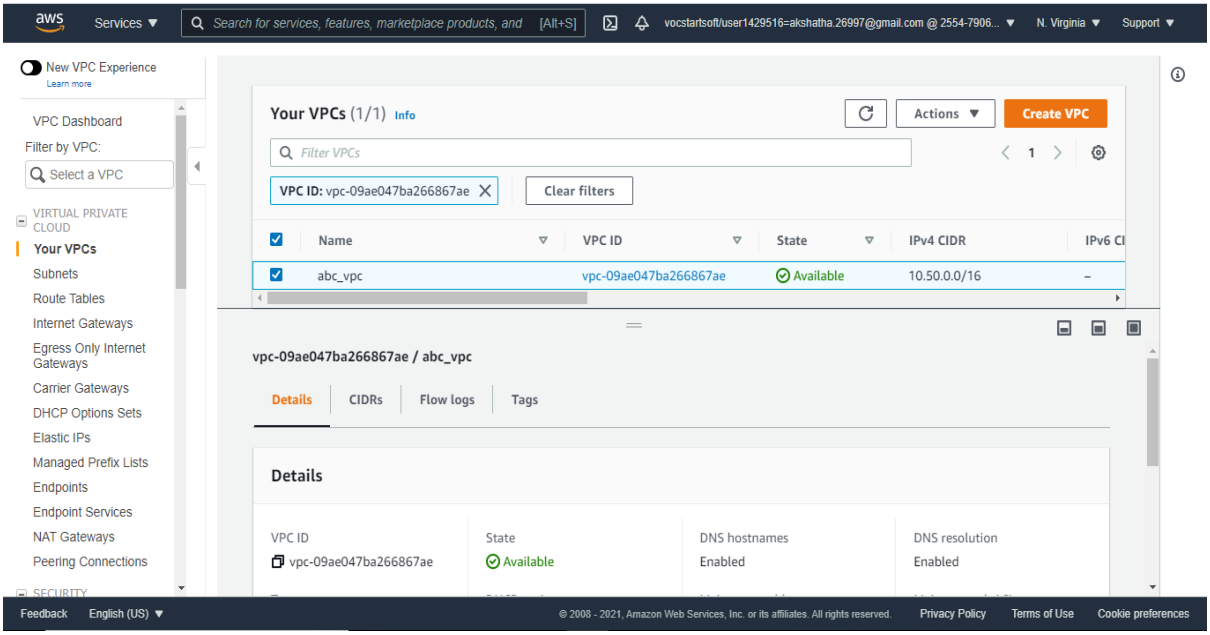
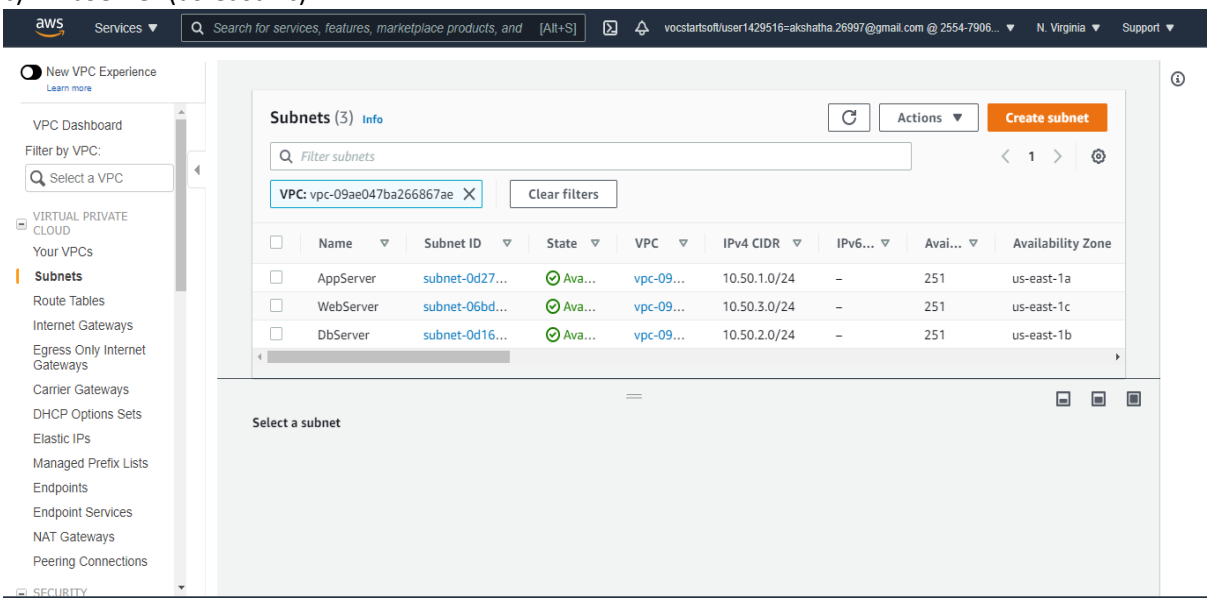
Assignment 2: Network Load Balancer simulation for ABC Corporates.

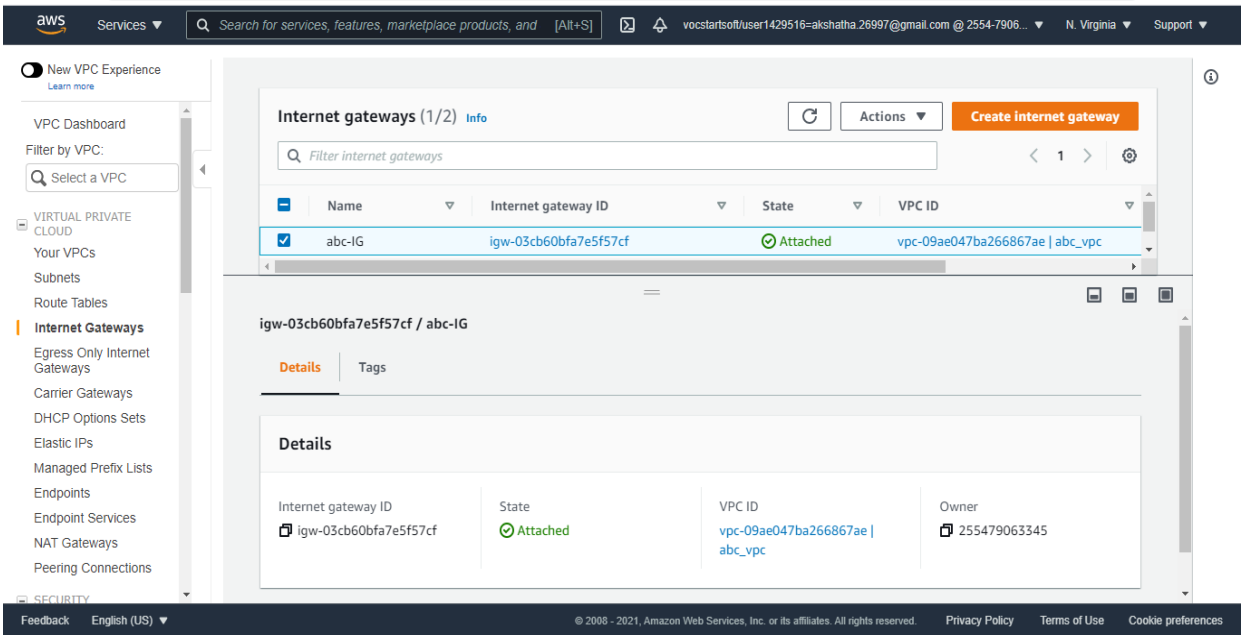
1. Create a custom VPC called “abc_vpc” with CIDR block – 10.50.0.0/16.



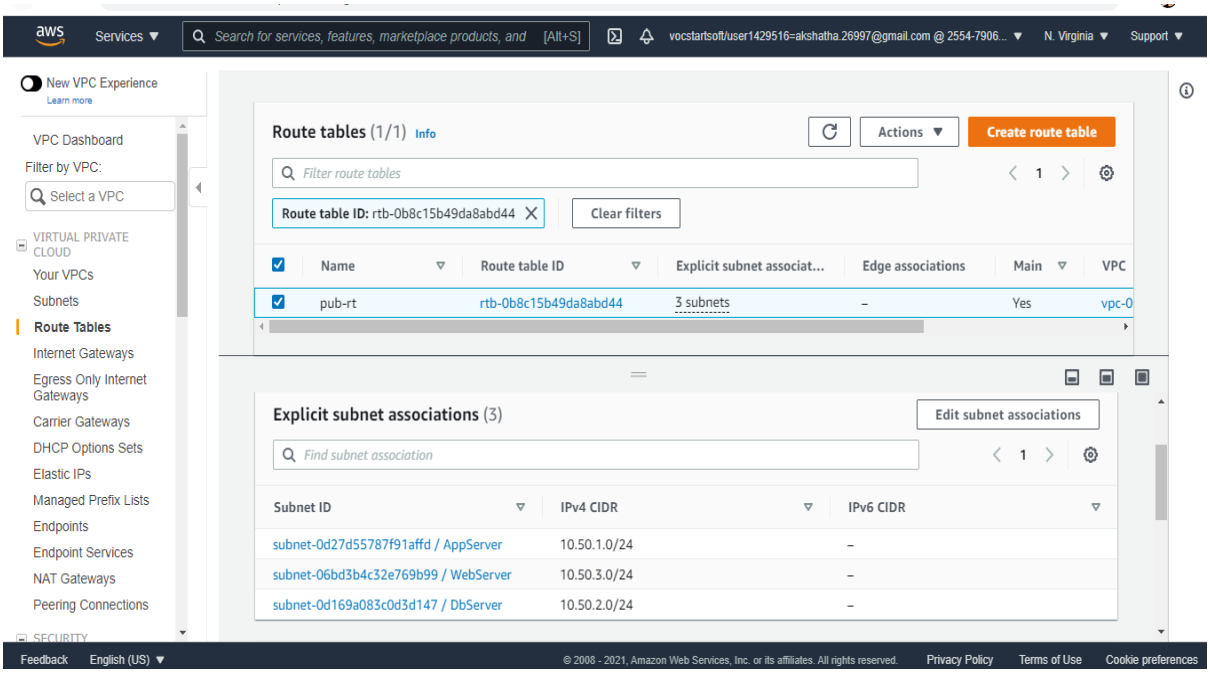
2. Create 3 subnets in the “abc_vpc”. Create the 3 subnets in 3 different availability zones.
   a) AppServer (us-east-1a)
   b) WebServer (us-east-1b)
   c) DbServer (us-east-1c)



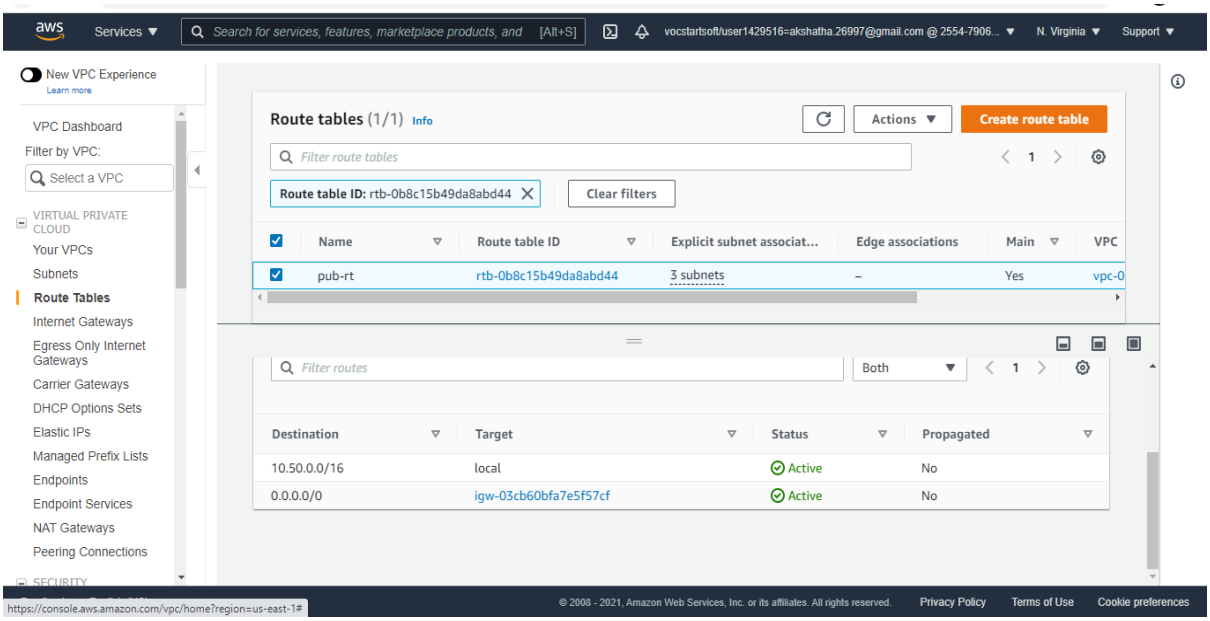
3. Create an internet gateway “abc-IG” and attach it to the VPC “abc_vpc”



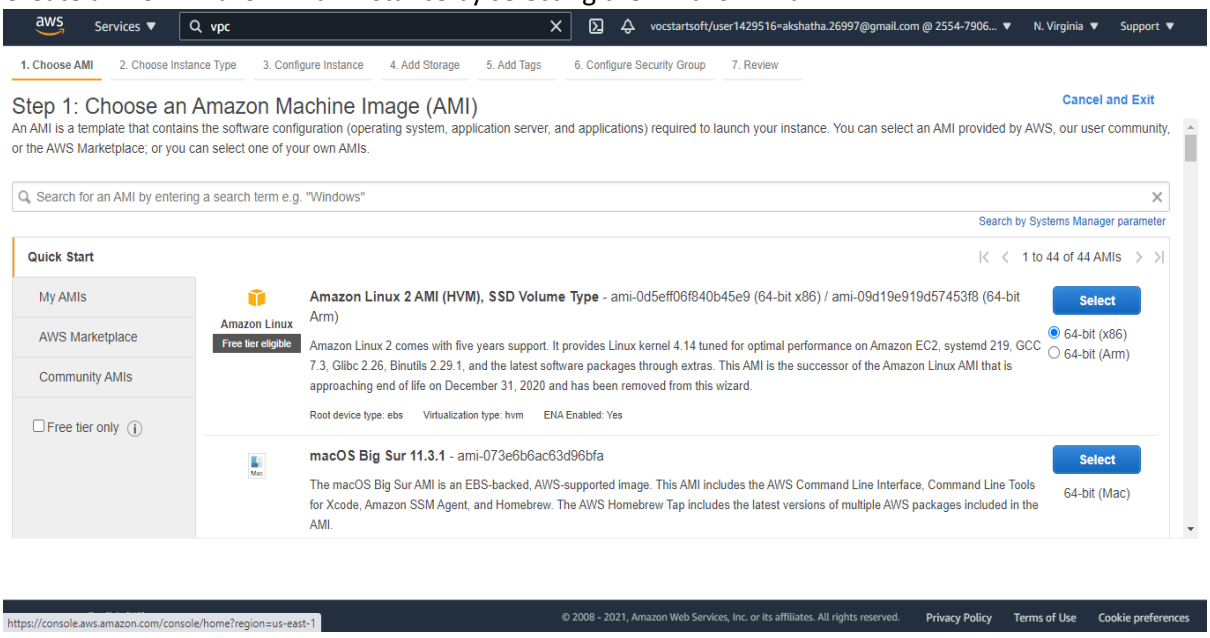
4. Create a route table “pub-rt”, and associate all the 3 subnets to the route table.



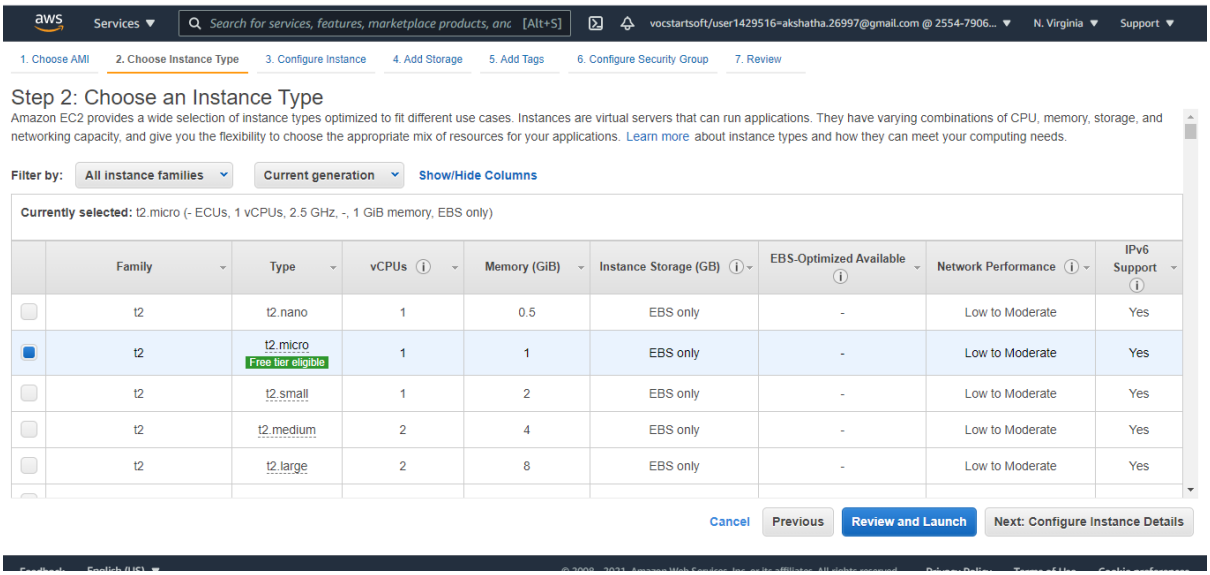
5. Add the route “0.0.0.0/0” and select the internet-gateway as Destination, so that the instances created in the subnets has internet access.



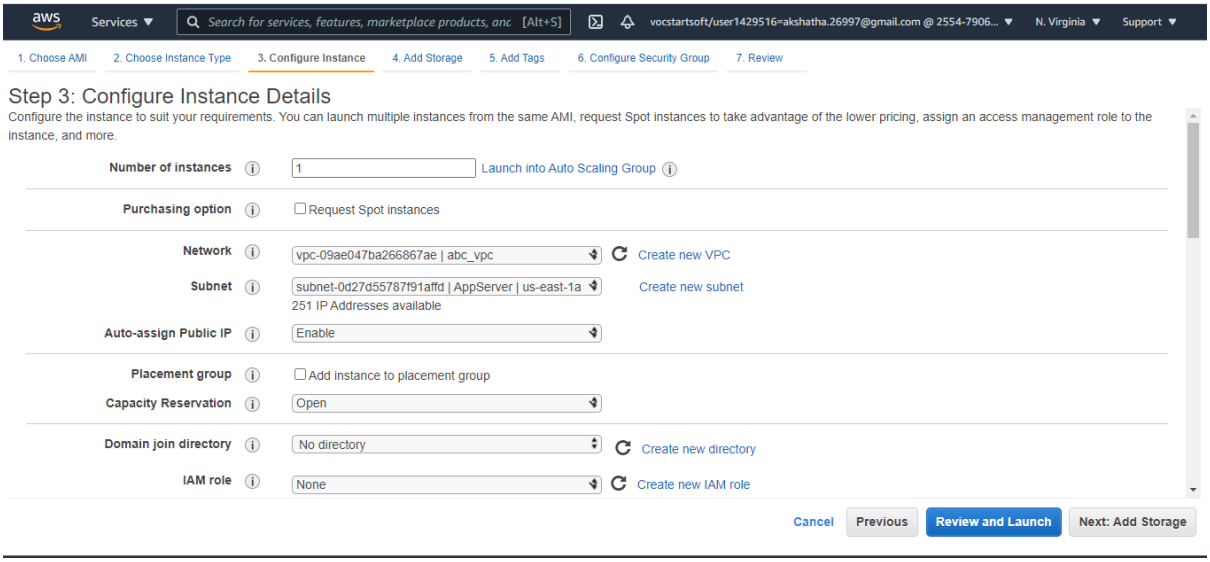
6. Create an EC2 Amazon Linux instance by selecting the Amazon Linux 2 AMI.



7. Select the instance type as “t2.micro”.

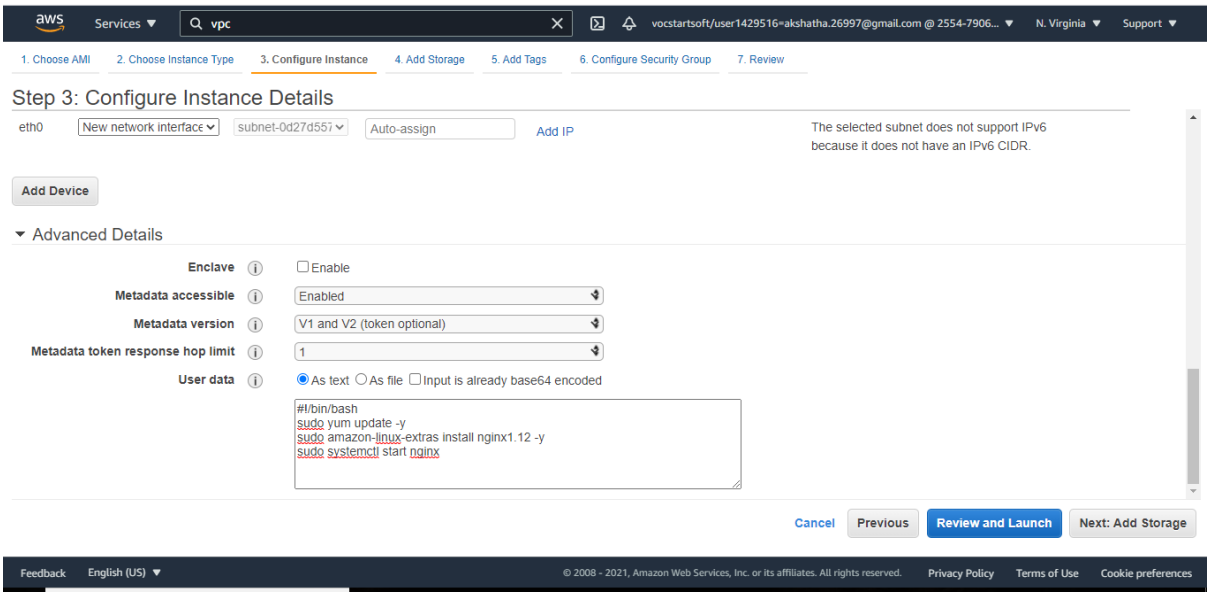


8. In the “configure instance” tab, select the VPC and subnet. Also select “Enable” for Auto-assign Public-IP, so that the instance has a Public IP and Public DNS.

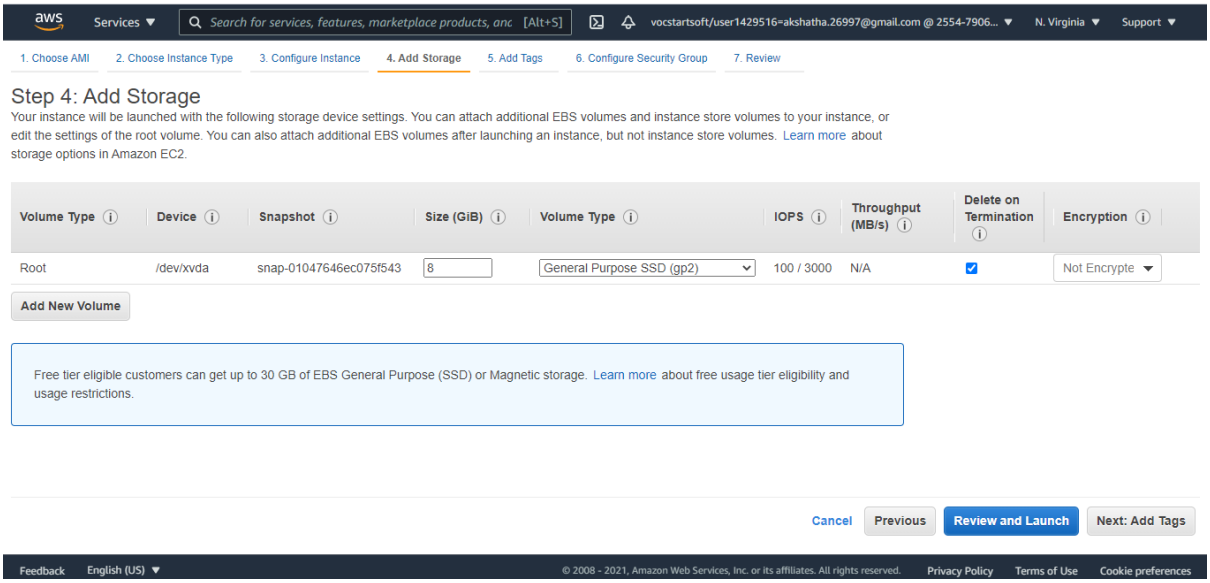


9. In the “configure Instance” tab, add the bash script to install nginx server in the instance when it is launched.

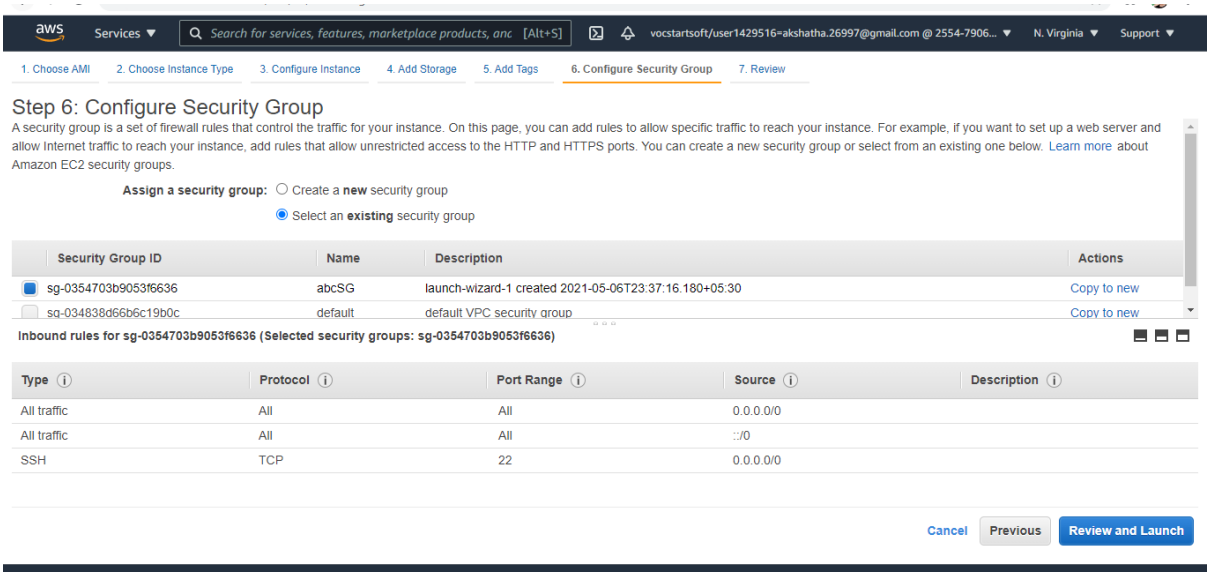
   Bash script: *#!/bin/bash*
   sudo yum update -y
   sudo amazon-linux-extras install nginx1.12 -y
   sudo systemctl start nginx



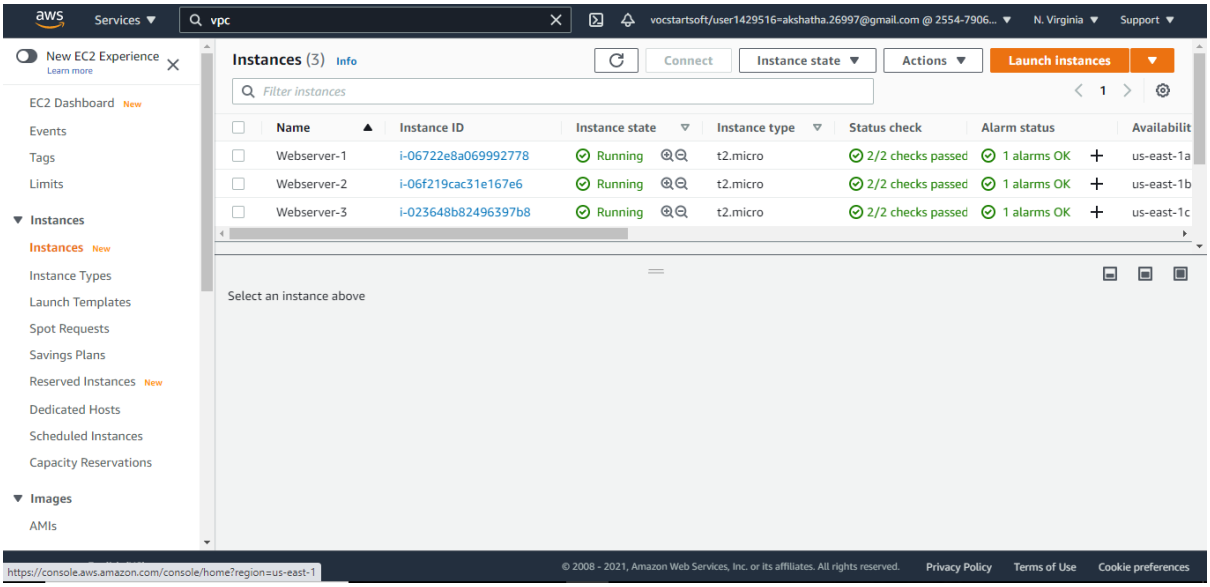
10. Add a root storage of 8GB to the instance.



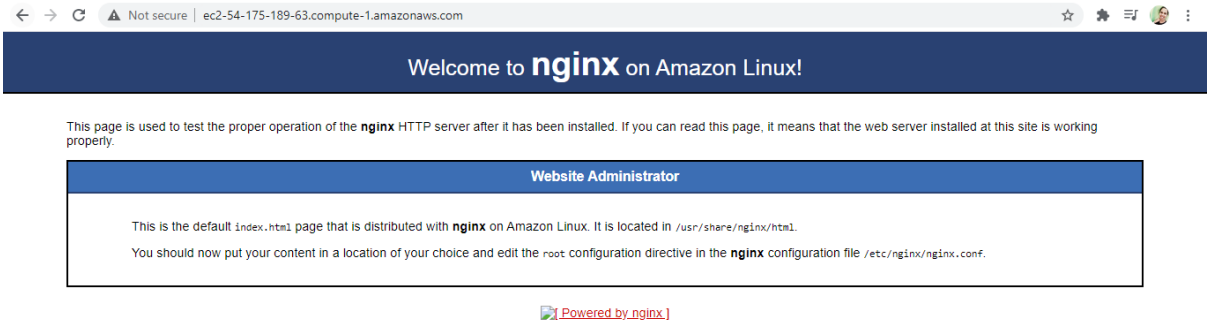
11. Create a Security group, which has “all traffic” as inbound rule, so that the instance is accessible from anywhere.



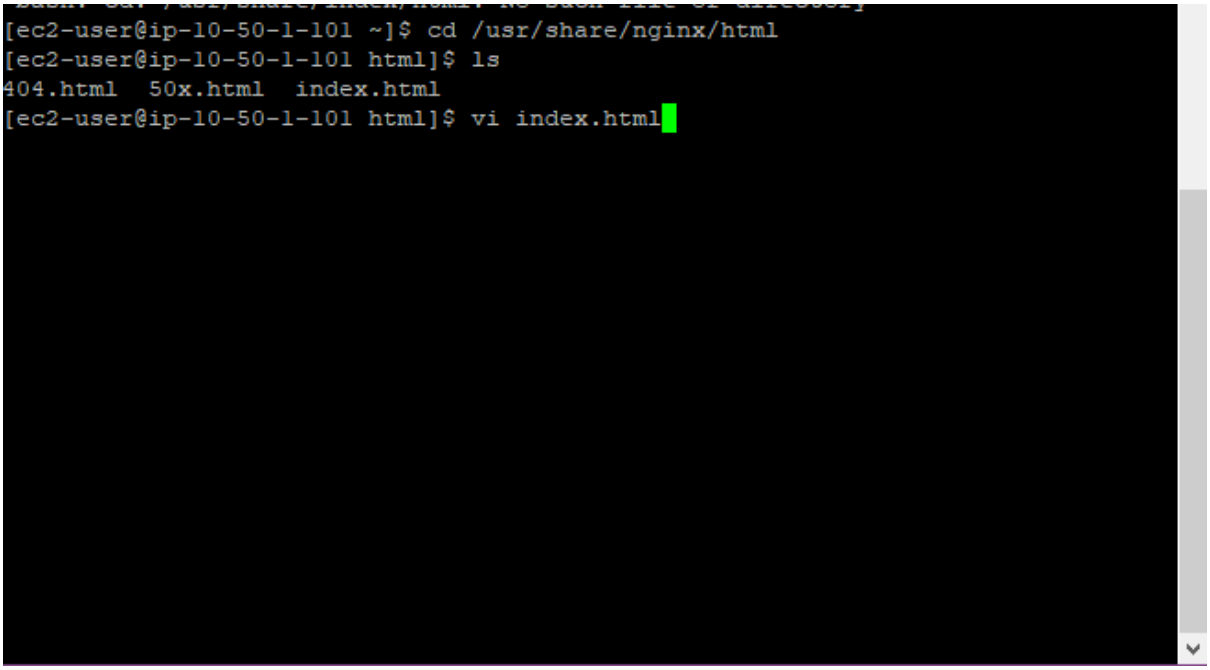
12. Launch 3 instances by repeating steps 6-11. All instances must be in different Availability zone.

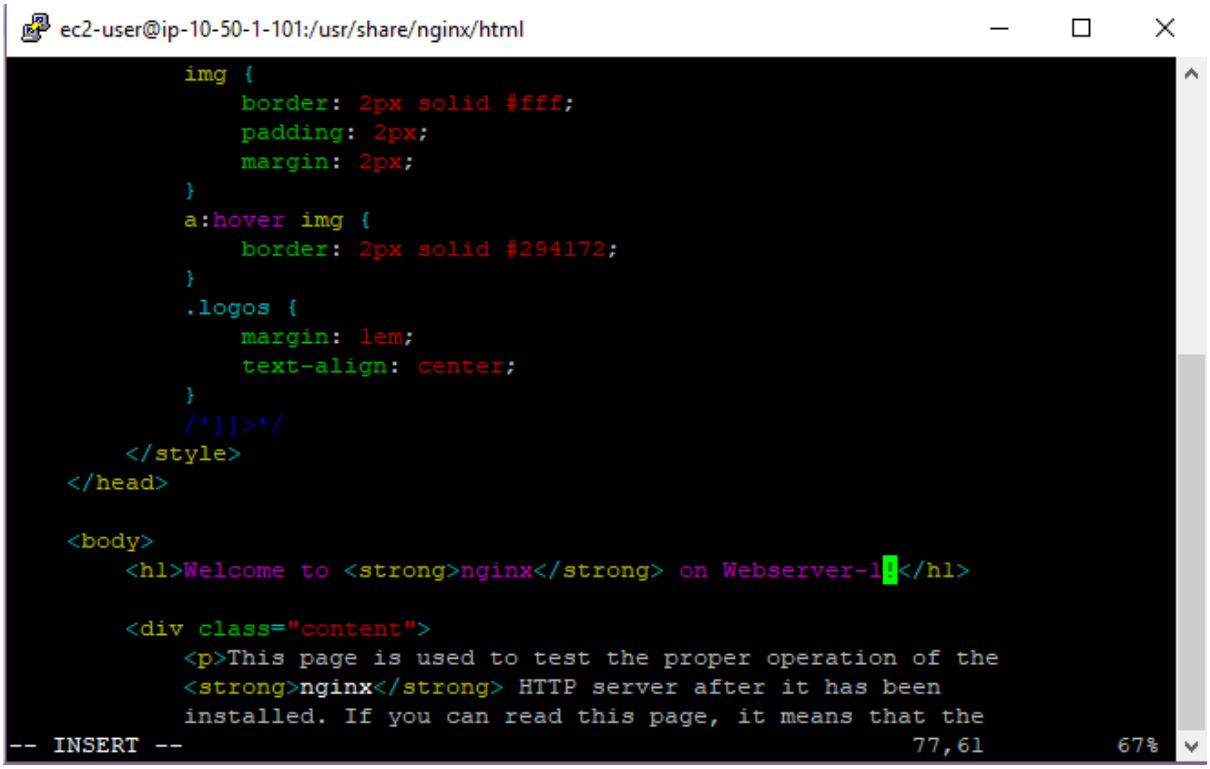


13. Because of the user_data added when launching the instance, “nginx” will be installed in all the 3 instances created.
    By hitting the Public DNS of the instances, we will be able to view the nginx-webpage as shown below.
    All the 3 instances will have the same page when we hit its Public DNS .

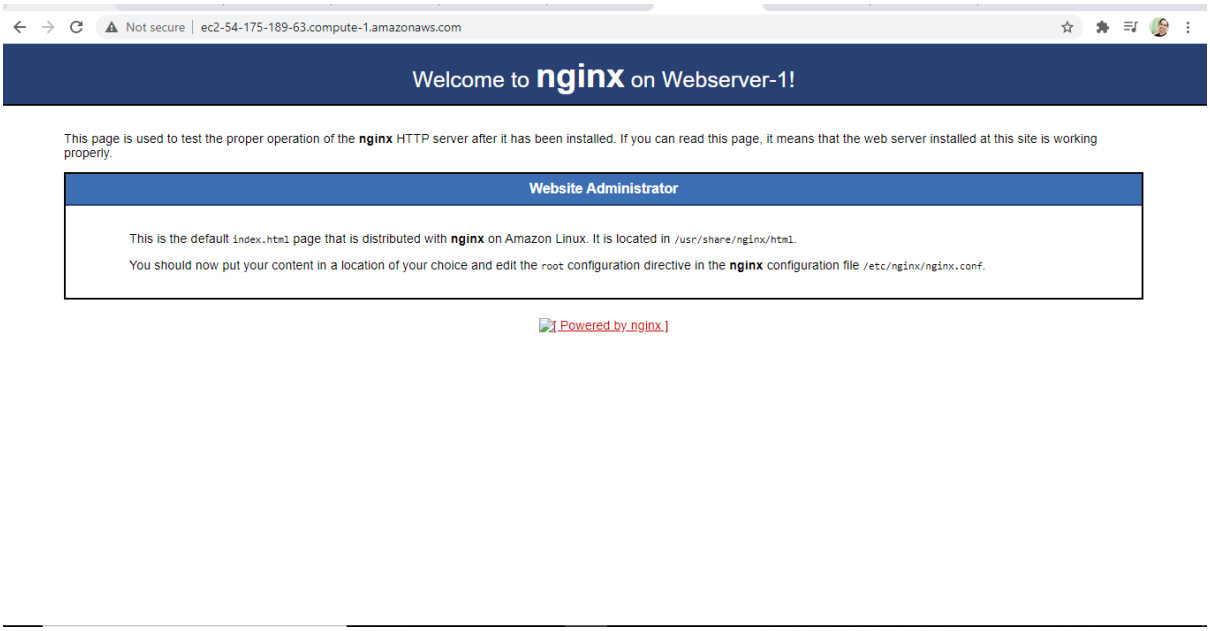


14. To differentiate between the instances, we will edit the “index.html” file of nginx server in the instance.
    SSH into the instance and edit the “index.html” file as shown below.



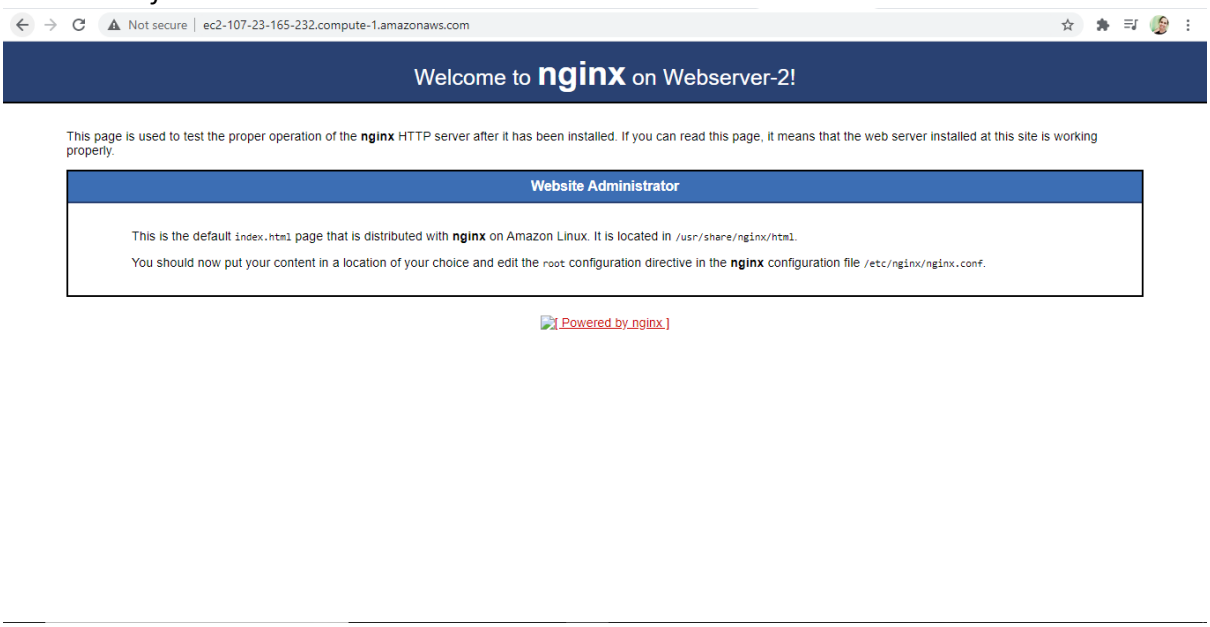


15. After editing the file, the below snap shows the web-page that gets loaded by hitting *Public DNS of webserver-1.*

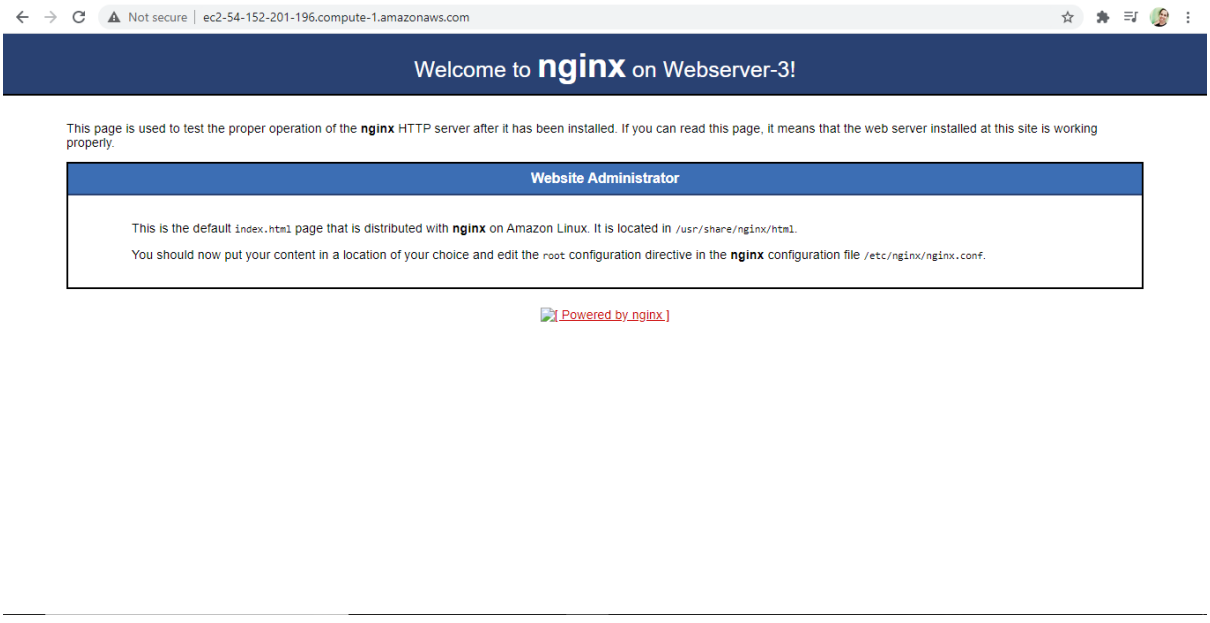


16. Repeat steps 14 and 15 for webserver-2 and webserver-3.

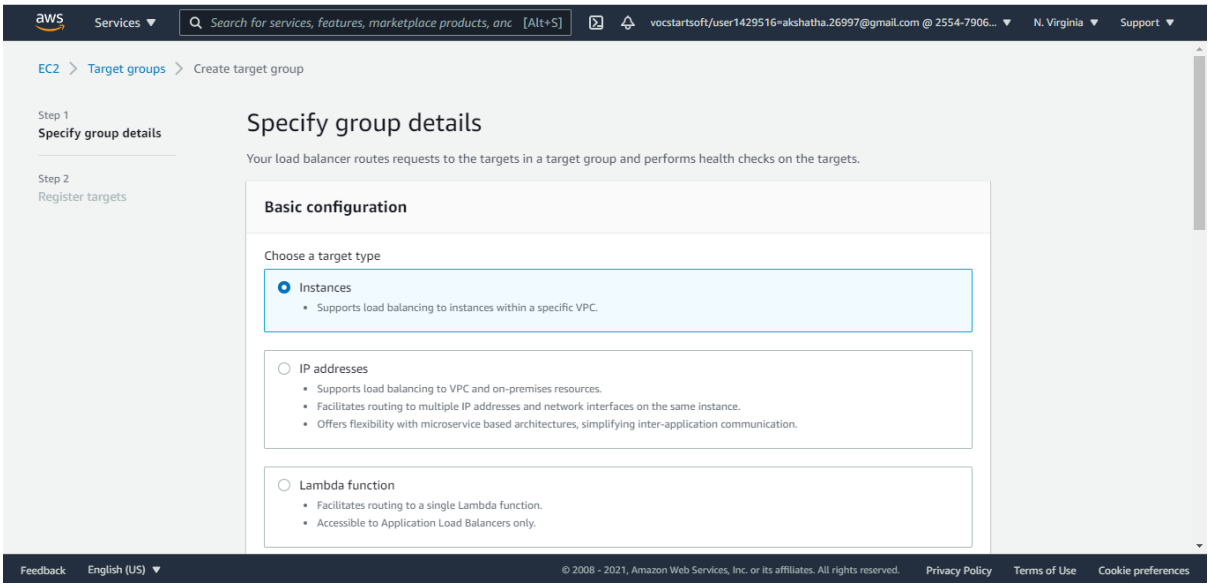
Public DNS of webserver-2:



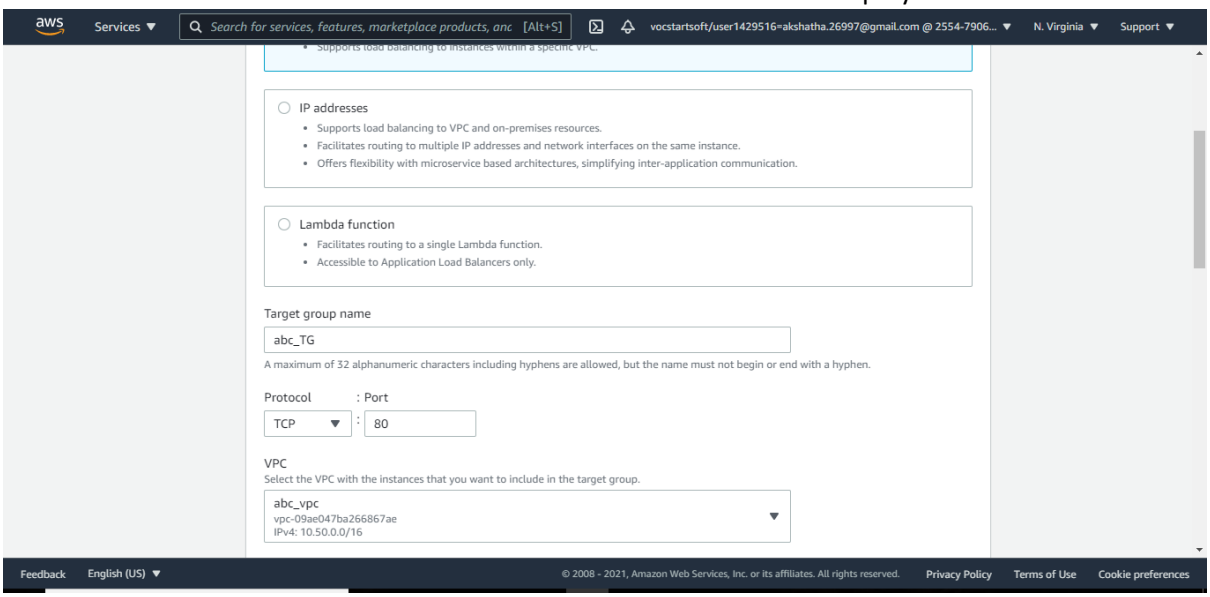
Public DNS of Webserver-3:



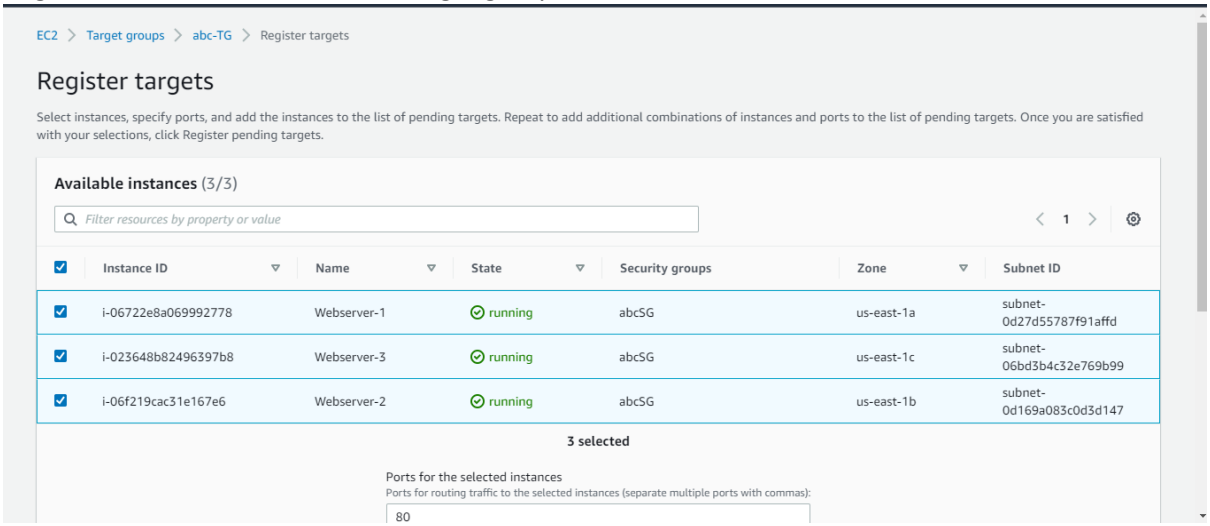
17. Create a target group , by choosing target-type as “Instance”



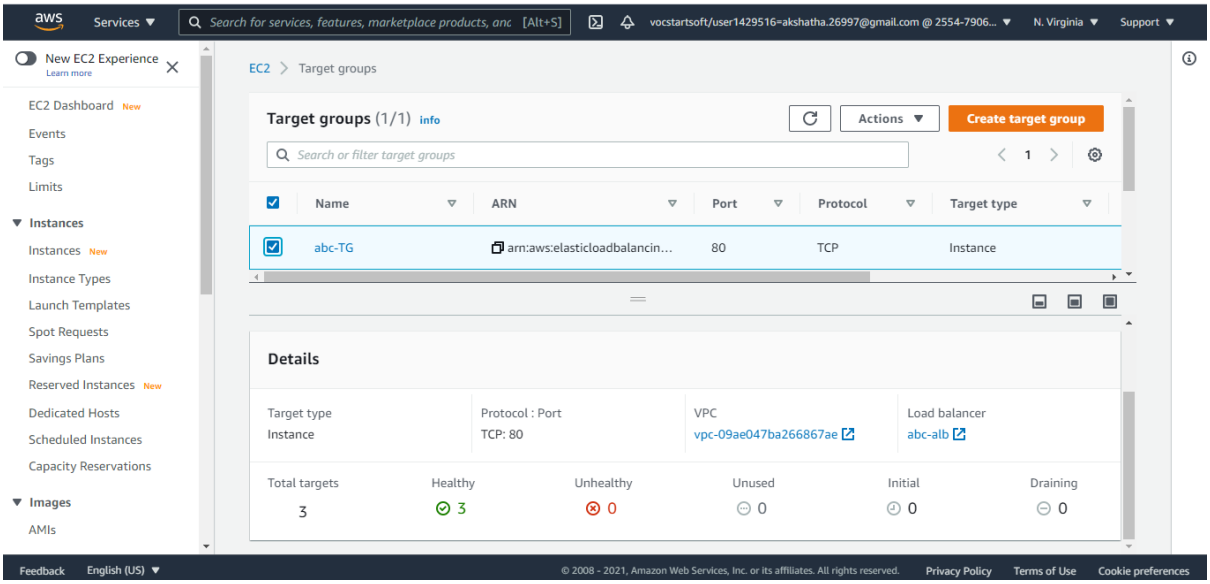
18. Select the Protocol TCP and select the VPC in which the instances are deployed.



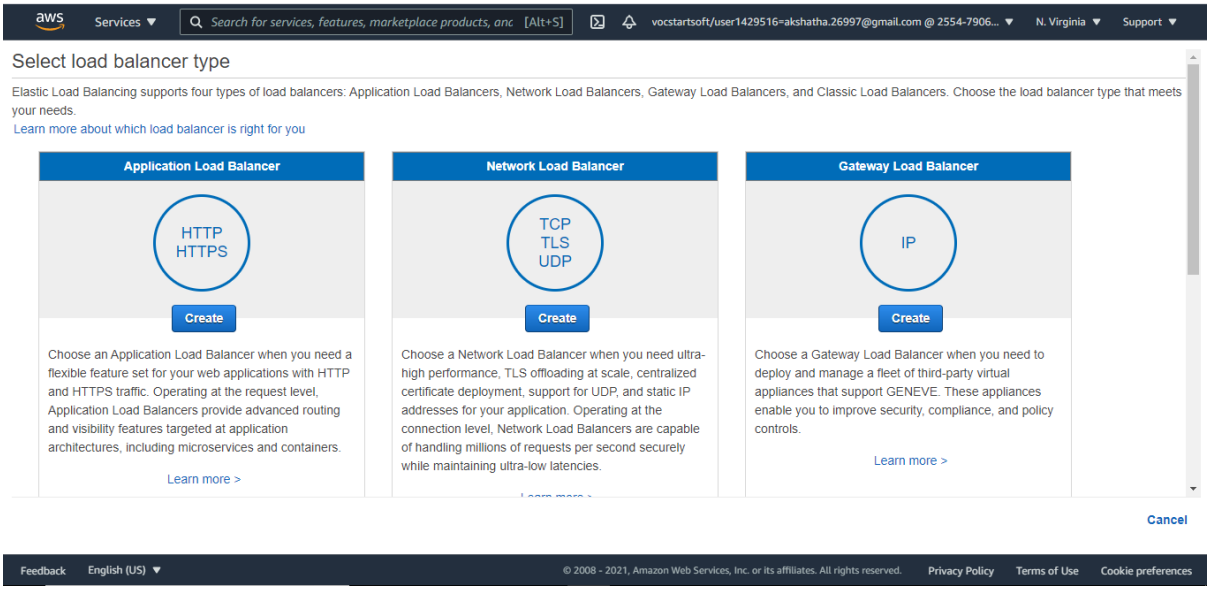
19. Register all the 3 instances to the target group as shown below-



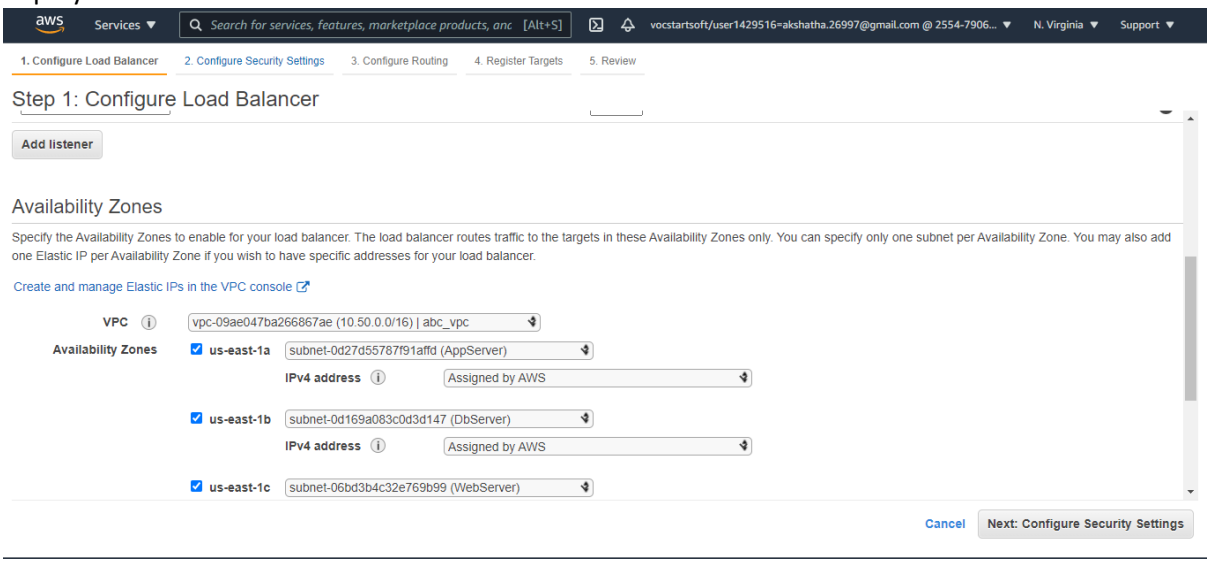
20. The target-group “abc-TG” is successfully created.



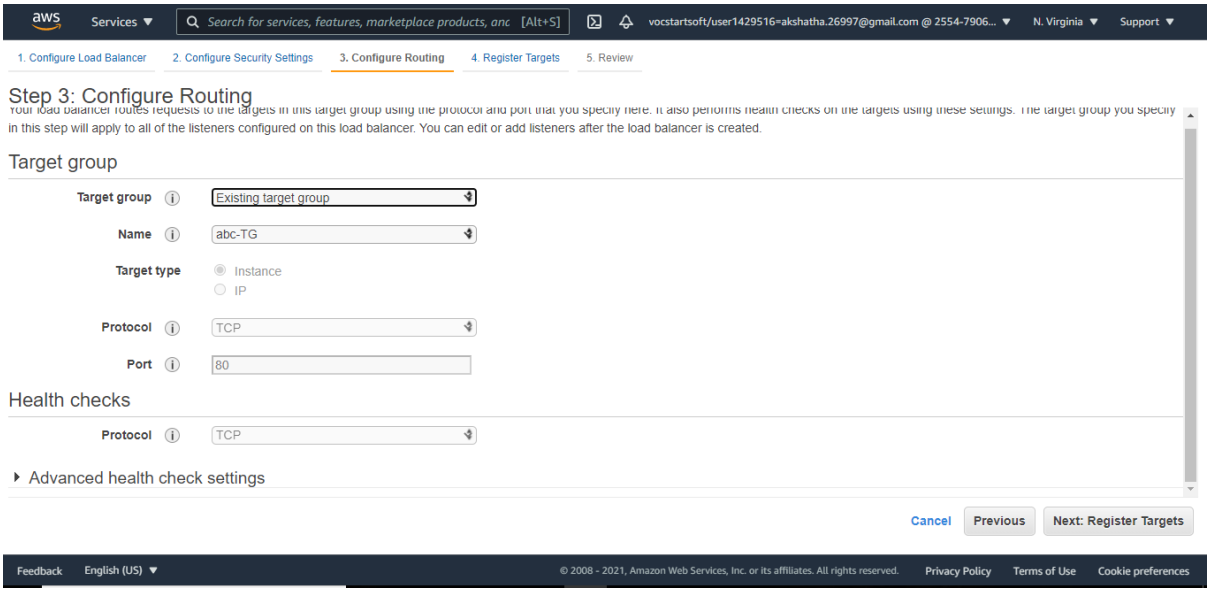
21. Create a Network Loadbalancer.



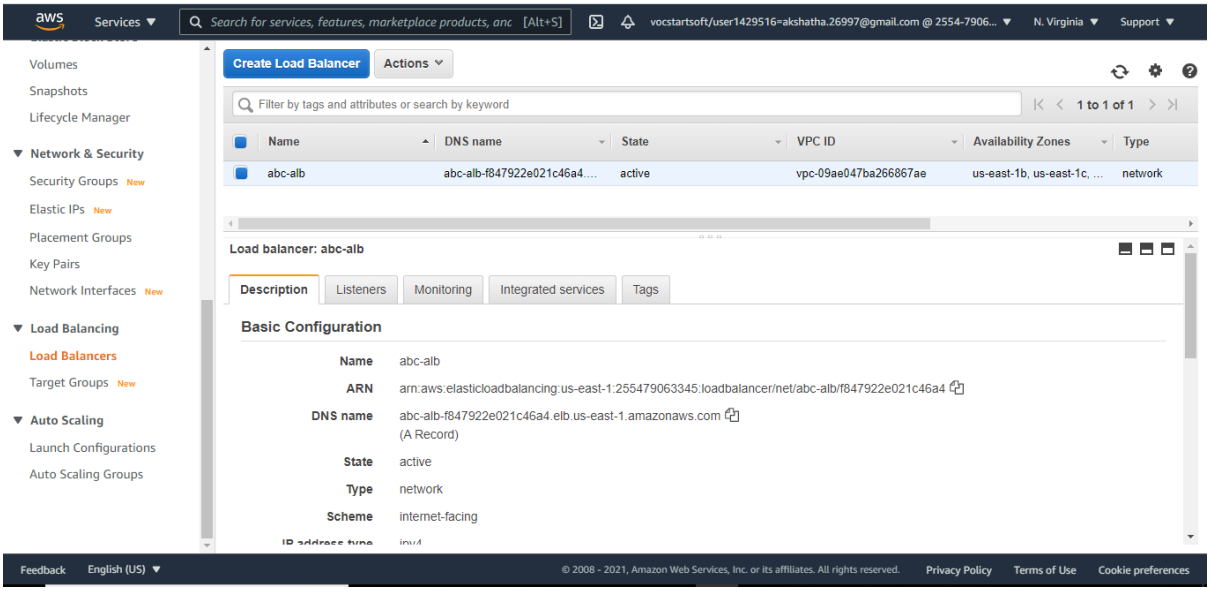
22. Configure the Loadbalancer by selecting the Availability zones in which the instances are deployed.



23. In “Configure Routing” tab, choose the target group that was created in step 20.



24. The Network Loadbalancer is successfully created as shown below –



25. To Test the simulation, Copy the DNS Name of the NLB and paste it in the browser.
    As shown in the below snaps, we can either get the webpage of Webserver-1, Webserver-2 or Webserver-3. The Routing of the traffic is determined by the NLB.