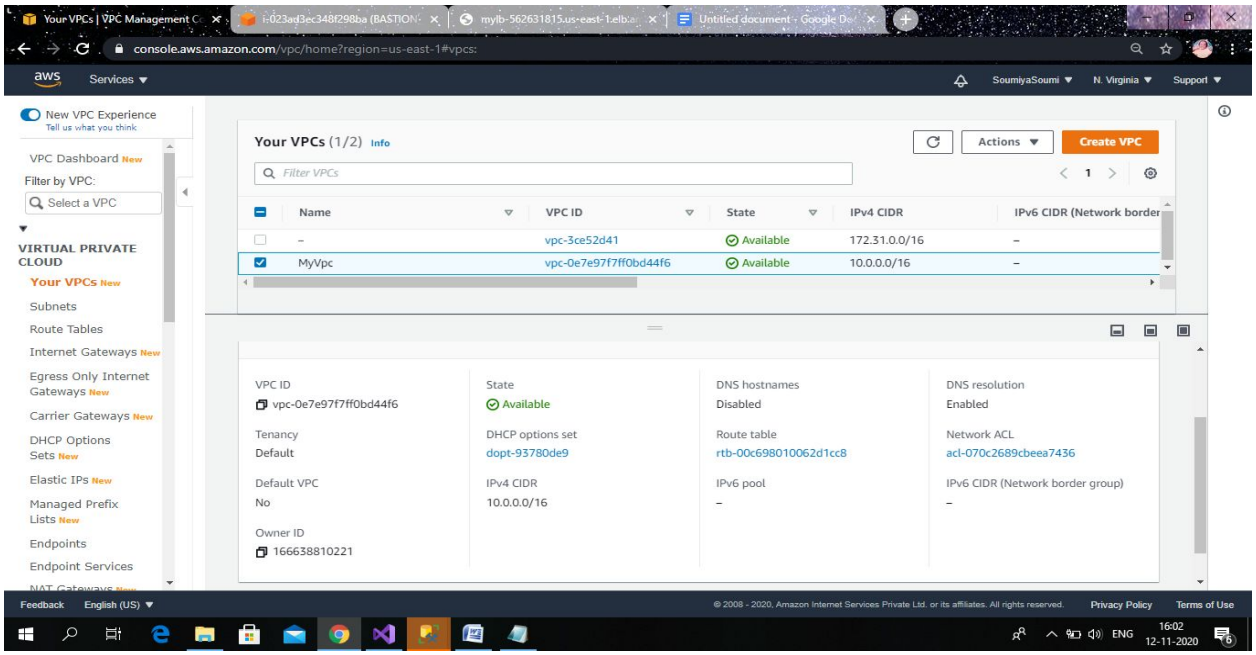
DEPLOYING A HIGHLY AVAILABLE WEB APPLICATION AND BASTION HOST IN AWS

CREATING A VPC

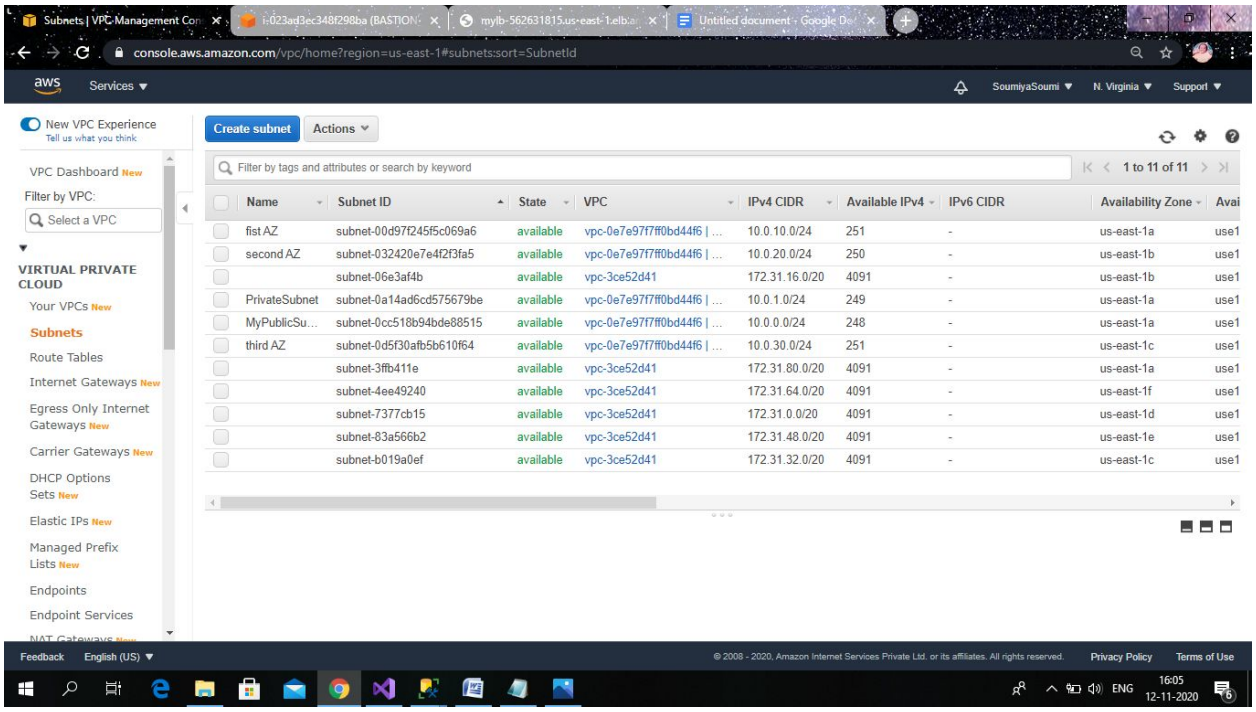
- CREATING THE VPC WITH THE IP 10.0.0.0/16



CREATING A SUBNET

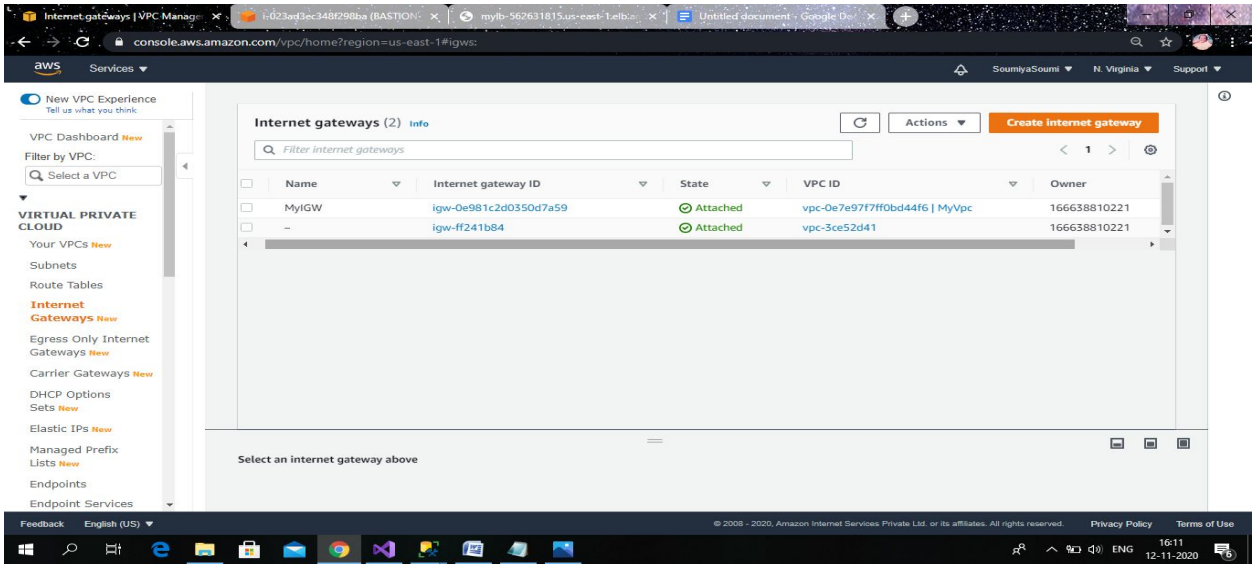
- CREATING FIVE SUBNETS
- WITH THEM 4 IN PUBLIC SUBNET WITH DIFFERENT AVAILABILITY ZONE AND ONE IN PRIVATE SUBNET FOR HIGHLY AVAILABLE APPLICATION
- THE PRIVATE IP DOESN’T CONTAIN IPV4 BECAUSE OF SECURITY
- WE HAVE TO ACCESS THE PRIVATE SUBNET WE NEED NAT GATEWAY IN PUBLIC SUBNET

- REMAINING FOUR SUBNETS ,ENABLING THE AUTO ASSIGN PUBLIC IP



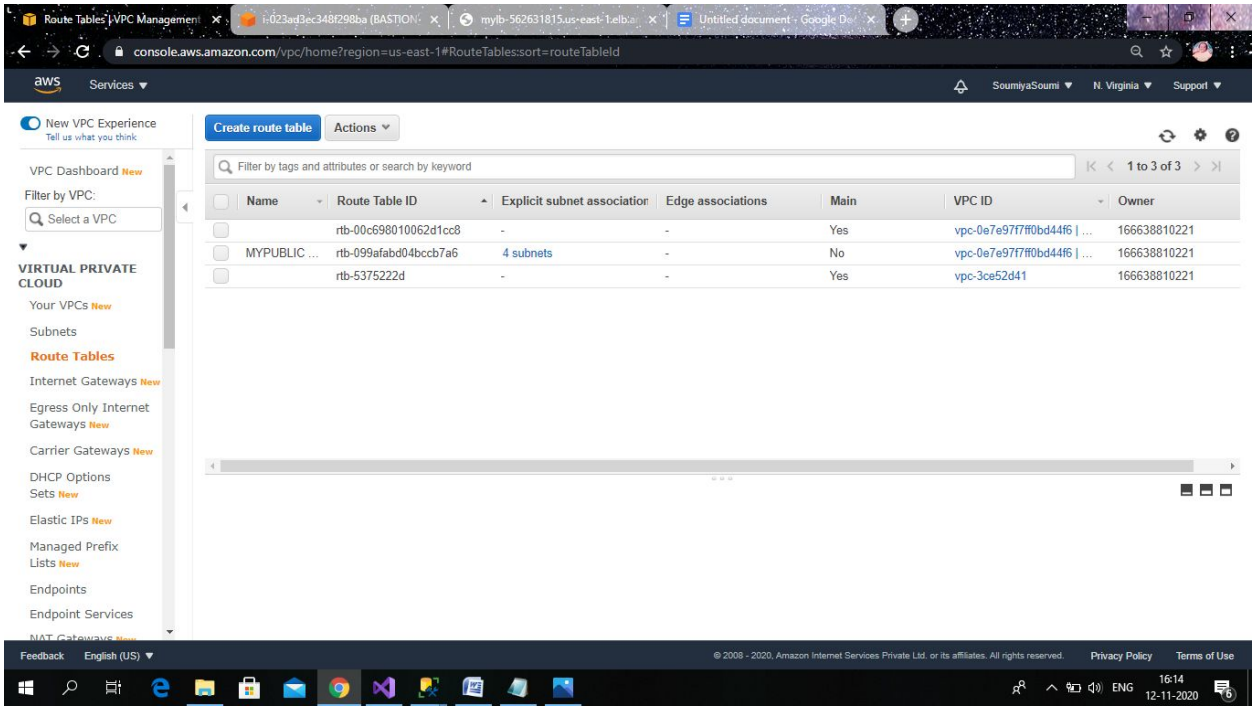
CREATING A INTERNET GATEWAY

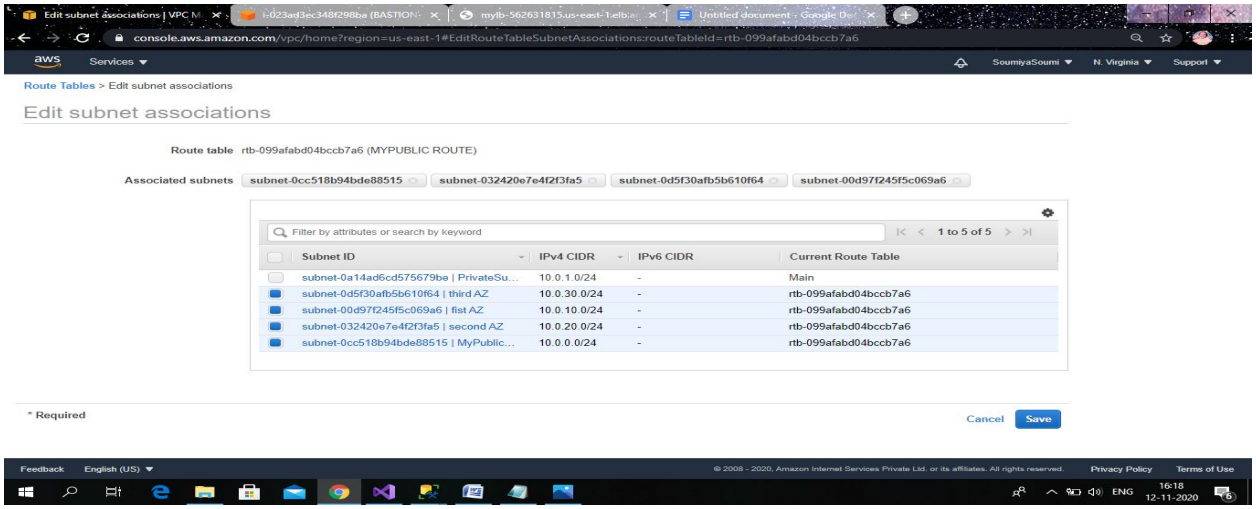
- CREATE AN INTERNET GATEWAY FOR ACCESS THE APPLICATIONS ON PUBLIC IP
- AND ATTACH THE VPC THAT ONE WE HAVE CREATED



CREATING A ROUTE TABLE

- CREATE ROUTE TABLE WITH THE CREATED VPC
- AND CLICK ON ADD ROUTES ADD 0.0.0.0./0 AS ROUTE AND ADD INTERNET GATEWAY THAT PREVIOUSLY CREATED ONE
- WE CAN SEE THE TWO ROUTE TABLE WITH SAME ID ONE IS MAIN AND ANOTHER ONE IS NO MAIN
- CLICK ON THE NO MAIN TABLE GOTO EDIT SUBNET ASSOCIATION AND ADD 4 PUBLIC SUBNETS TO IT

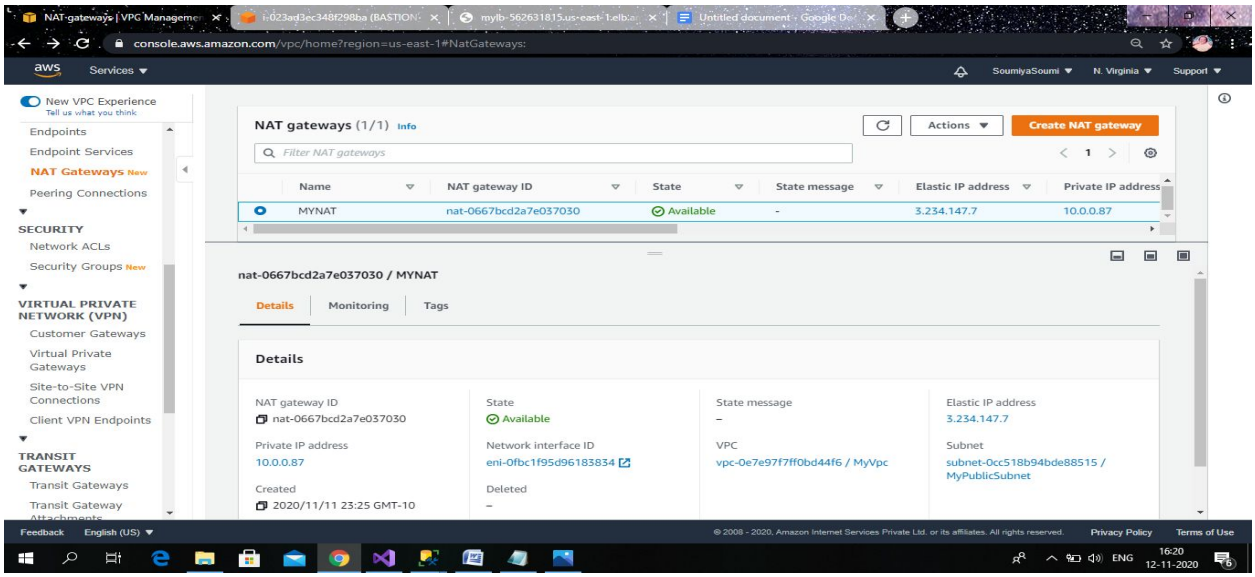


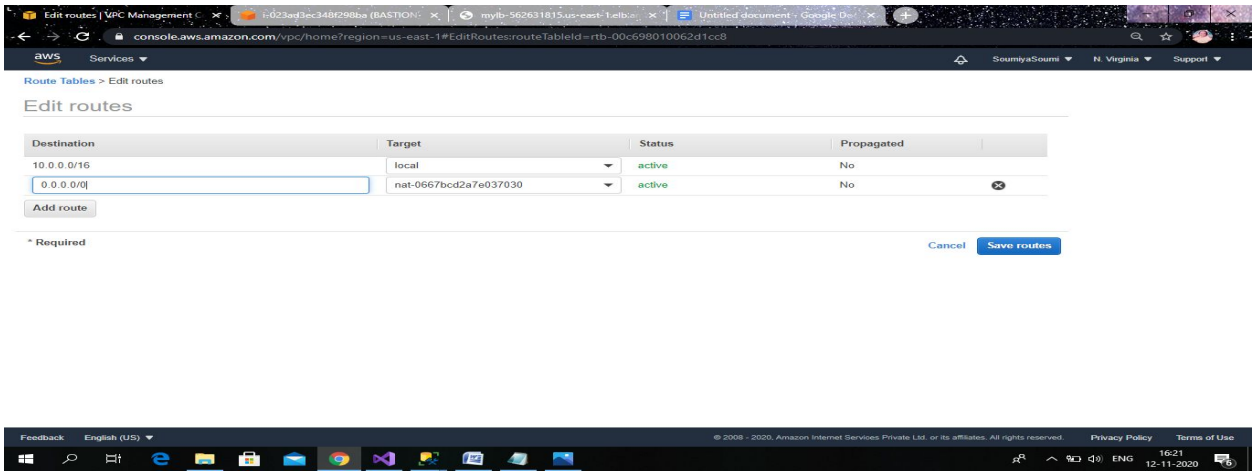


CREATING A NAT GATEWAY

- IN PRIVATE SUBNET DOESN'T HAVE THE ACCESS TO THE PUBLIC SO WE HAVE TO CREATE A GATEWAY CALLED AS NAT GATEWAY
- CREATE A NAT GATEWAY WITH PUBLIC SUBNET
- AFTER THAT GO TO ROUTE TABLE GO TO THE ROUTE TABLE WITH SAME ID MAIN ROUTE
- CLICK ON EDIT ROUTE

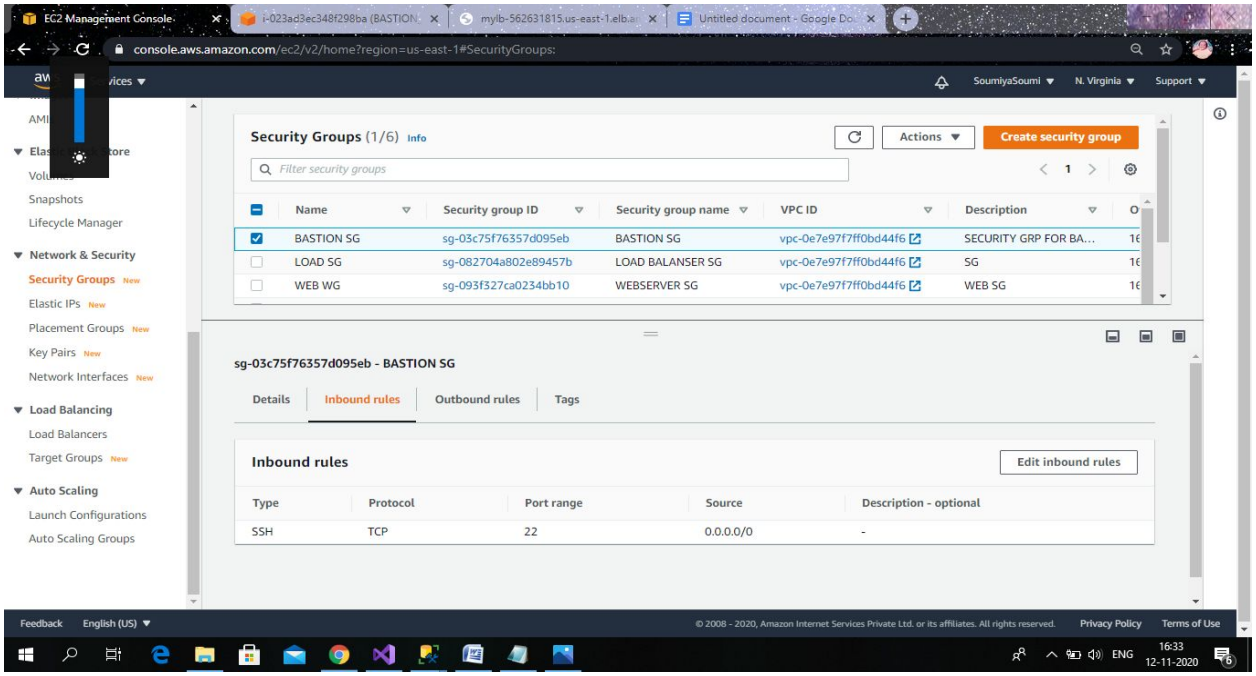
- ADD 0.0.0.0/0 AS IP AND ADD NAT GATEWAY TO IT





CREATING SECURITY GROUPS

- CREATING SECURITY GROUP FOR BASTION SERVER ,LOAD BALANCER AND WEB SERVER
- IN THE BASTION SERVER SG WITH ,INBOUND RULES AS SSH TYPE AND CUSTOM 0.0.0.0/0
- LOAD BALANCER SG WITH ,INBOUND RULES HTTP TYPE AND 0.0.0.0/0 CUSTOM
- THE WEB SERVER SG WITHE ,INBOUND RULES HTTP AND SSH TYPES ,BY USING LOAD BALANCER SG AND BASTION SG


EC2 Management Console
console.aws.amazon.com/ec2/v2/home?region=us-east-1#SecurityGroups:
SoumiyaSoumi
N. Virginia
Support
Security Groups (1/6) Info
Actions
Create security group
Filter security groups
Name
Security group ID
Security group name
VPC ID
Description
BASTION SG sg-03c75f76357d095eb BASTION SG vpc-0e7e97f7ff0bd44f6 SECURITY GRP FOR BA...
LOAD SG sg-082704a802e89457b LOAD BALANSER SG vpc-0e7e97f7ff0bd44f6 SG
WEB WG sg-093f327ca0234bb10 WEBSERVER SG vpc-0e7e97f7ff0bd44f6 WEB SG
Snapshots
Lifecycle Manager
Network & Security
Security Groups New
Elastic IPs New
Placement Groups New
Key Pairs New
Network Interfaces New
Load Balancing
Load Balancers
Target Groups New
Auto Scaling
Launch Configurations
Auto Scaling Groups
sg-03c75f76357d095eb - BASTION SG
Details
Inbound rules
Outbound rules
Tags
Inbound rules
Edit inbound rules
Type
Protocol
Port range
Source
Description - optional
SSH TCP 22 0.0.0.0/0 -
Feedback
English (US)
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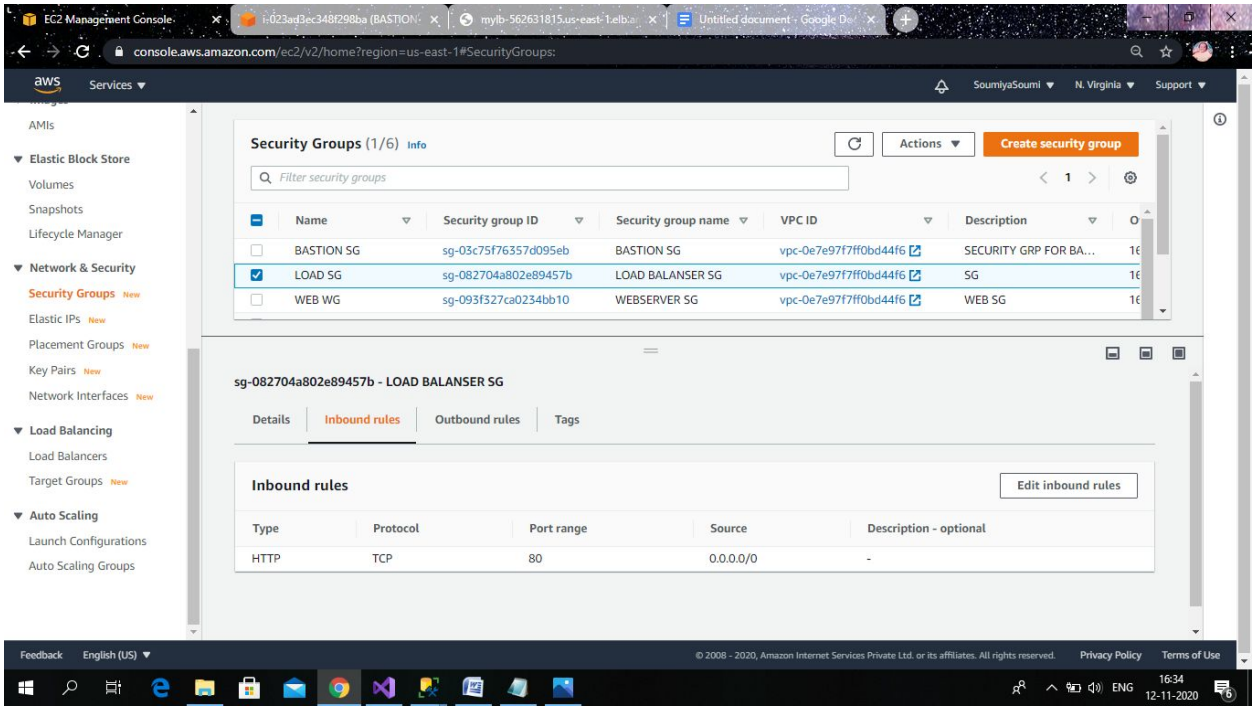
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AMIs
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups New
Elastic IPs New
Placement Groups New
Key Pairs New
Network Interfaces New
Load Balancing
Load Balancers
Target Groups New
Auto Scaling
Launch Configurations
Auto Scaling Groups
sg-082704a802e89457b - LOAD BALANSER SG
Details
Inbound rules
Outbound rules
Tags
Inbound rules
Edit inbound rules
Type
Protocol
Port range
Source
Description - optional
HTTP TCP 80 0.0.0.0/0 -
Feedback
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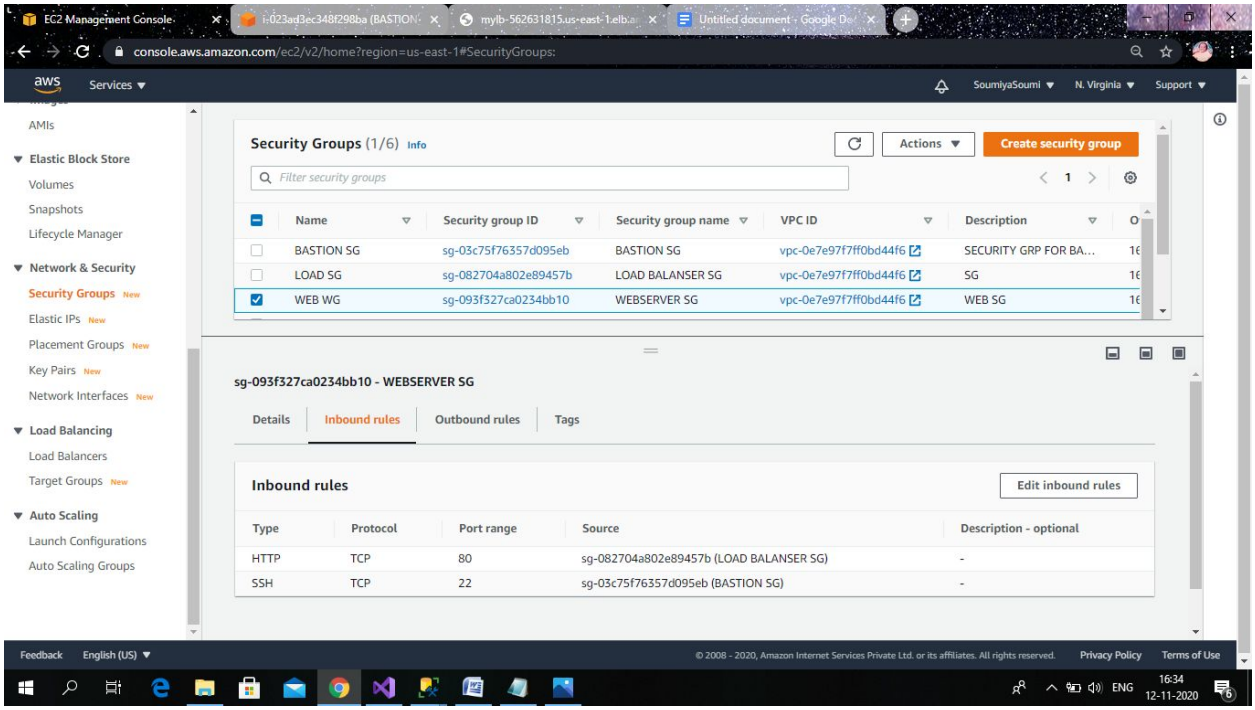
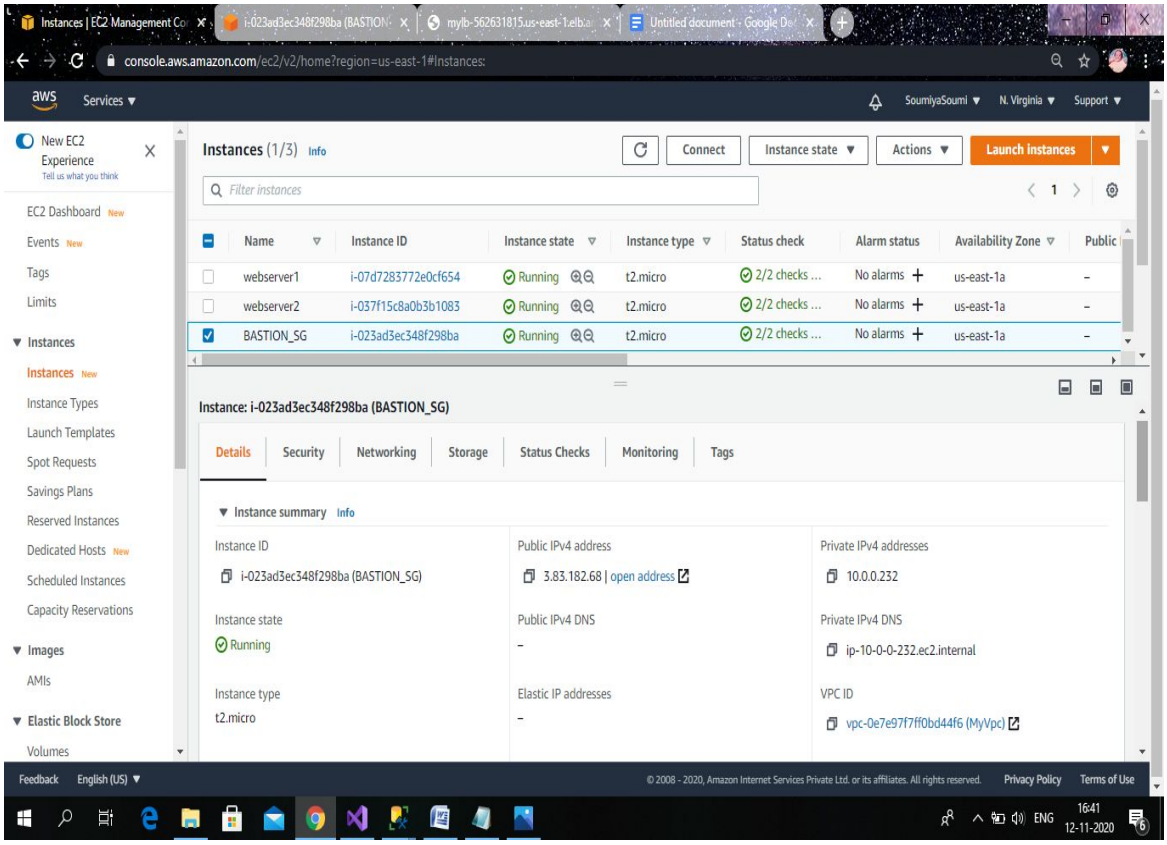


CREATING EC2 INSTANCES

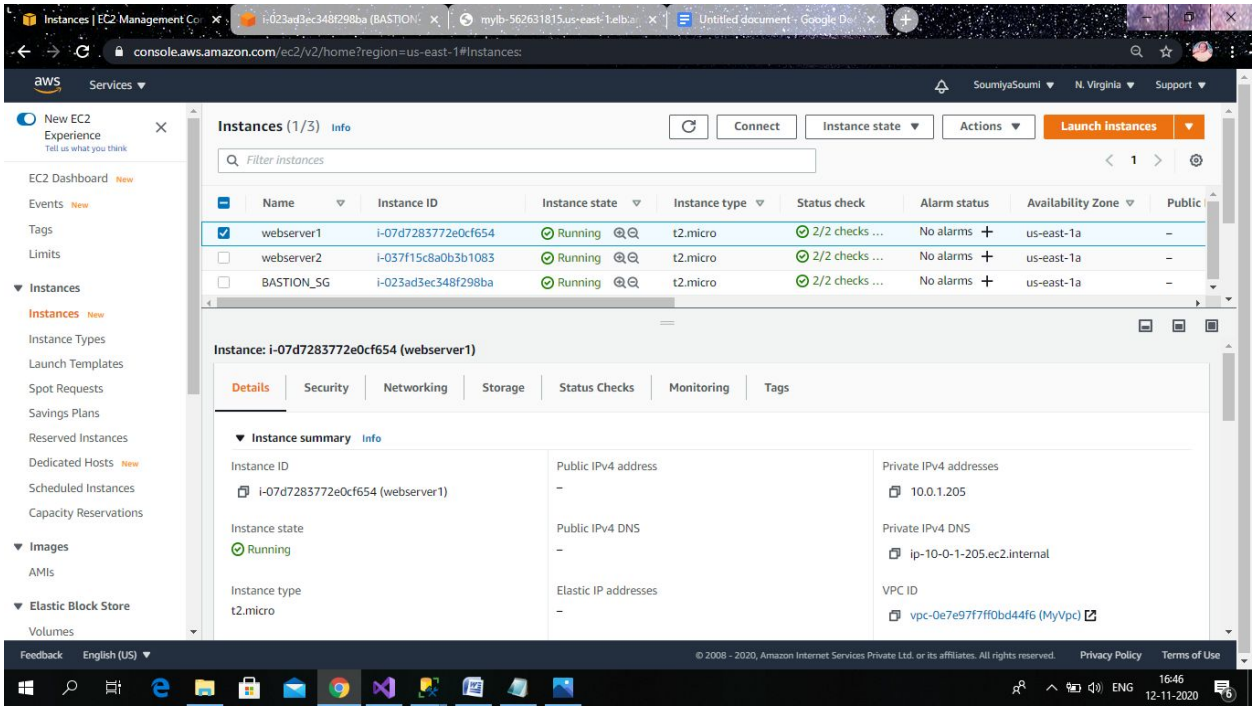
CREATING A BASTION SERVER

- CREATING A BASTION WEB SERVER WITH PUBLIC SUBNET THAT ONE WE HAVE CREATED
- CHOOSE THE BASTION SECURITY GROUP THAT WE HAVE CREATED
- VIEW AND LAUNCH



CREATING WEB SERVERS

- Creating 2 web servers with a private subnet and web server security group.
- Waiting for 2/2 check of all the instances


Instances | EC2 Management Co
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mylb-562631815.us-east-1.elb.a
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console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:
aws
Services
SoumiyaSoumi
N. Virginia
Support
New EC2 Experience
Tell us what you think
EC2 Dashboard New
Events New
Tags
Limits
Instances
Instances New
Instance Types
Launch Templates
Spot Requests
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Dedicated Hosts New
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Capacity Reservations
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Volumes
Instances (1/3) Info
Connect
Instance state
Actions
Launch instances
Filter instances
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
webserver1 i-07d7283772e0cf654 Running t2.micro 2/2 checks ... No alarms us-east-1a
webserver2 i-037f15c8a0b3b1083 Running t2.micro 2/2 checks ... No alarms us-east-1a
BASTION_SG i-023ad3ec348f298ba Running t2.micro 2/2 checks ... No alarms us-east-1a
Instance: i-07d7283772e0cf654 (webserver1)
Details
Security
Networking
Storage
Status Checks
Monitoring
Tags
Instance summary Info
Instance ID
i-07d7283772e0cf654 (webserver1)
Public IPv4 address
-
Private IPv4 addresses
10.0.1.205
Instance state
Running
Public IPv4 DNS
-
Private IPv4 DNS
ip-10-0-1-205.ec2.internal
Instance type
t2.micro
Elastic IP addresses
-
VPC ID
vpc-0e7e97f7ff0bd44f6 (MyVpc)
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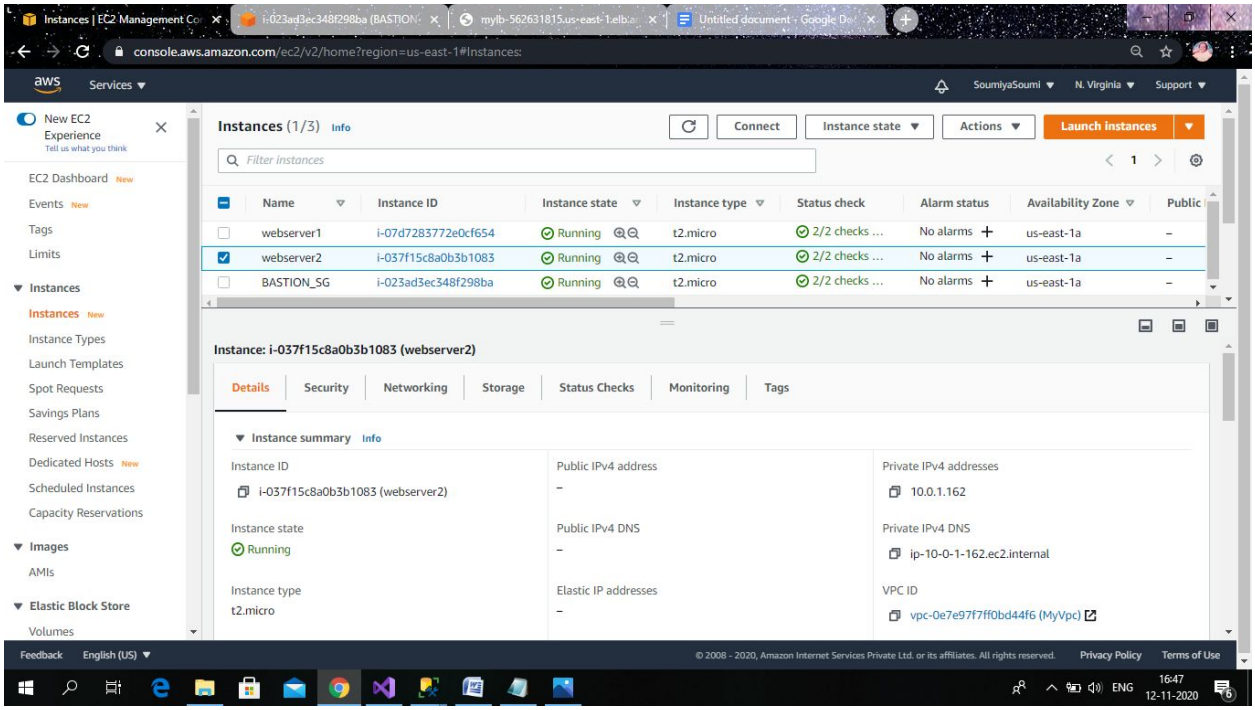
Instances | EC2 Management Co
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console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:
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BASTION_SG i-023ad3ec348f298ba Running t2.micro 2/2 checks ... No alarms us-east-1a
Instance: i-037f15c8a0b3b1083 (webserver2)
Details
Security
Networking
Storage
Status Checks
Monitoring
Tags
Instance summary Info
Instance ID
i-037f15c8a0b3b1083 (webserver2)
Public IPv4 address
-
Private IPv4 addresses
10.0.1.162
Instance state
Running
Public IPv4 DNS
-
Private IPv4 DNS
ip-10-0-1-162.ec2.internal
Instance type
t2.micro
Elastic IP addresses
-
VPC ID
vpc-0e7e97f7ff0bd44f6 (MyVpc)
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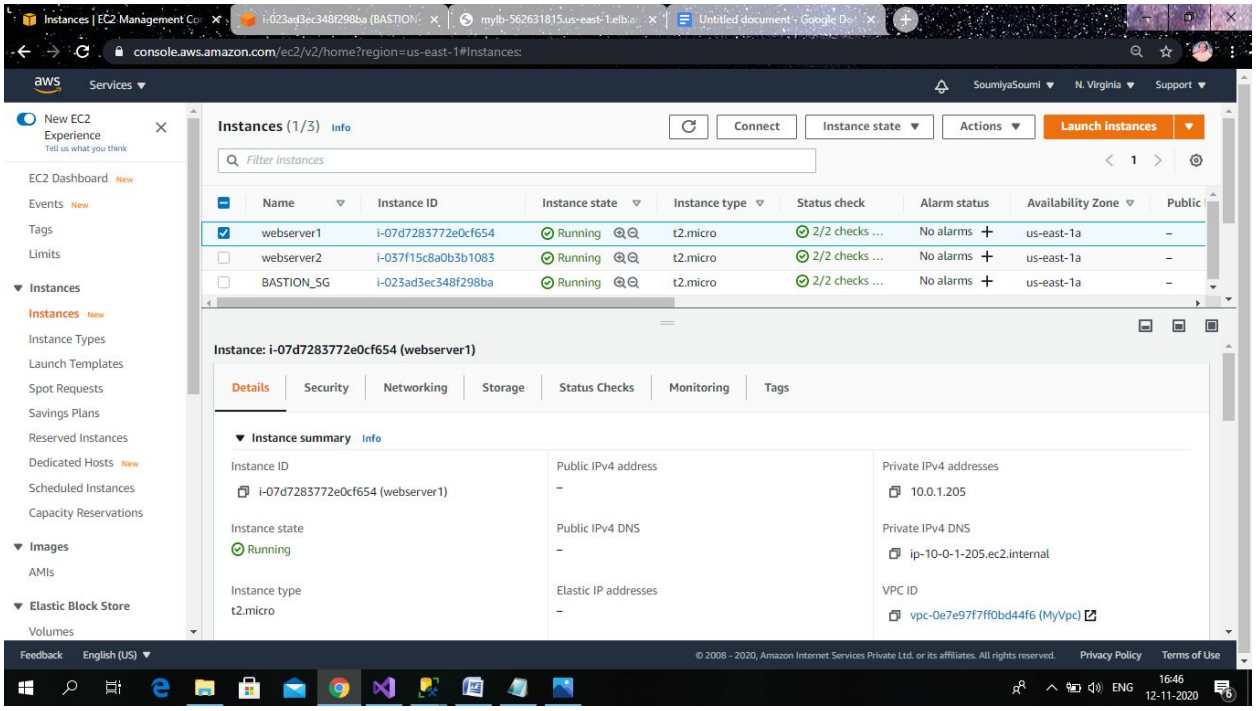
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Instance ID
i-07d7283772e0cf654 (webserver1)
Public IPv4 address
–
Private IPv4 addresses
10.0.1.205
Instance state
Running
Public IPv4 DNS
–
Private IPv4 DNS
ip-10-0-1-205.ec2.internal
Instance type
t2.micro
Elastic IP addresses
–
VPC ID
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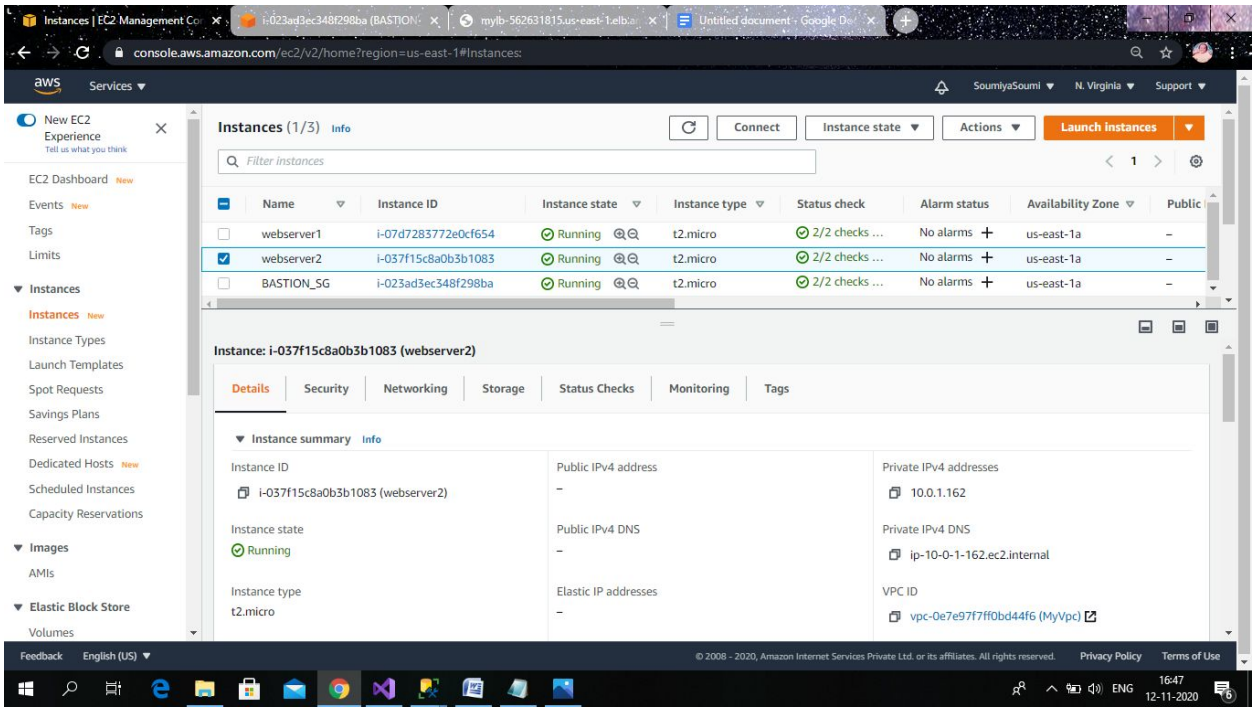
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BASTION_SG i-023ad3ec348f298ba Running t2.micro 2/2 checks ... No alarms us-east-1a –
Instance: i-037f15c8a0b3b1083 (webserver2)
Details
Security
Networking
Storage
Status Checks
Monitoring
Tags
Instance summary Info
Instance ID
i-037f15c8a0b3b1083 (webserver2)
Public IPv4 address
–
Private IPv4 addresses
10.0.1.162
Instance state
Running
Public IPv4 DNS
–
Private IPv4 DNS
ip-10-0-1-162.ec2.internal
Instance type
t2.micro
Elastic IP addresses
–
VPC ID
vpc-0e7e97f7ff0bd44f6 (MyVpc)
Feedback
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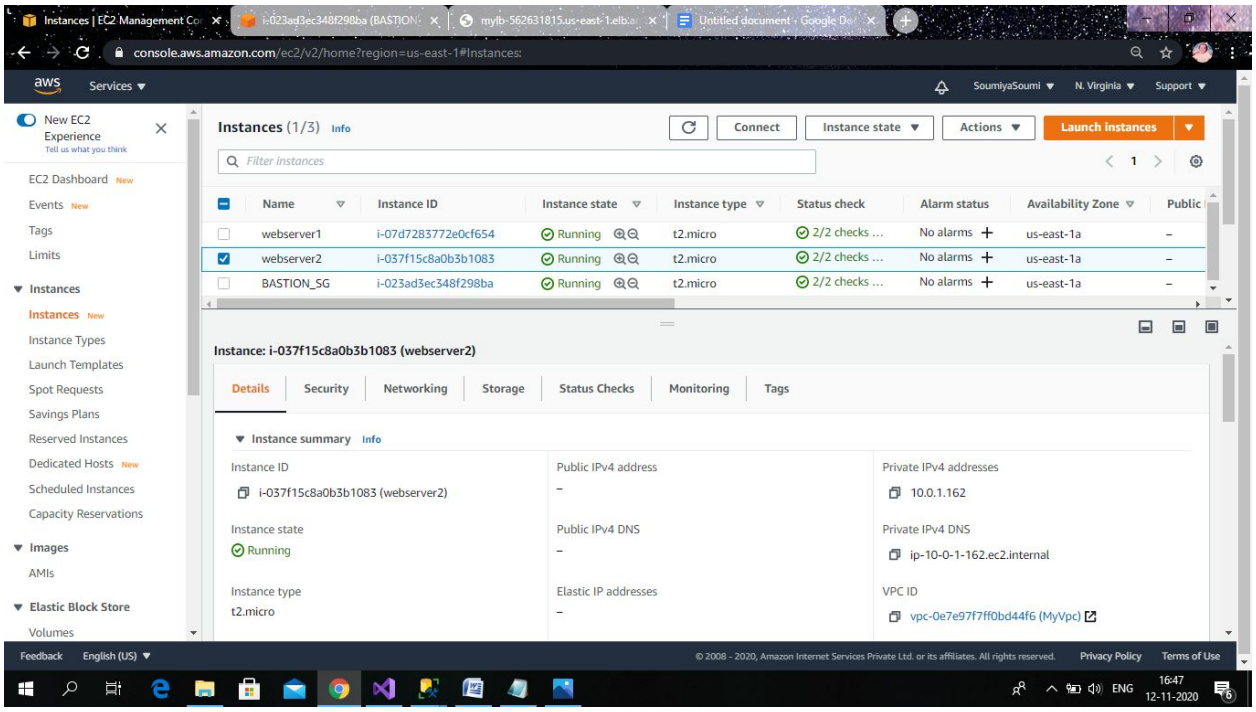
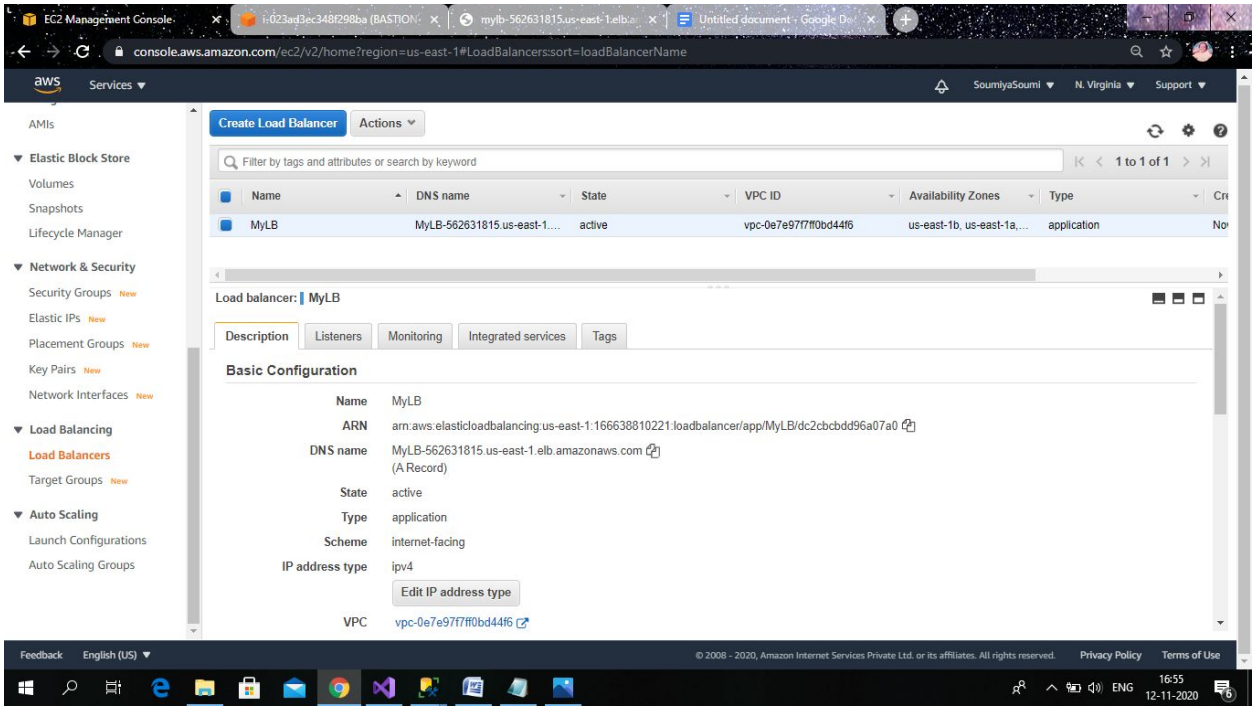
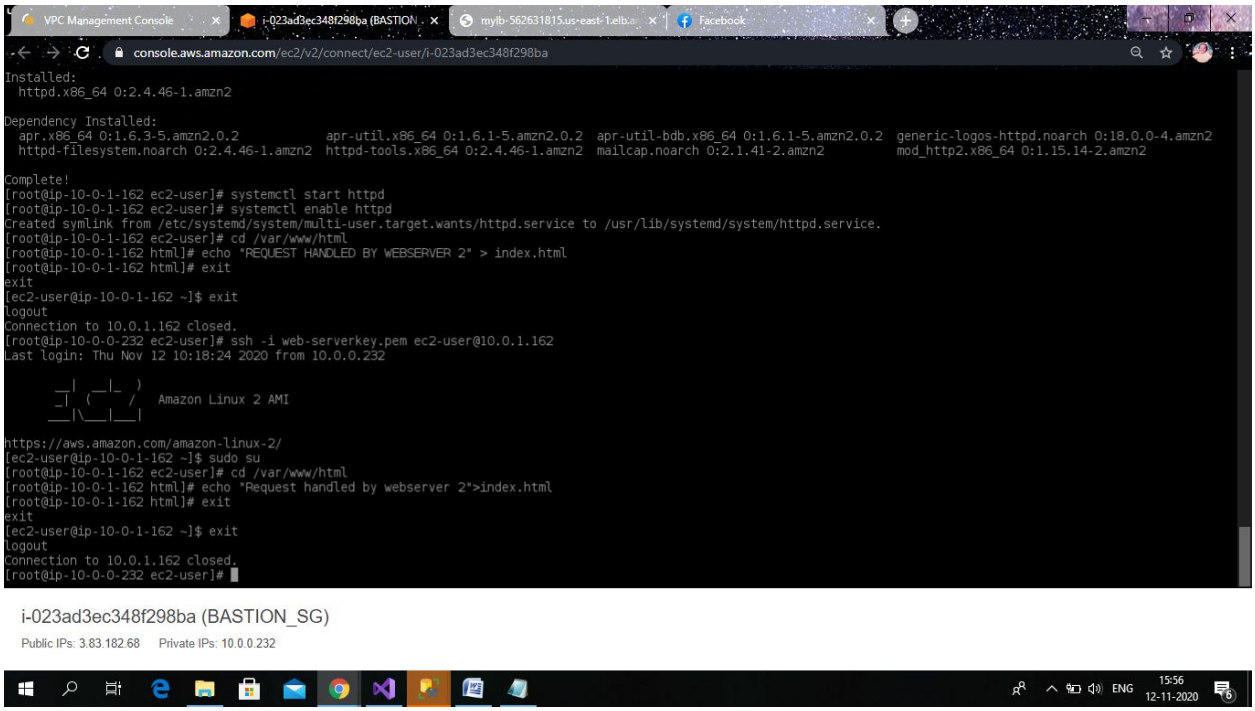
Launching Instances

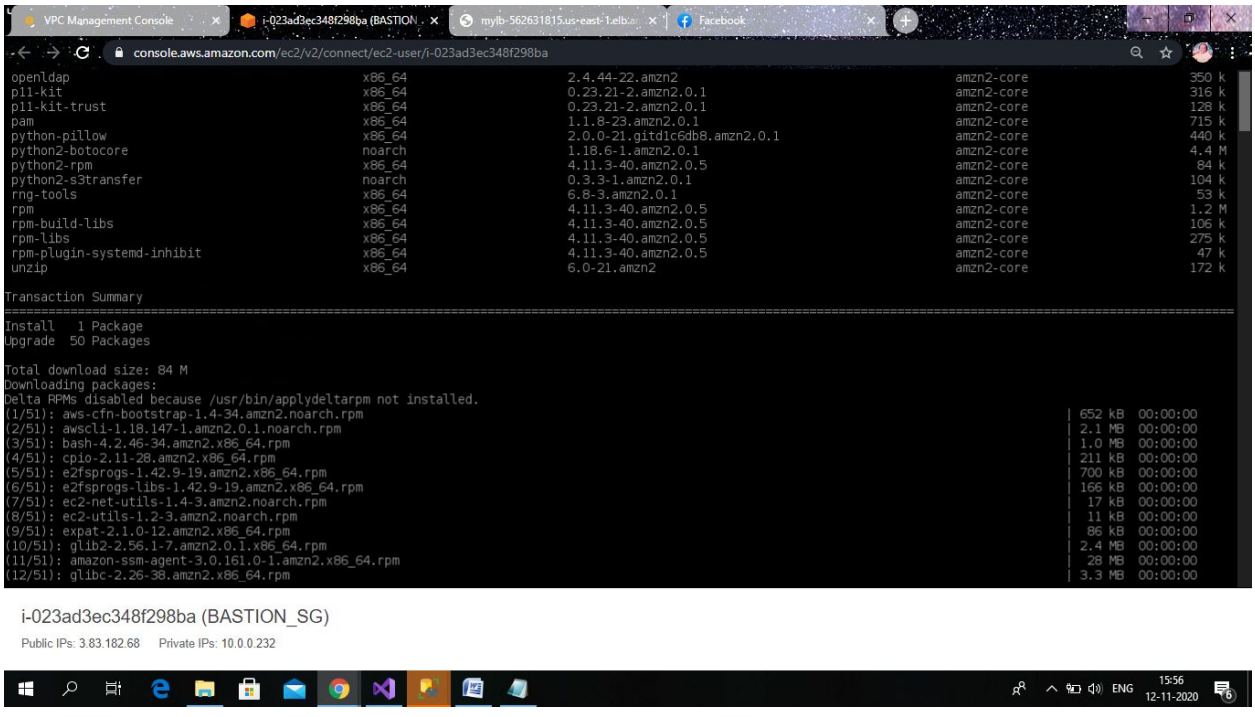
- Creating the load balancer
- Register the target





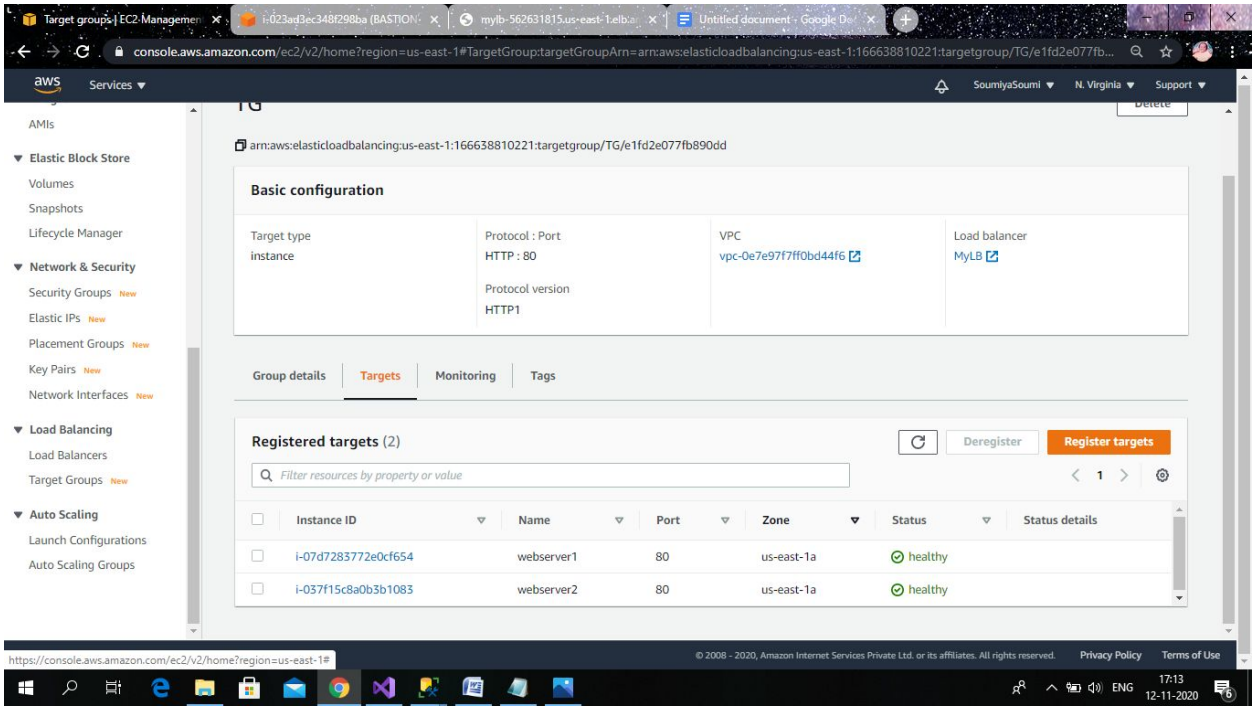
- Launch the bastion server



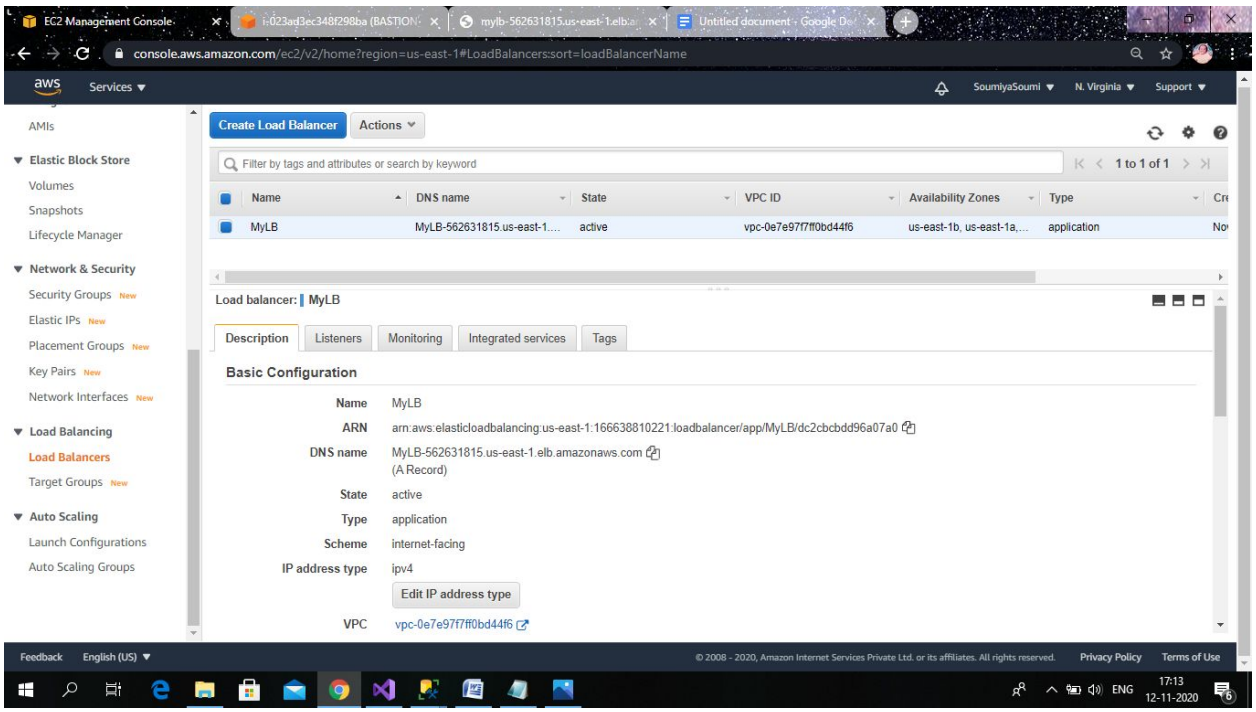


- Become a root user using sudo su
- Vi web-serverkey.pem
- Copy the pem file into and press escape :wq enter

- Using chmod 400 webserverkey.pem
- log into the web server using ssh -i web-serverkey.pem ec2-user@10.0.1.205
- Installing a apache server
- Sudo su for switch as a root user in web server 1
- Yum update -y
- Yum install httpd -y
- Systemctl start httpd
- Systemctl enable httpd
- Cd /var/www/html
- Echo “request handled by web server 1” >index.html
- Click on exit and exit
- Exit from the web server
- Repeat same process for launching web server 2
- The only change is
- Echo “request handled by web server 2” >index.html
- Exit
- Exit
- Now go to the target groups
- See the health of the both of the instance



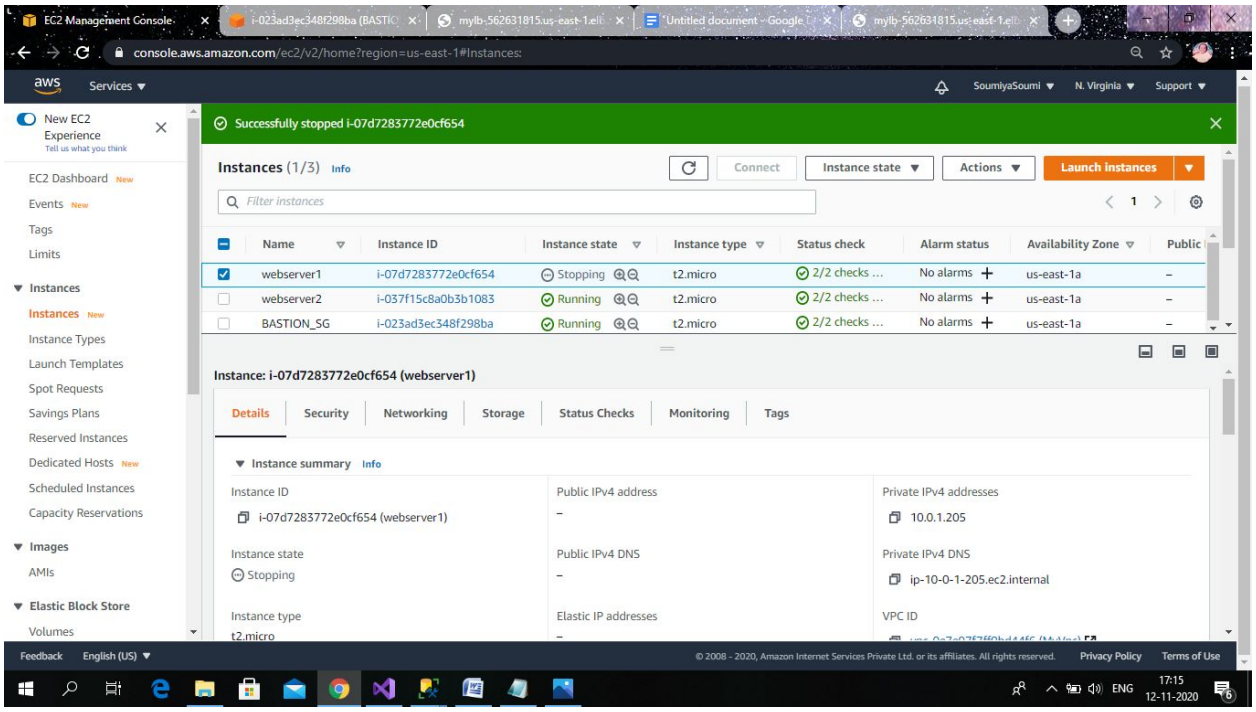
- If the health of the both instance are healthy
- Then go to the load balancer copy th DNS and paste it check both the web server are running

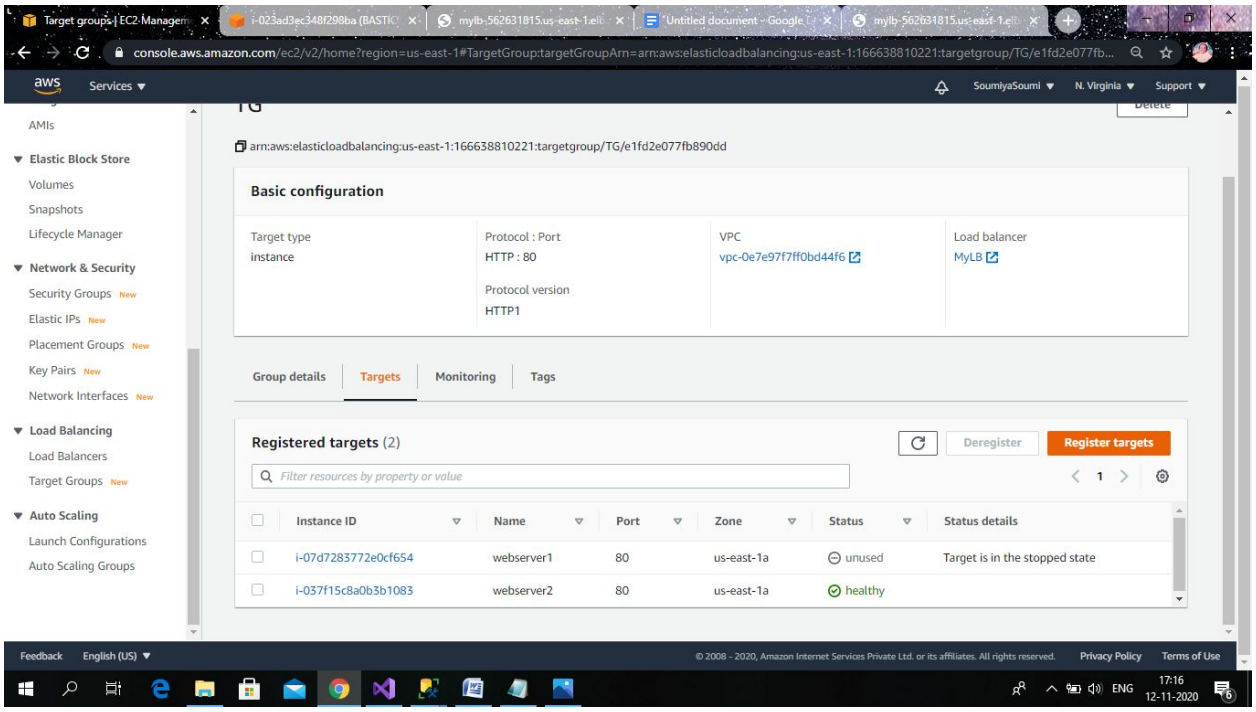


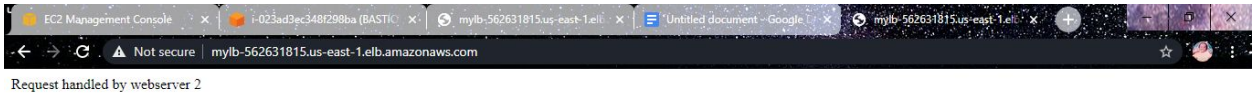
Request HANDLED BY WEBSERVER 1

Request handled by webserver 2

After stopping one instance







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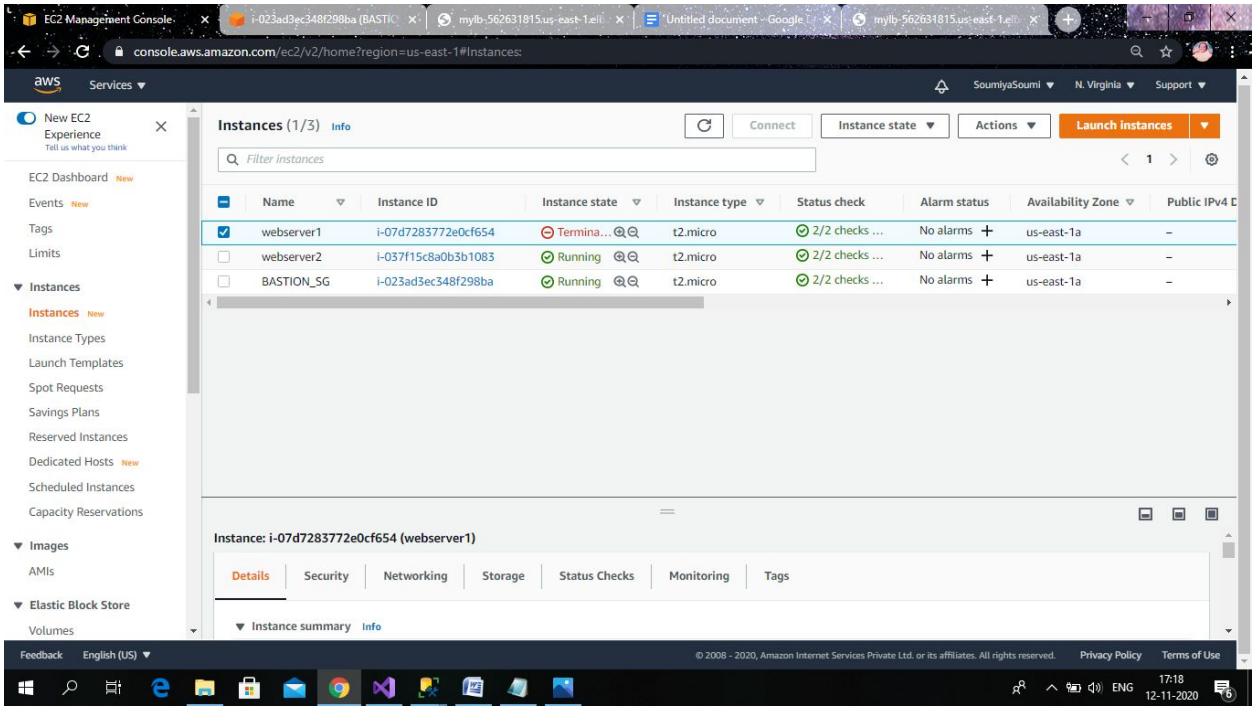
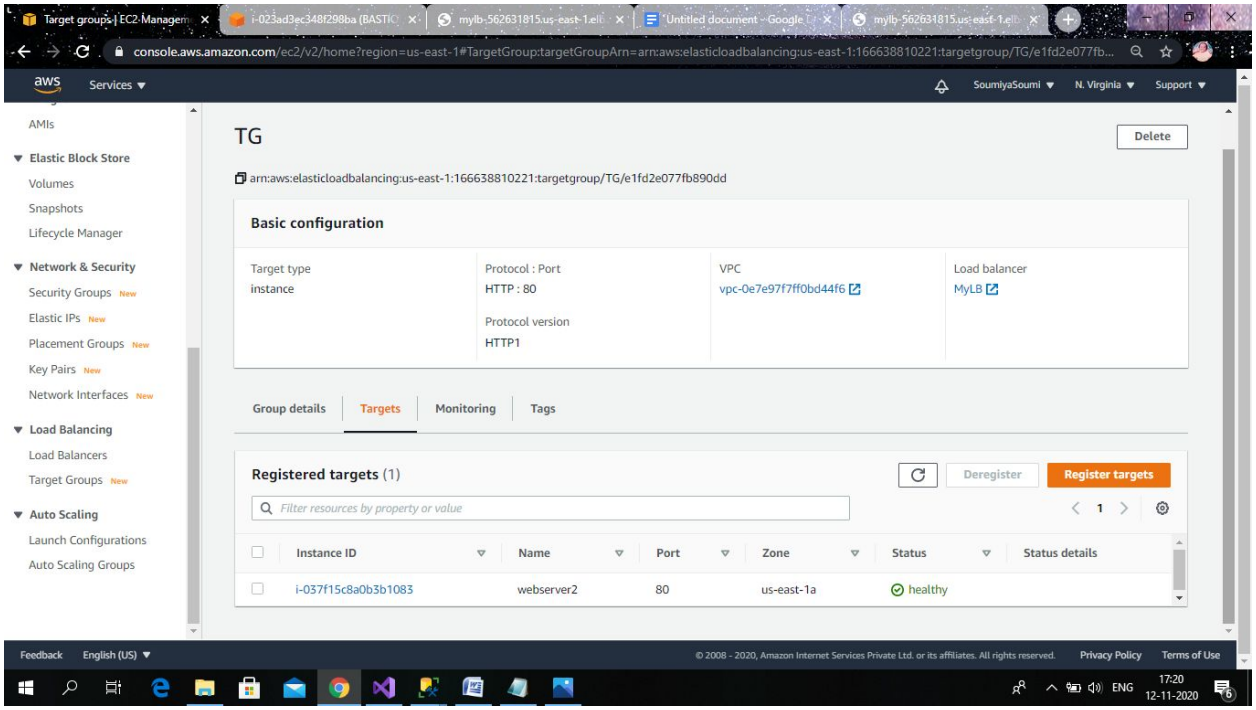
The webserver 1 comes under unused and the webserver 2 only handles the request

After terminating webserver1





Finally

The we implement a highly available web application and bastion aws