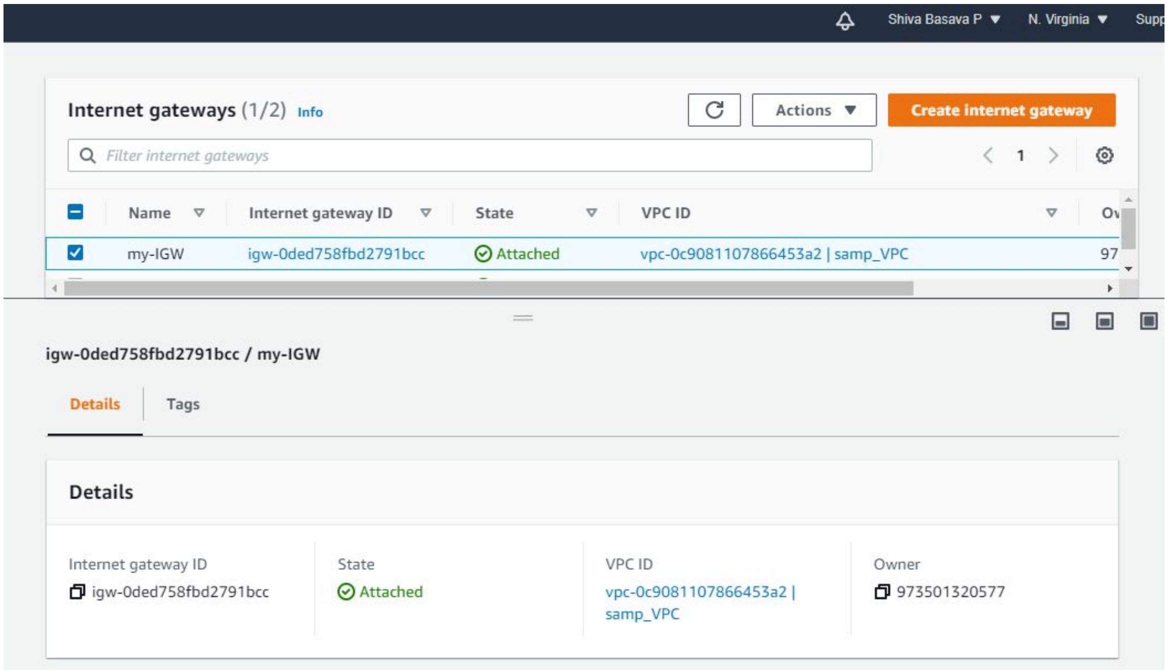


Your VPCs (1/2) Info

☐	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR (Network border group)
☐	–	vpc-834282fe	Available	172.31.0.0/16	–
☑	samp_VPC	vpc-0c9081107866453a2	Available	10.0.0.0/16	–

VPC ID vpc-0c9081107866453a2	State Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP options set dopt-ed9df097	Route table rtb-0add175e93f307df5	Network ACL acl-0d844677efb6cc2a8
Default VPC No	IPv4 CIDR 10.0.0.0/16	IPv6 pool –	IPv6 CIDR (Network border group) –
Owner ID 973501320577			

II. Created **Internet Gateway** - **my-IGW** & Attached it to the above VPC.



Internet gateways (1/2) Info

☐	Name	Internet gateway ID	State	VPC ID	Ov
☑	my-IGW	igw-0ded758fbd2791bcc	Attached	vpc-0c9081107866453a2 | samp_VPC	97

igw-0ded758fbd2791bcc / my-IGW

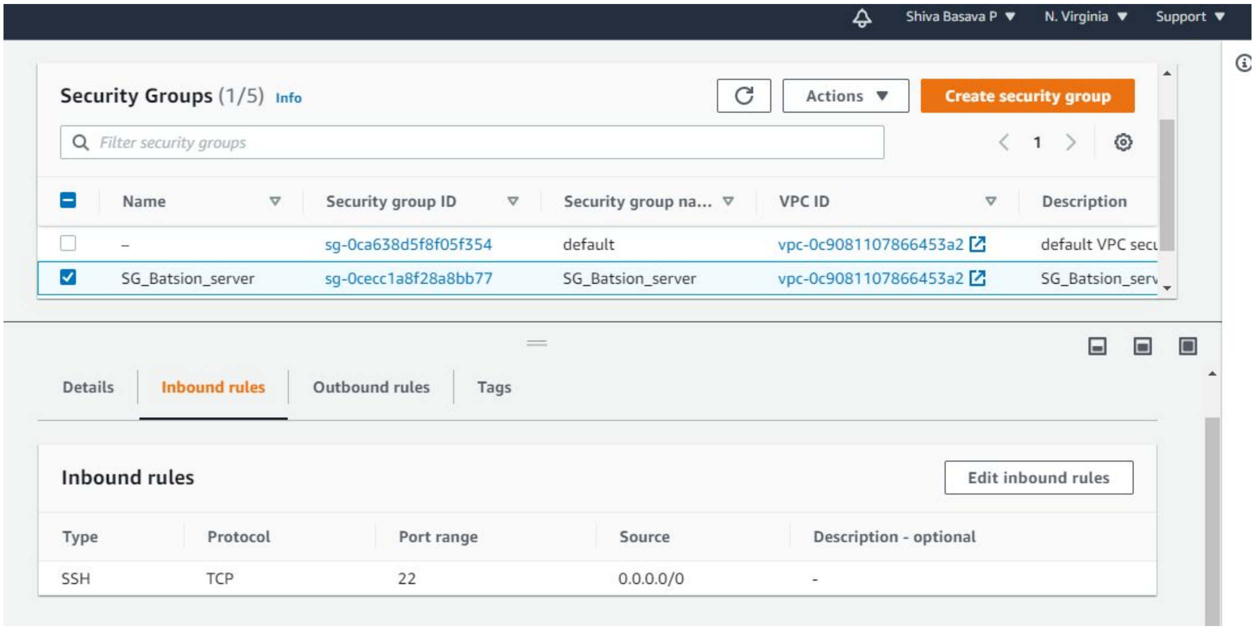
Details

Internet gateway ID	State	VPC ID	Owner
igw-0ded758fbd2791bcc	Attached	vpc-0c9081107866453a2 | samp_VPC	973501320577

III. Created **Security Groups** in the above VPC for - Bastion Server, Web-Server & Load Balancer.

1. **Security Group** for Bastion Server - **SG_Batsion_server.**

Inbound Rules for **SG_Batsion_server**



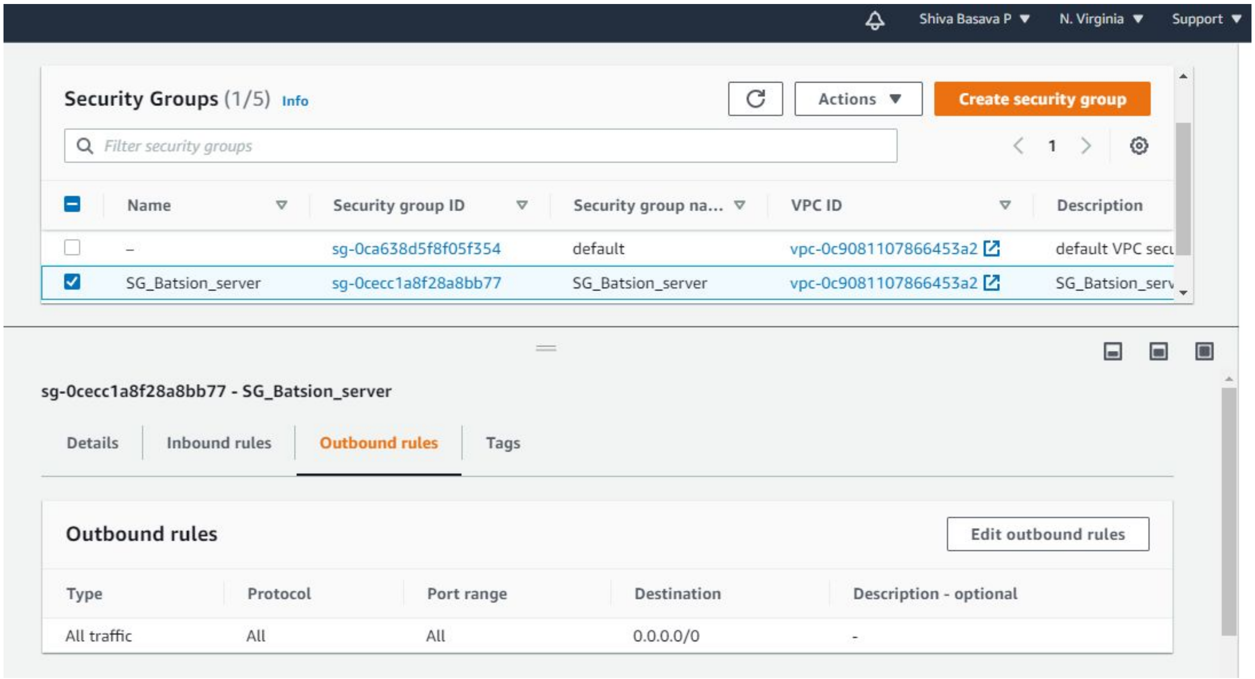
Security Groups (1/5) Info

☐	Name	Security group ID	Security group na...	VPC ID	Description
☐	–	sg-0ca638d5f8f05f354	default	vpc-0c9081107866453a2	default VPC secu
☑	SG_Batsion_server	sg-0cecc1a8f28a8bb77	SG_Batsion_server	vpc-0c9081107866453a2	SG_Batsion_serv

Inbound rules

Type	Protocol	Port range	Source	Description - optional
SSH	TCP	22	0.0.0.0/0	-

Outbound Rules(Default) for **SG_Batsion_server**



Security Groups (1/5) Info

☐	Name	Security group ID	Security group na...	VPC ID	Description
☐	–	sg-0ca638d5f8f05f354	default	vpc-0c9081107866453a2	default VPC secu
☑	SG_Batsion_server	sg-0cecc1a8f28a8bb77	SG_Batsion_server	vpc-0c9081107866453a2	SG_Batsion_serv

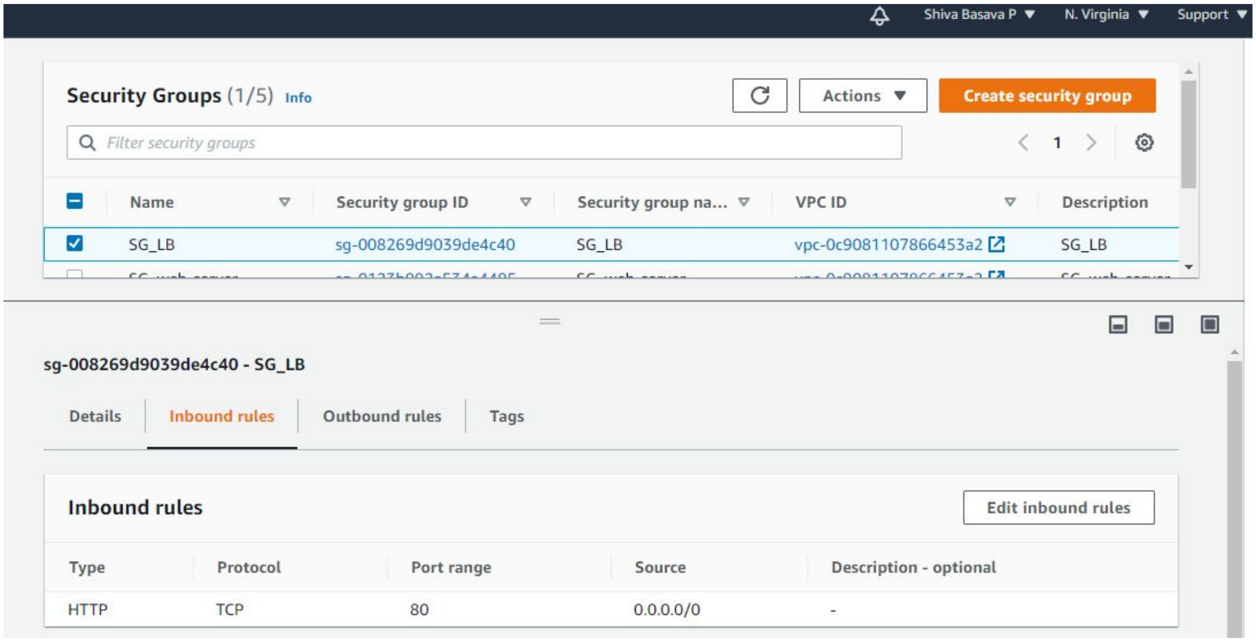
sg-0cecc1a8f28a8bb77 - SG_Batsion_server

Outbound rules

Type	Protocol	Port range	Destination	Description - optional
All traffic	All	All	0.0.0.0/0	-

2. **Security Group** for Load Balancer - **SG_LB**

Inbound Rules for **SG_LB**



Security Groups (1/5)

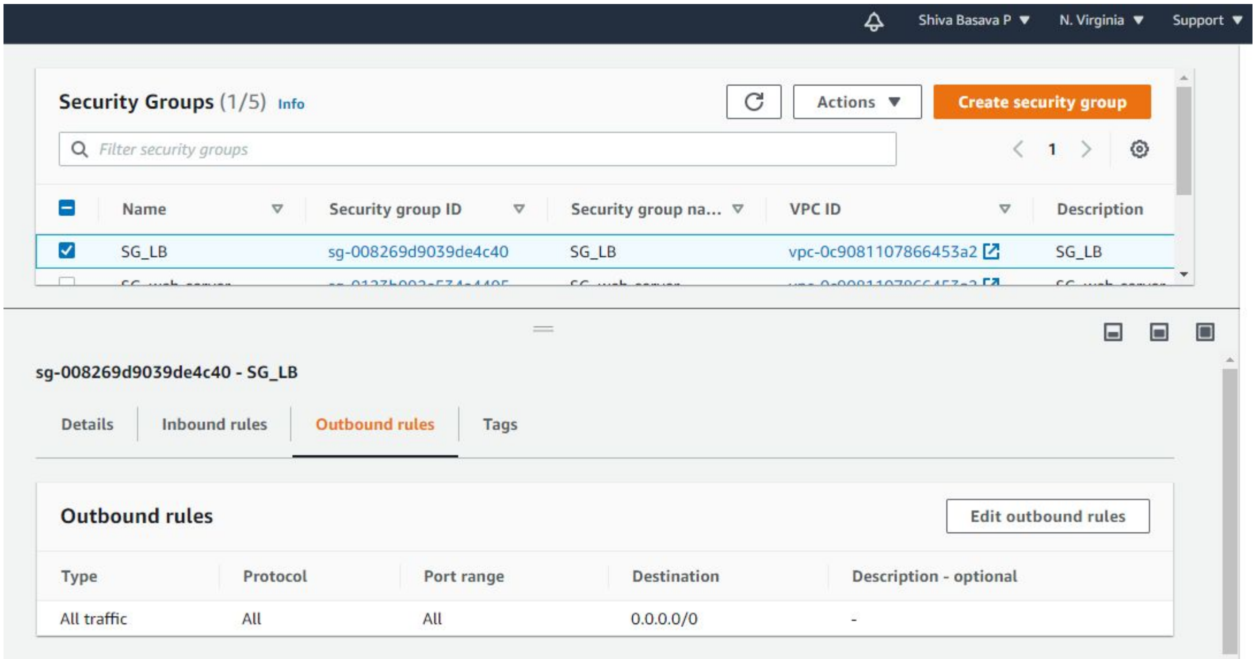
Name	Security group ID	Security group na...	VPC ID	Description
☑ SG_LB	sg-008269d9039de4c40	SG_LB	vpc-0c9081107866453a2	SG_LB

sg-008269d9039de4c40 - SG_LB

Inbound rules

Type	Protocol	Port range	Source	Description - optional
HTTP	TCP	80	0.0.0.0/0	-

Outbound Rules(Default) for **SG_LB**



Security Groups (1/5)

Name	Security group ID	Security group na...	VPC ID	Description
☑ SG_LB	sg-008269d9039de4c40	SG_LB	vpc-0c9081107866453a2	SG_LB

sg-008269d9039de4c40 - SG_LB

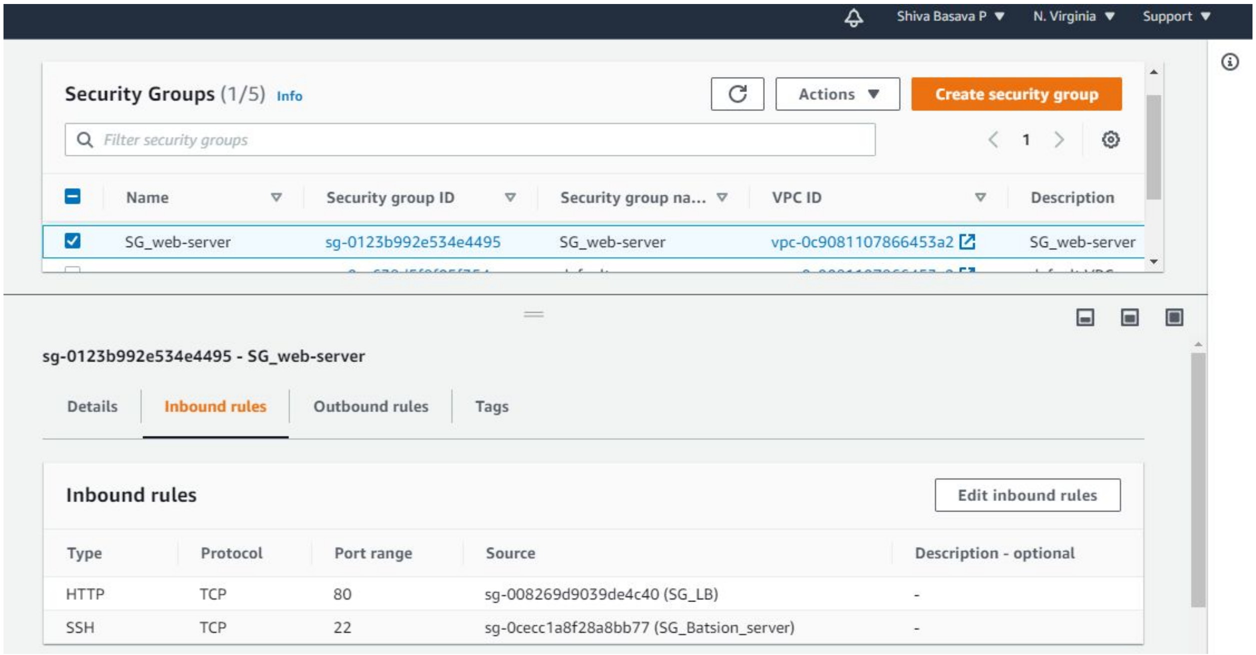
Outbound rules

Type	Protocol	Port range	Destination	Description - optional
All traffic	All	All	0.0.0.0/0	-

3. **Security Group** for Web-Server - **SG_web-server**

(A common Security Group for both Web-Server1 & Web-Server2)

Inbound Rules for **SG_web-server**, copy from **Security Group** of Bastion Server & Load Balancer



Security Groups (1/5) Info

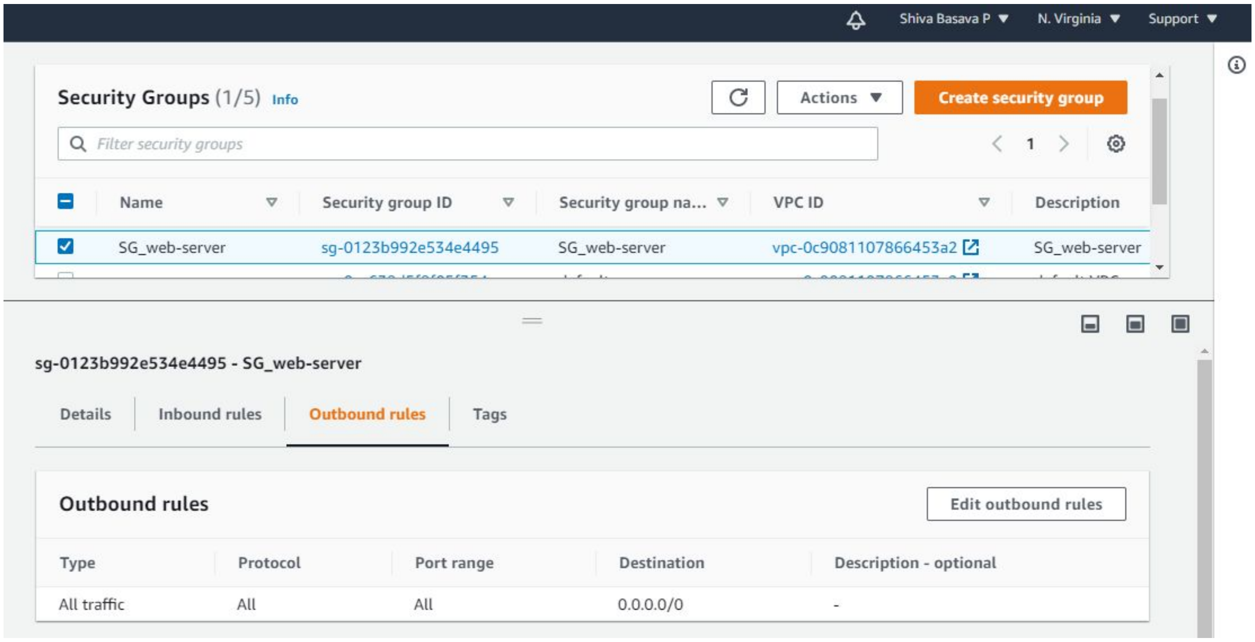
☐	Name	Security group ID	Security group na...	VPC ID	Description
☑	SG_web-server	sg-0123b992e534e4495	SG_web-server	vpc-0c9081107866453a2	SG_web-server

sg-0123b992e534e4495 - SG_web-server

Inbound rules

Type	Protocol	Port range	Source	Description - optional
HTTP	TCP	80	sg-008269d9039de4c40 (SG_LB)	-
SSH	TCP	22	sg-0cecc1a8f28a8bb77 (SG_Batsion_server)	-

Outbound Rules(Default) for **SG_web-server**



Security Groups (1/5) Info

☐	Name	Security group ID	Security group na...	VPC ID	Description
☑	SG_web-server	sg-0123b992e534e4495	SG_web-server	vpc-0c9081107866453a2	SG_web-server

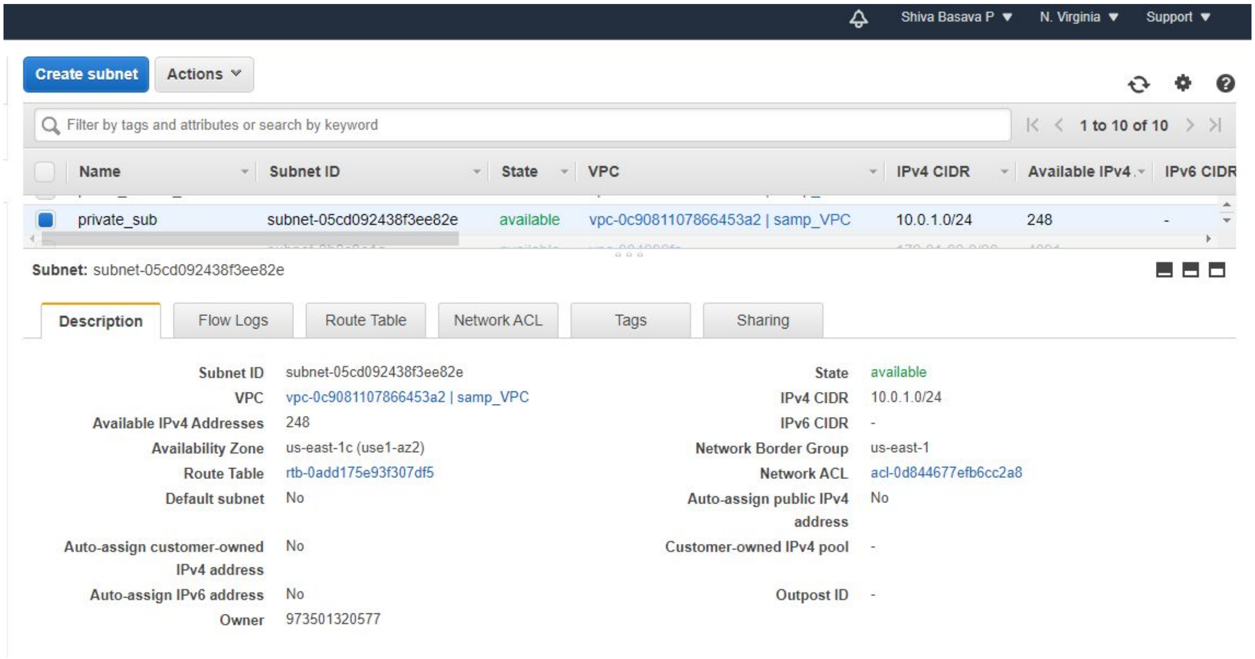
sg-0123b992e534e4495 - SG_web-server

Outbound rules

Type	Protocol	Port range	Destination	Description - optional
All traffic	All	All	0.0.0.0/0	-

IV. Created **Subnets**(Public & Private) inside the above **VPC.**

1. **Private** Subnet - **private_sub** (IPV4 CIDR - **10.0.1.0/24**) & at Availability Zone - **us-east-1c**.

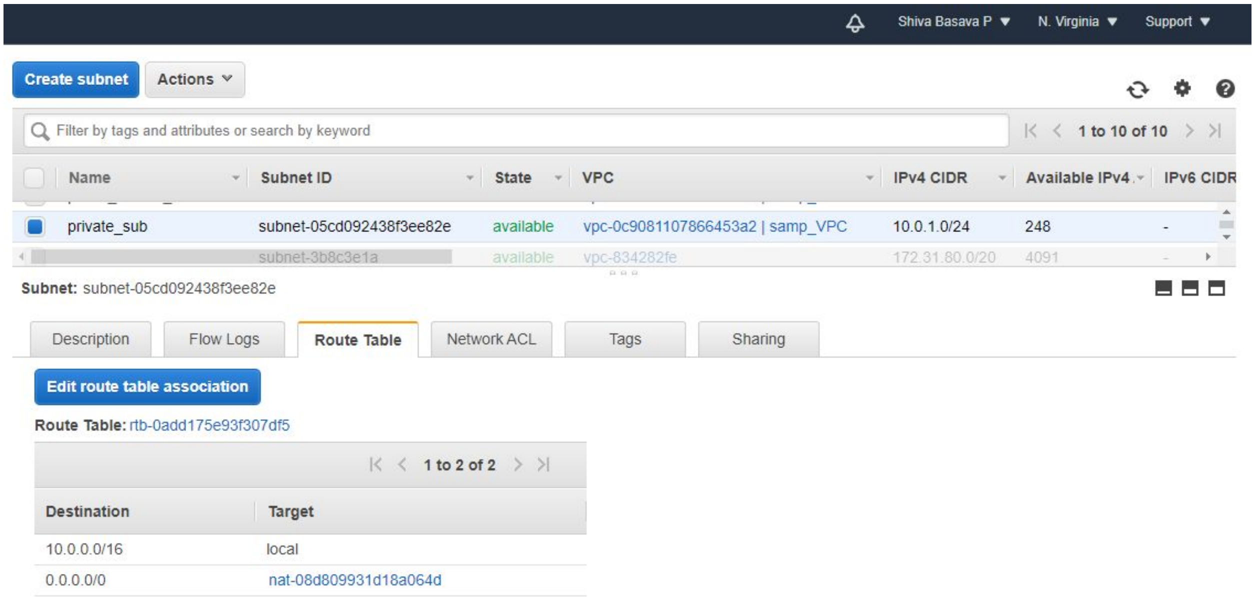


☐	Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
■	private_sub	subnet-05cd092438f3ee82e	available	vpc-0c9081107866453a2 | samp_VPC	10.0.1.0/24	248	-

Subnet: subnet-05cd092438f3ee82e

Subnet ID	subnet-05cd092438f3ee82e	State	available
VPC	vpc-0c9081107866453a2 | samp_VPC	IPv4 CIDR	10.0.1.0/24
Available IPv4 Addresses	248	IPv6 CIDR	-
Availability Zone	us-east-1c (use1-az2)	Network Border Group	us-east-1
Route Table	rtb-0add175e93f307df5	Network ACL	acl-0d844677efb6cc2a8
Default subnet	No	Auto-assign public IPv4 address	No
Auto-assign customer-owned IPv4 address	No	Customer-owned IPv4 pool	-
Auto-assign IPv6 address	No	Outpost ID	-
Owner	973501320577		

(after Route Table Association **Step VI,** through **NATGateway** - **NAT-GW** from **Step V**)



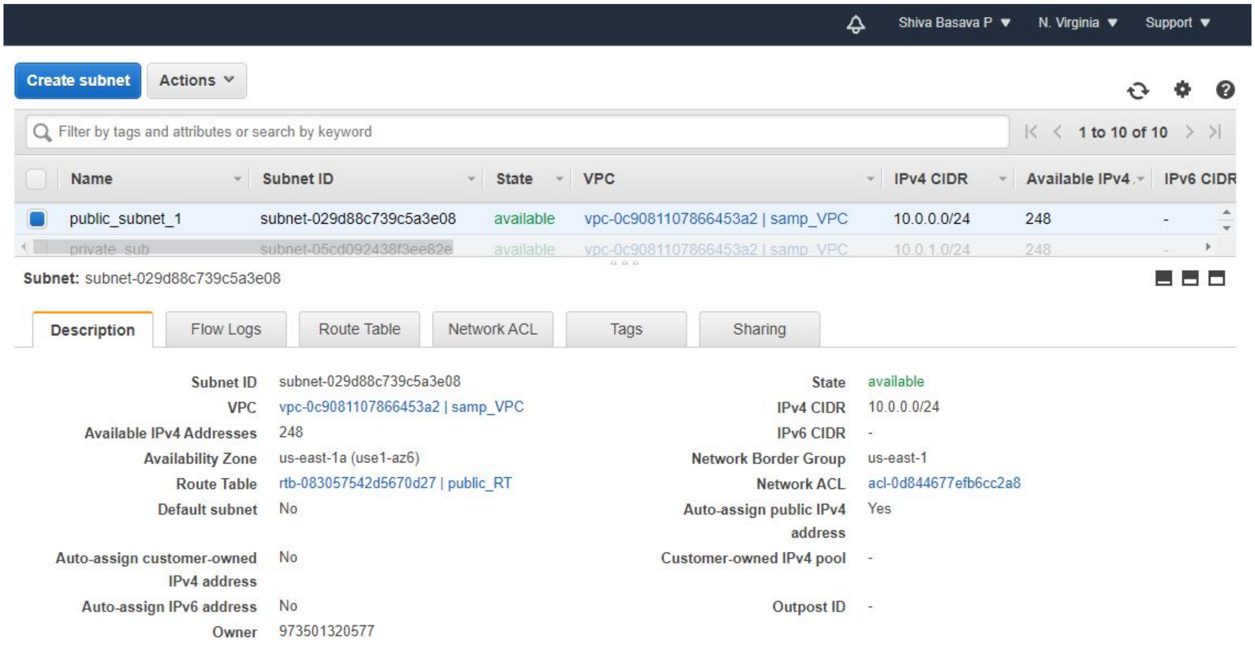
☐	Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
■	private_sub	subnet-05cd092438f3ee82e	available	vpc-0c9081107866453a2 | samp_VPC	10.0.1.0/24	248	-
		subnet-3b8c3e1a	available	vpc-834282fe	172.31.80.0/20	4091	-

Subnet: subnet-05cd092438f3ee82e

Route Table: rtb-0add175e93f307df5

Destination	Target
10.0.0.0/16	local
0.0.0.0/0	nat-08d809931d18a064d

2. **Public** Subnet, Created 3 public subnets with preference to Availability Zones.
    a. Public Subnet **1** - **public_subnet_1** (IPV4 CIDR - **10.0.0.0/24**) at Availability Zone - **us-east-1a**.

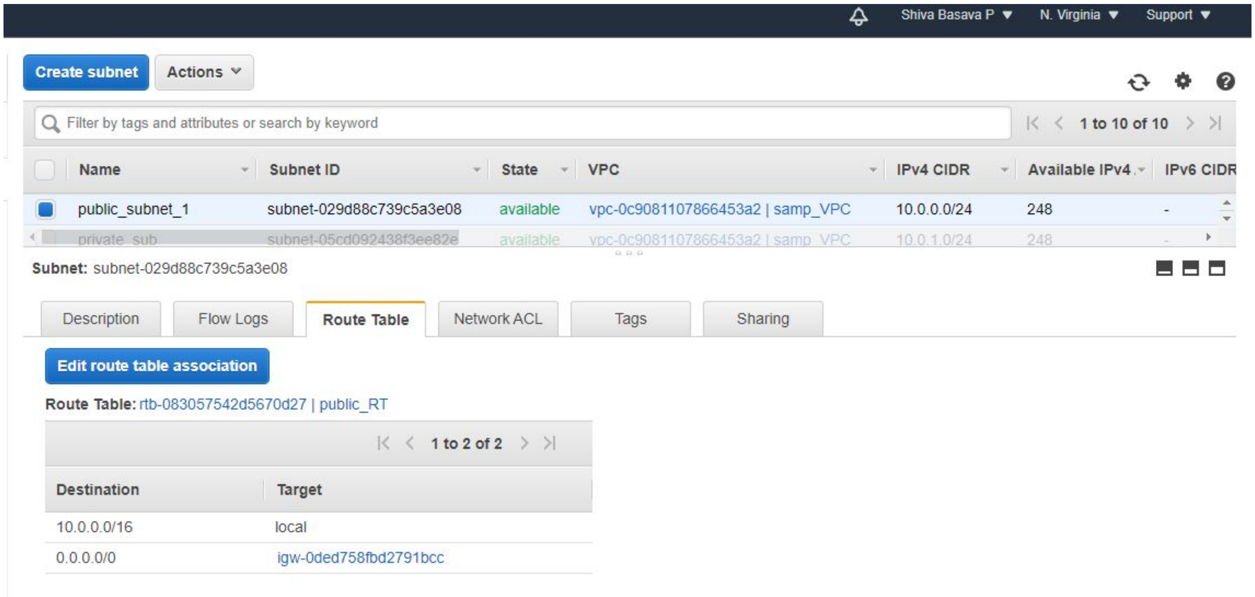


Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
public_subnet_1	subnet-029d88c739c5a3e08	available	vpc-0c9081107866453a2 | samp_VPC	10.0.0.0/24	248	-
private_sub	subnet-05cd092438f3ee82e	available	vpc-0c9081107866453a2 | samp_VPC	10.0.1.0/24	248	-

Subnet: subnet-029d88c739c5a3e08

Subnet ID	subnet-029d88c739c5a3e08	State	available
VPC	vpc-0c9081107866453a2 | samp_VPC	IPv4 CIDR	10.0.0.0/24
Available IPv4 Addresses	248	IPv6 CIDR	-
Availability Zone	us-east-1a (use1-az6)	Network Border Group	us-east-1
Route Table	rtb-083057542d5670d27 | public_RT	Network ACL	acl-0d844677efb6cc2a8
Default subnet	No	Auto-assign public IPv4 address	Yes
Auto-assign customer-owned IPv4 address	No	Customer-owned IPv4 pool	-
Auto-assign IPv6 address	No	Outpost ID	-
Owner	973501320577		

(after Route Table Association next step, **Step VI,** through **Internet Gateway - my-IGW**)



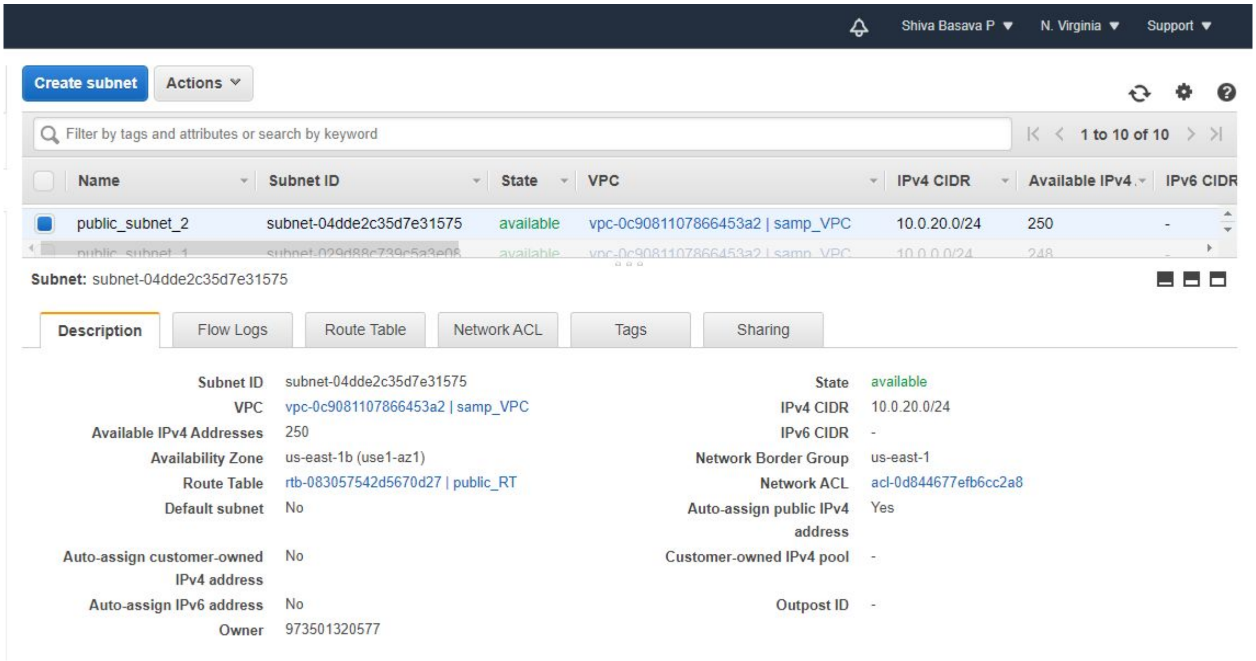
Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
public_subnet_1	subnet-029d88c739c5a3e08	available	vpc-0c9081107866453a2 | samp_VPC	10.0.0.0/24	248	-
private_sub	subnet-05cd092438f3ee82e	available	vpc-0c9081107866453a2 | samp_VPC	10.0.1.0/24	248	-

Subnet: subnet-029d88c739c5a3e08

Route Table: rtb-083057542d5670d27 | public_RT

Destination	Target
10.0.0.0/16	local
0.0.0.0/0	igw-0ded758fbd2791bcc

b. Public Subnet **2** - **public_subnet_2** (IPV4 CIDR - **10.0.20.0/24**) & at Availability Zone - **us-east-1b**.

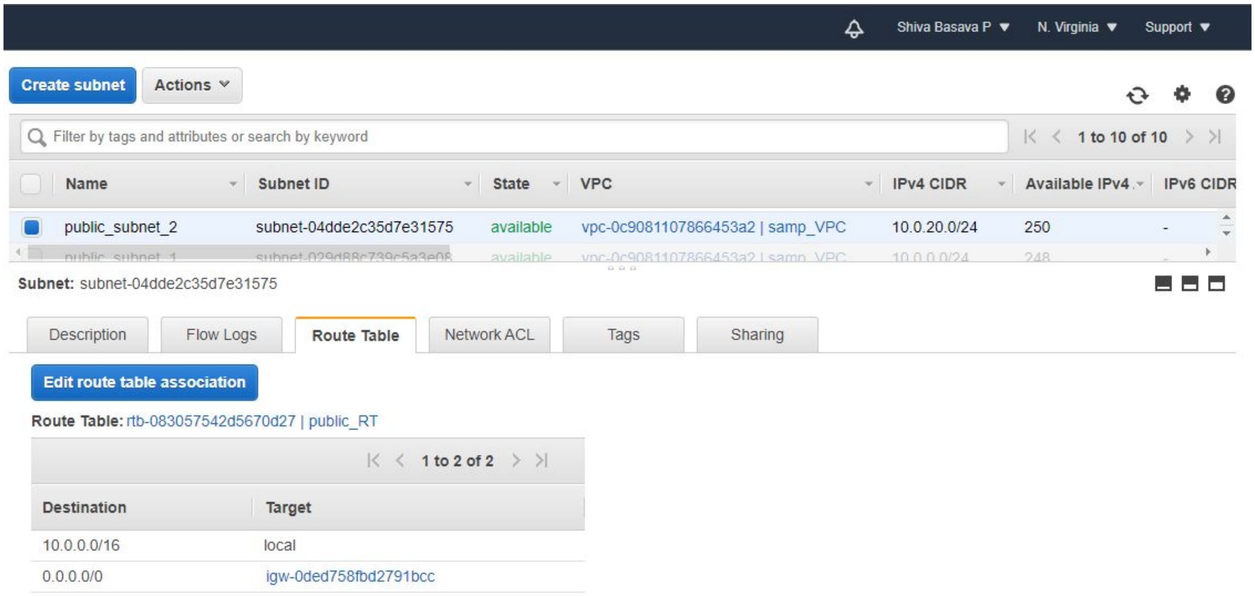


	Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
■	public_subnet_2	subnet-04dde2c35d7e31575	available	vpc-0c9081107866453a2 | samp_VPC	10.0.20.0/24	250	-
□	public_subnet_1	subnet-029d88c739c5a3e06	available	vpc-0c9081107866453a2 | samp_VPC	10.0.0.0/24	248	

Subnet: subnet-04dde2c35d7e31575

Subnet ID	subnet-04dde2c35d7e31575	State	available
VPC	vpc-0c9081107866453a2 | samp_VPC	IPv4 CIDR	10.0.20.0/24
Available IPv4 Addresses	250	IPv6 CIDR	-
Availability Zone	us-east-1b (use1-az1)	Network Border Group	us-east-1
Route Table	rtb-083057542d5670d27 | public_RT	Network ACL	acl-0d844677efb6cc2a8
Default subnet	No	Auto-assign public IPv4 address	Yes
Auto-assign customer-owned IPv4 address	No	Customer-owned IPv4 pool	-
Auto-assign IPv6 address	No	Outpost ID	-
Owner	973501320577		

(after <u>Route Table Association</u> next step, **Step VI,** through **Internet Gateway - my-IGW**)



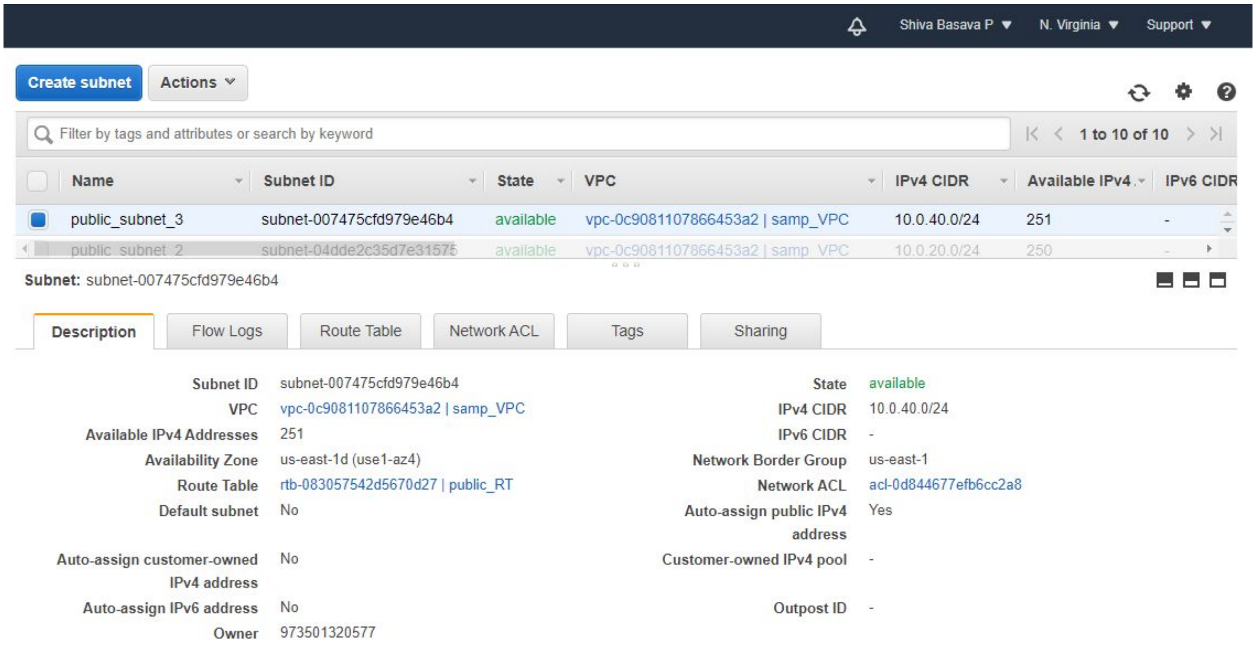
	Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
■	public_subnet_2	subnet-04dde2c35d7e31575	available	vpc-0c9081107866453a2 | samp_VPC	10.0.20.0/24	250	-
□	public_subnet_1	subnet-029d88c739c5a3e06	available	vpc-0c9081107866453a2 | samp_VPC	10.0.0.0/24	248	

Subnet: subnet-04dde2c35d7e31575

Route Table: rtb-083057542d5670d27 | public_RT

Destination	Target
10.0.0.0/16	local
0.0.0.0/0	igw-0ded758fbd2791bcc

c. Public Subnet **2** - **public_subnet_2** (IPV4 CIDR - **10.0.40.0/24**) & at Availability Zone - **us-east-1d**.

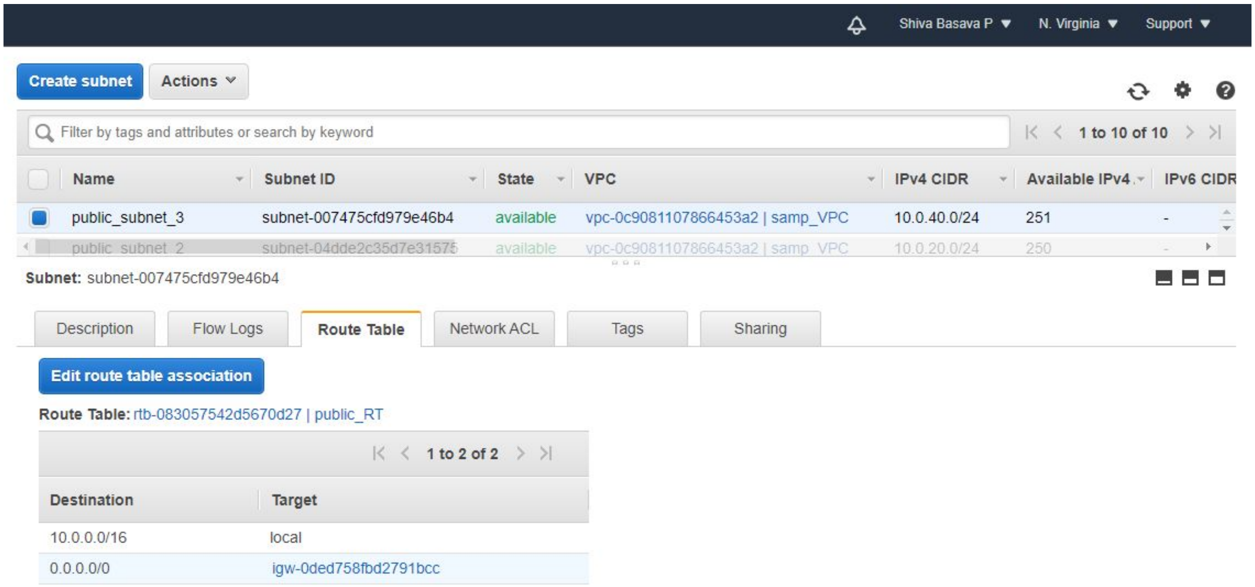


	Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
■	public_subnet_3	subnet-007475cfd979e46b4	available	vpc-0c9081107866453a2 | samp_VPC	10.0.40.0/24	251	-
□	public_subnet_2	subnet-04dde2c35d7e31575	available	vpc-0c9081107866453a2 | samp_VPC	10.0.20.0/24	250	-

Subnet: subnet-007475cfd979e46b4

Subnet ID	subnet-007475cfd979e46b4	State	available
VPC	vpc-0c9081107866453a2 | samp_VPC	IPv4 CIDR	10.0.40.0/24
Available IPv4 Addresses	251	IPv6 CIDR	-
Availability Zone	us-east-1d (use1-az4)	Network Border Group	us-east-1
Route Table	rtb-083057542d5670d27 | public_RT	Network ACL	acl-0d844677efb6cc2a8
Default subnet	No	Auto-assign public IPv4 address	Yes
Auto-assign customer-owned IPv4 address	No	Customer-owned IPv4 pool	-
Auto-assign IPv6 address	No	Outpost ID	-
Owner	973501320577		

(after Route Table Association next step, **Step VI,** through **Internet Gateway - my-IGW**)



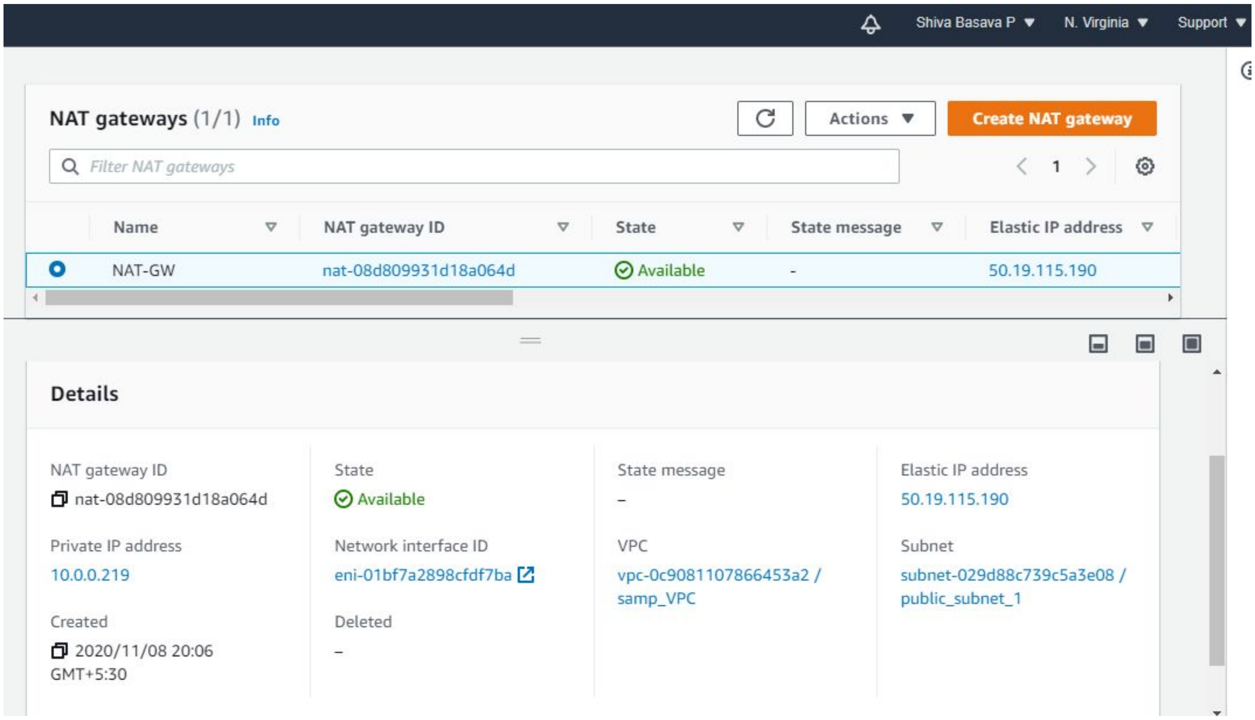
	Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
■	public_subnet_3	subnet-007475cfd979e46b4	available	vpc-0c9081107866453a2 | samp_VPC	10.0.40.0/24	251	-
□	public_subnet_2	subnet-04dde2c35d7e31575	available	vpc-0c9081107866453a2 | samp_VPC	10.0.20.0/24	250	-

Subnet: subnet-007475cfd979e46b4

Route Table: rtb-083057542d5670d27 | public_RT

Destination	Target
10.0.0.0/16	local
0.0.0.0/0	igw-0ded758fbd2791bcc

V. Created a **NAT Gateway - NAT-GW**



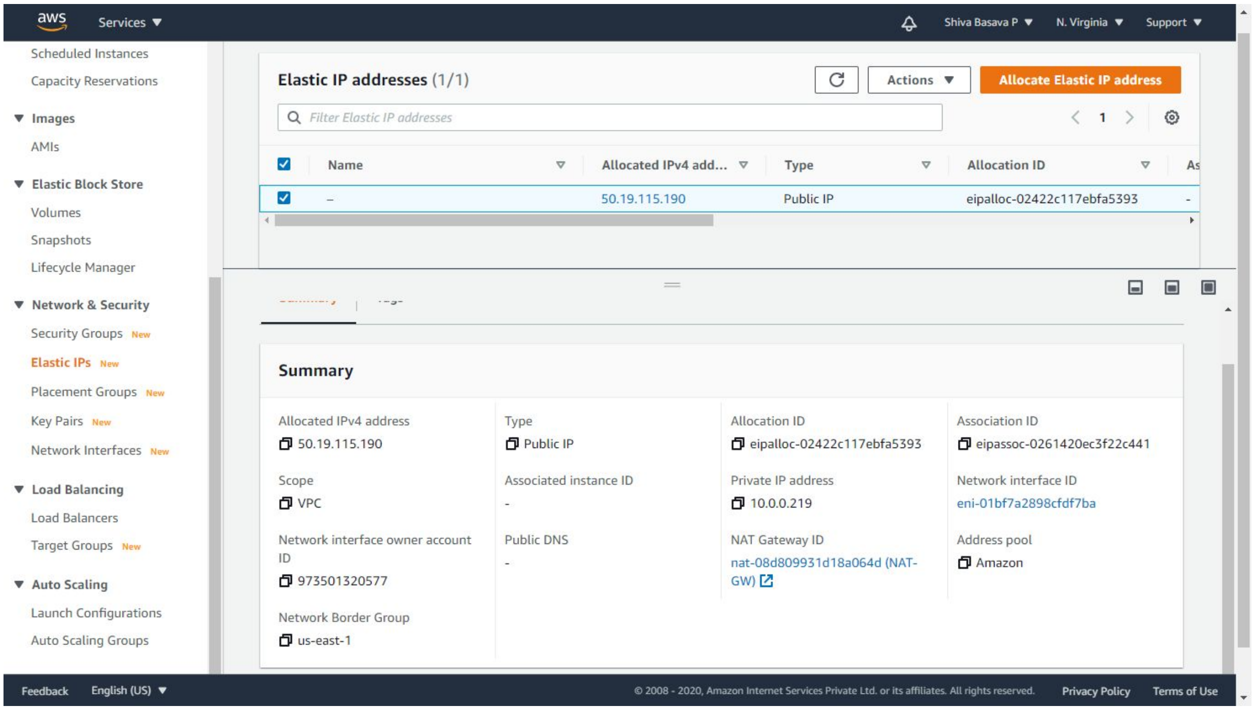
NAT gateways (1/1)

	Name	NAT gateway ID	State	State message	Elastic IP address
●	NAT-GW	nat-08d809931d18a064d	✓ Available	-	50.19.115.190

Details

NAT gateway ID nat-08d809931d18a064d	State ✓ Available	State message –	Elastic IP address 50.19.115.190
Private IP address 10.0.0.219	Network interface ID eni-01bf7a2898cfdf7ba	VPC vpc-0c9081107866453a2 / samp_VPC	Subnet subnet-029d88c739c5a3e08 / public_subnet_1
Created 2020/11/08 20:06 GMT+5:30	Deleted –		

Associated **Elastic IP addresses**



Elastic IP addresses (1/1)

☑	Name	Allocated IPv4 add...	Type	Allocation ID	As
☑	–	50.19.115.190	Public IP	eipalloc-02422c117ebfa5393	-

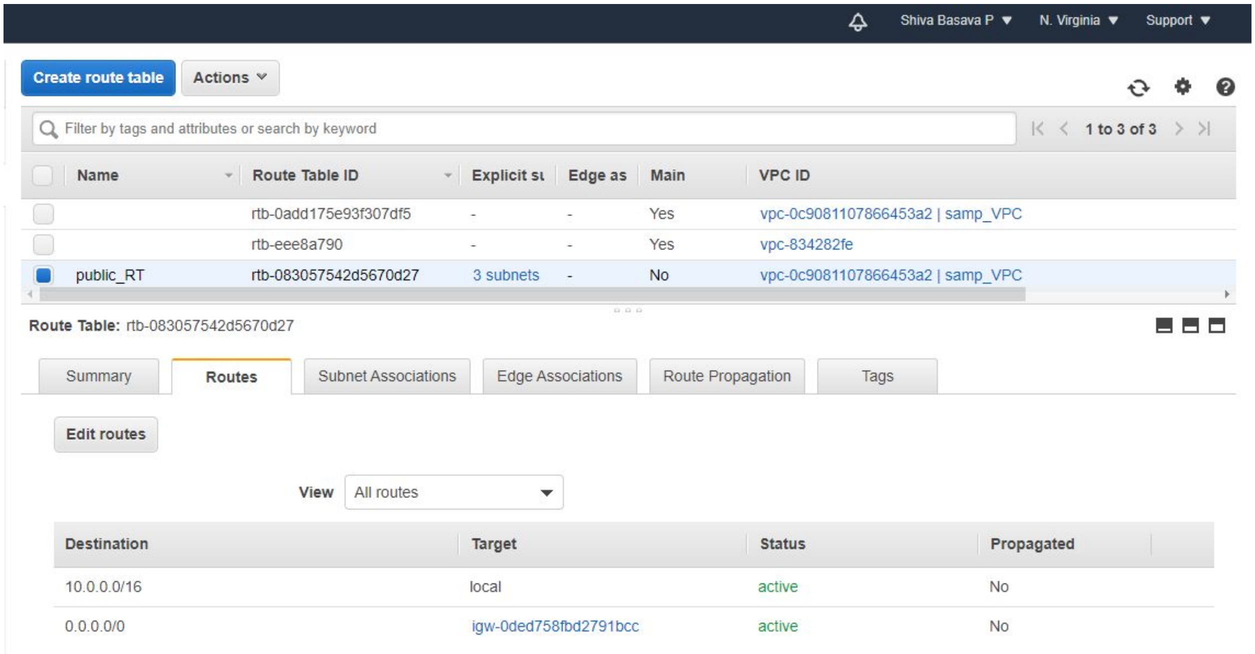
Summary

Allocated IPv4 address 50.19.115.190	Type Public IP	Allocation ID eipalloc-02422c117ebfa5393	Association ID eipassoc-0261420ec3f22c441
Scope VPC	Associated instance ID -	Private IP address 10.0.0.219	Network interface ID eni-01bf7a2898cfdf7ba
Network interface owner account ID 973501320577	Public DNS -	NAT Gateway ID nat-08d809931d18a064d (NAT-GW)	Address pool Amazon
Network Border Group us-east-1			

© 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.

VI. Created **Route table**

a. Public Subnets(**public_subnet_1, public_subnet_2**, **public_subnet_3**) - **public_RT** & Main route table = **No**.



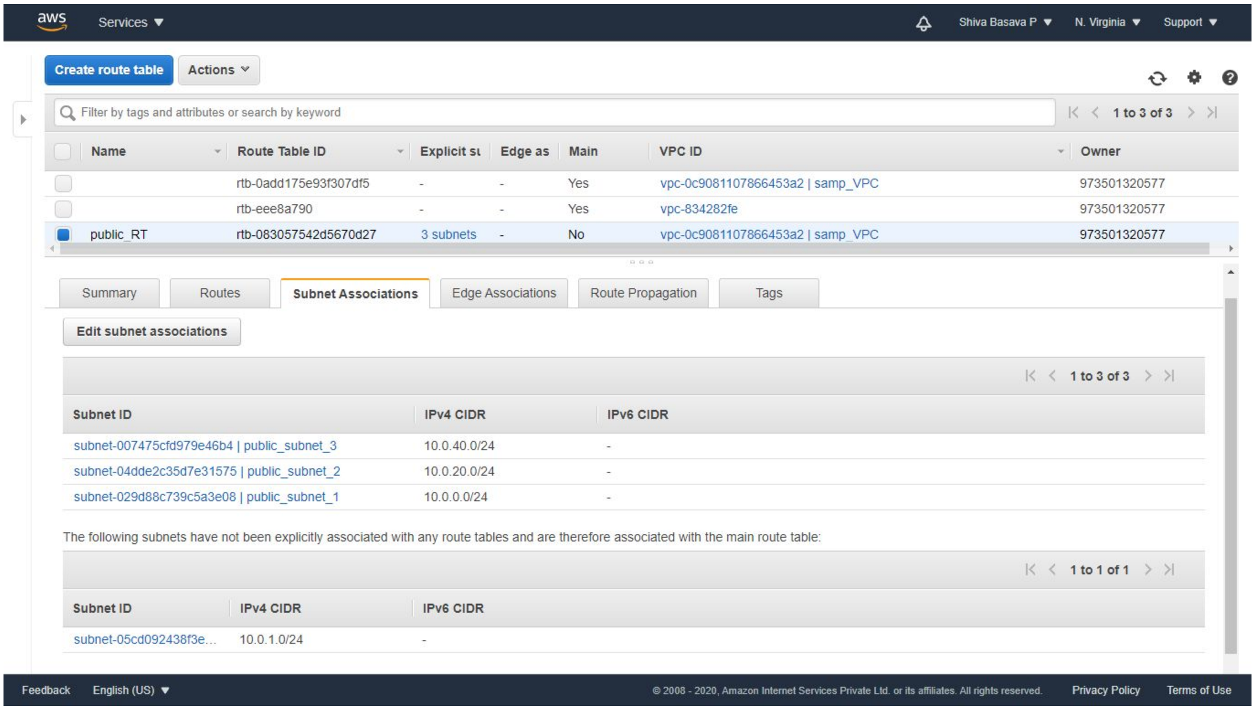
Name	Route Table ID	Explicit su	Edge as	Main	VPC ID
	rtb-0add175e93f307df5	-	-	Yes	vpc-0c9081107866453a2 | samp_VPC
	rtb-eee8a790	-	-	Yes	vpc-834282fe
public_RT	rtb-083057542d5670d27	3 subnets	-	No	vpc-0c9081107866453a2 | samp_VPC

Route Table: rtb-083057542d5670d27

View: All routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	active	No
0.0.0.0/0	igw-0ded758fbd2791bcc	active	No

All associated & unassociated **Subnets**



Name	Route Table ID	Explicit su	Edge as	Main	VPC ID	Owner
	rtb-0add175e93f307df5	-	-	Yes	vpc-0c9081107866453a2 | samp_VPC	973501320577
	rtb-eee8a790	-	-	Yes	vpc-834282fe	973501320577
public_RT	rtb-083057542d5670d27	3 subnets	-	No	vpc-0c9081107866453a2 | samp_VPC	973501320577

Subnet ID	IPv4 CIDR	IPv6 CIDR
subnet-007475cfd979e46b4 | public_subnet_3	10.0.40.0/24	-
subnet-04dde2c35d7e31575 | public_subnet_2	10.0.20.0/24	-
subnet-029d88c739c5a3e08 | public_subnet_1	10.0.0.0/24	-

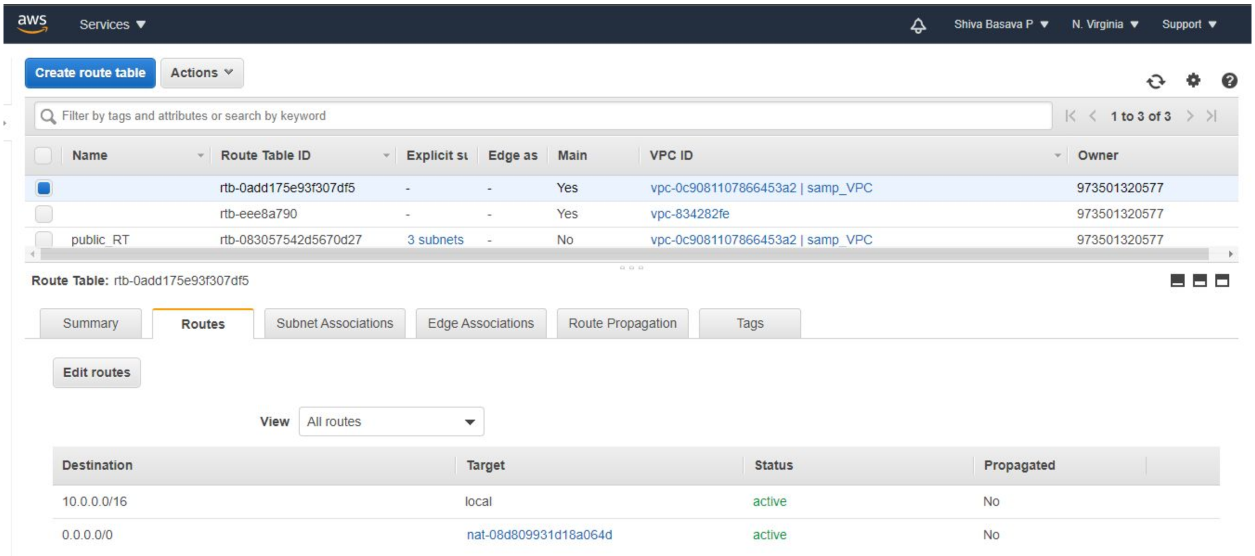
The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table:

Subnet ID	IPv4 CIDR	IPv6 CIDR
subnet-05cd092438f3e...	10.0.1.0/24	-

Feedback
English (US) ▼
© 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

b. This is for communicating with Private Subnet, through **NAT Gateway**(**NAT-GT**) & Main route table = **Yes.**

(**Note**: We don't explicitly create this, Its Implicitly Created by route table during creation of **public_RT**, But we create **NAT Gateway** & map that to this)



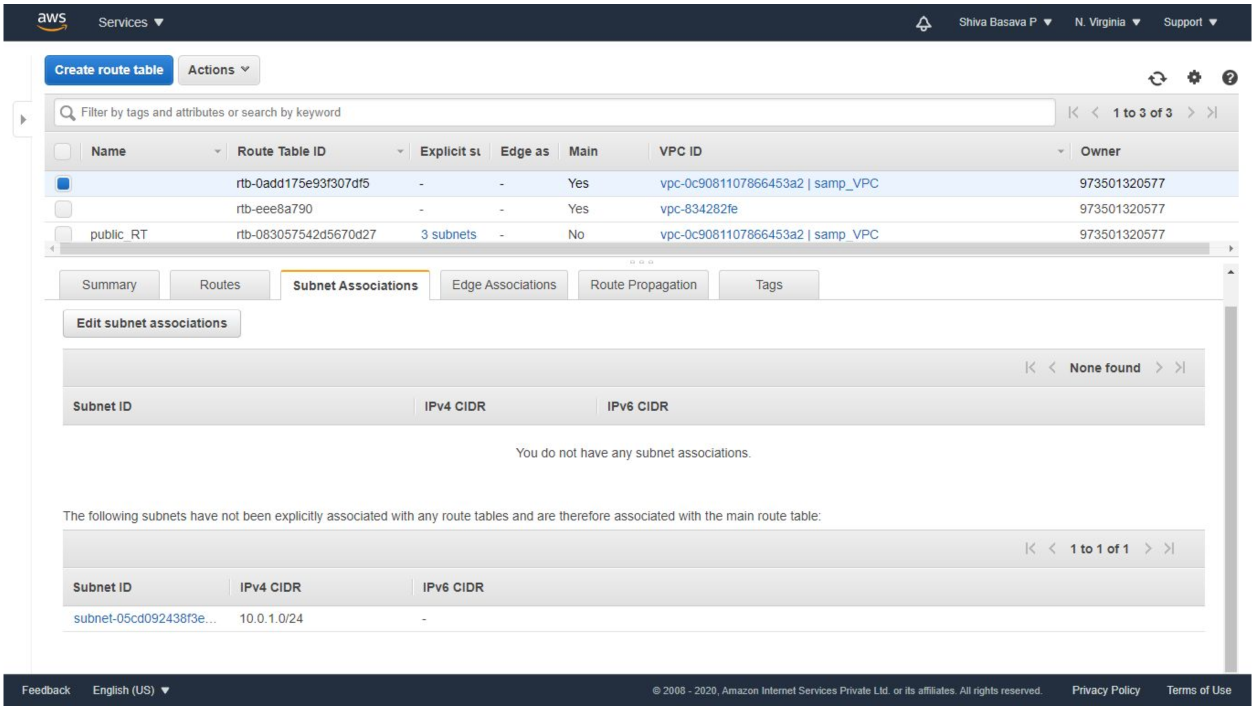
Name	Route Table ID	Explicit su	Edge as	Main	VPC ID	Owner
	rtb-0add175e93f307df5	-	-	Yes	vpc-0c9081107866453a2 | samp_VPC	973501320577
	rtb-eee8a790	-	-	Yes	vpc-834282fe	973501320577
public_RT	rtb-083057542d5670d27	3 subnets	-	No	vpc-0c9081107866453a2 | samp_VPC	973501320577

Route Table: rtb-0add175e93f307df5

View: All routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	active	No
0.0.0.0/0	nat-08d809931d18a064d	active	No

Subnet Association



Name	Route Table ID	Explicit su	Edge as	Main	VPC ID	Owner
	rtb-0add175e93f307df5	-	-	Yes	vpc-0c9081107866453a2 | samp_VPC	973501320577
	rtb-eee8a790	-	-	Yes	vpc-834282fe	973501320577
public_RT	rtb-083057542d5670d27	3 subnets	-	No	vpc-0c9081107866453a2 | samp_VPC	973501320577

Subnet ID	IPv4 CIDR	IPv6 CIDR

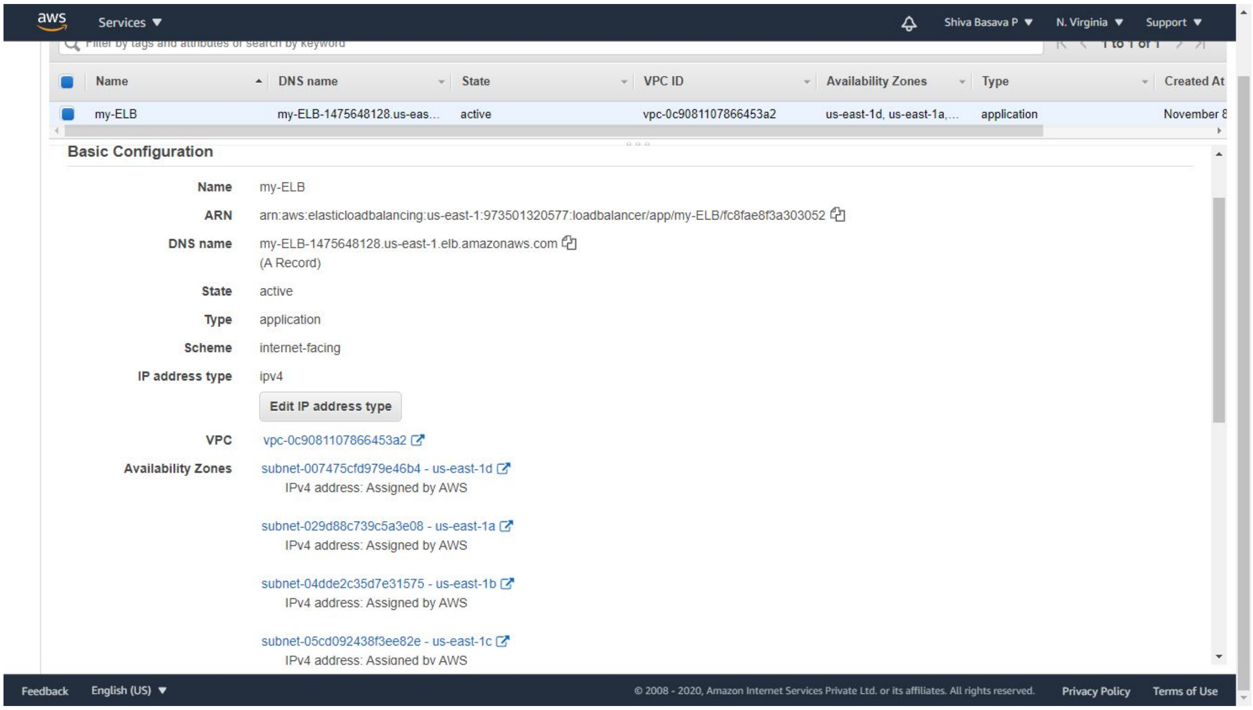
You do not have any subnet associations.

The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table:

Subnet ID	IPv4 CIDR	IPv6 CIDR
subnet-05cd092438f3e...	10.0.1.0/24	-

Feedback
English (US)
© 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

VII. Created **Load Balancer - myELB,** with **DNS Name - my-ELB-1475648128.us-east-1.elb.amazonaws.com**

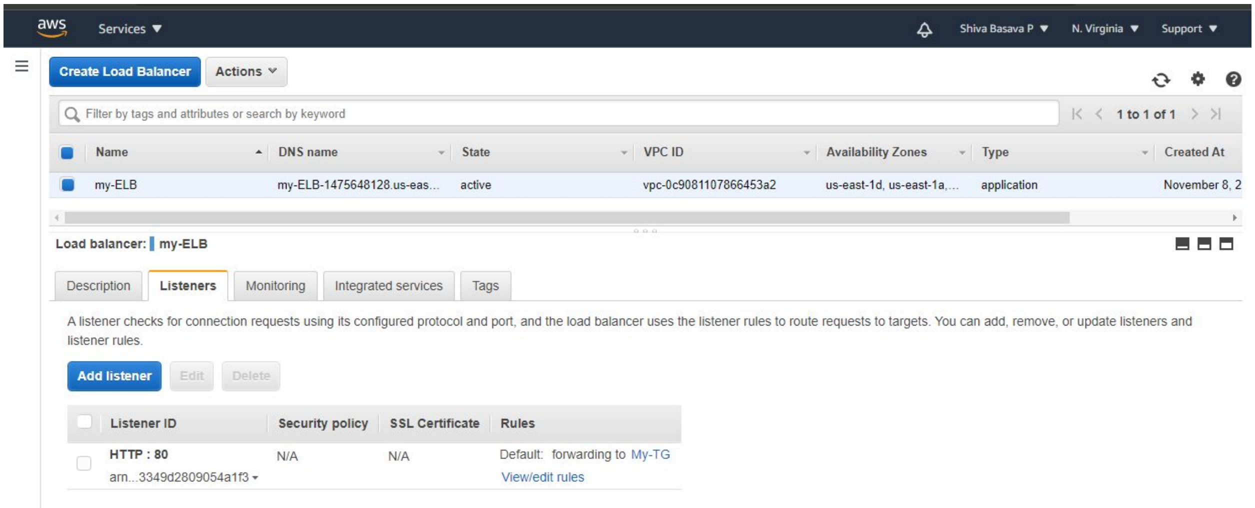

aws
Services ▼
Shiva Basava P ▼
N. Virginia ▼
Support ▼
Filter by tags and attributes or search by keyword
1 to 1 of 1
Feedback
English (US) ▼
© 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

Name	DNS name	State	VPC ID	Availability Zones	Type	Created At
my-ELB	my-ELB-1475648128.us-eas...	active	vpc-0c9081107866453a2	us-east-1d, us-east-1a,...	application	November 8

Basic Configuration

Name	my-ELB
ARN	arn:aws:elasticloadbalancing:us-east-1:973501320577:loadbalancer/app/my-ELB/fc8fae8f3a303052
DNS name	my-ELB-1475648128.us-east-1.elb.amazonaws.com (A Record)
State	active
Type	application
Scheme	internet-facing
IP address type	ipv4 Edit IP address type
VPC	vpc-0c9081107866453a2
Availability Zones	subnet-007475cfd979e46b4 - us-east-1d IPv4 address: Assigned by AWS subnet-029d88c739c5a3e08 - us-east-1a IPv4 address: Assigned by AWS subnet-04dde2c35d7e31575 - us-east-1b IPv4 address: Assigned by AWS subnet-05cd092438f3ee82e - us-east-1c IPv4 address: Assigned by AWS

Listeners



Name	DNS name	State	VPC ID	Availability Zones	Type	Created At
my-ELB	my-ELB-1475648128.us-eas...	active	vpc-0c9081107866453a2	us-east-1d, us-east-1a,...	application	November 8, 2

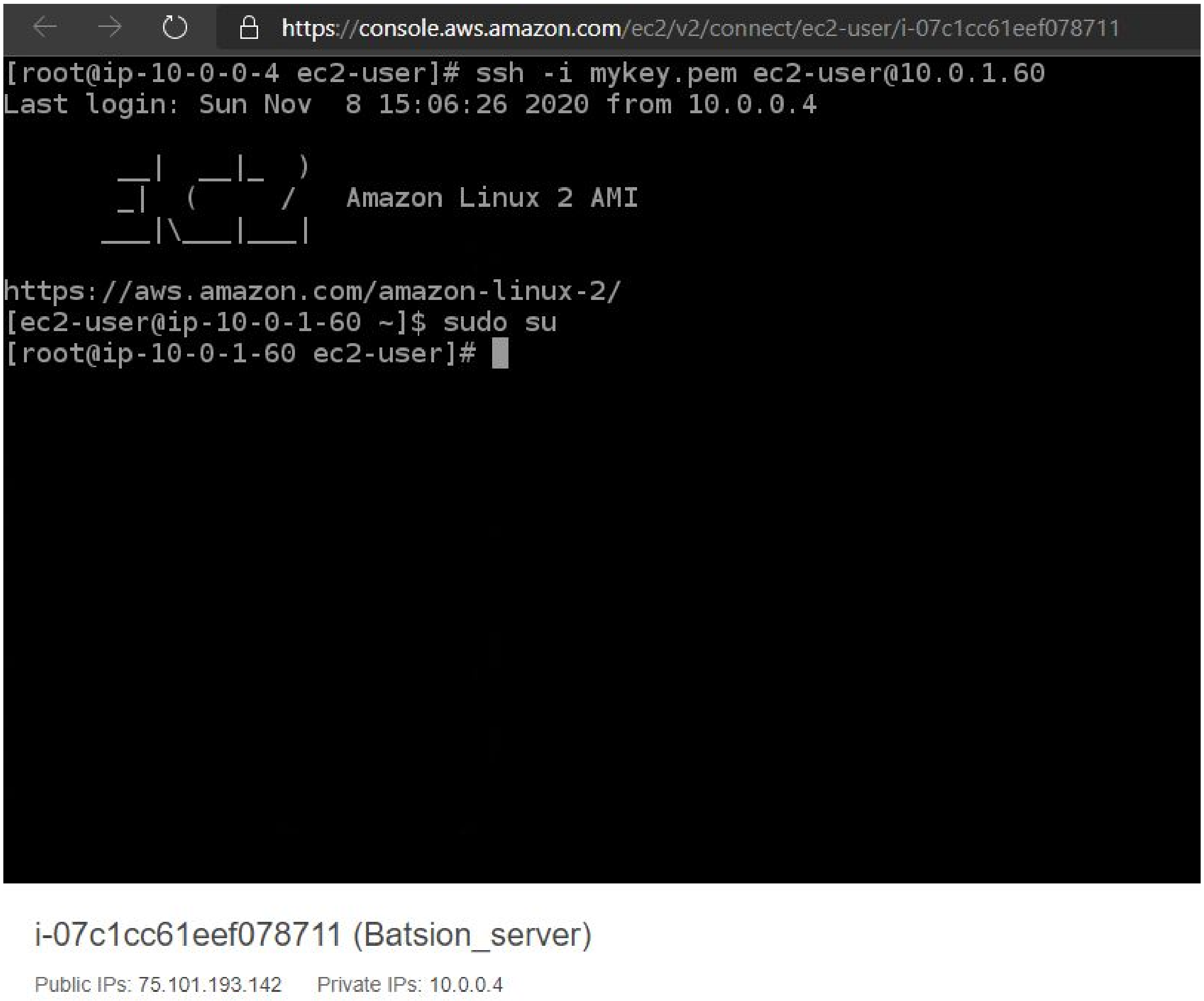
Load balancer: my-ELB

A listener checks for connection requests using its configured protocol and port, and the load balancer uses the listener rules to route requests to targets. You can add, remove, or update listeners and listener rules.

Listener ID	Security policy	SSL Certificate	Rules
HTTP : 80 arn...3349d2809054a1f3	N/A	N/A	Default: forwarding to My-TG View/edit rules

VIII. Connected to **Bastion Server** (Bastion_Server)
In Super user mode, Performed the update of the server, then created **mykey.pem**

a. From **Bastion_Server** SSH to Web-Server 1 with its **private IP** - **10.0.1.60**



https://console.aws.amazon.com/ec2/v2/connect/ec2-user/i-07c1cc61eef078711

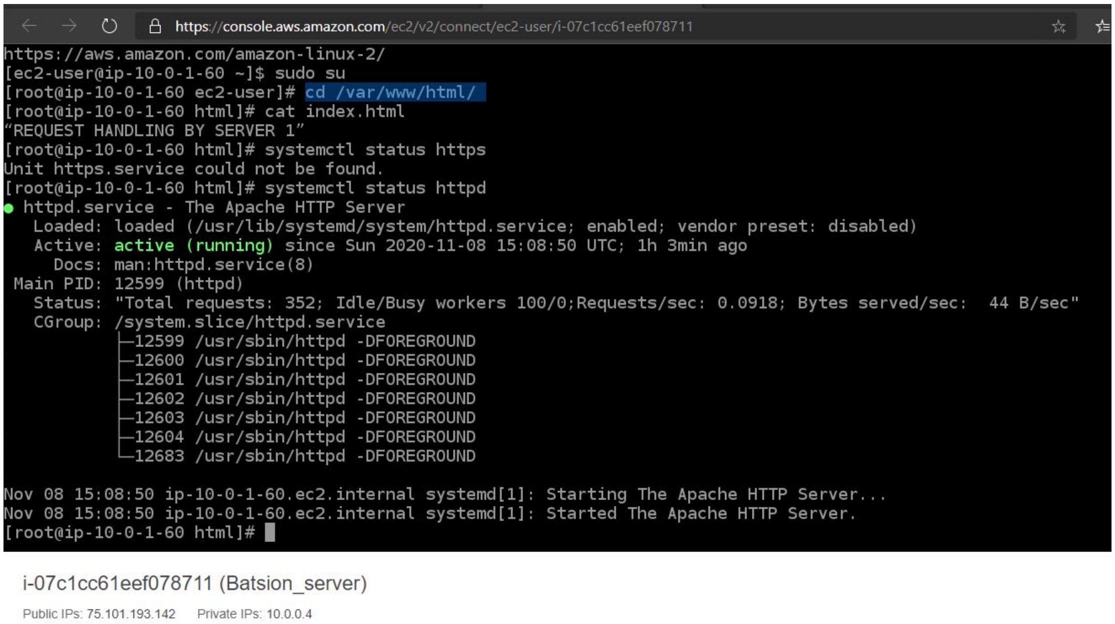
```
[root@ip-10-0-0-4 ec2-user]# ssh -i mykey.pem ec2-user@10.0.1.60
Last login: Sun Nov  8 15:06:26 2020 from 10.0.0.4

       __|  __|_  )
       _|  (     /   Amazon Linux 2 AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-0-1-60 ~]$ sudo su
[root@ip-10-0-1-60 ec2-user]# 
```

i-07c1cc61eef078711 (Batsion_server)

Public IPs: 75.101.193.142 Private IPs: 10.0.0.4

Installing Apache:

sudo su
yum update -y
yum install httpd -y
cd /var/www/html
systemctl start httpd
systemctl enable httpd
echo “REQUEST HANDLING BY SERVER 1” > index.html
systemctl status httpd
(Again to connect to next web-server, come-out of the current and follow **step b**)



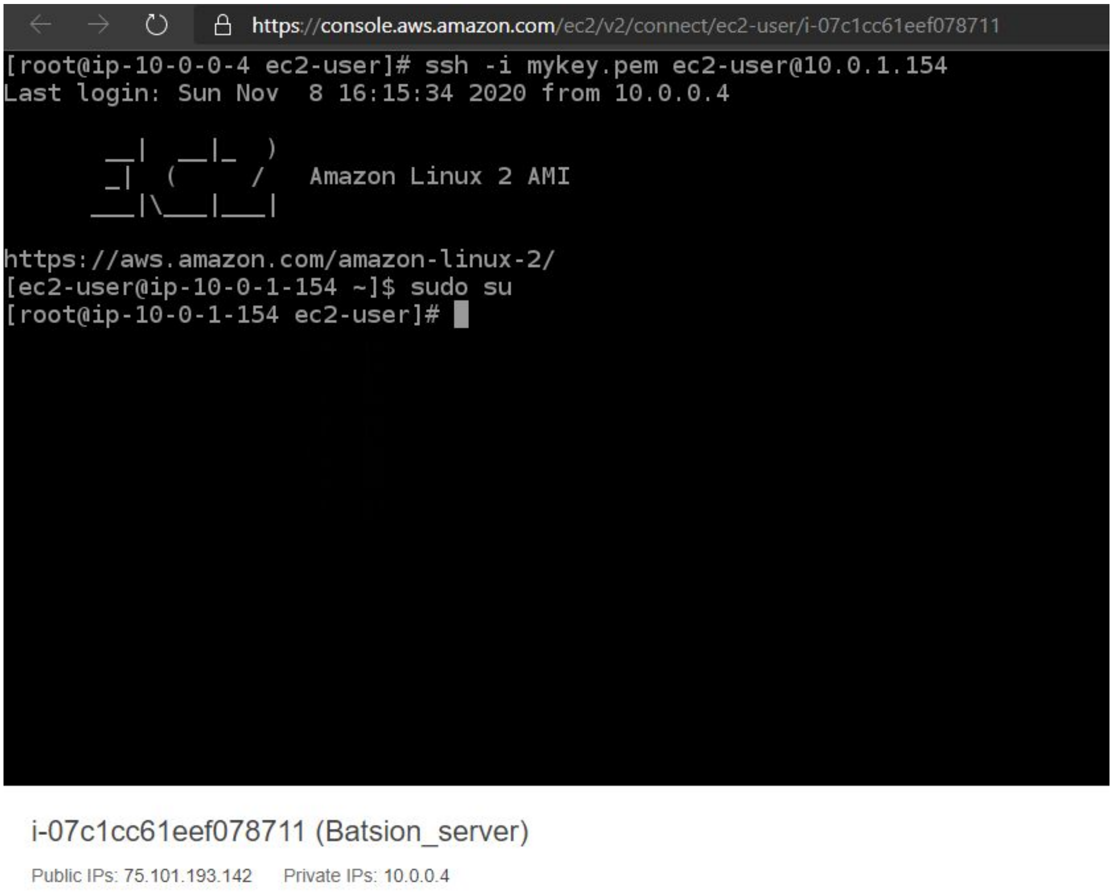
https://console.aws.amazon.com/ec2/v2/connect/ec2-user/i-07c1cc61eef078711

```
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-0-1-60 ~]$ sudo su
[root@ip-10-0-1-60 ec2-user]# cd /var/www/html/
[root@ip-10-0-1-60 html]# cat index.html
“REQUEST HANDLING BY SERVER 1”
[root@ip-10-0-1-60 html]# systemctl status https
Unit https.service could not be found.
[root@ip-10-0-1-60 html]# systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)
   Active: active (running) since Sun 2020-11-08 15:08:50 UTC; 1h 3min ago
     Docs: man:httpd.service(8)
 Main PID: 12599 (httpd)
   Status: "Total requests: 352; Idle/Busy workers 100/0;Requests/sec: 0.0918; Bytes served/sec:  44 B/sec"
   CGroup: /system.slice/httpd.service
           ├─12599 /usr/sbin/httpd -DFOREGROUND
           ├─12600 /usr/sbin/httpd -DFOREGROUND
           ├─12601 /usr/sbin/httpd -DFOREGROUND
           ├─12602 /usr/sbin/httpd -DFOREGROUND
           ├─12603 /usr/sbin/httpd -DFOREGROUND
           ├─12604 /usr/sbin/httpd -DFOREGROUND
           └─12683 /usr/sbin/httpd -DFOREGROUND

Nov 08 15:08:50 ip-10-0-1-60.ec2.internal systemd[1]: Starting The Apache HTTP Server...
Nov 08 15:08:50 ip-10-0-1-60.ec2.internal systemd[1]: Started The Apache HTTP Server.
[root@ip-10-0-1-60 html]# █
```

i-07c1cc61eef078711 (Batsion_server)

Public IPs: 75.101.193.142 Private IPs: 10.0.0.4

b. From **Bastion_Server** SSH to <u>Web-Server 2</u> with its **private IP** - **10.0.1.154**



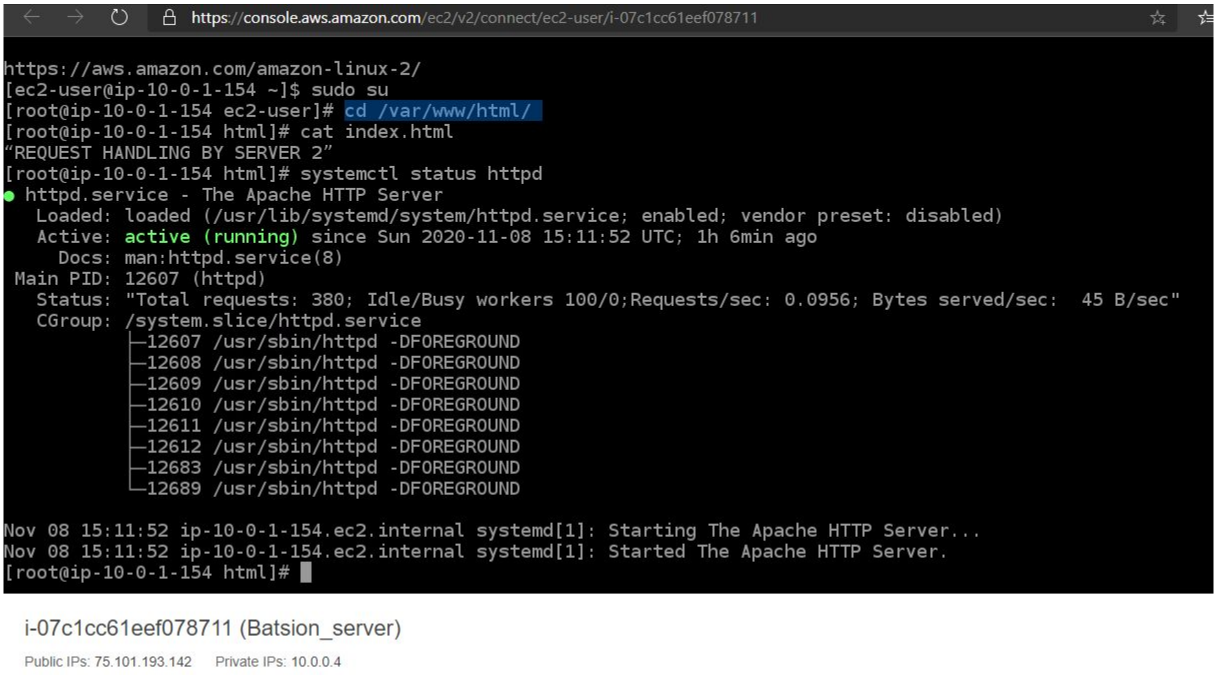
https://console.aws.amazon.com/ec2/v2/connect/ec2-user/i-07c1cc61eef078711

```
[root@ip-10-0-0-4 ec2-user]# ssh -i mykey.pem ec2-user@10.0.1.154
Last login: Sun Nov  8 16:15:34 2020 from 10.0.0.4

       __|  __|_  )
       _|  (     /   Amazon Linux 2 AMI
      ___|\___|___|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-0-1-154 ~]$ sudo su
[root@ip-10-0-1-154 ec2-user]# █
```

i-07c1cc61eef078711 (Batsion_server)

Public IPs: 75.101.193.142 Private IPs: 10.0.0.4

Installing Apache: (Same commands till, systemctl enable httpd), then we are tying this -
echo “REQUEST HANDLING BY SERVER 2” > index.html
systemctl status httpd



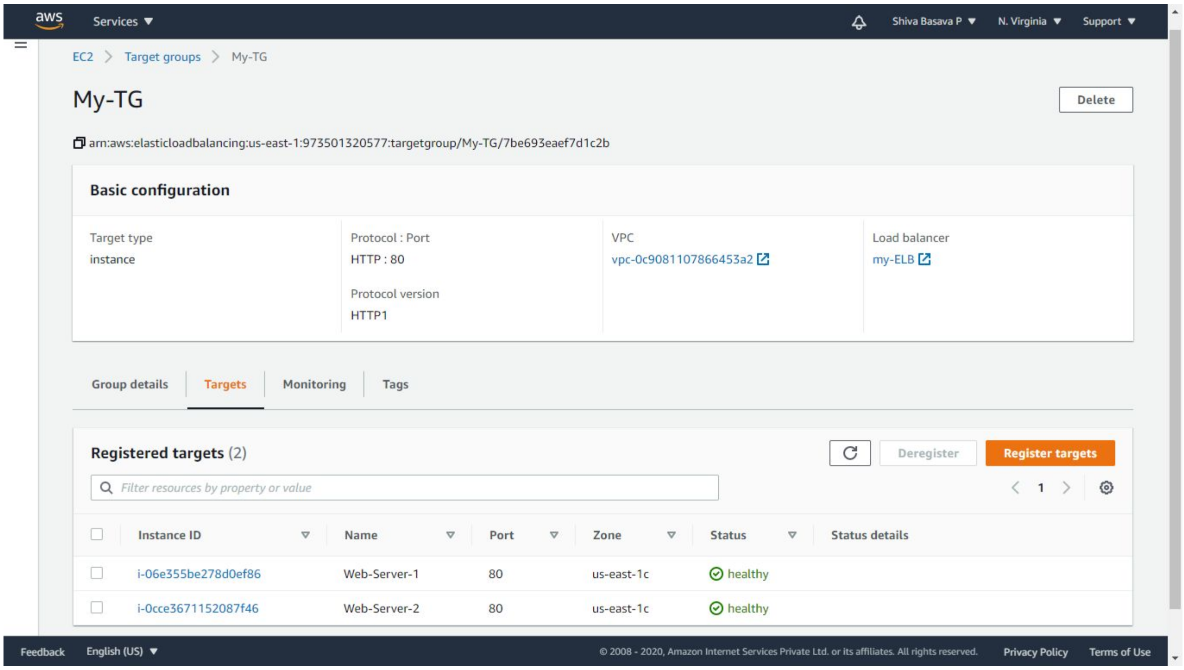
https://console.aws.amazon.com/ec2/v2/connect/ec2-user/i-07c1cc61eef078711

```
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-0-1-154 ~]$ sudo su
[root@ip-10-0-1-154 ec2-user]# cd /var/www/html/
[root@ip-10-0-1-154 html]# cat index.html
“REQUEST HANDLING BY SERVER 2”
[root@ip-10-0-1-154 html]# systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)
   Active: active (running) since Sun 2020-11-08 15:11:52 UTC; 1h 6min ago
     Docs: man:httpd.service(8)
 Main PID: 12607 (httpd)
   Status: "Total requests: 380; Idle/Busy workers 100/0;Requests/sec: 0.0956; Bytes served/sec:  45 B/sec"
   CGroup: /system.slice/httpd.service
           ├─12607 /usr/sbin/httpd -DFOREGROUND
           ├─12608 /usr/sbin/httpd -DFOREGROUND
           ├─12609 /usr/sbin/httpd -DFOREGROUND
           ├─12610 /usr/sbin/httpd -DFOREGROUND
           ├─12611 /usr/sbin/httpd -DFOREGROUND
           ├─12612 /usr/sbin/httpd -DFOREGROUND
           ├─12683 /usr/sbin/httpd -DFOREGROUND
           └─12689 /usr/sbin/httpd -DFOREGROUND

Nov 08 15:11:52 ip-10-0-1-154.ec2.internal systemd[1]: Starting The Apache HTTP Server...
Nov 08 15:11:52 ip-10-0-1-154.ec2.internal systemd[1]: Started The Apache HTTP Server.
[root@ip-10-0-1-154 html]# █
```

i-07c1cc61eef078711 (Batsion_server)

Public IPs: 75.101.193.142 Private IPs: 10.0.0.4

IX. Checking the **Health** of the **Load Balancer,** under Target group -> Registered Targets. Both servers are showing ‘<u>Healthy</u>’.



My-TG

arn:aws:elasticloadbalancing:us-east-1:973501320577:targetgroup/My-TG/7be693eaef7d1c2b

Basic configuration

Target type: instance
Protocol : Port: HTTP : 80
Protocol version: HTTP1
VPC: vpc-0c9081107866453a2
Load balancer: my-ELB

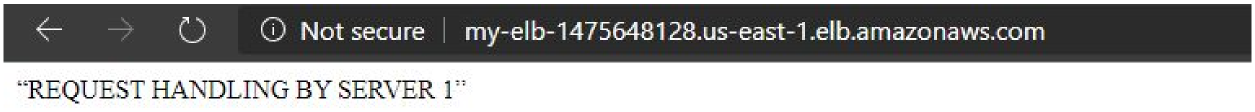
Registered targets (2)

□	Instance ID	Name	Port	Zone	Status	Status details
□	i-06e355be278d0ef86	Web-Server-1	80	us-east-1c	✓ healthy	
□	i-0cce3671152087f46	Web-Server-2	80	us-east-1c	✓ healthy	

Feedback
English (US) ▼
© 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

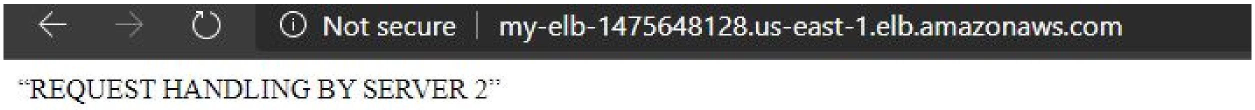
X. Now Checking the Application by accessing the DNS of the Load Balancer - **my-ELB-1475648128.us-east-1.elb.amazonaws.com**

a. At browser we get the following response from **Web-Server-1**



"REQUEST HANDLING BY SERVER 1"

b. If we keep-on refreshing, we get the Reply from **Web-Server-2**



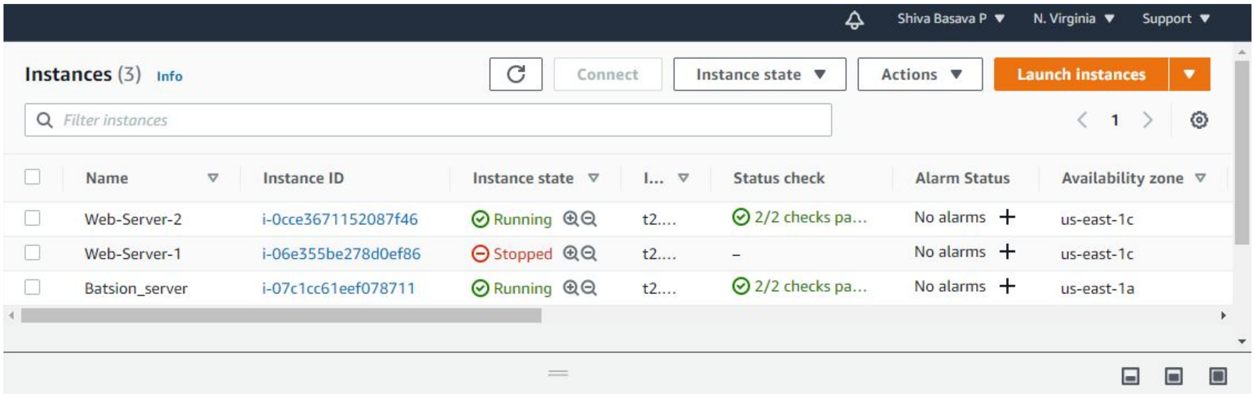
"REQUEST HANDLING BY SERVER 2"

(We have successfully created a **Bastion Server**, 2 web-server & an Application Load Balancer.)

XI. Test Case for **High Availability**

a. Stopped the **Web-Server-1** & **Web-Server-2** is Running.

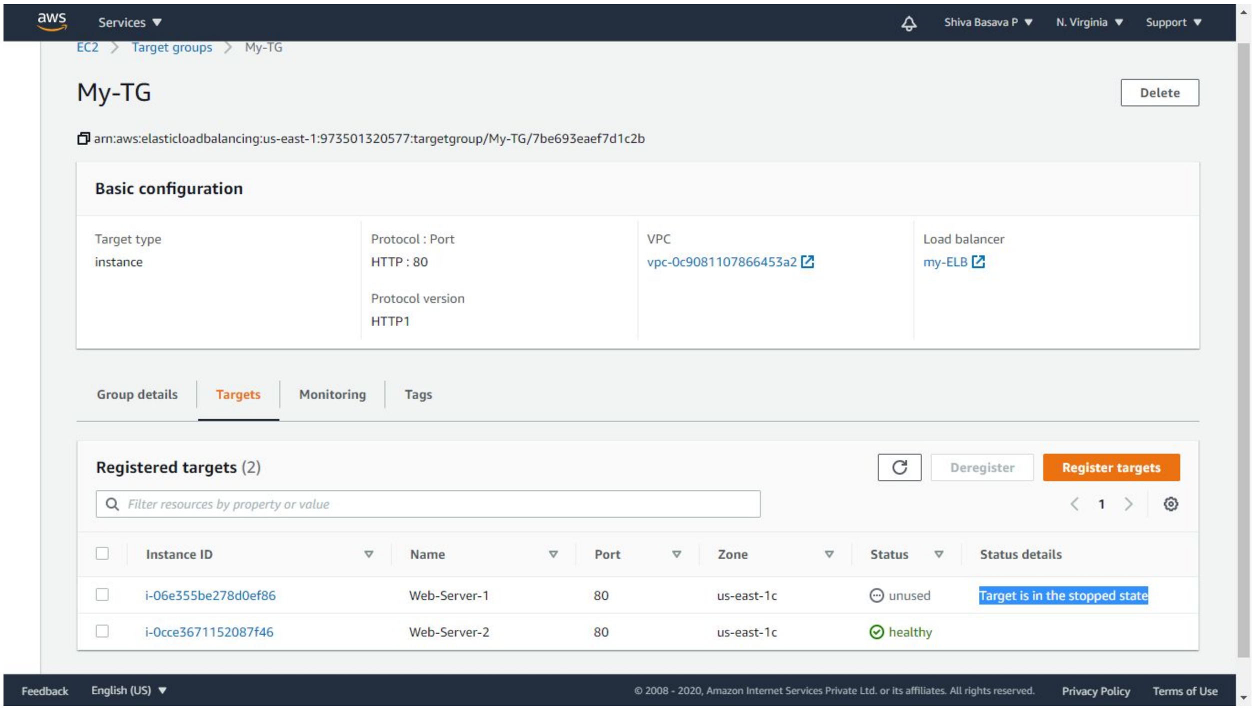
Following is the Screenshot for the same



□	Name	Instance ID	Instance state	I...	Status check	Alarm Status	Availability zone
□	Web-Server-2	i-0cce3671152087f46	Running	t2....	2/2 checks pa...	No alarms +	us-east-1c
□	Web-Server-1	i-06e355be278d0ef86	Stopped	t2....	–	No alarms +	us-east-1c
□	Batsion_server	i-07c1cc61eef078711	Running	t2....	2/2 checks pa...	No alarms +	us-east-1a

At Load Balancer's Target Group we can check for its health, It'll be showing as **unused**

& Target Group is **stopped** status for **Web-Server-1**



My-TG

arn:aws:elasticloadbalancing:us-east-1:973501320577:targetgroup/My-TG/7be693eaef7d1c2b

Basic configuration

Target type: instance

Protocol : Port: HTTP : 80

Protocol version: HTTP1

VPC: vpc-0c9081107866453a2

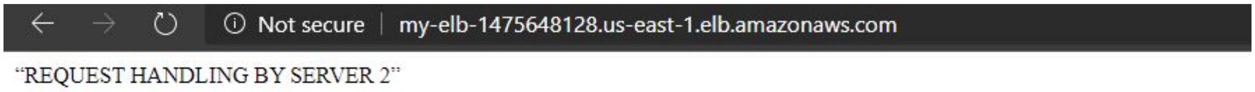
Load balancer: my-ELB

Registered targets (2)

□	Instance ID	Name	Port	Zone	Status	Status details
□	i-06e355be278d0ef86	Web-Server-1	80	us-east-1c	unused	Target is in the stopped state
□	i-0cce3671152087f46	Web-Server-2	80	us-east-1c	✓ healthy	

Now if we access application through the link of Load Balancer - **my-ELB-1475648128.us-east-1.elb.amazonaws.com**

We always receive response from **Web-Server-2**

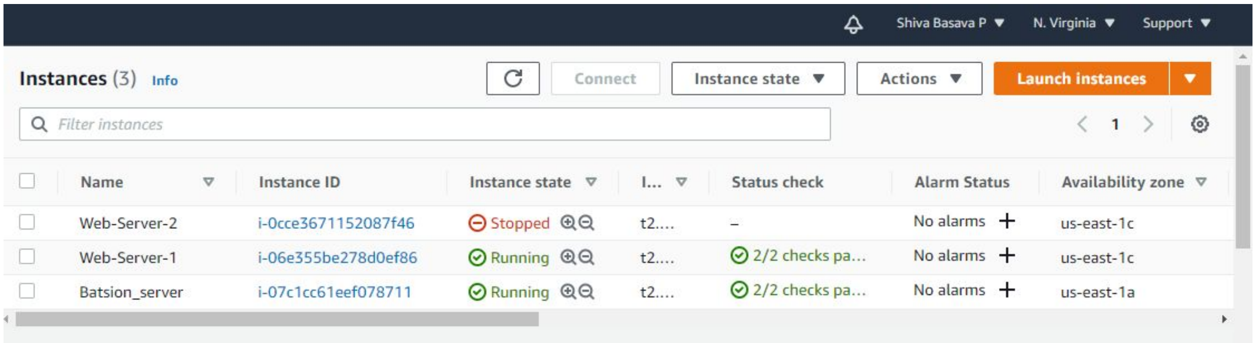


my-elb-1475648128.us-east-1.elb.amazonaws.com

“REQUEST HANDLING BY SERVER 2”

b. Stopped the **Web-Server-2** & **Web-Server-1** is Running.

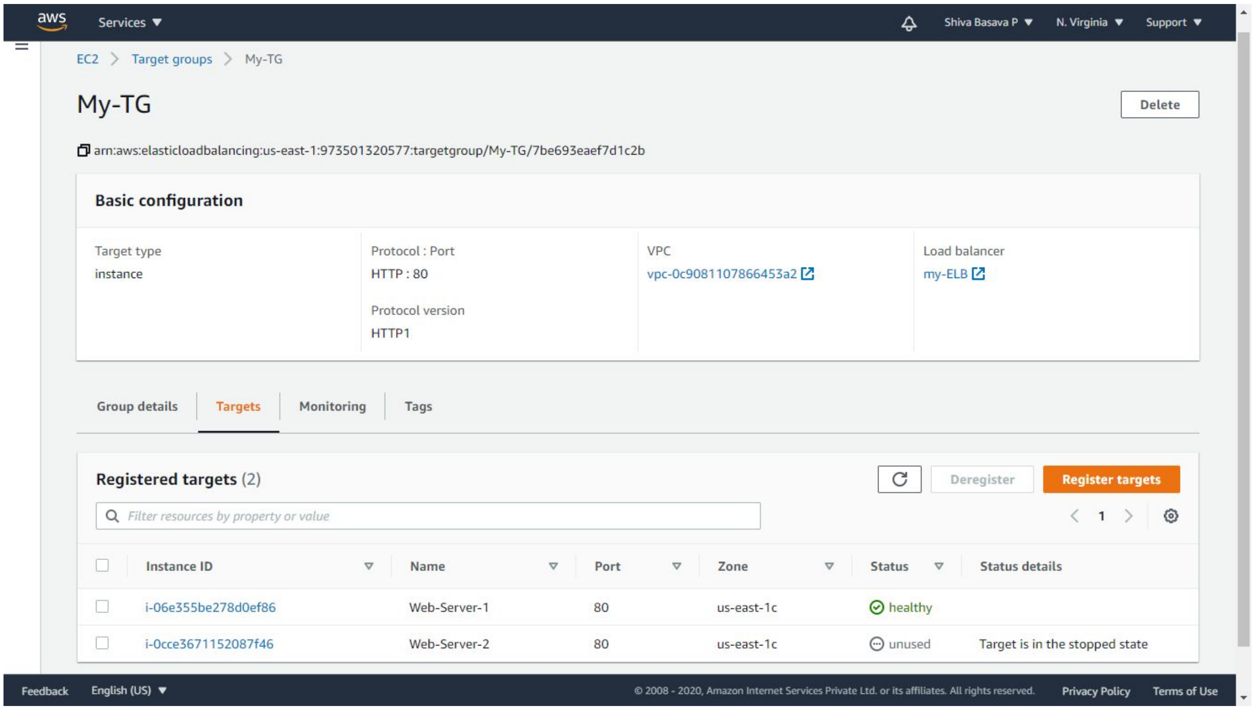
Following is the Screenshot for the same



Instances (3) Info

□	Name	Instance ID	Instance state	I...	Status check	Alarm Status	Availability zone
□	Web-Server-2	i-0cce3671152087f46	Stopped	t2....	–	No alarms +	us-east-1c
□	Web-Server-1	i-06e355be278d0ef86	Running	t2....	2/2 checks pa...	No alarms +	us-east-1c
□	Batsion_server	i-07c1cc61eef078711	Running	t2....	2/2 checks pa...	No alarms +	us-east-1a

At Load Balancer’s Target Group we can check for its health, It’ll be showing as **unused** & Target Group is **stopped** status for **Web-Server-2**



My-TG

arn:aws:elasticloadbalancing:us-east-1:973501320577:targetgroup/My-TG/7be693eaef7d1c2b

Basic configuration

Target type: instance

Protocol : Port: HTTP : 80

Protocol version: HTTP1

VPC: vpc-0c9081107866453a2

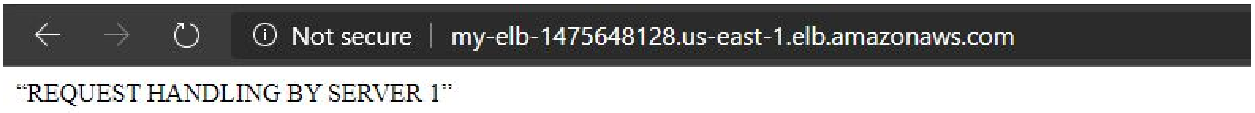
Load balancer: my-ELB

Registered targets (2)

□	Instance ID	Name	Port	Zone	Status	Status details
□	i-06e355be278d0ef86	Web-Server-1	80	us-east-1c	healthy	
□	i-0cce3671152087f46	Web-Server-2	80	us-east-1c	unused	Target is in the stopped state

Now if we access application through the link of Load Balancer - **my-ELB-1475648128.us-east-1.elb.amazonaws.com**

We always receive response from **Web-Server-1**



my-elb-1475648128.us-east-1.elb.amazonaws.com

“REQUEST HANDLING BY SERVER 1”