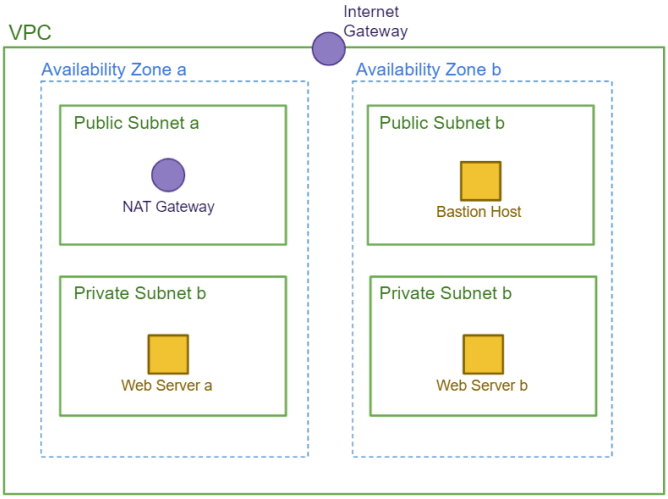
2021

PROJECT REPORT

CLASSIC LOAD BALANCER ON AWS CONSOLE

GROUP 2 – DEEPAK, NATHANIEL, JAHNAVI, MATTHEW, EFANGA

OVERVIEW



1. create a VPC
   group-two-vpc
   10.0.0.0/16

2. 4 subnets, two private, two public

   private-subnet-a
   10.0.0.0/24
   availability zone a

   private-subnet-b
   10.0.1.0/24
   availability zone b
   auto-assign elastic ipv4

   public-subnet-a
   10.0.2.0/24
   availability zone a

   public-subnet-b
   10.0.3.0/24
   availability zone b

3. Internet gateway
   group2-igw

4. NAT gateway
   group2-nat-gw
   public-subnet-a

5. Routes table

private-route-table (main=yes)
associations:
private-subnet-a
private-subnet-b
0.0.0.0/0 nat gateway

public-route-table
associations:
public-subnet-a
public-subnet-b
0.0.0.0/0 igw

6. EC2

Webserver 1
amazon linux 2
t2.micro
group-2-vpc
private-subnet-b
enable auto-assign ip

userdata as text:

```
#!/bin/bash
sudo su
yum update -y
yum install httpd -y
cd /var/www/html
echo "<html><h1>THIS IS SERVER-01</h1></html>" > index.html
systemctl start httpd
chkconfig httpd on
```

tag:
Name
Webserver-b

security group:
Webserver-a
HTTP all addresses
HTTPS all addresses

create new Key pair
webserver-b

7. Webserver 2
amazon linux 2
t2.micro
group-2-vpc

private-subnet-a
enable auto-assign ip

userdata as text:

```
#!/bin/bash
sudo su
yum update -y
yum install httpd -y
cd /var/www/html
echo "<html><h1>THIS IS SERVER-02</h1></html>" > index.html
systemctl start httpd
chkconfig httpd on
```

tag:
Name
webserver-b

security group:
name: WebServer-a
HTTP all addresses
HTTPS all addresses

create new Key pair
webserver-a

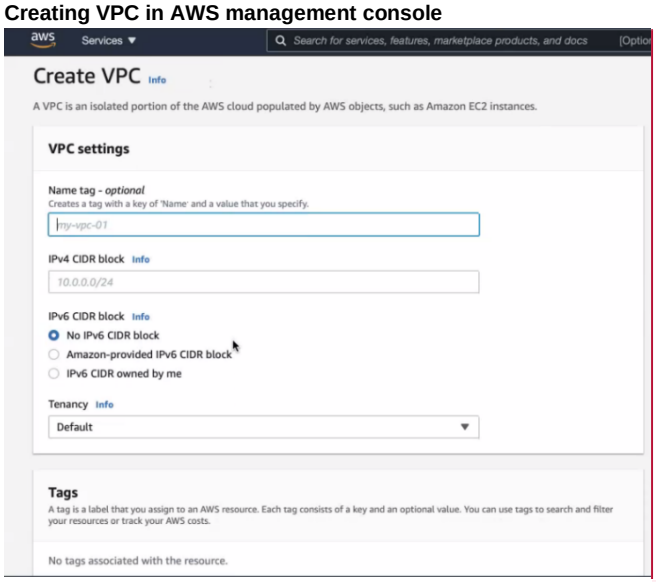
8. classic load balancer
Group2-loadbalancer
protocols:
HTTP

security groups:
Webserver-a

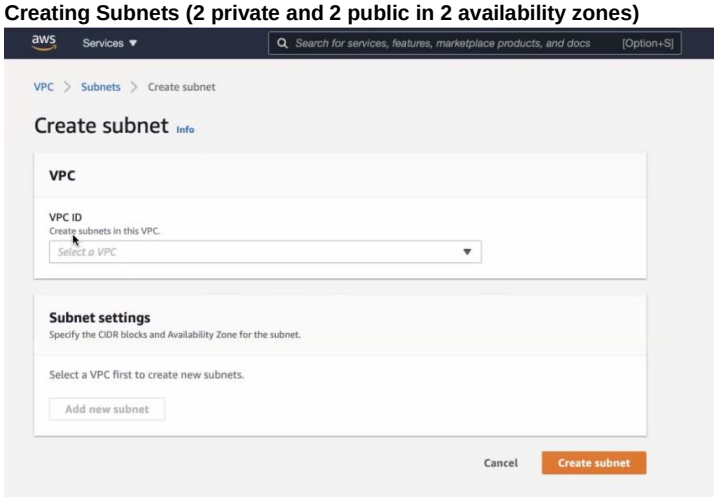
configure health check:
response timeouts 3
interval 10
unhealthy threshold 2
healthy threshold 5

SCREEN SHOTS

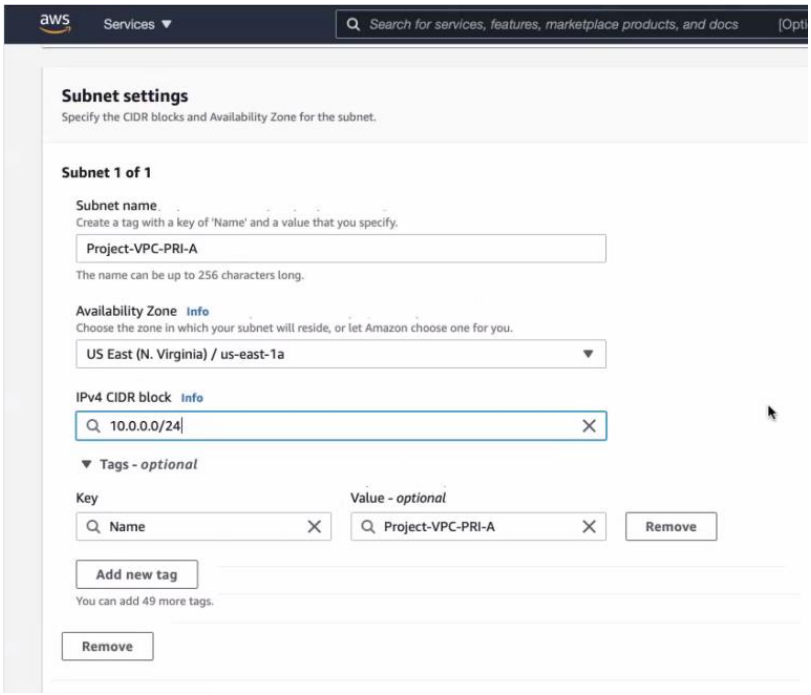
Creating VPC in AWS management console

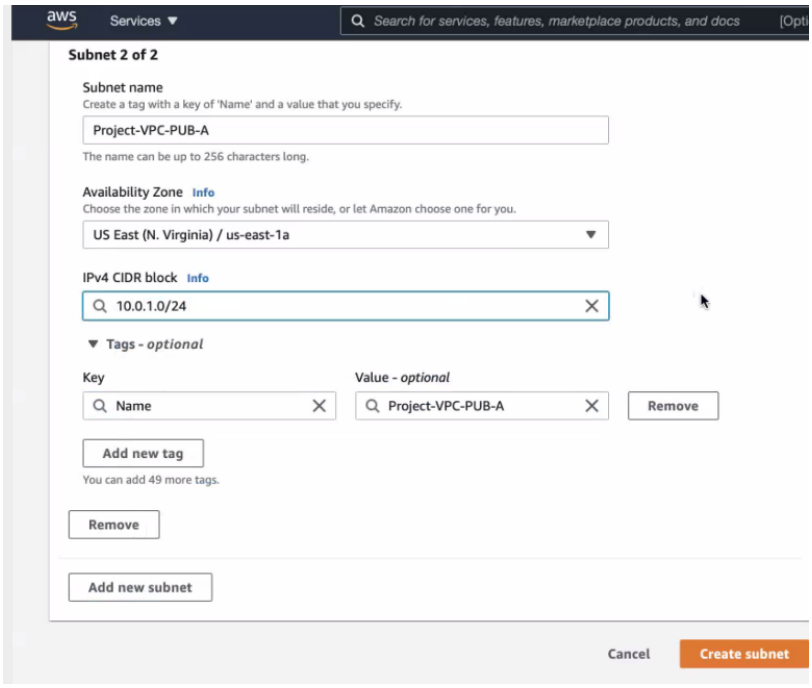


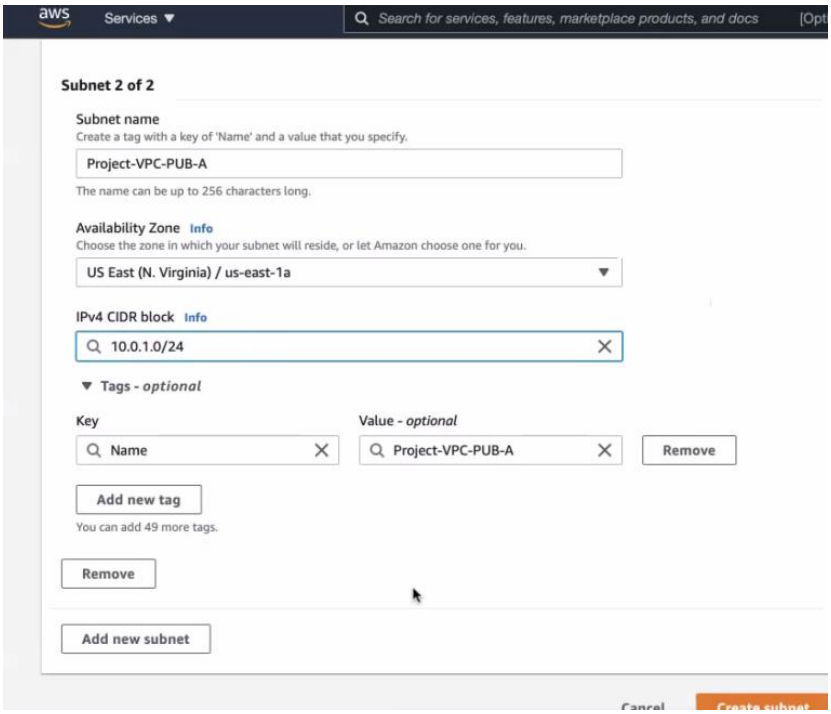
Creating Subnets (2 private and 2 public in 2 availability zones)

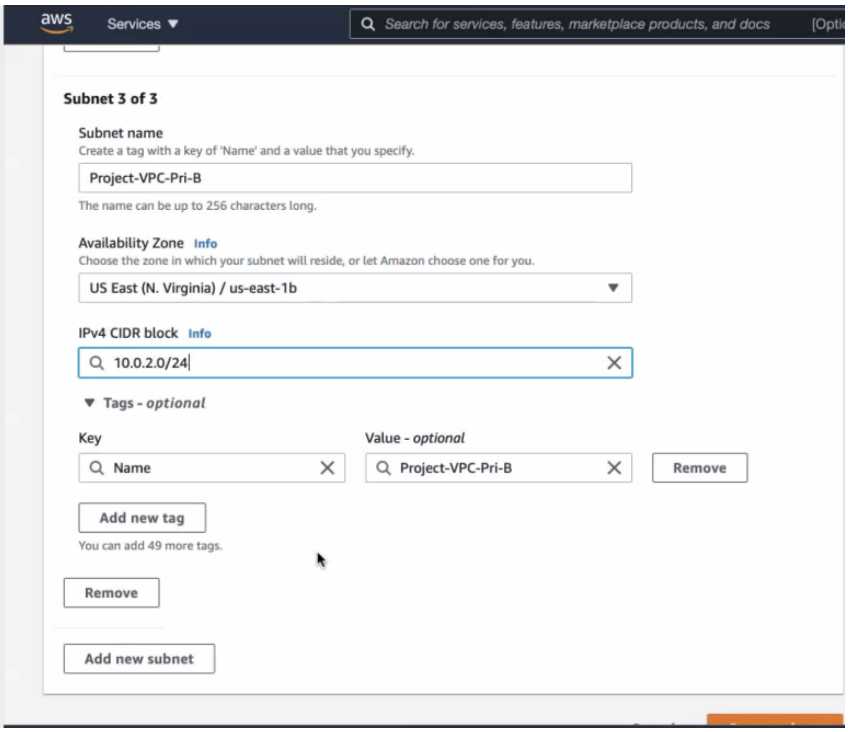


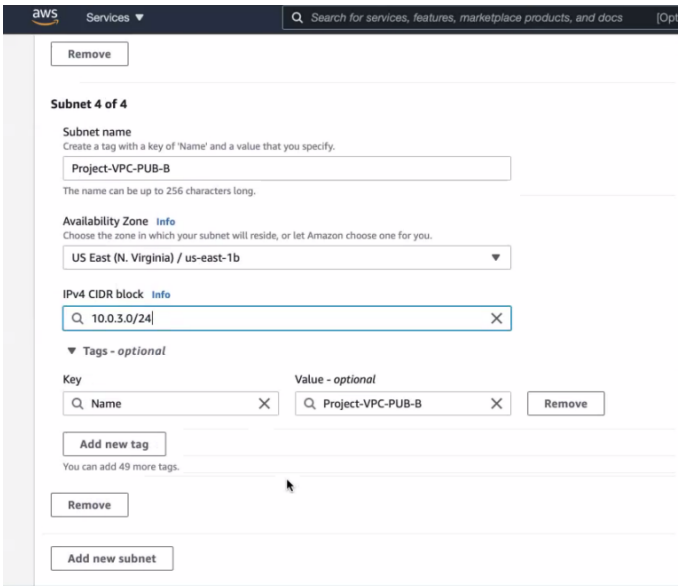
Commented [NC1]: image tells me nothing, need extra notes for what goes where


aws
Services
Search for services, features, marketplace products, and docs
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.
Project-VPC-PRI-A
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.
US East (N. Virginia) / us-east-1a
IPv4 CIDR block Info
10.0.0.0/24
Tags - optional
Key
Value - optional
Name
Project-VPC-PRI-A
Remove
Add new tag
You can add 49 more tags.
Remove

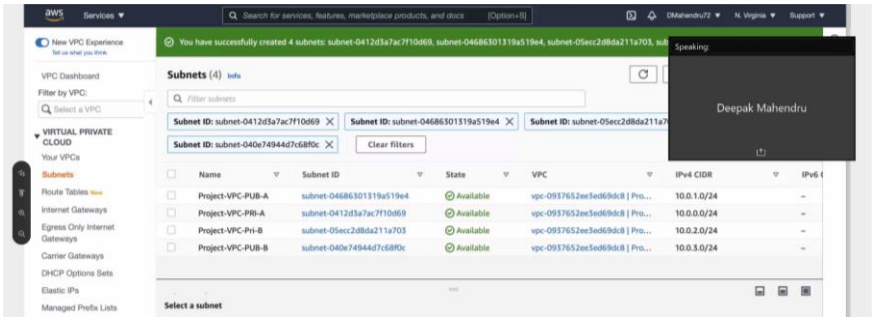

aws
Services
Search for services, features, marketplace products, and docs
Subnet 2 of 2
Subnet name
Create a tag with a key of 'Name' and a value that you specify.
Project-VPC-PUB-A
The name can be up to 256 characters long.
Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
US East (N. Virginia) / us-east-1a
IPv4 CIDR block Info
10.0.1.0/24
Tags - optional
Key
Value - optional
Name
Project-VPC-PUB-A
Remove
Add new tag
You can add 49 more tags.
Remove
Add new subnet
Cancel
Create subnet


aws
Services
Search for services, features, marketplace products, and docs
Subnet 2 of 2
Subnet name
Create a tag with a key of 'Name' and a value that you specify.
Project-VPC-PUB-A
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.
US East (N. Virginia) / us-east-1a
IPv4 CIDR block Info
10.0.1.0/24
Tags - optional
Key
Value - optional
Name
Project-VPC-PUB-A
Remove
Add new tag
You can add 49 more tags.
Remove
Add new subnet

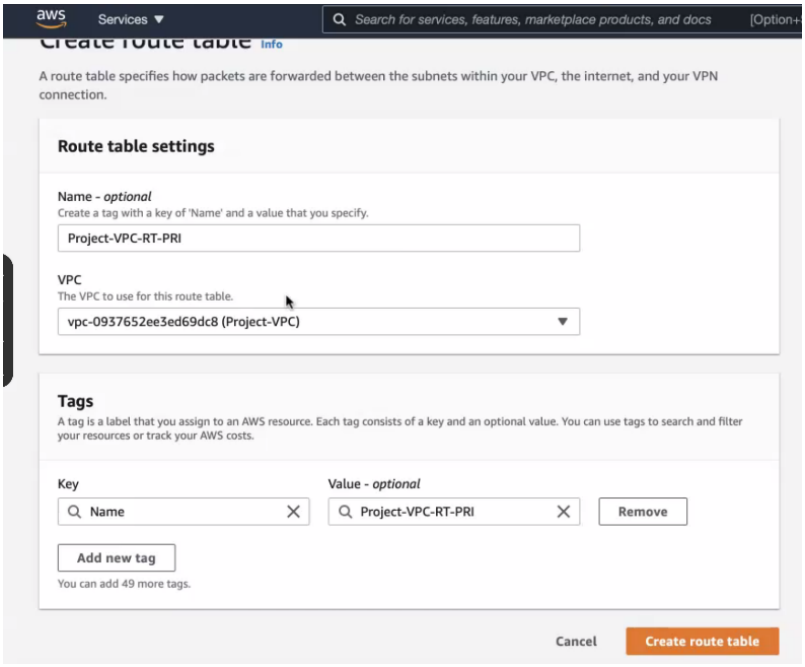

aws
Services
Search for services, features, marketplace products, and docs
Subnet 3 of 3
Subnet name
Create a tag with a key of 'Name' and a value that you specify.
Project-VPC-Pri-B
The name can be up to 256 characters long.
Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
US East (N. Virginia) / us-east-1b
IPv4 CIDR block Info
10.0.2.0/24
Tags - optional
Key
Value - optional
Name
Project-VPC-Pri-B
Remove
Add new tag
You can add 49 more tags.
Remove
Add new subnet

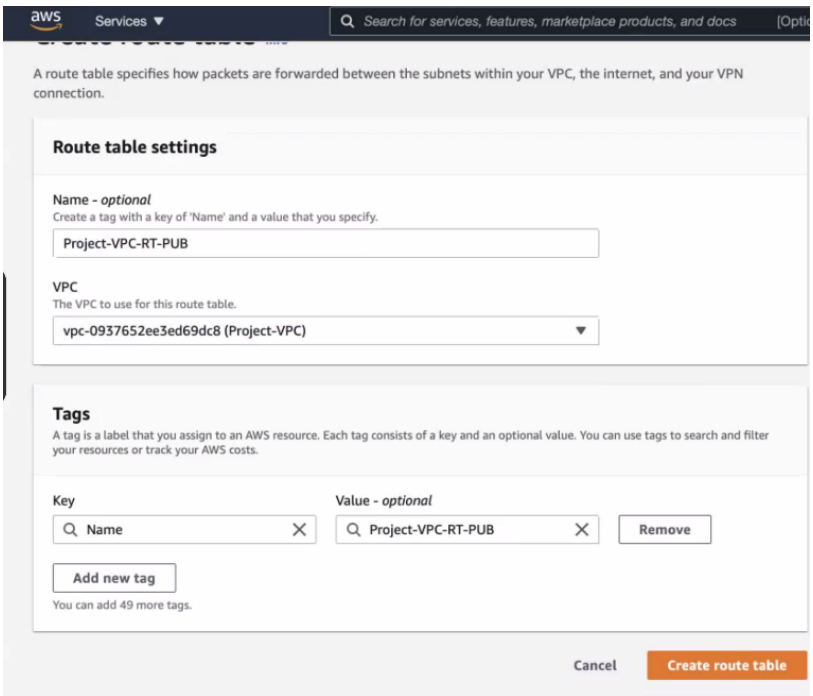


Successfully created 4 subnets

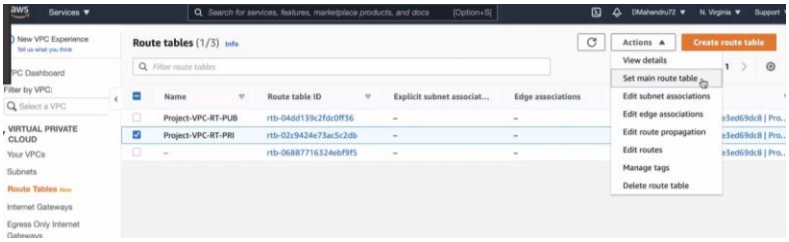


Creating Route tables for subnets

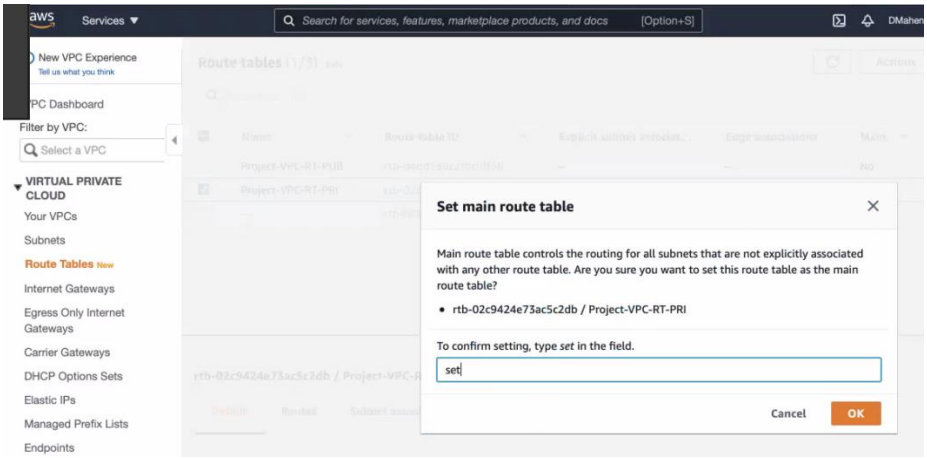




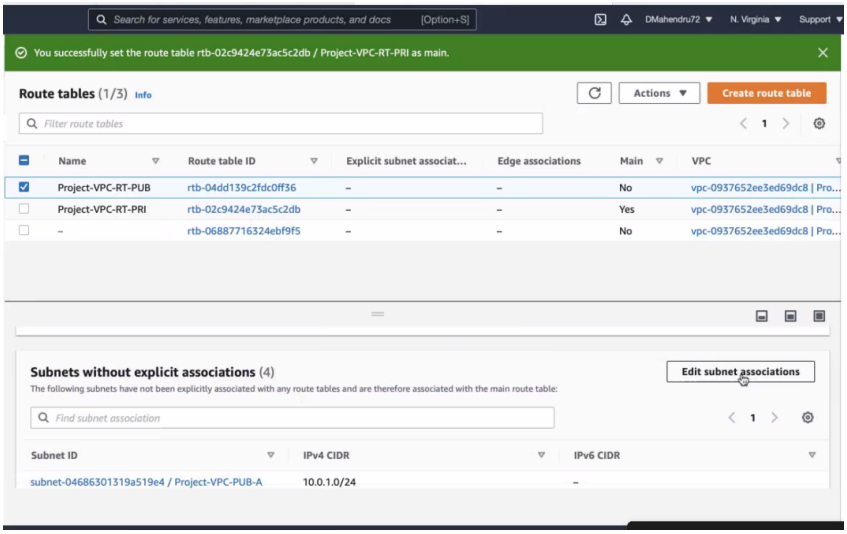
Set Main route table



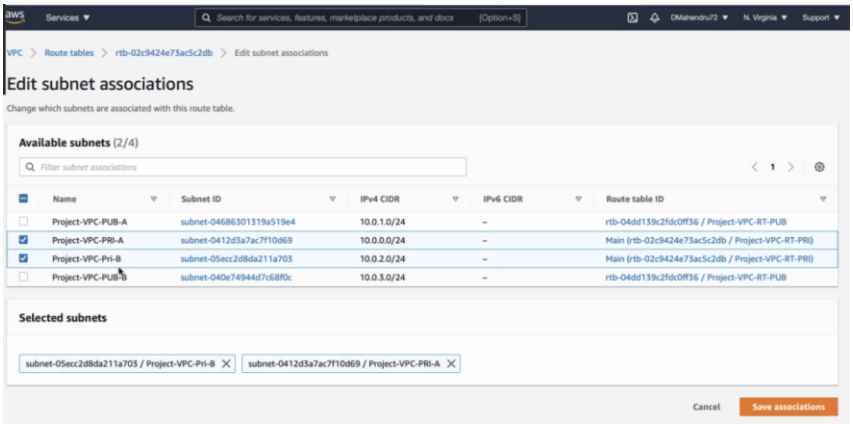
Set Main route table



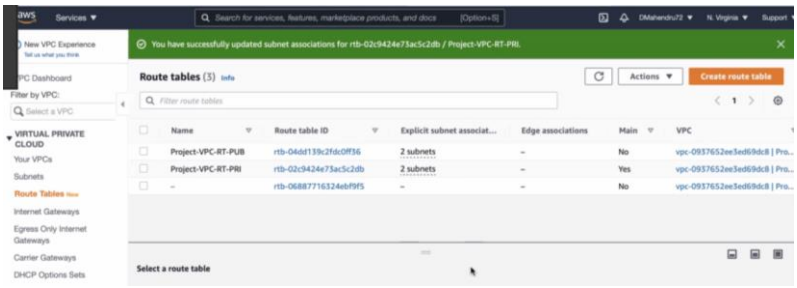
Successfully set main route table



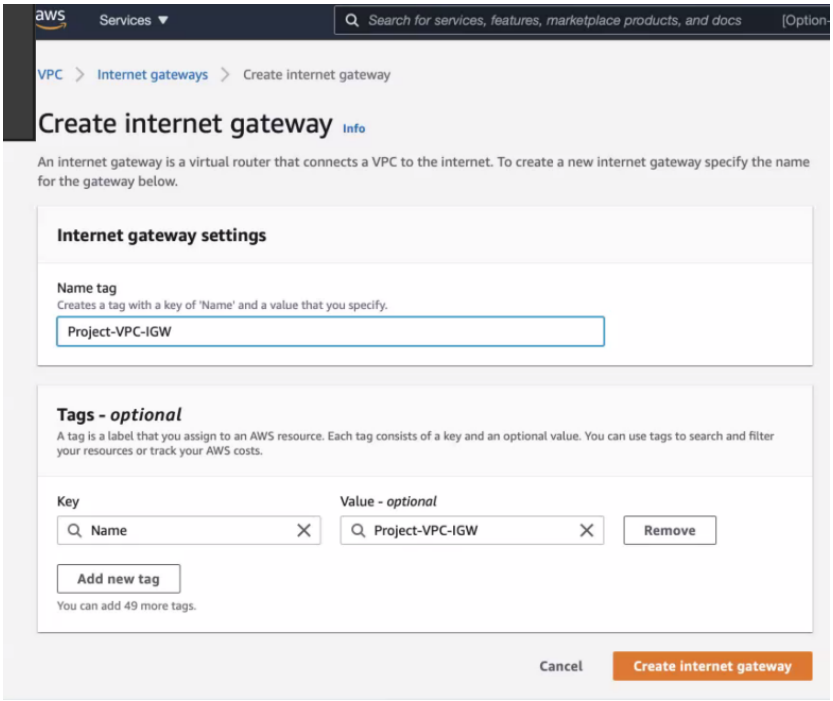
Associating public and private subnets to different routing tables



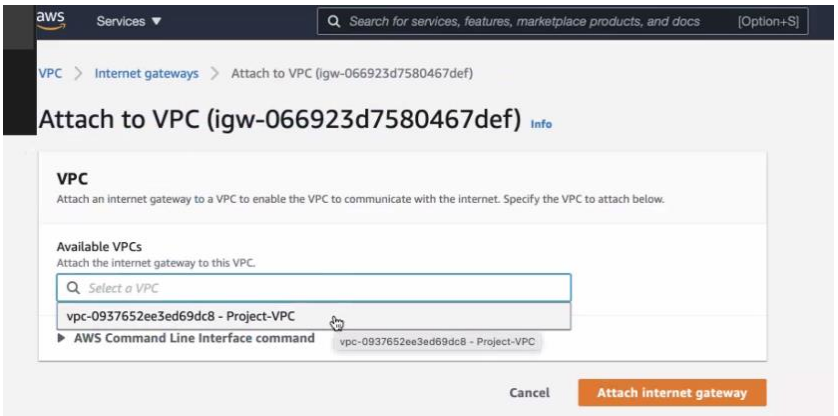
Successfully updated public and private subnets



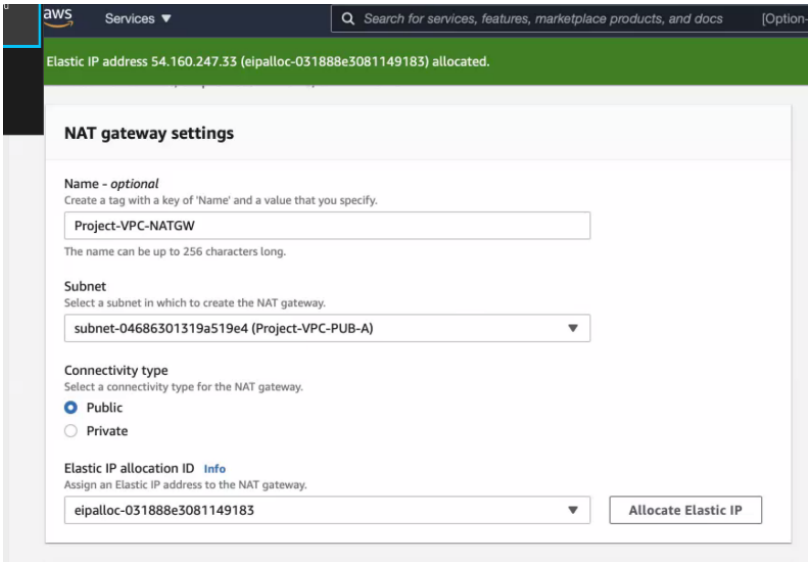
Creating Internet gateway for public subnet access to internet



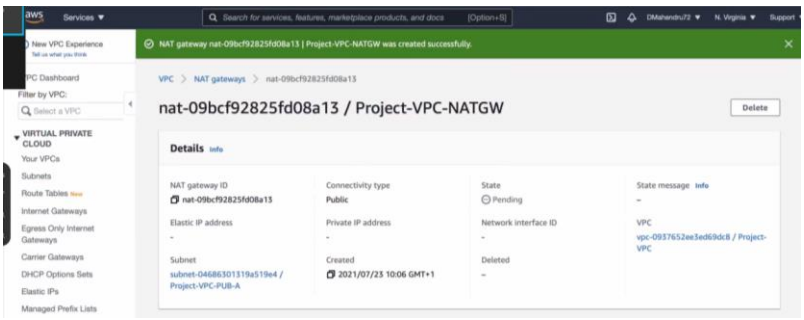
Attach to VPC



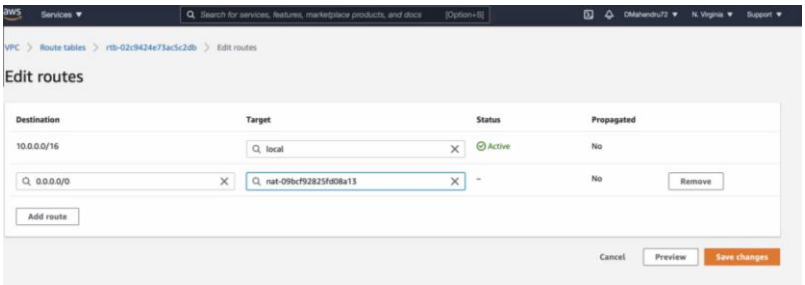
Create NAT gateway for private subnet access to internet
Assigning public subnet to NAT gateway (allocate Elastic IP)



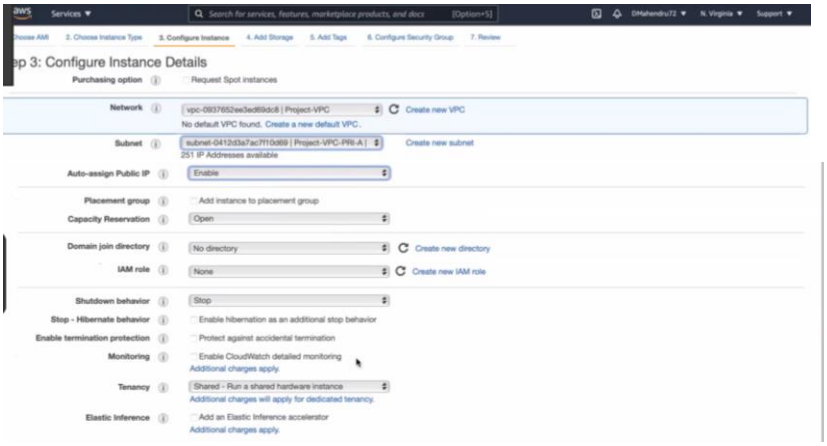
Nat gateway successfully created

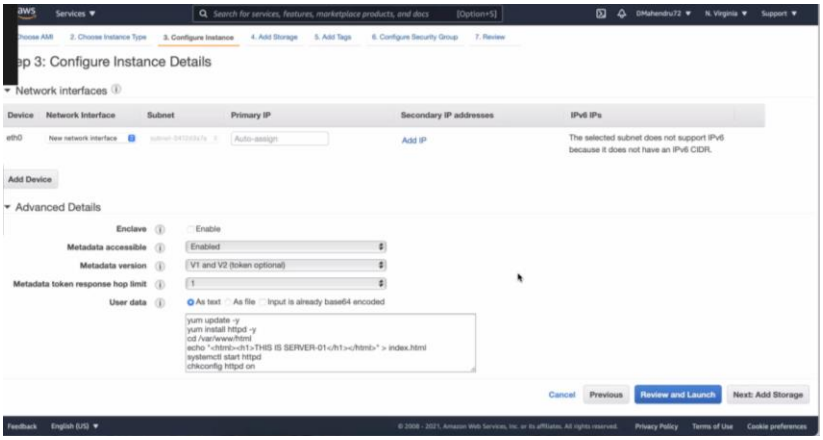


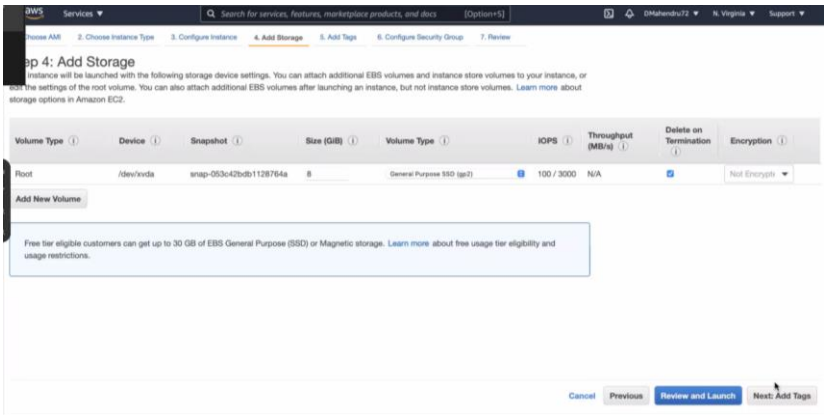
Edit route tables (connect private to NAT gateway)

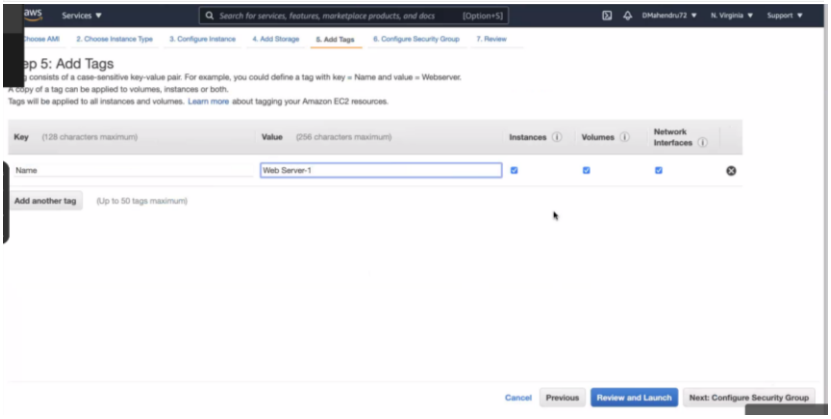


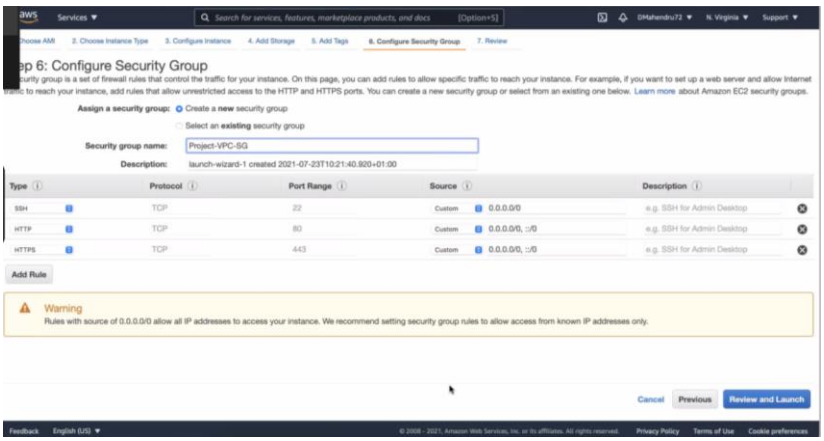
Create EC2 instance (configure webserver 1 in private subnet A)



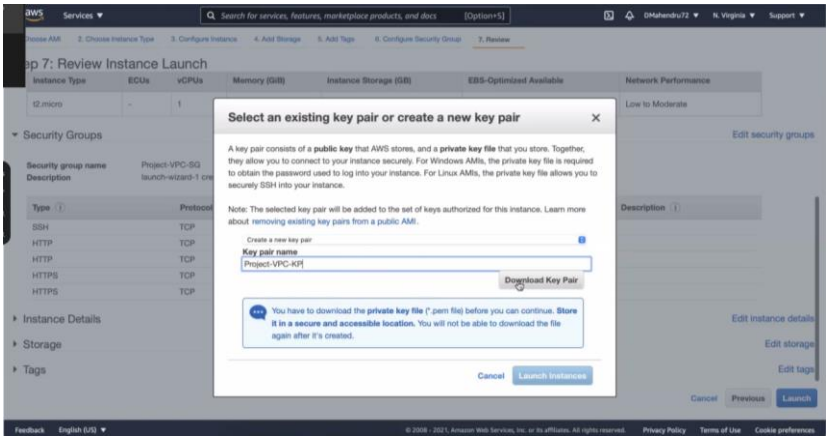



Step 4: Add Storage
Volume Type
Device
Snapshot
Size (GiB)
Volume Type
IOPS
Throughput (MB/s)
Delete on Termination
Encryption
Root
/dev/xvda
snap-053c42bdb1128764a
8
General Purpose SSD (gp2)
100 / 3000
N/A
Not Encrypted
Add New Volume
Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and usage restrictions.
Cancel
Previous
Review and Launch
Next: Add Tags

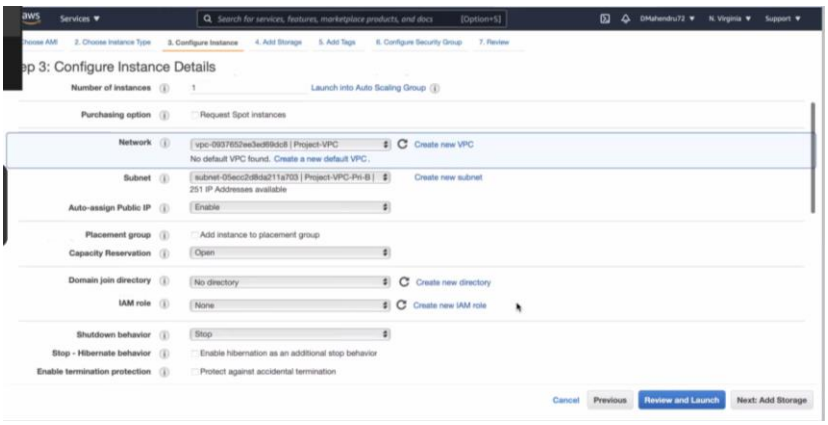

Step 5: Add Tags
A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.
A copy of a tag can be applied to volumes, instances or both.
Tags will be applied to all instances and volumes. Learn more about tagging your Amazon EC2 resources.
Key (128 characters maximum)
Value (256 characters maximum)
Instances
Volumes
Network Interfaces
Name
Web Server-1
Add another tag
(Up to 50 tags maximum)
Cancel
Previous
Review and Launch
Next: Configure Security Group

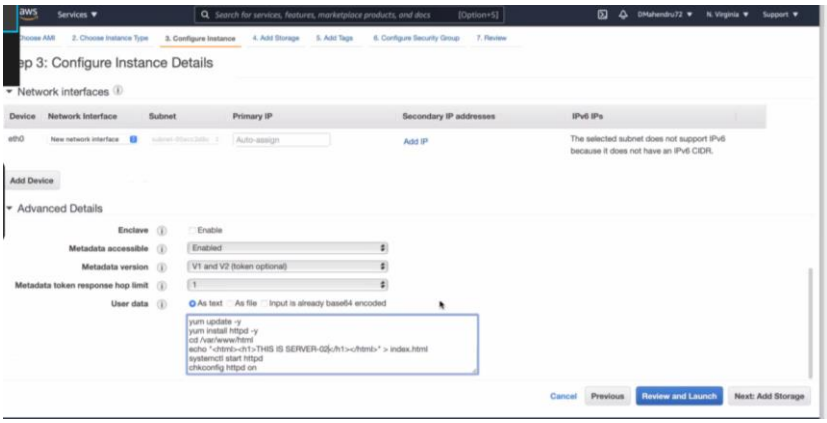

Step 6: Configure Security Group
Assign a security group:
Create a new security group
Select an existing security group
Security group name:
Project-VPC-SG
Description:
launch-wizard-1 created 2021-07-23T10:21:40.920+01:00
Type
Protocol
Port Range
Source
Description
SSH
TCP
22
Custom
0.0.0.0/0
e.g. SSH for Admin Desktop
HTTP
TCP
80
Custom
0.0.0.0/0, ::/0
e.g. SSH for Admin Desktop
HTTPS
TCP
443
Custom
0.0.0.0/0, ::/0
e.g. SSH for Admin Desktop
Add Rule
Warning
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
Cancel
Previous
Review and Launch
Feedback
English (US)
Privacy Policy
Terms of Use
Cookie preferences

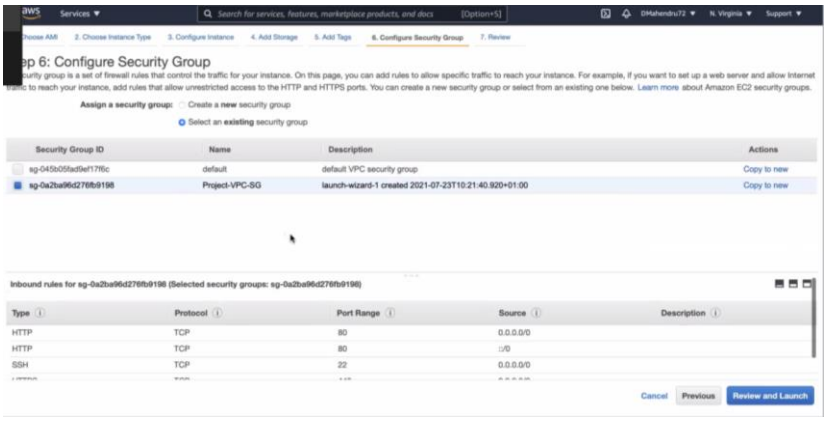
Download Keypair for SSH (with putty on windows)



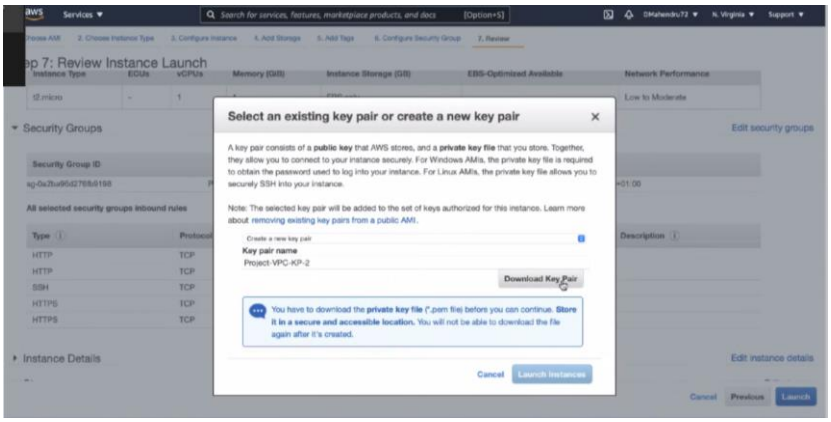
Create EC2 instance (webserver 2 in private subnet B)



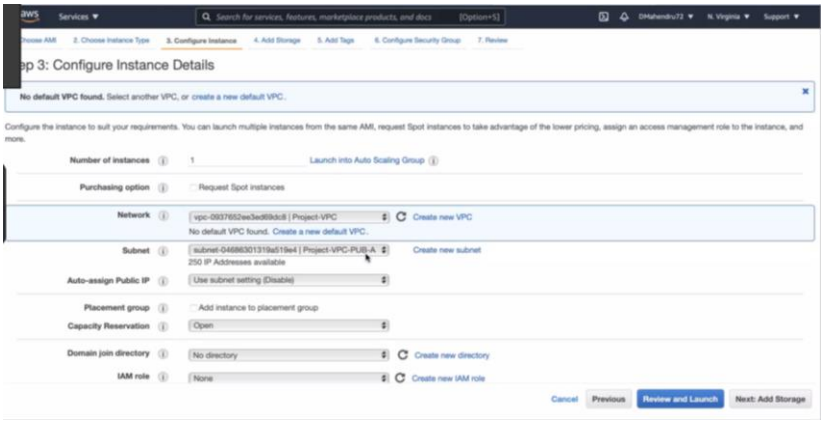




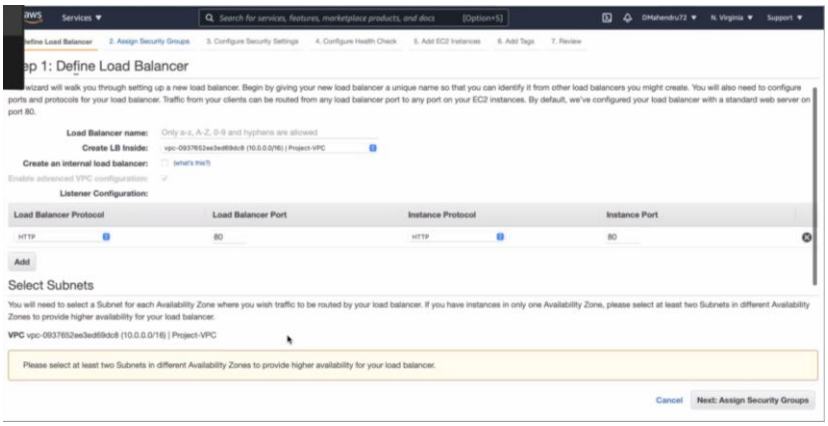
Downloading the key pair for SSH

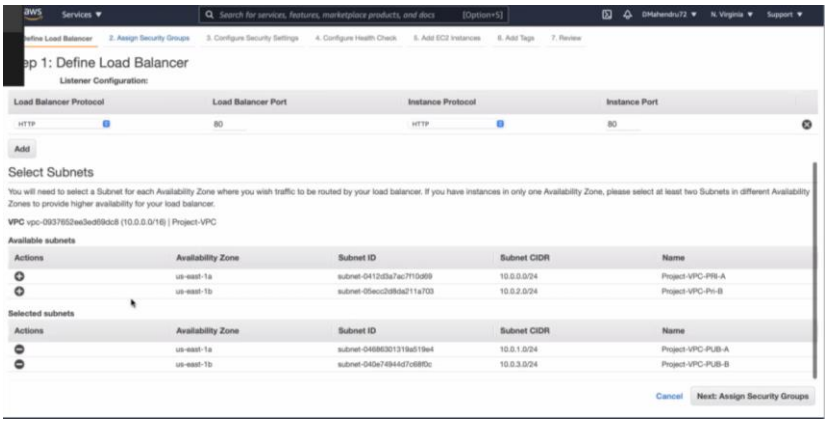


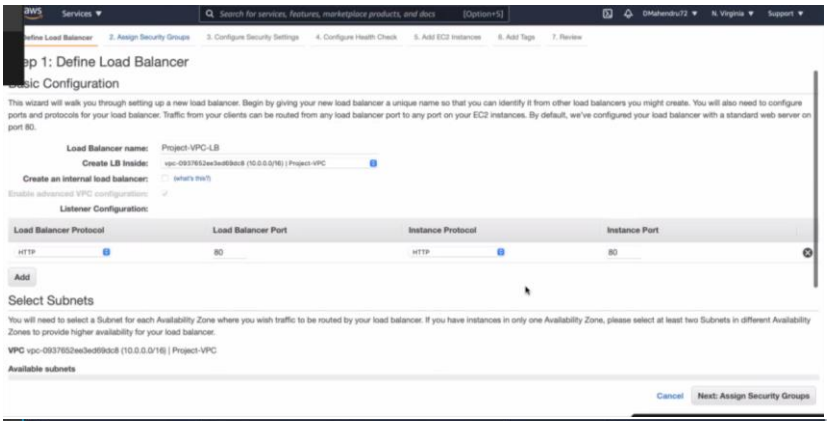
Create EC2 (Bastion server in public subnet)

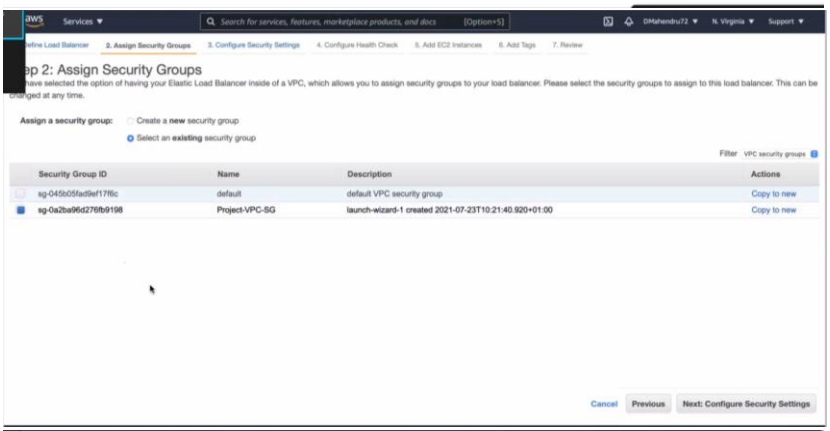


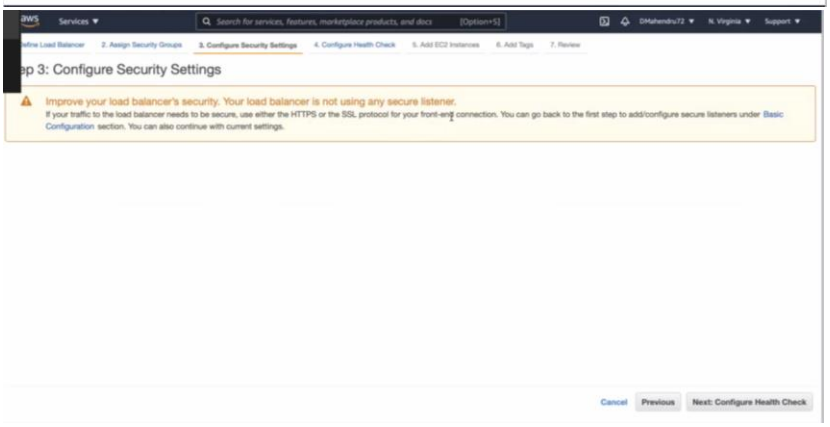
Create Load Balancer






Services
Search for services, features, marketplace products, and docs [Option+S]
DMahendru72
N. Virginia
Support
1. Define Load Balancer
2. Assign Security Groups
3. Configure Security Settings
4. Configure Health Check
5. Add EC2 Instances
6. Add Tags
7. Review
ep 1: Define Load Balancer
sic Configuration
This wizard will walk you through setting up a new load balancer. Begin by giving your new load balancer a unique name so that you can identify it from other load balancers you might create. You will also need to configure ports and protocols for your load balancer. Traffic from your clients can be routed from any load balancer port to any port on your EC2 instances. By default, we've configured your load balancer with a standard web server on port 80.
Load Balancer name:
Project-VPC-LB
Create LB Inside:
vpc-0937652ee3ed69dc8 (10.0.0.0/16) | Project-VPC
Create an internal load balancer:
(what's this?)
Enable advanced VPC configuration:
Listener Configuration:
Load Balancer Protocol
Load Balancer Port
Instance Protocol
Instance Port
HTTP
80
HTTP
80
Add
Select Subnets
You will need to select a Subnet for each Availability Zone where you wish traffic to be routed by your load balancer. If you have instances in only one Availability Zone, please select at least two Subnets in different Availability Zones to provide higher availability for your load balancer.
VPC vpc-0937652ee3ed69dc8 (10.0.0.0/16) | Project-VPC
Available subnets
Cancel
Next: Assign Security Groups


Services
Search for services, features, marketplace products, and docs [Option+S]
DMahendru72
N. Virginia
Support
1. Define Load Balancer
2. Assign Security Groups
3. Configure Security Settings
4. Configure Health Check
5. Add EC2 Instances
6. Add Tags
7. Review
ep 2: Assign Security Groups
have selected the option of having your Elastic Load Balancer inside of a VPC, which allows you to assign security groups to your load balancer. Please select the security groups to assign to this load balancer. This can be changed at any time.
Assign a security group:
Create a new security group
Select an existing security group
Filter VPC security groups
Security Group ID
Name
Description
Actions
sg-045b05fad9ef17f6c
default
default VPC security group
Copy to new
sg-0a2ba96d276fb9198
Project-VPC-SG
launch-wizard-1 created 2021-07-23T10:21:40.920+01:00
Copy to new
Cancel
Previous
Next: Configure Security Settings


Services
Search for services, features, marketplace products, and docs [Option+S]
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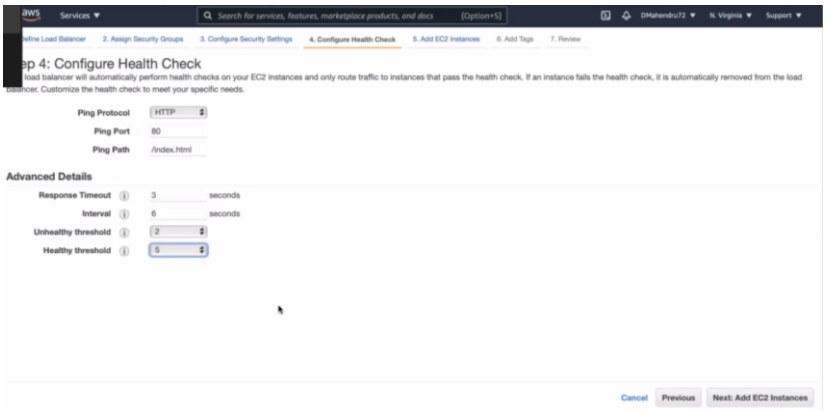
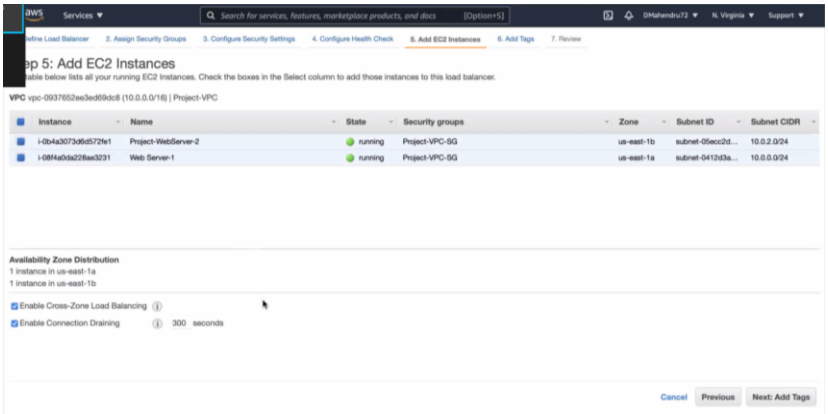
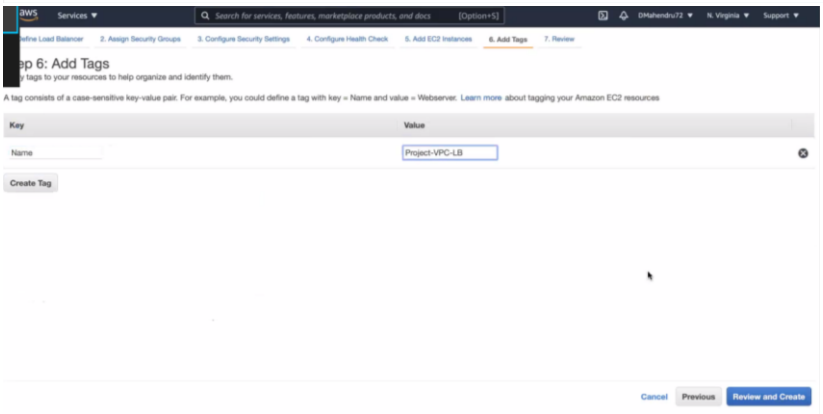
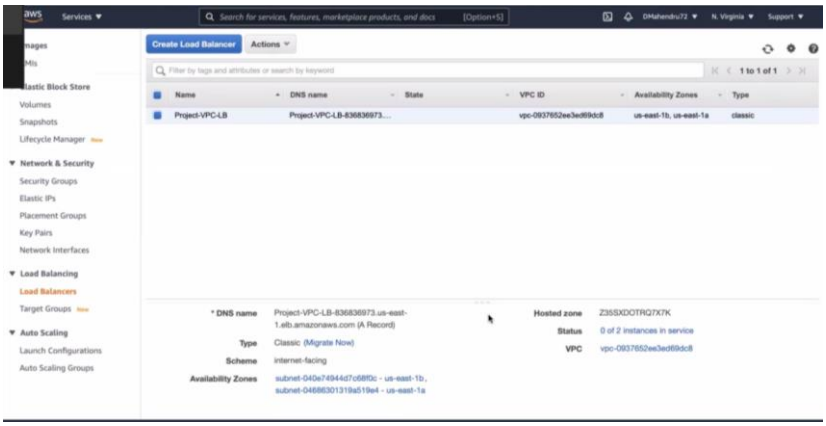
Support
1. Define Load Balancer
2. Assign Security Groups
3. Configure Security Settings
4. Configure Health Check
5. Add EC2 Instances
6. Add Tags
7. Review
ep 3: Configure Security Settings
Improve your load balancer's security. Your load balancer is not using any secure listener.
If your traffic to the load balancer needs to be secure, use either the HTTPS or the SSL protocol for your front-end connection. You can go back to the first step to add/configure secure listeners under Basic Configuration section. You can also continue with current settings.
Cancel
Previous
Next: Configure Health Check

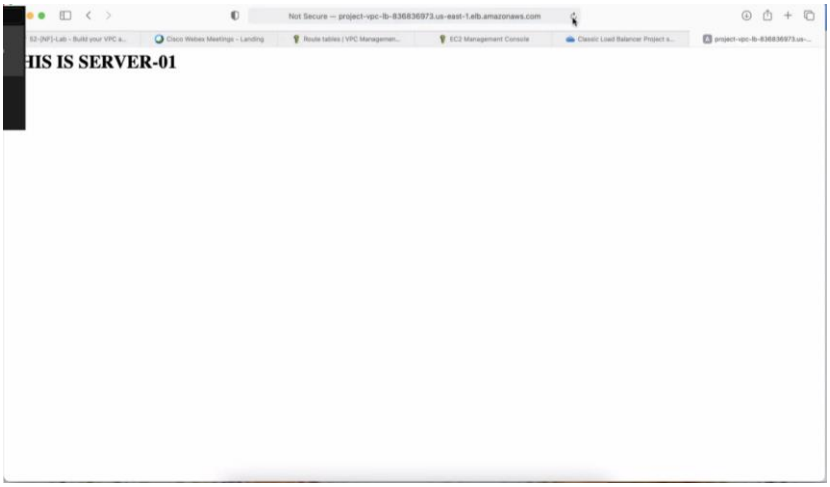

Services
Search for services, features, marketplace products, and docs [Option+S]
DMahendru72
N. Virginia
Support
2. Assign Security Groups
3. Configure Security Settings
4. Configure Health Check
5. Add EC2 Instances
6. Add Tags
7. Review
ep 4: Configure Health Check
load balancer will automatically perform health checks on your EC2 instances and only route traffic to instances that pass the health check. If an instance fails the health check, it is automatically removed from the load balancer. Customize the health check to meet your specific needs.
Ping Protocol
HTTP
Ping Port
80
Ping Path
/index.html
Advanced Details
Response Timeout
3
seconds
Interval
6
seconds
Unhealthy threshold
2
Healthy threshold
5
Cancel
Previous
Next: Add EC2 Instances

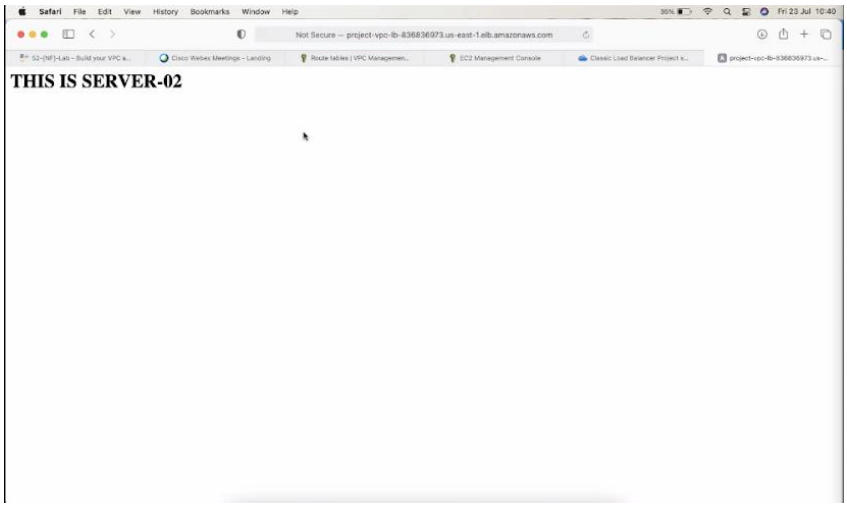

Services
Search for services, features, marketplace products, and docs [Option+S]
DMahendru72
N. Virginia
Support
4. Configure Health Check
5. Add EC2 Instances
6. Add Tags
7. Review
ep 5: Add EC2 Instances
table below lists all your running EC2 instances. Check the boxes in the Select column to add those instances to this load balancer.
VPC vpc-0937652ee3ed69dc8 (10.0.0.0/16) | Project-VPC
Instance
Name
State
Security groups
Zone
Subnet ID
Subnet CIDR
i-0b4a3073d6d572fe1
Project-WebServer-2
running
Project-VPC-SG
us-east-1b
subnet-05ecc2d...
10.0.2.0/24
i-08f4a0da228ae3231
Web Server-1
running
Project-VPC-SG
us-east-1a
subnet-0412d3a...
10.0.0.0/24
Availability Zone Distribution
1 instance in us-east-1a
1 instance in us-east-1b
Enable Cross-Zone Load Balancing
Enable Connection Draining
300
seconds
Cancel
Previous
Next: Add Tags


Services
Search for services, features, marketplace products, and docs [Option+S]
DMahendru72
N. Virginia
Support
4. Configure Health Check
5. Add EC2 Instances
6. Add Tags
7. Review
ep 6: Add Tags
tags to your resources to help organize and identify them.
A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. Learn more about tagging your Amazon EC2 resources
Key
Value
Name
Project-VPC-LB
Create Tag
Cancel
Previous
Review and Create



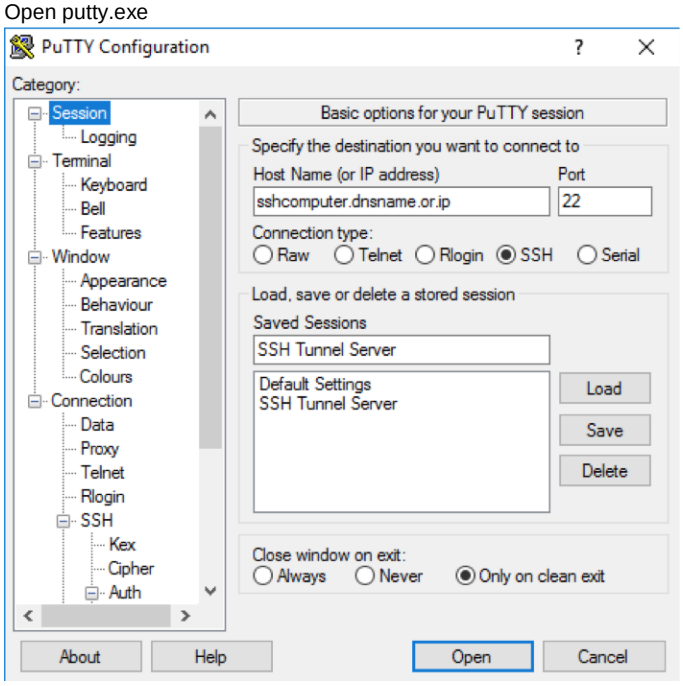
Copy and paste DNS in web browser to test load balancer





Using SSH to Connect

Open putty.exe



Configure PuTTY to not timeout:

Click Connection

Set Seconds between keepalives to 30

Configure PuTTY session:

Click Session

Host Name (or IP address): Paste the Public IPv4 value of the EC2 instance (Bastion Host)

PuTTy, in the Connection list, expand SSH
Click Auth (don't expand it)
Click Browse
Browse to and select the webserver.ppk file that was downloaded when instance was created
Login as ec2-user
Successful connection to instance.
From the Bastion Host you can now SSH to the web servers in your private subnets.