Module3: ELB :Case study :

Problem Statement:

You work for XYZ Corporation that uses on premise solutions and some limited number of systems. With the increase in requests in their application, the load also increases. So, to handle the load the corporation had to buy more systems almost on regular basis. Realizing the need to cut down the expenses on systems, they decided to move their infrastructure on AWS.

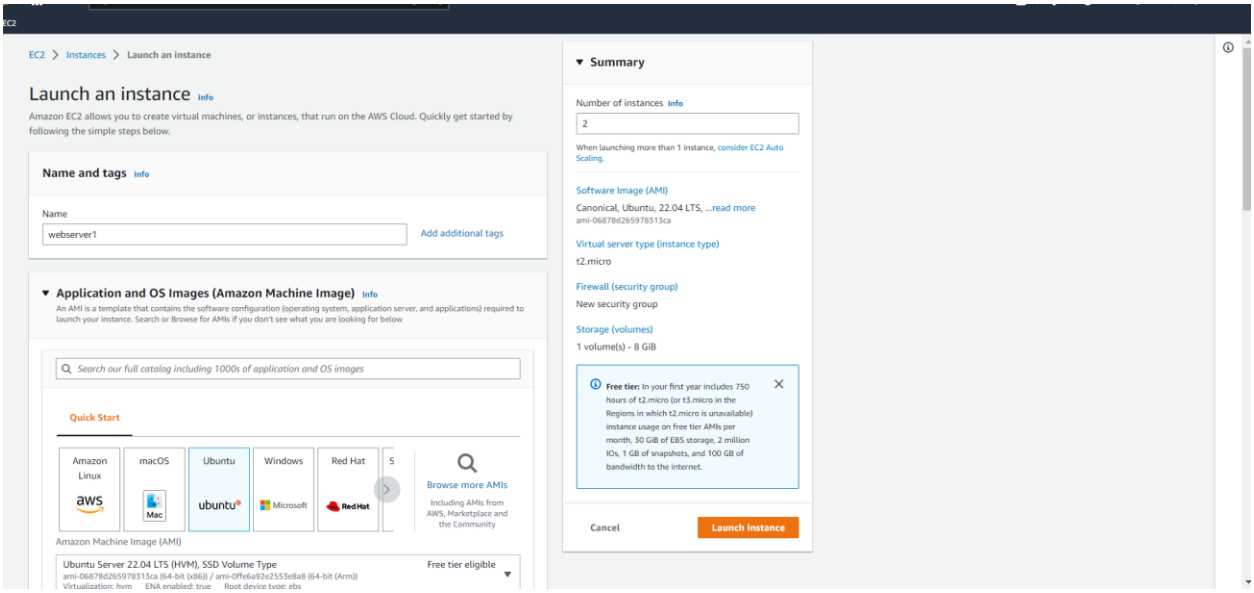
Once migrated, you have been asked to:

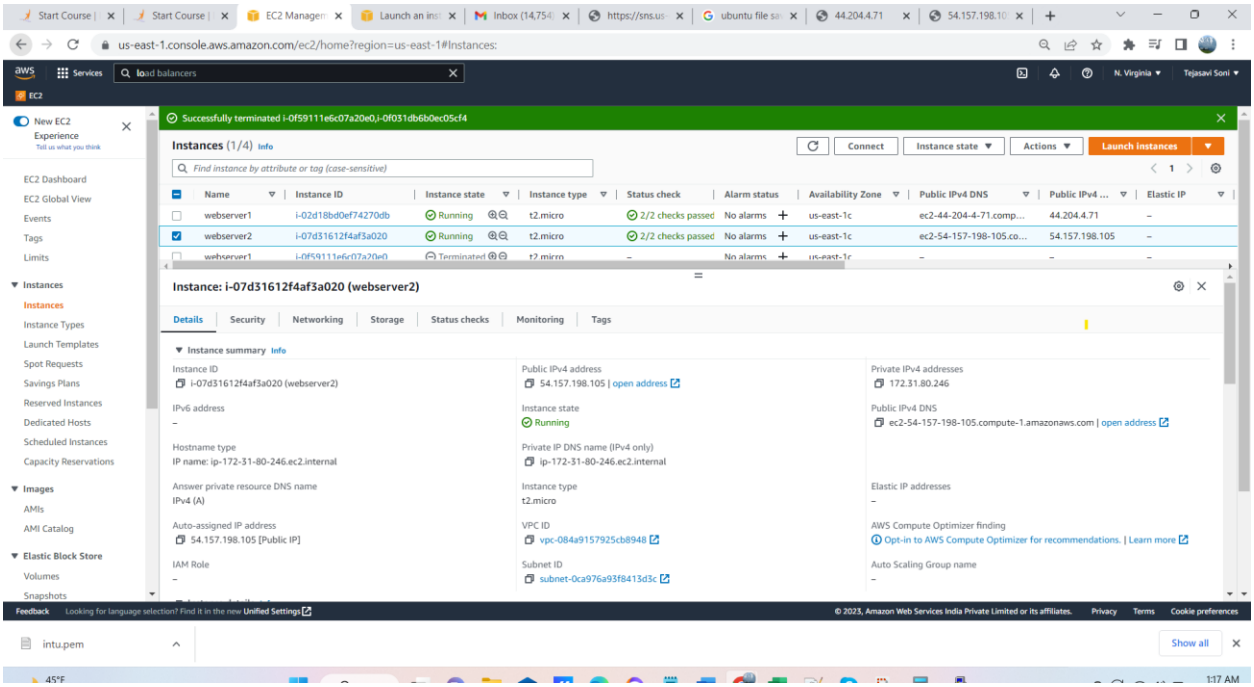
1. Manage the scaling requirements of the company by:
    - Deploying multiple compute resources on the cloud as soon as the load increases and the CPU utilization exceeds 80%
    - Removing the resources when the CPU utilization goes under 60%
2. Create a Load balancer to distribute the load between compute resources
3. Route the traffic to the company's domain

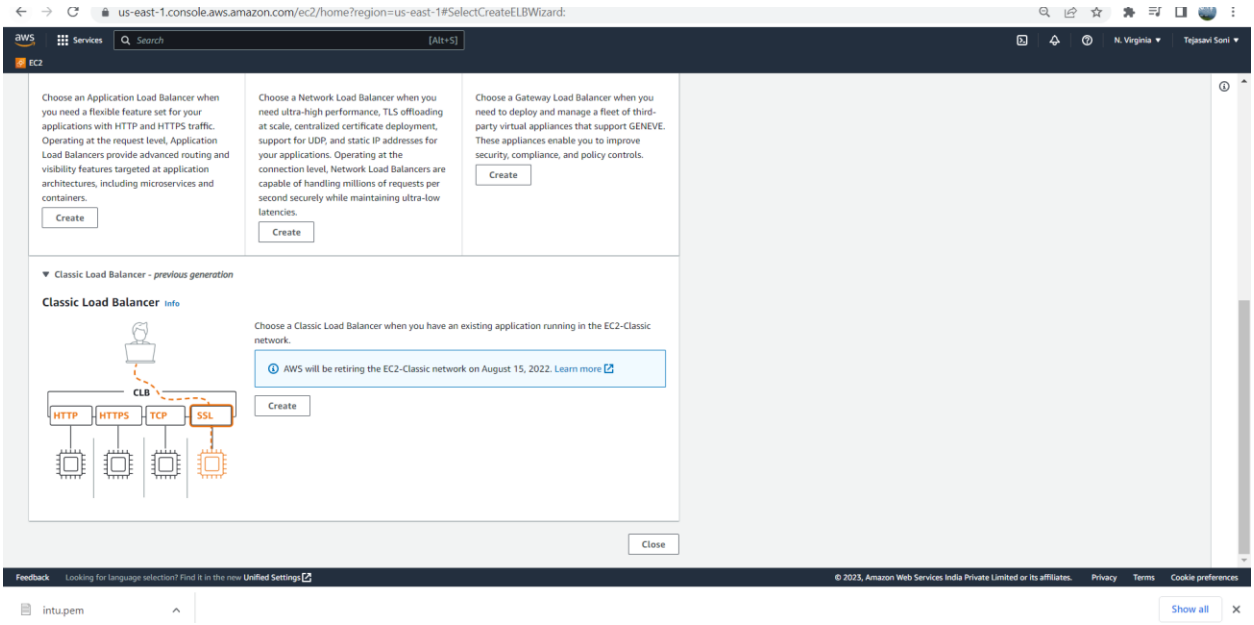
Note: You can get a free domain from Freenom

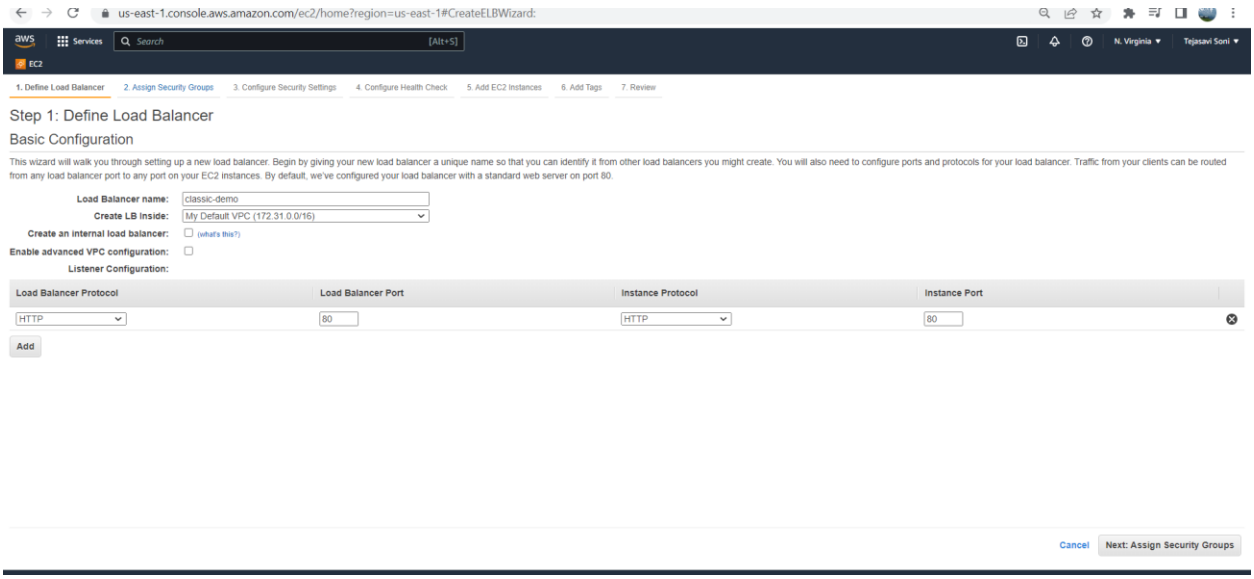
1 Create 2 instances ;

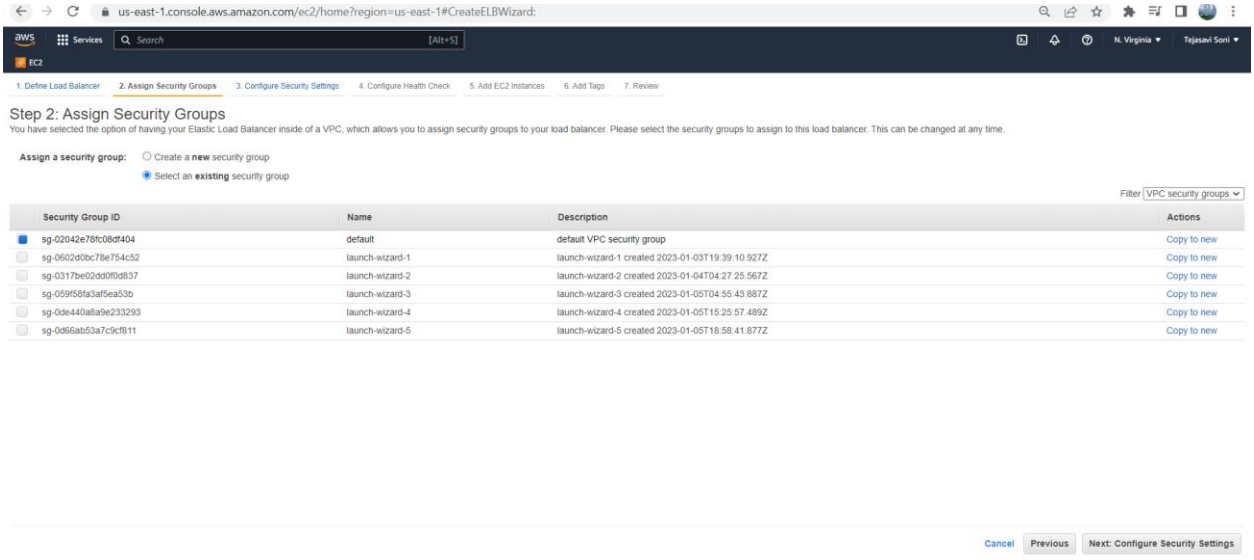
Create a load balancer to distribute the load b/w compute resources :




Successfully terminated i-0f59111e6c07a20e0,i-0f031db6b0ec05cf4
Instances (1/4) Info
Connect
Instance state
Actions
Launch instances
webserver1 i-02d18bd0ef74270db Running t2.micro 2/2 checks passed No alarms us-east-1c ec2-44-204-4-71.comp... 44.204.4.71
webserver2 i-07d31612f4af3a020 Running t2.micro 2/2 checks passed No alarms us-east-1c ec2-54-157-198-105.co... 54.157.198.105
Instance: i-07d31612f4af3a020 (webserver2)
Details
Security
Networking
Storage
Status checks
Monitoring
Tags
Instance summary Info
Instance ID
i-07d31612f4af3a020 (webserver2)
Public IPv4 address
54.157.198.105 | open address
Private IPv4 addresses
172.31.80.246
IPv6 address
Instance state
Running
Public IPv4 DNS
ec2-54-157-198-105.compute-1.amazonaws.com | open address
Hostname type
IP name: ip-172-31-80-246.ec2.internal
Private IP DNS name (IPv4 only)
ip-172-31-80-246.ec2.internal
Answer private resource DNS name
IPv4 (A)
Instance type
t2.micro
Elastic IP addresses
Auto-assigned IP address
54.157.198.105 [Public IP]
VPC ID
vpc-084a9157925cb8948
AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. | Learn more
IAM Role
Subnet ID
subnet-0ca976a93f8413d3c
Auto Scaling Group name
intu.pem
Show all


Choose an Application Load Balancer when you need a flexible feature set for your applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.
Create
Choose a Network Load Balancer when you need ultra-high performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your applications. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.
Create
Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.
Create
Classic Load Balancer - previous generation
Classic Load Balancer Info
CLB
HTTP
HTTPS
TCP
SSL
Choose a Classic Load Balancer when you have an existing application running in the EC2-Classic network.
AWS will be retiring the EC2-Classic network on August 15, 2022. Learn more
Create
Close
intu.pem
Show all


us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateELBWizard:
aws
Services
Search
[Alt+S]
N. Virginia
Tejasavi Soni
EC2
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
Step 1: Define Load Balancer
Basic 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:
classic-demo
Create LB Inside:
My Default VPC (172.31.0.0/16)
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
Cancel
Next: Assign Security Groups


us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateELBWizard:
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EC2
1. Define Load Balancer
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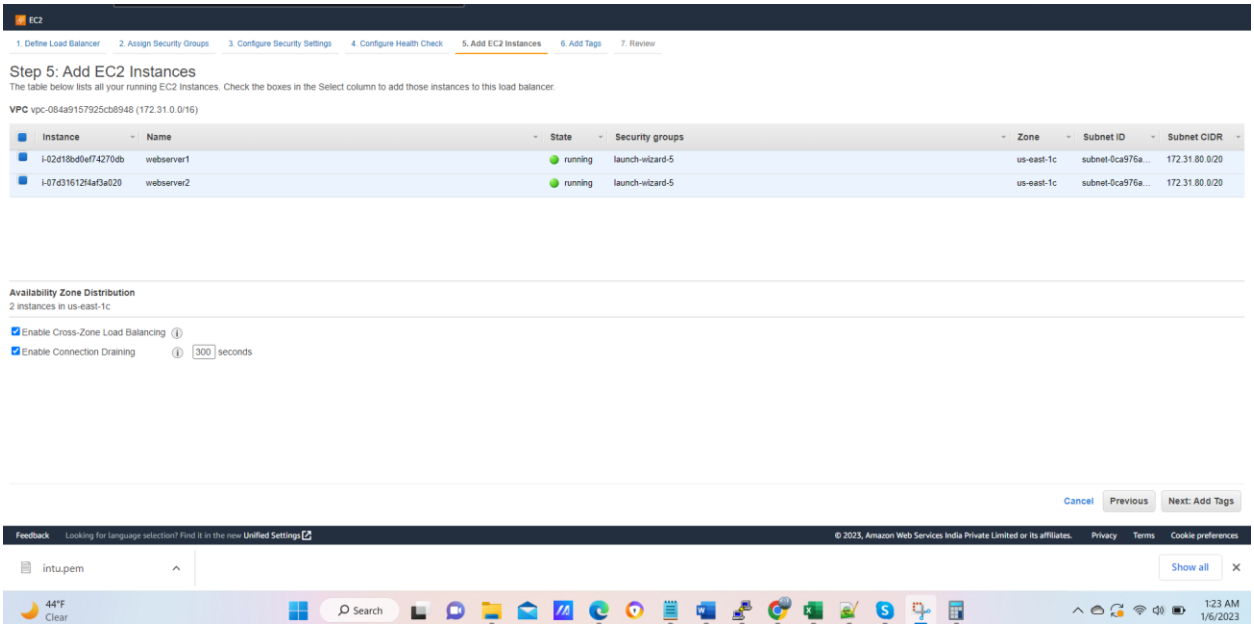
Step 2: Assign Security Groups
You have selected the option of having your Elastic Load Balancer inside of a VPC, which allows you to assign security groups to your load balancer. Please select the security groups to assign to this load balancer. This can be changed at any time.
Assign a security group:
Create a new security group
Select an existing security group
Filter
VPC security groups
Security Group ID
Name
Description
Actions
sg-02042e78fc08df404
default
default VPC security group
Copy to new
sg-0602d0bc78e754c52
launch-wizard-1
launch-wizard-1 created 2023-01-03T19:39:10.927Z
Copy to new
sg-0317be02dd0f0d837
launch-wizard-2
launch-wizard-2 created 2023-01-04T04:27:25.567Z
Copy to new
sg-059f58fa3af5ea53b
launch-wizard-3
launch-wizard-3 created 2023-01-05T04:55:43.887Z
Copy to new
sg-0de440a8a9e233293
launch-wizard-4
launch-wizard-4 created 2023-01-05T15:25:57.489Z
Copy to new
sg-0d66ab53a7c9cf811
launch-wizard-5
launch-wizard-5 created 2023-01-05T18:58:41.877Z
Copy to new
Cancel
Previous
Next: Configure Security Settings


EC2
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
Step 5: Add EC2 Instances
The 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-084a9157925cb8948 (172.31.0.0/16)
Instance
Name
State
Security groups
Zone
Subnet ID
Subnet CIDR
i-02d18bd0ef74270db
webserver1
running
launch-wizard-5
us-east-1c
subnet-0ca976a...
172.31.80.0/20
i-07d31612f4af3a020
webserver2
running
launch-wizard-5
us-east-1c
subnet-0ca976a...
172.31.80.0/20
Availability Zone Distribution
2 instances in us-east-1c
Enable Cross-Zone Load Balancing
Enable Connection Draining
300
seconds
Cancel
Previous
Next: Add Tags
Feedback
Looking for language selection? Find it in the new Unified Settings
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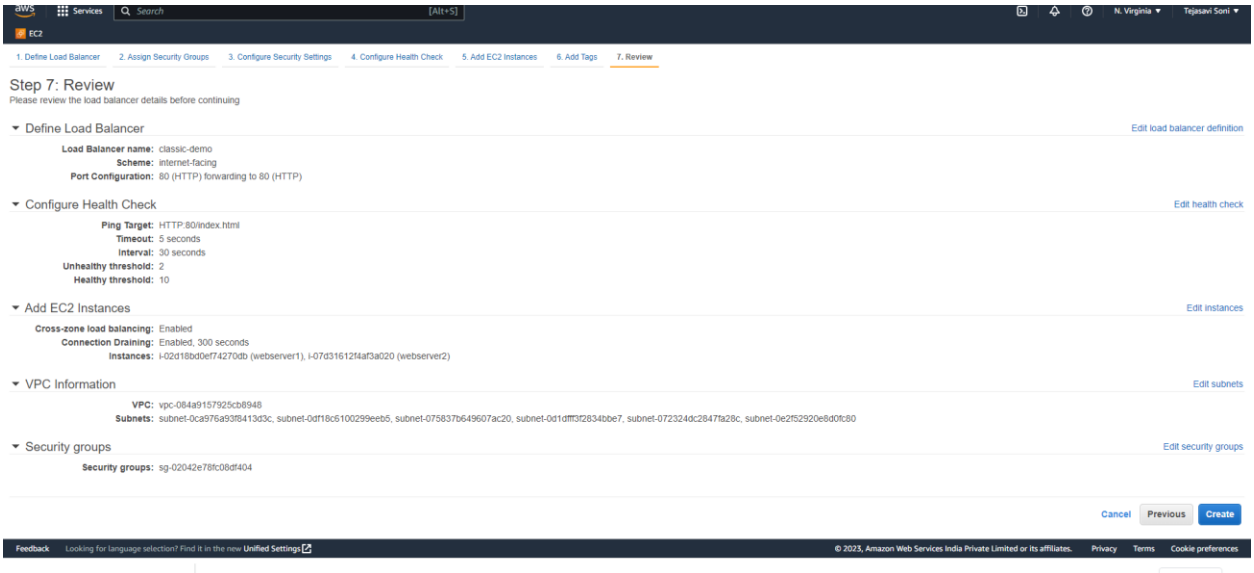
Privacy
Terms
Cookie preferences

intu.pem
Show all
44°F
Clear
Search
1:23 AM
1/6/2023


aws
Services
Search
[Alt+S]
N. Virginia
Tejasavi Soni
EC2
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
Step 7: Review
Please review the load balancer details before continuing
Define Load Balancer
Edit load balancer definition
Load Balancer name: classic-demo
Scheme: internet-facing
Port Configuration: 80 (HTTP) forwarding to 80 (HTTP)
Configure Health Check
Edit health check
Ping Target: HTTP:80/index.html
Timeout: 5 seconds
Interval: 30 seconds
Unhealthy threshold: 2
Healthy threshold: 10
Add EC2 Instances
Edit instances
Cross-zone load balancing: Enabled
Connection Draining: Enabled, 300 seconds
Instances: i-02d18bd0ef74270db (webserver1), i-07d31612f4af3a020 (webserver2)
VPC Information
Edit subnets
VPC: vpc-084a9157925cb8948
Subnets: subnet-0ca976a93f8413d3c, subnet-0df18c6100299eeb5, subnet-075837b649607ac20, subnet-0d1dfff3f2834bbe7, subnet-072324dc2847fa28c, subnet-0e2f52920e8d0fc80
Security groups
Edit security groups
Security groups: sg-02042e78fc08df404
Cancel
Previous
Create
Feedback
Looking for language selection? Find it in the new Unified Settings
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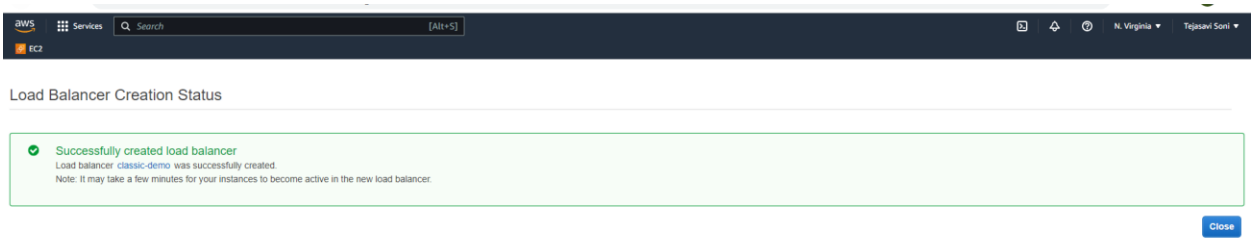
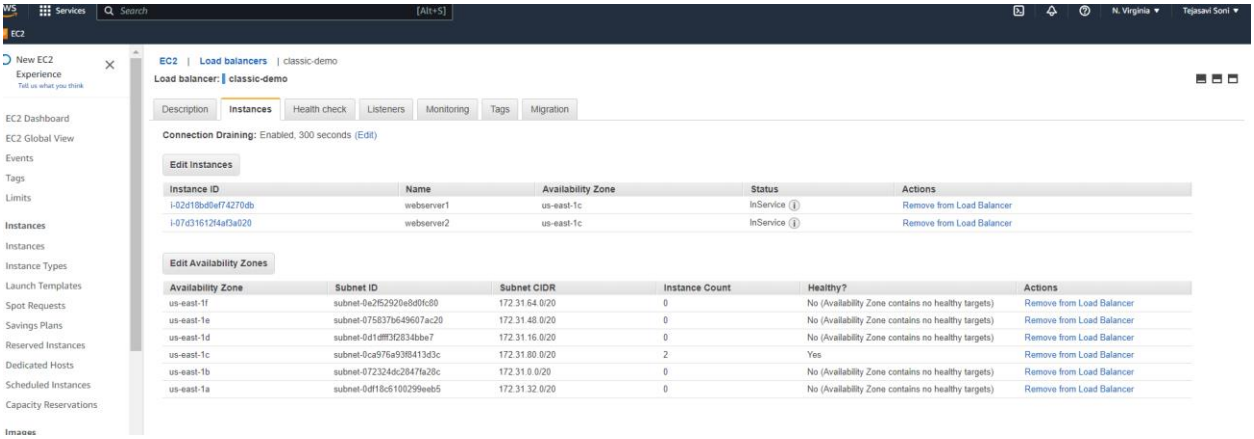
Privacy
Terms
Cookie preferences

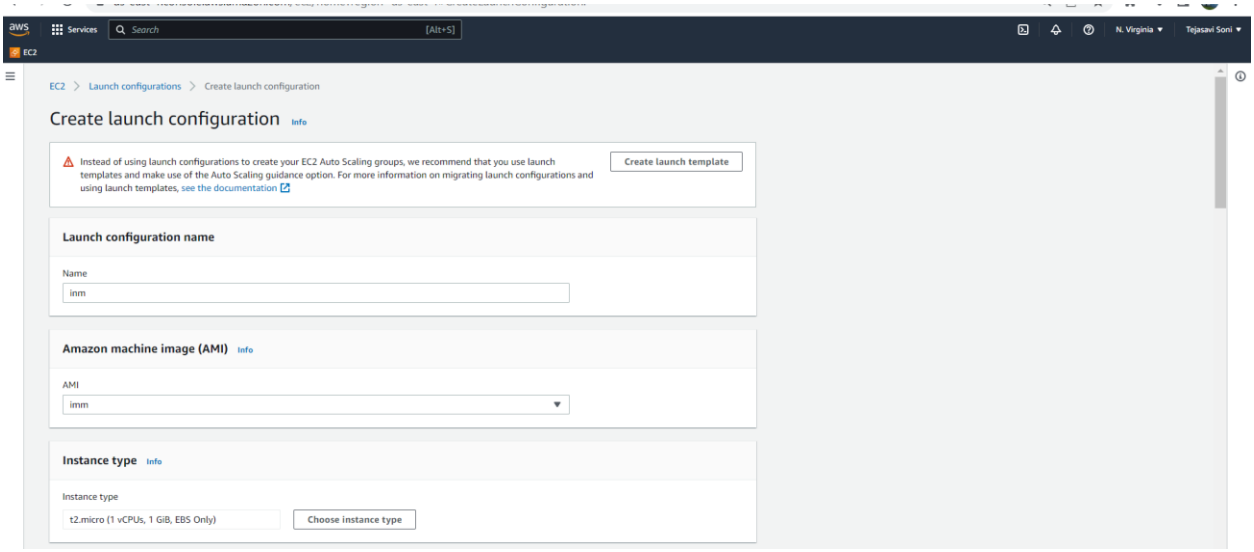


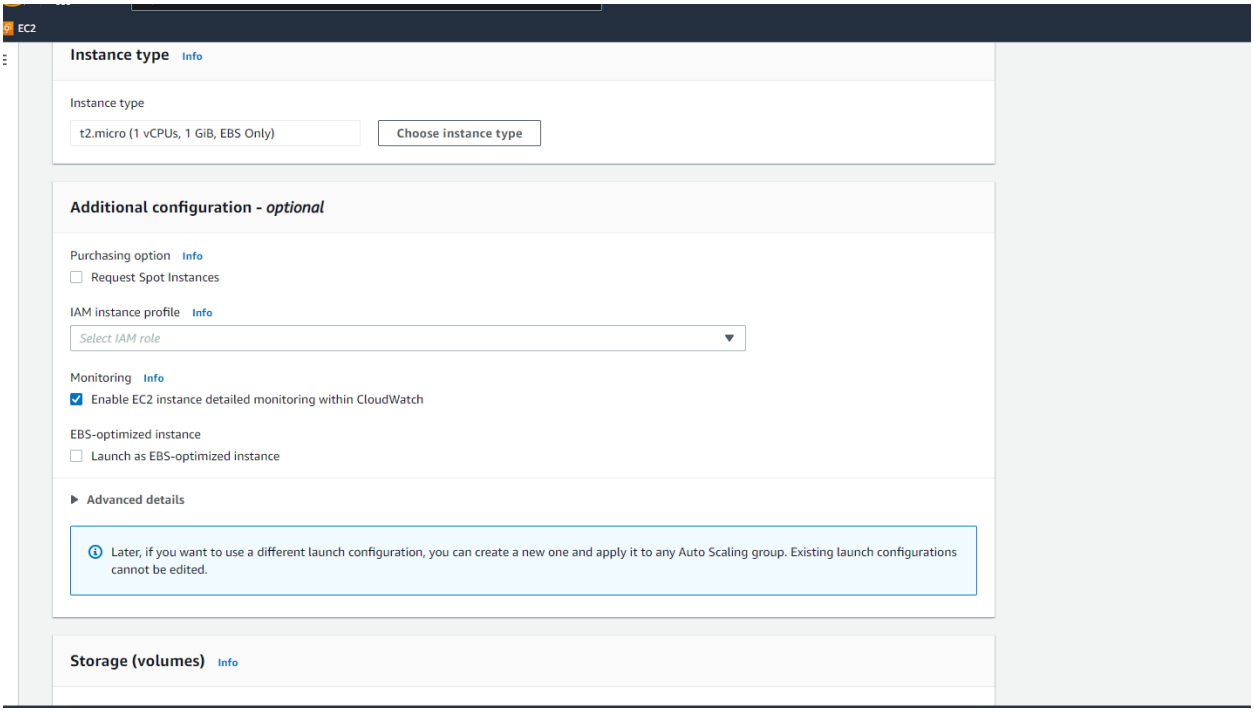


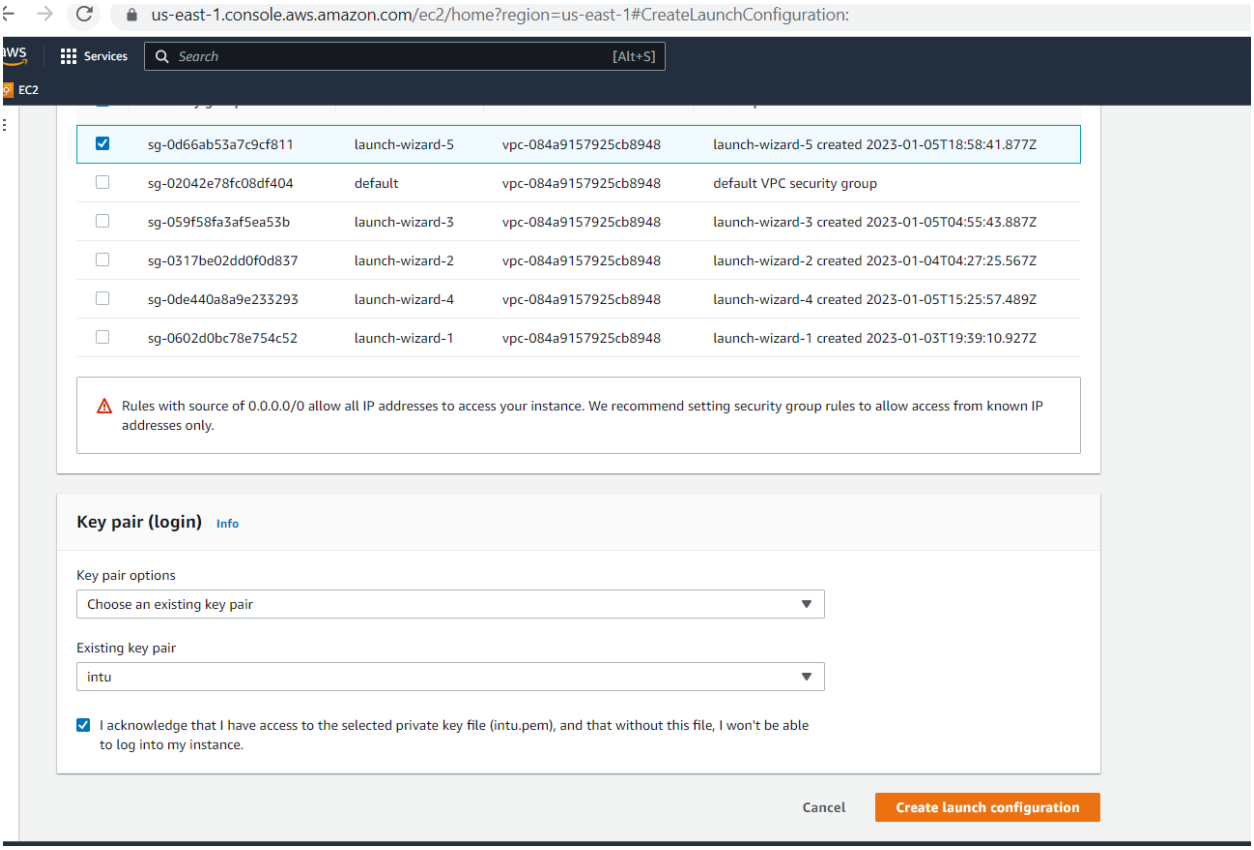
We will create image of the instance :

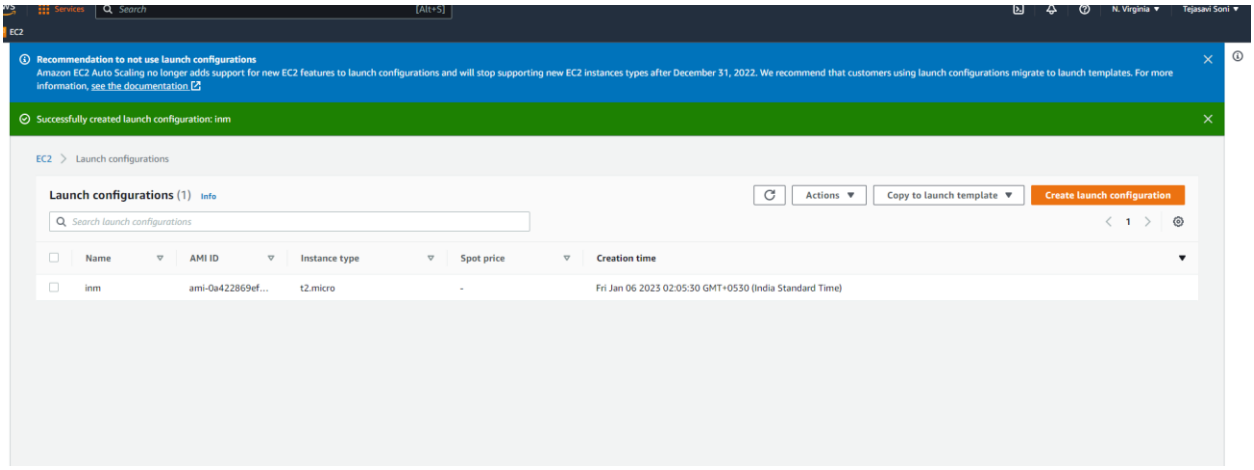
Now autosacaling :

Launch configuration :

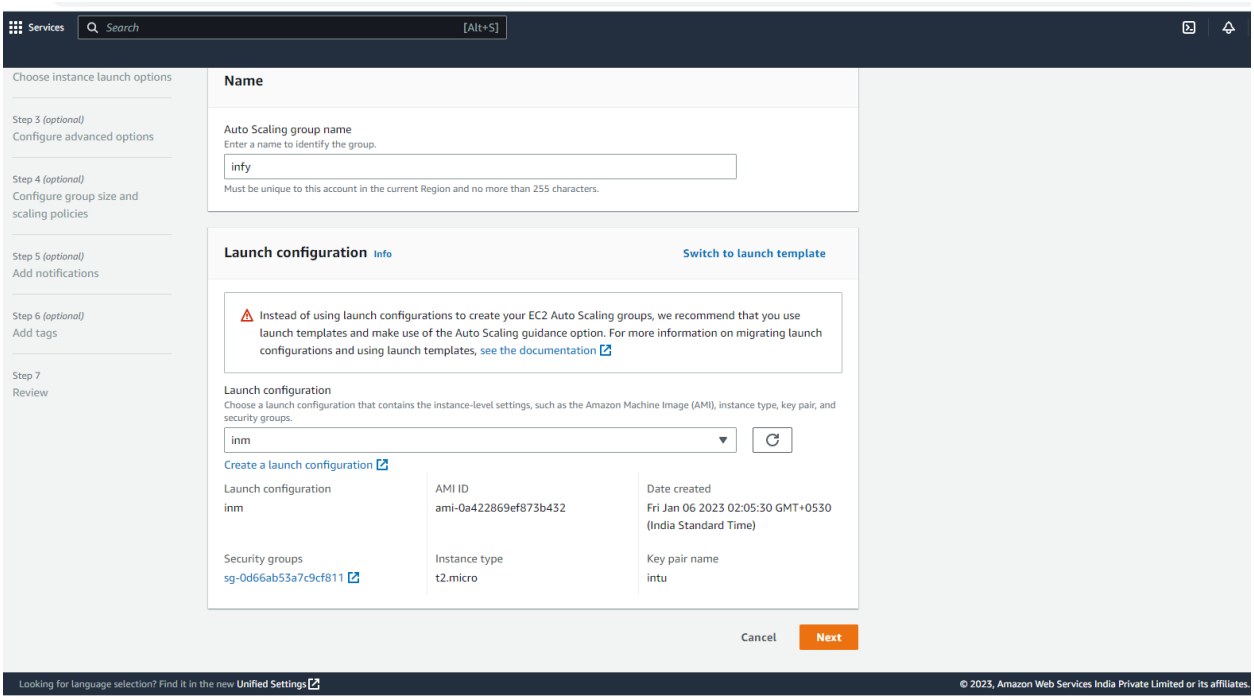

aws
Services
Search
[Alt+S]
N. Virginia
Tejasavi Soni
EC2
EC2 > Launch configurations > Create launch configuration
Create launch configuration Info
Instead of using launch configurations to create your EC2 Auto Scaling groups, we recommend that you use launch templates and make use of the Auto Scaling guidance option. For more information on migrating launch configurations and using launch templates, see the documentation
Create launch template
Launch configuration name
Name
inm
Amazon machine image (AMI) Info
AMI
imm
Instance type Info
Instance type
t2.micro (1 vCPUs, 1 GiB, EBS Only)
Choose instance type


EC2
Instance type Info
Instance type
t2.micro (1 vCPUs, 1 GiB, EBS Only)
Choose instance type
Additional configuration - optional
Purchasing option Info
Request Spot Instances
IAM instance profile Info
Select IAM role
Monitoring Info
Enable EC2 instance detailed monitoring within CloudWatch
EBS-optimized instance
Launch as EBS-optimized instance
Advanced details
Later, if you want to use a different launch configuration, you can create a new one and apply it to any Auto Scaling group. Existing launch configurations cannot be edited.
Storage (volumes) Info

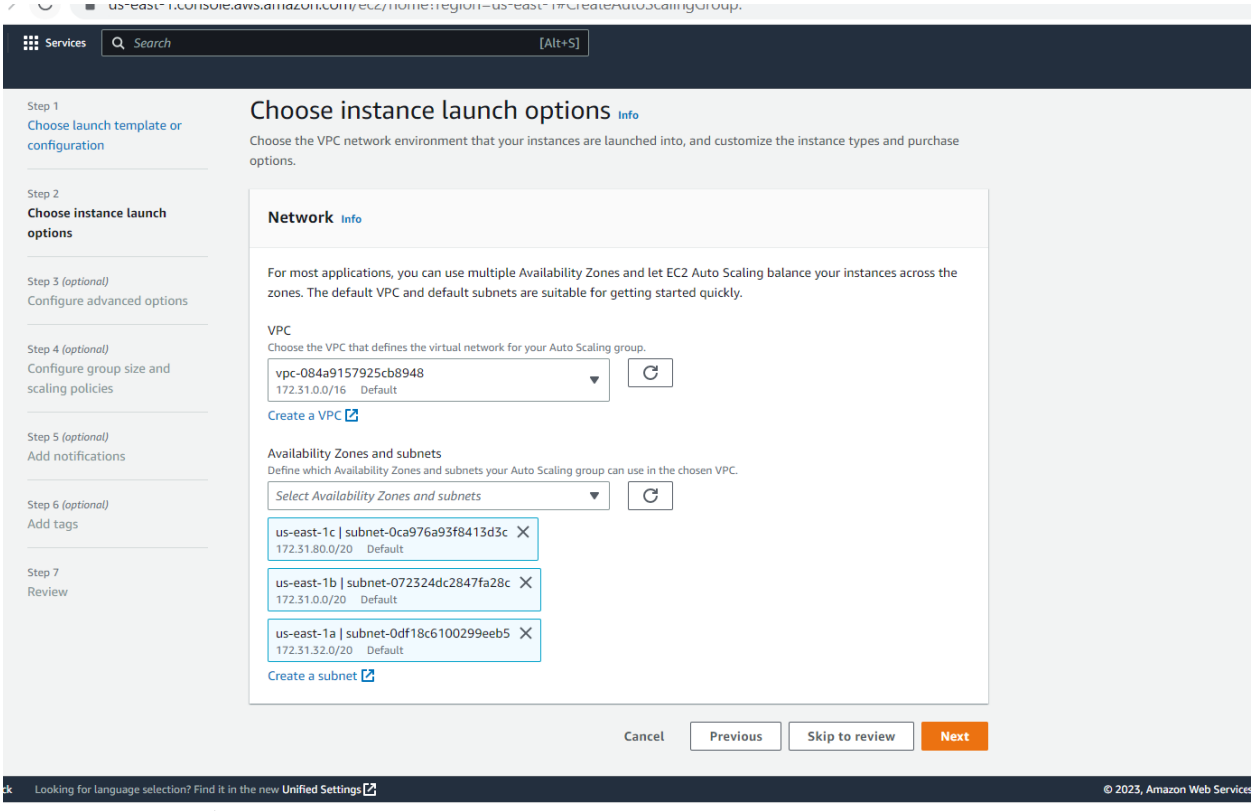




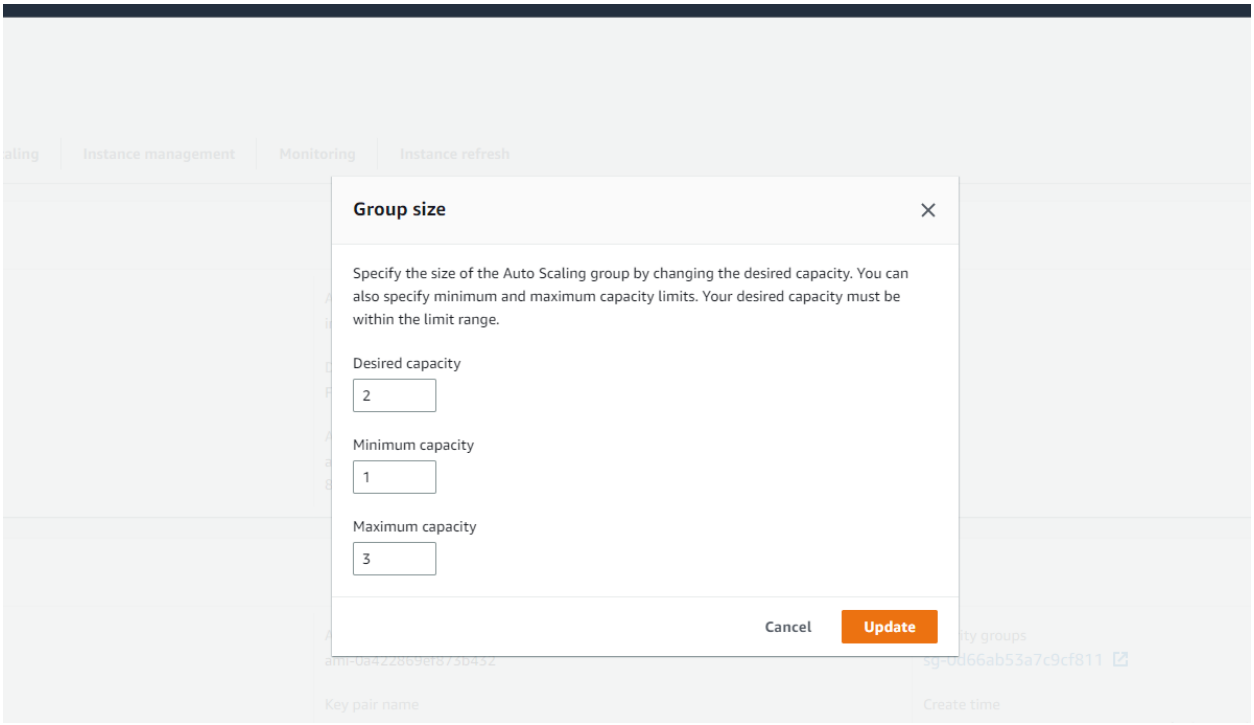
Go to auto scaling groups



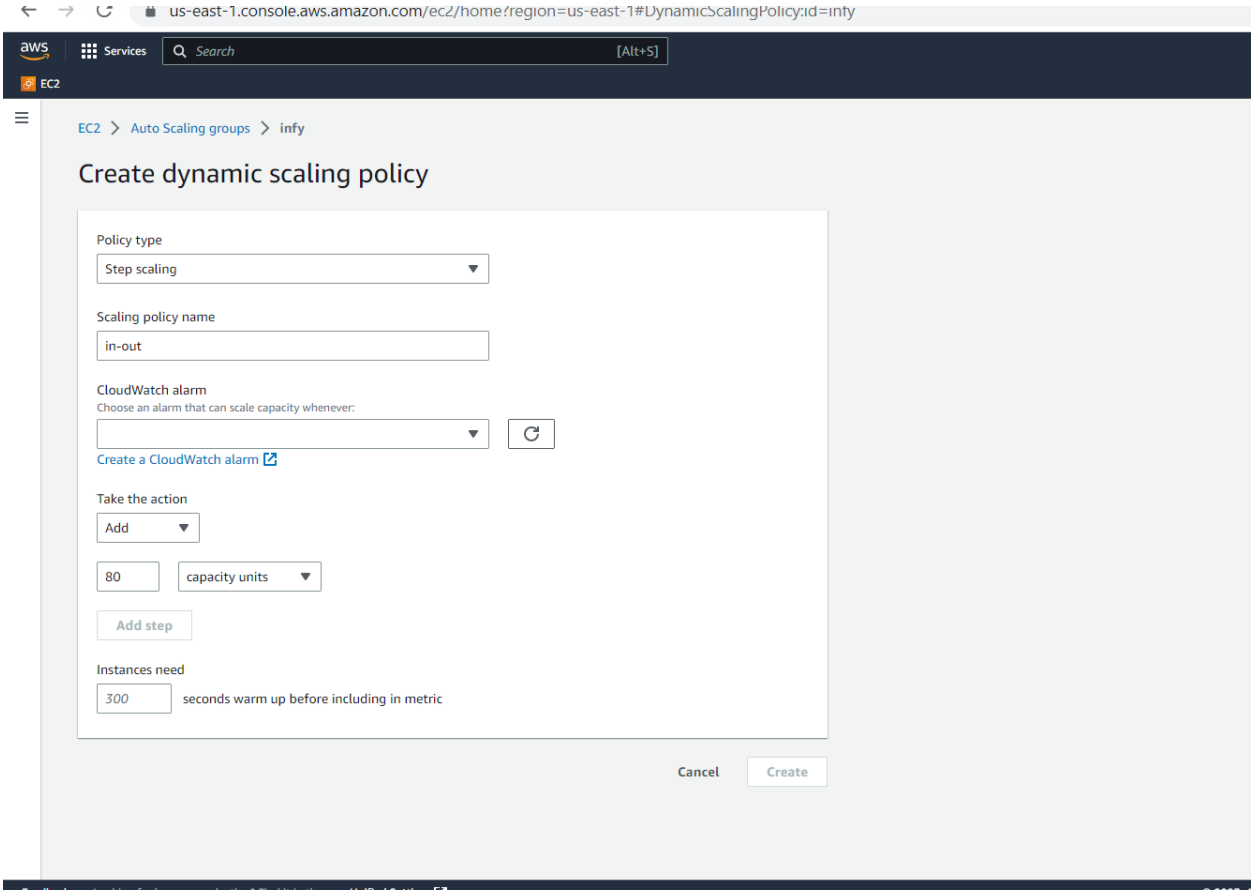
tu.pem

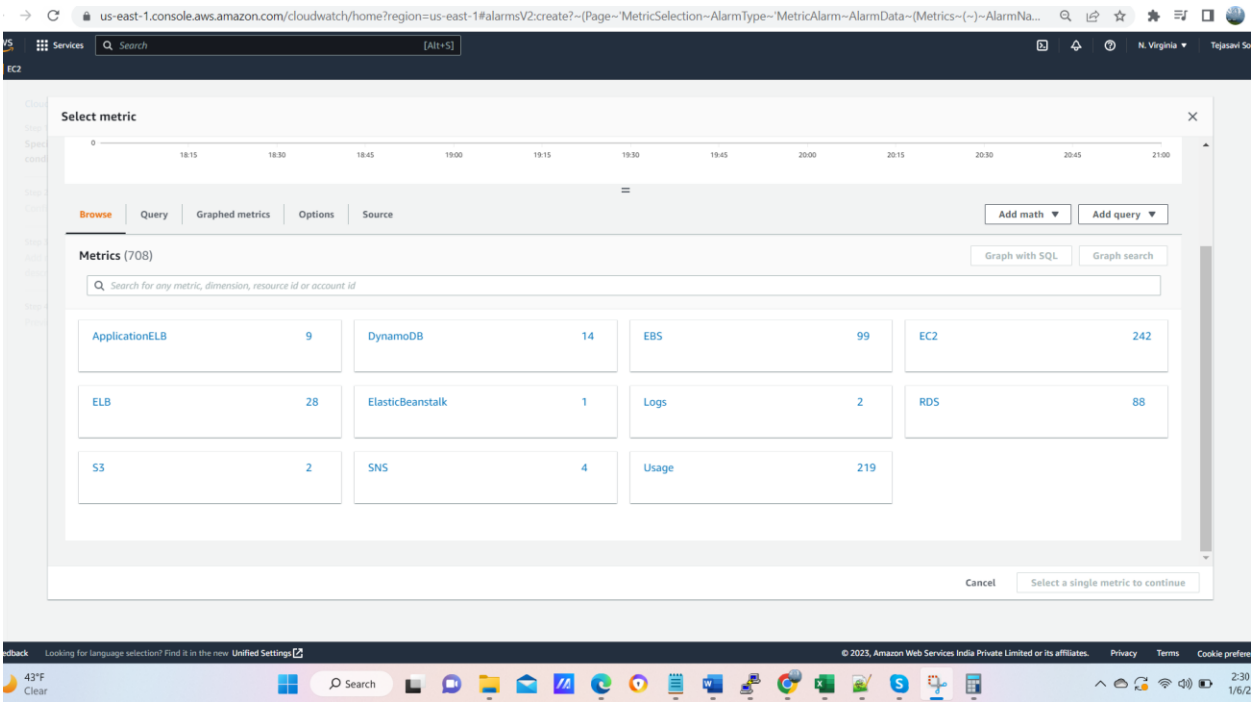


intu.pem



For adding & removing click on step scaling policy from automatic SCALING :


us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#DynamicScalingPolicy:id=infy
aws
Services
Search
[Alt+S]
EC2
EC2 > Auto Scaling groups > infy
Create dynamic scaling policy
Policy type
Step scaling
Scaling policy name
in-out
CloudWatch alarm
Choose an alarm that can scale capacity whenever:
Create a CloudWatch alarm
Take the action
Add
80
capacity units
Add step
Instances need
300
seconds warm up before including in metric
Cancel
Create


us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#alarmsV2:create?~(Page~'MetricSelection~AlarmType~'MetricAlarm~AlarmData~(Metrics~(~)~AlarmNa...
Select metric
Browse
Query
Graphed metrics
Options
Source
Add math
Add query
Metrics (708)
Graph with SQL
Graph search
Search for any metric, dimension, resource id or account id
ApplicationELB 9
DynamoDB 14
EBS 99
EC2 242
ELB 28
ElasticBeanstalk 1
Logs 2
RDS 88
S3 2
SNS 4
Usage 219
Cancel
Select a single metric to continue
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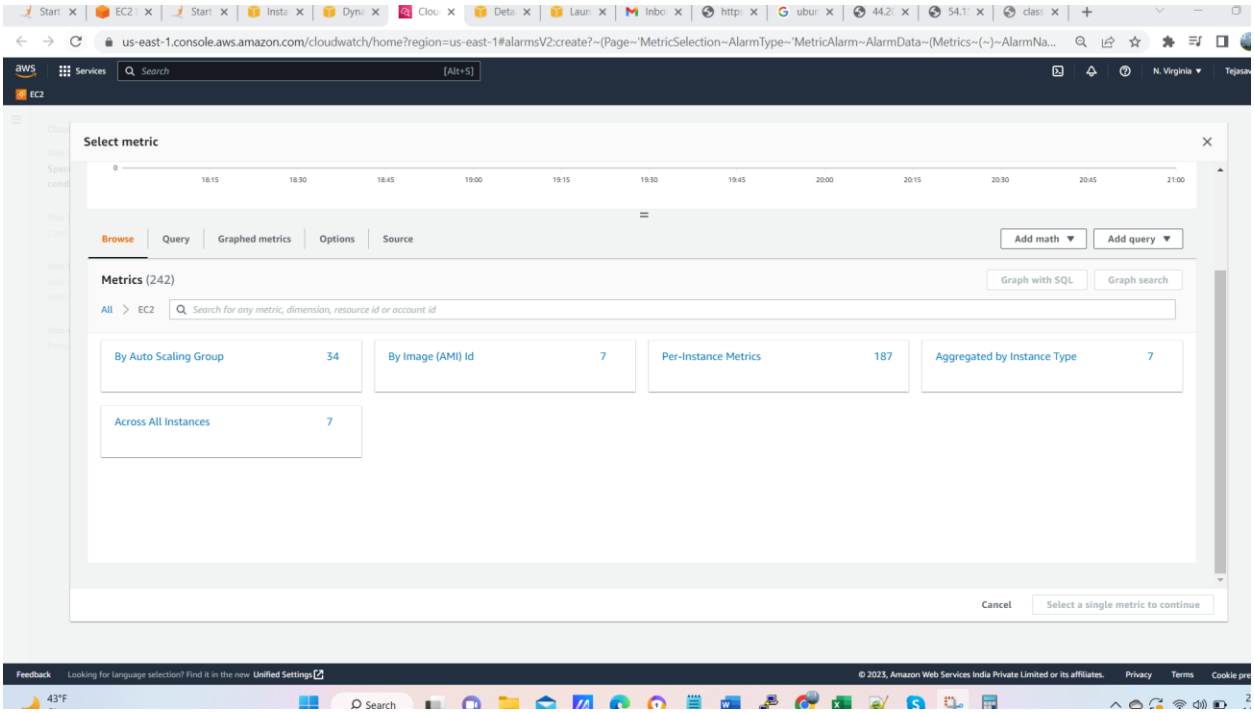
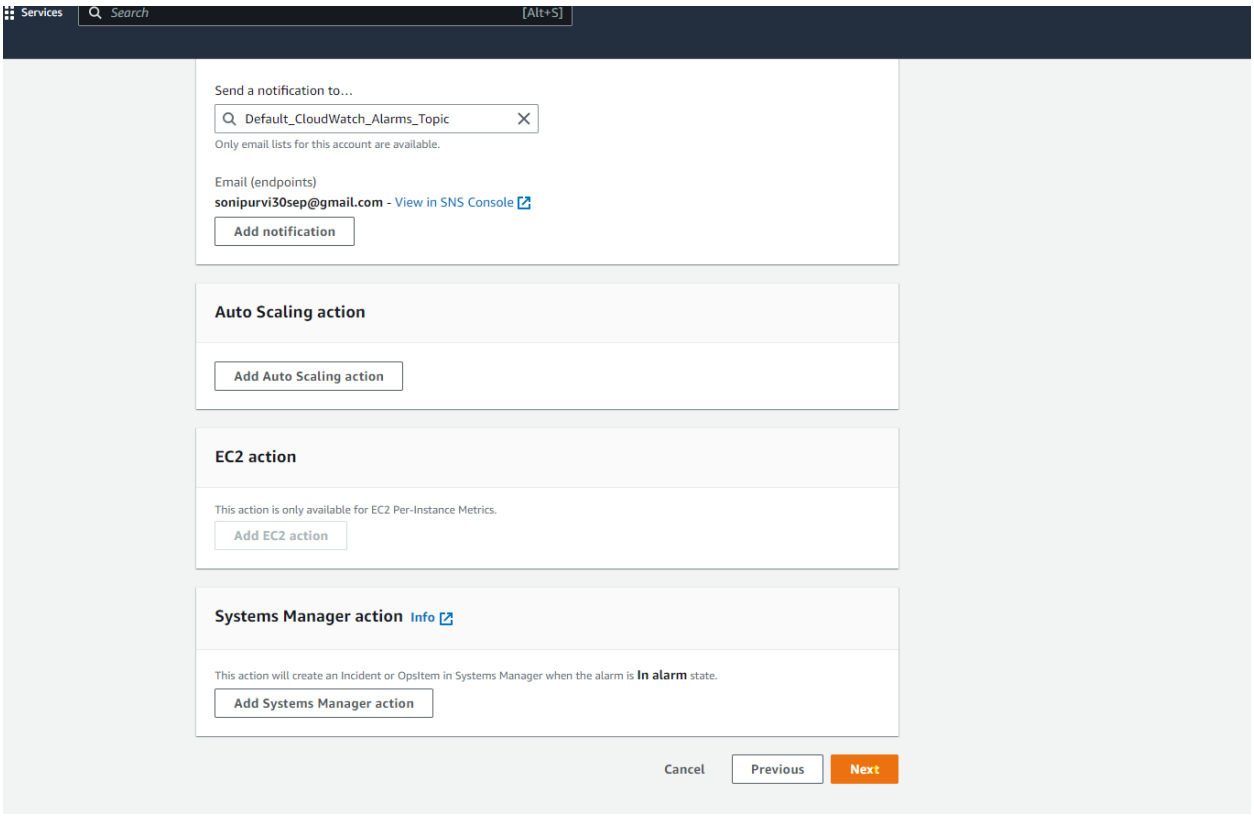
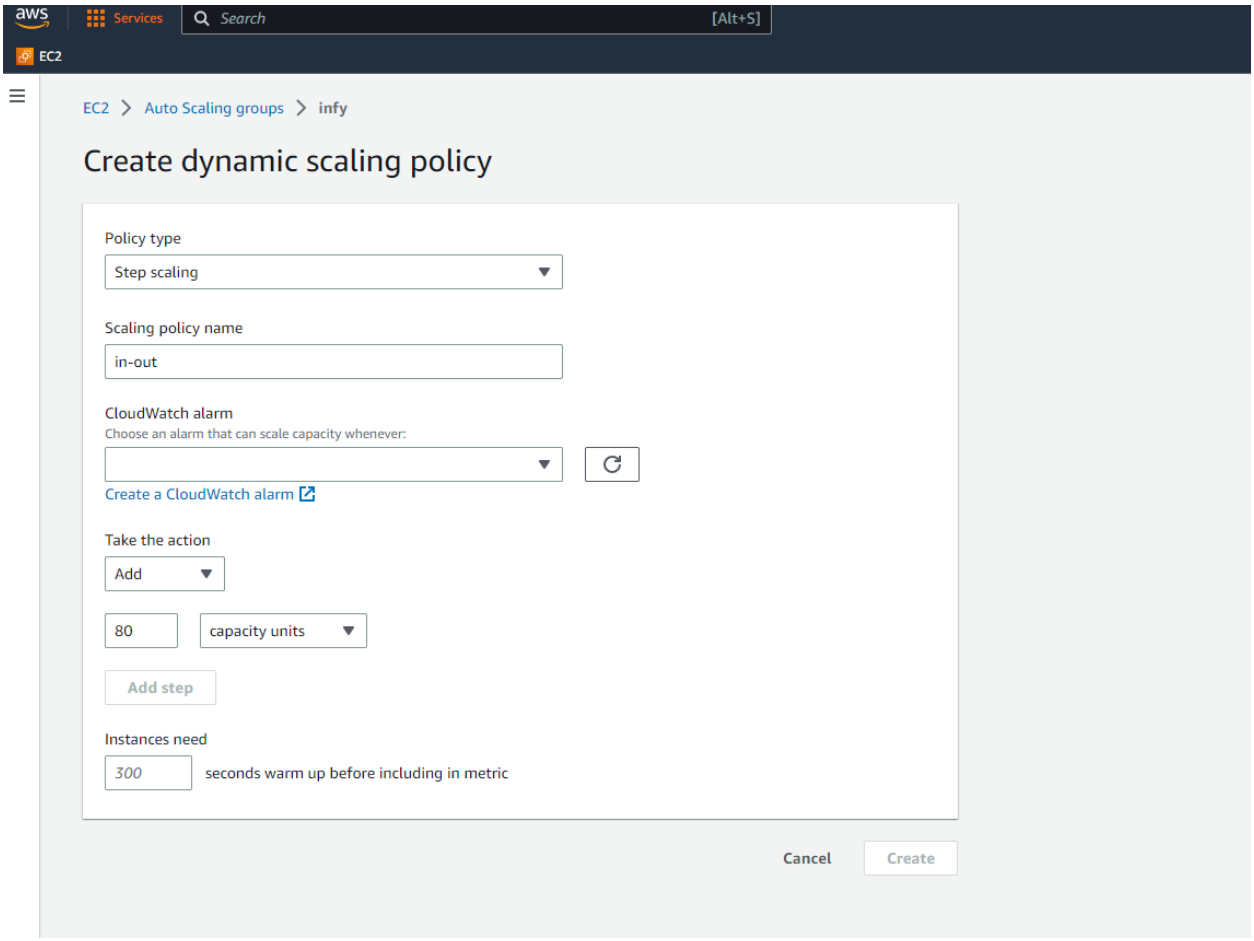
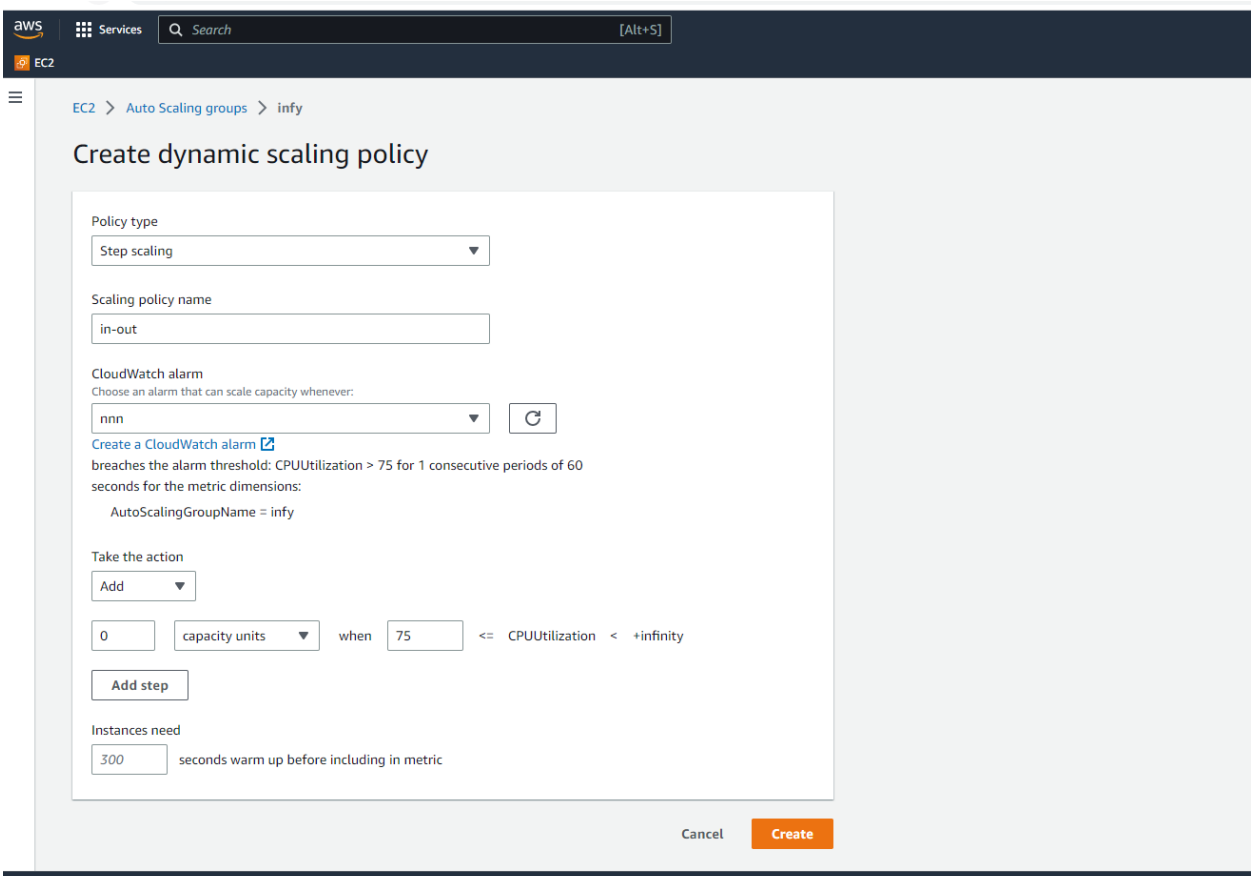
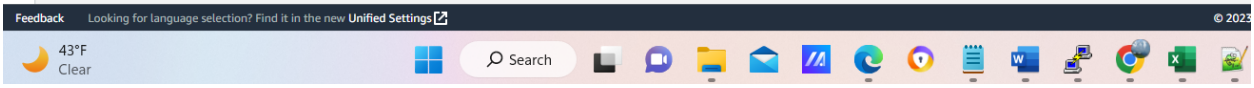
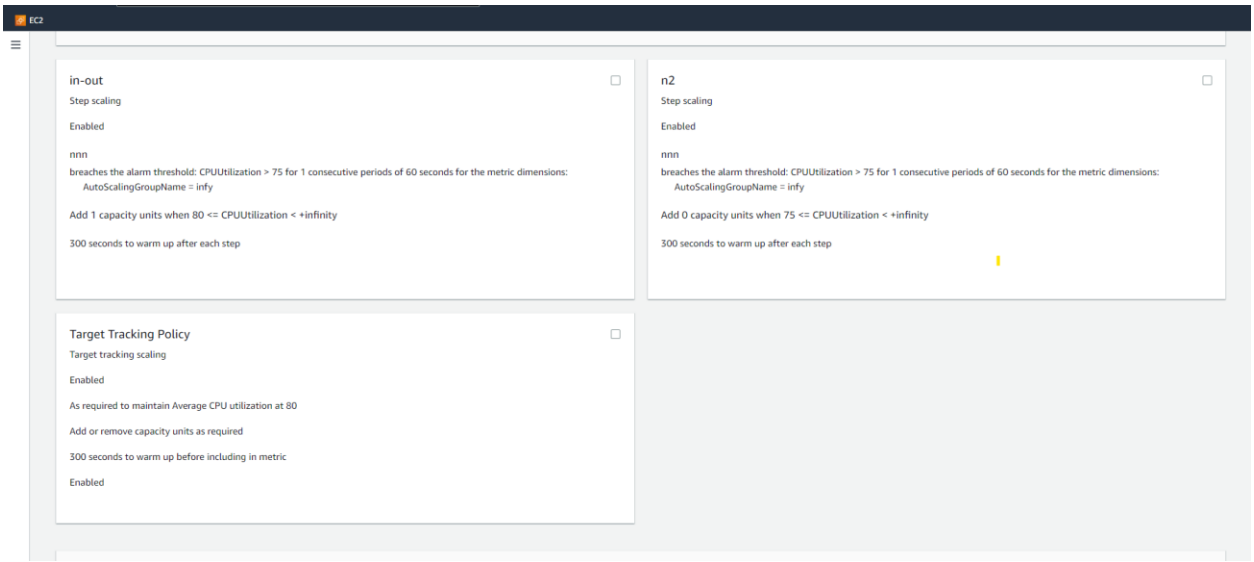

Select metric
Browse
Query
Graphed metrics
Options
Source
Add math
Add query
Metrics (242)
Graph with SQL
Graph search
All
EC2
Search for any metric, dimension, resource id or account id
By Auto Scaling Group 34
By Image (AMI) Id 7
Per-Instance Metrics 187
Aggregated by Instance Type 7
Across All Instances 7
Cancel
Select a single metric to continue

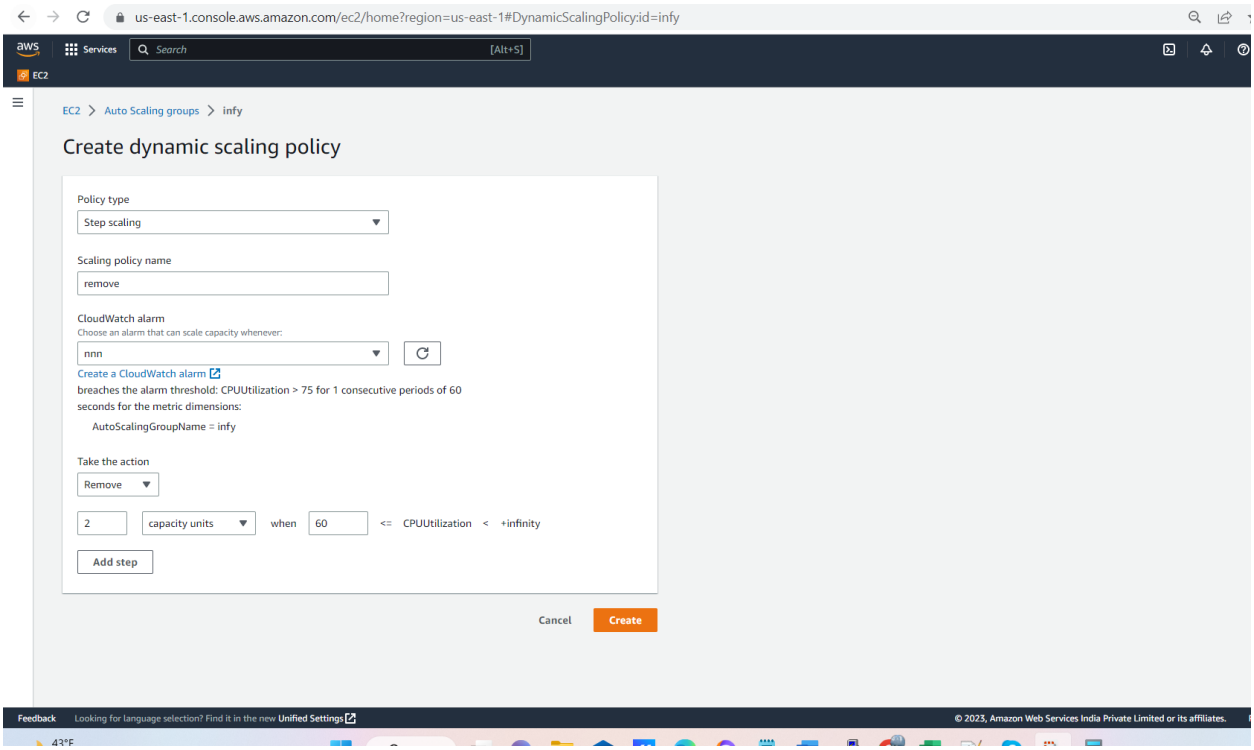

Send a notification to...
Default_CloudWatch_Alarms_Topic
Only email lists for this account are available.
Email (endpoints)
sonipurvi30sep@gmail.com - View in SNS Console
Add notification
Auto Scaling action
Add Auto Scaling action
EC2 action
This action is only available for EC2 Per-Instance Metrics.
Add EC2 action
Systems Manager action Info
This action will create an Incident or OpsItem in Systems Manager when the alarm is In alarm state.
Add Systems Manager action
Cancel
Previous
Next

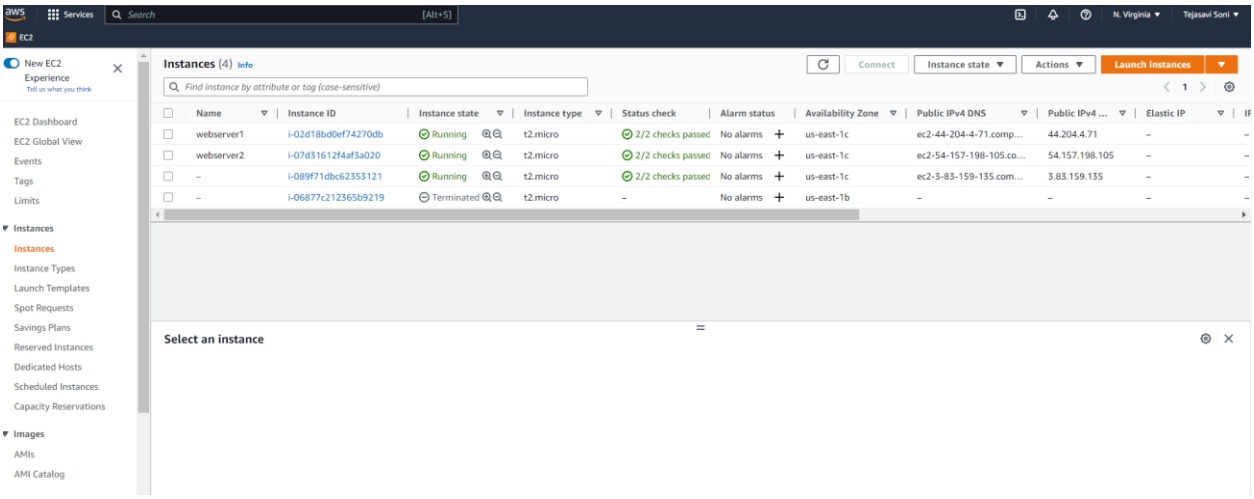

aws
Services
Search
[Alt+S]
EC2
EC2 > Auto Scaling groups > infy
Create dynamic scaling policy
Policy type
Step scaling
Scaling policy name
in-out
CloudWatch alarm
Choose an alarm that can scale capacity whenever:
Create a CloudWatch alarm
Take the action
Add
80
capacity units
Add step
Instances need
300
seconds warm up before including in metric
Cancel
Create


aws
Services
Search
[Alt+S]
EC2
EC2 > Auto Scaling groups > infy
Create dynamic scaling policy
Policy type
Step scaling
Scaling policy name
in-out
CloudWatch alarm
Choose an alarm that can scale capacity whenever:
nnn
Create a CloudWatch alarm
breaches the alarm threshold: CPUUtilization > 75 for 1 consecutive periods of 60 seconds for the metric dimensions:
AutoScalingGroupName = infy
Take the action
Add
0
capacity units
when
75
<=
CPUUtilization
<
+infinity
Add step
Instances need
300
seconds warm up before including in metric
Cancel
Create


Feedback
Looking for language selection? Find it in the new Unified Settings
43°F
Clear
Search


EC2
in-out
Step scaling
Enabled
nnn
breaches the alarm threshold: CPUUtilization > 75 for 1 consecutive periods of 60 seconds for the metric dimensions:
AutoScalingGroupName = infy
Add 1 capacity units when 80 <= CPUUtilization < +infinity
300 seconds to warm up after each step
n2
Step scaling
Enabled
nnn
breaches the alarm threshold: CPUUtilization > 75 for 1 consecutive periods of 60 seconds for the metric dimensions:
AutoScalingGroupName = infy
Add 0 capacity units when 75 <= CPUUtilization < +infinity
300 seconds to warm up after each step
Target Tracking Policy
Target tracking scaling
Enabled
As required to maintain Average CPU utilization at 80
Add or remove capacity units as required
300 seconds to warm up before including in metric
Enabled

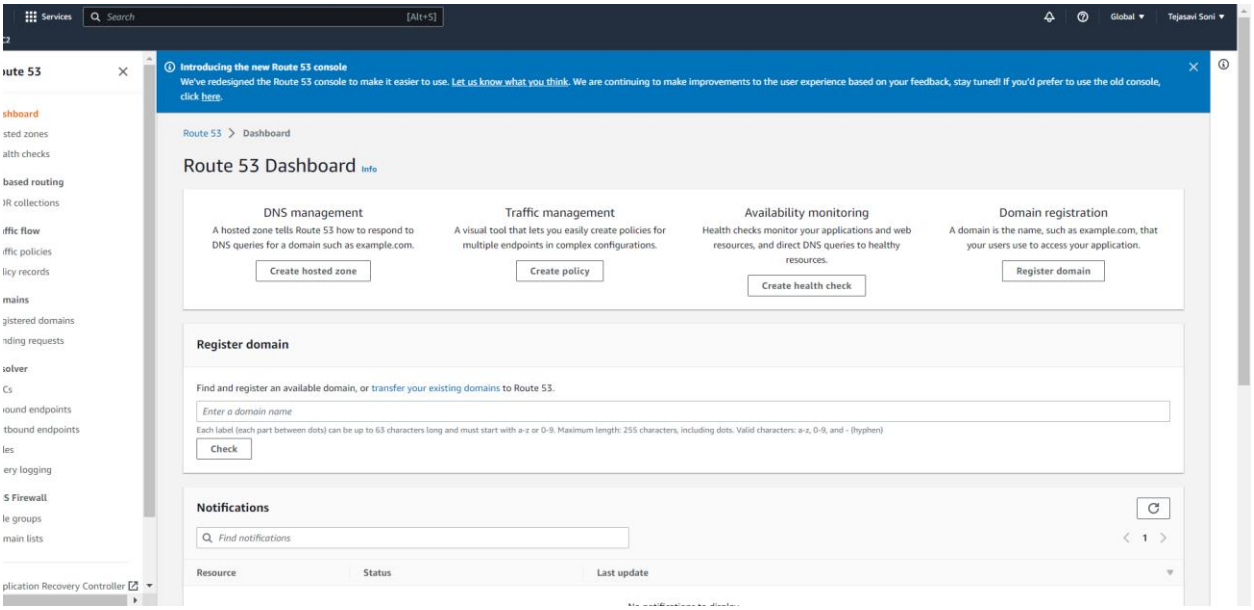




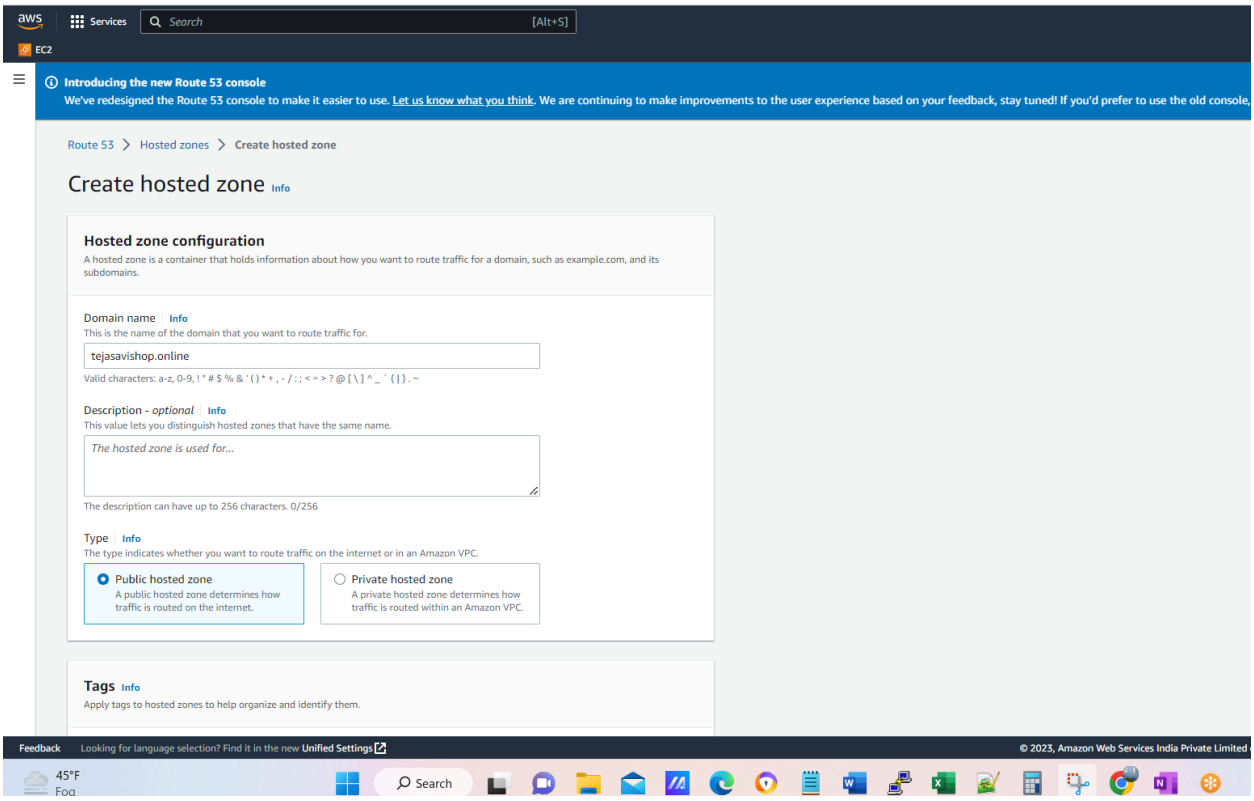
Automatically instances are creating

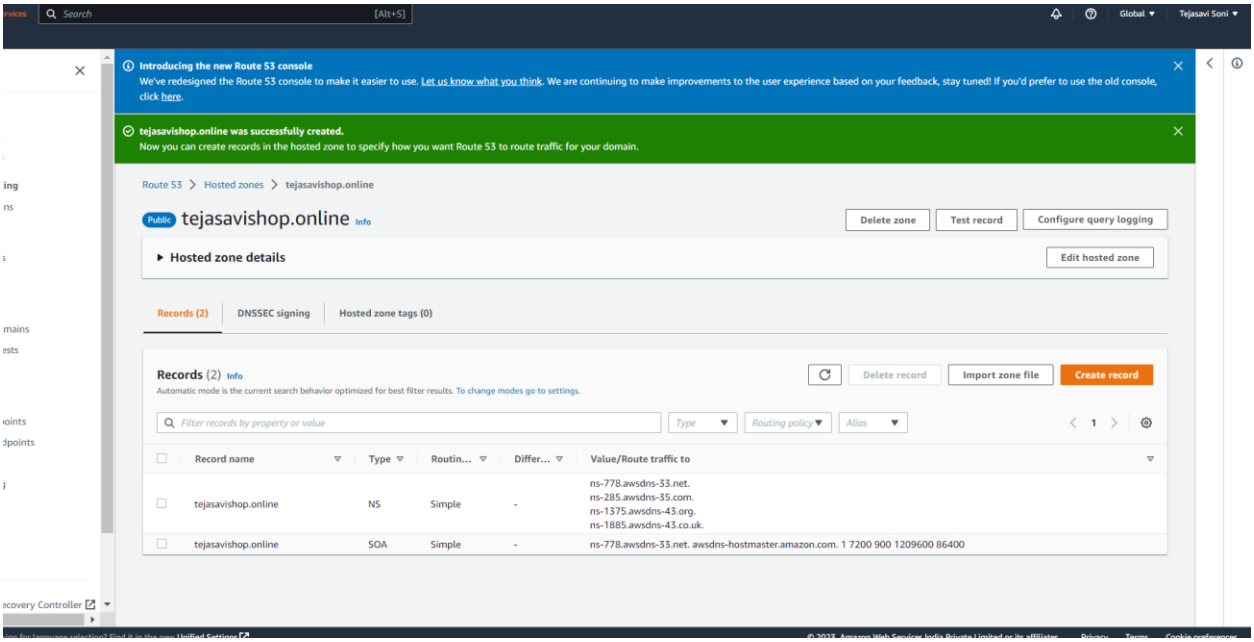
3. Route the traffic to the company's domain

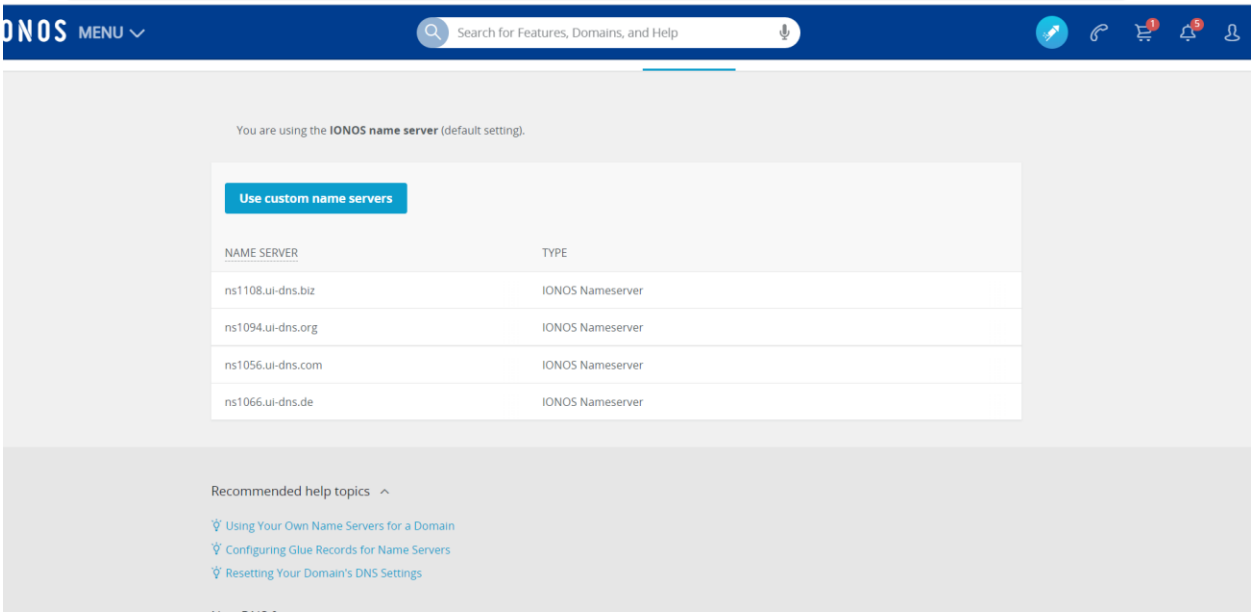
Create one instance .Launch

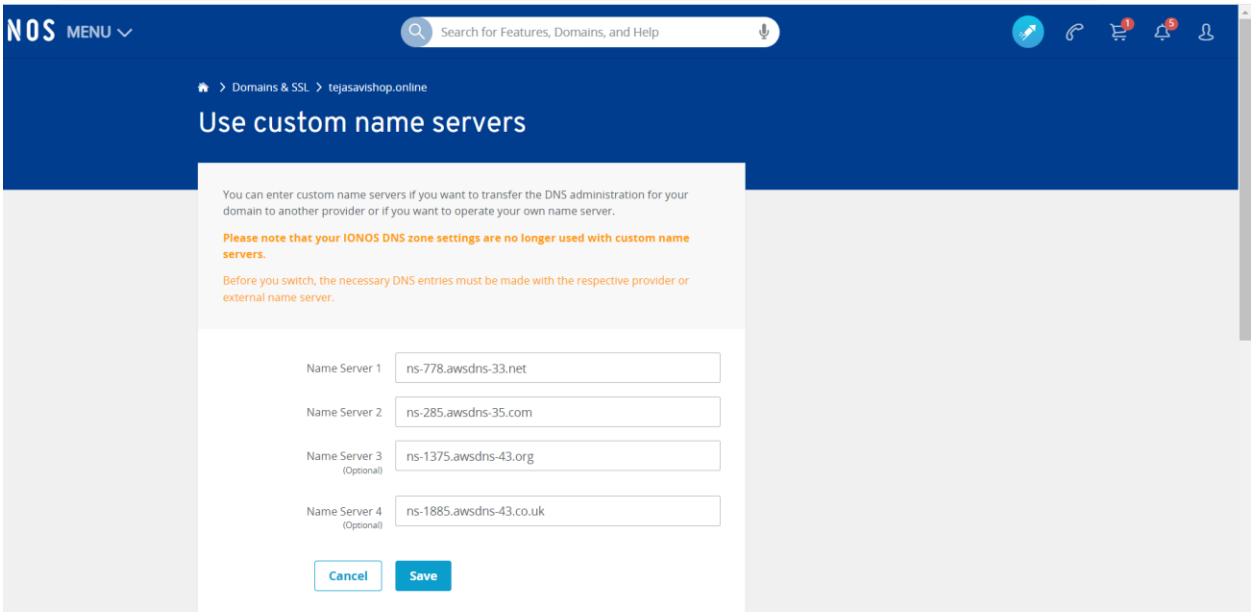


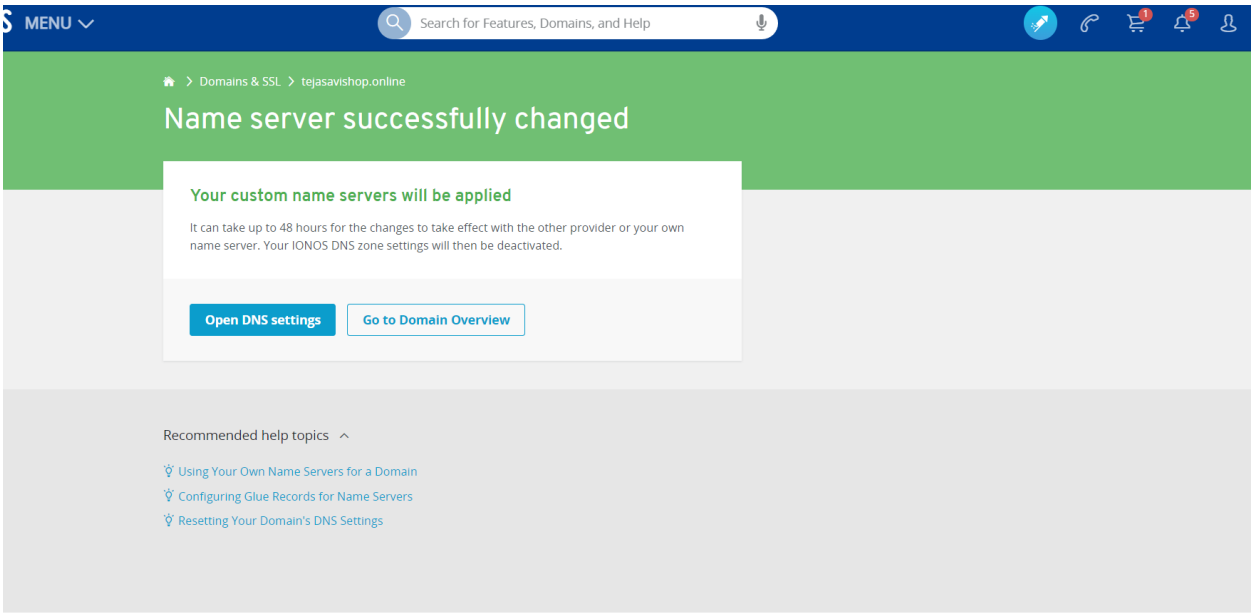
Click on create hosted zone :

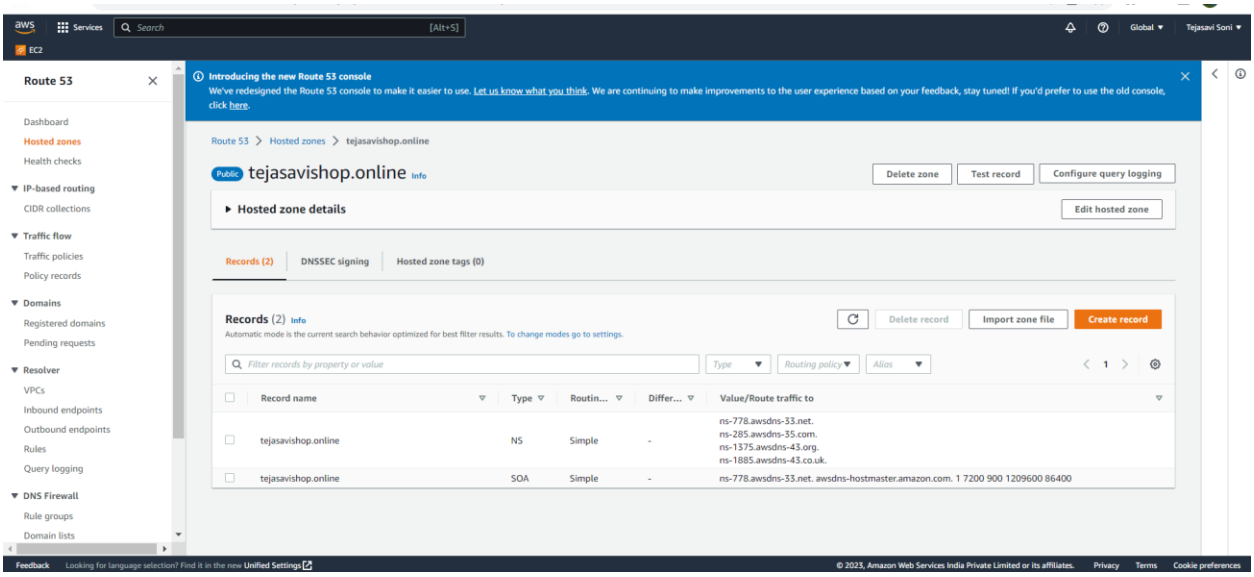



Search
[Alt+S]
Global
Tejasavi Soni
Introducing the new Route 53 console
We've redesigned the Route 53 console to make it easier to use. Let us know what you think. We are continuing to make improvements to the user experience based on your feedback, stay tuned! If you'd prefer to use the old console, click here.
tejasavishop.online was successfully created.
Now you can create records in the hosted zone to specify how you want Route 53 to route traffic for your domain.
Route 53 > Hosted zones > tejasavishop.online
Public tejasavishop.online Info
Delete zone
Test record
Configure query logging
Hosted zone details
Edit hosted zone
Records (2)
DNSSEC signing
Hosted zone tags (0)
Records (2) Info
Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.
Delete record
Import zone file
Create record
Filter records by property or value
Type
Routing policy
Alias
Record name
Type
Routin...
Differ...
Value/Route traffic to
tejasavishop.online
NS
Simple
-
ns-778.awsdns-33.net.
ns-285.awsdns-35.com.
ns-1375.awsdns-43.org.
ns-1885.awsdns-43.co.uk.
tejasavishop.online
SOA
Simple
-
ns-778.awsdns-33.net. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400

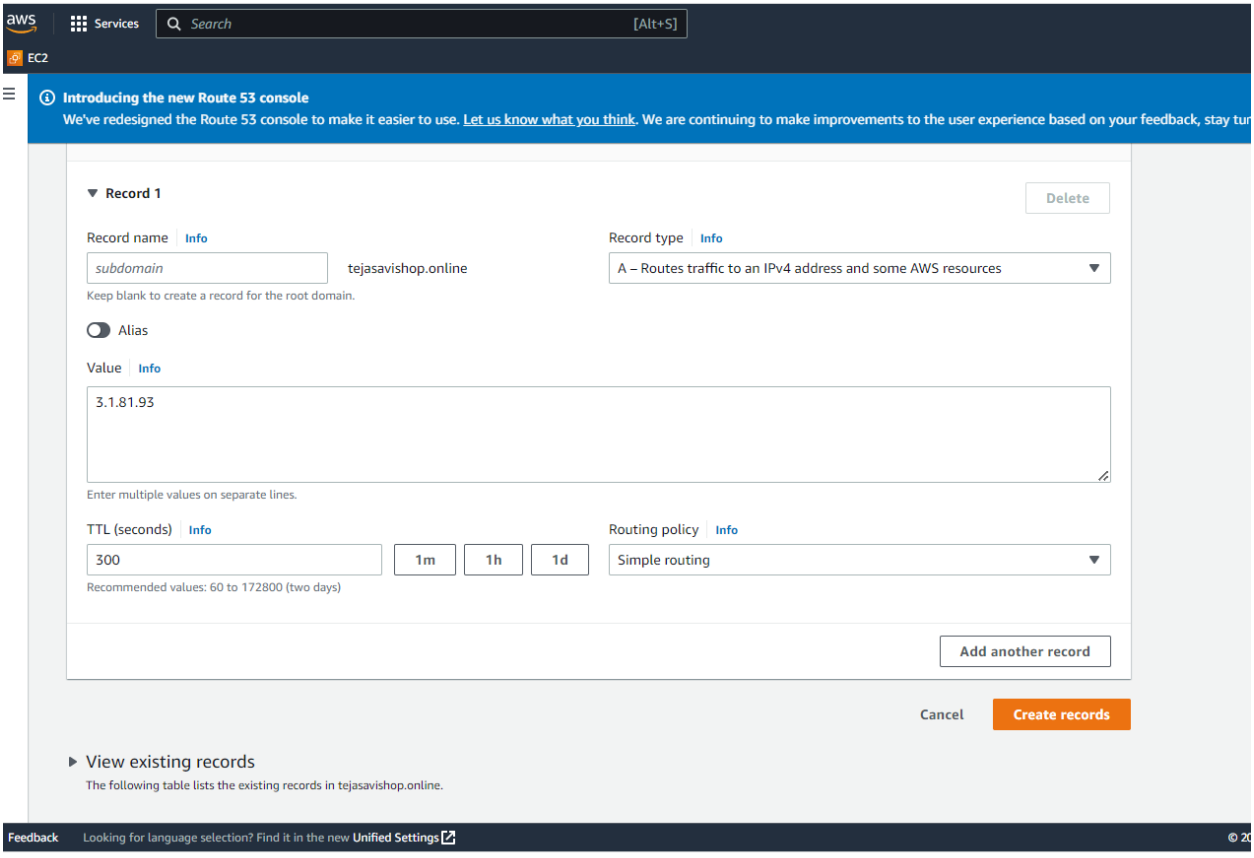

ONOS MENU
Search for Features, Domains, and Help
You are using the IONOS name server (default setting).
Use custom name servers
NAME SERVER
TYPE
ns1108.ui-dns.biz
IONOS Nameserver
ns1094.ui-dns.org
IONOS Nameserver
ns1056.ui-dns.com
IONOS Nameserver
ns1066.ui-dns.de
IONOS Nameserver
Recommended help topics
Using Your Own Name Servers for a Domain
Configuring Glue Records for Name Servers
Resetting Your Domain's DNS Settings

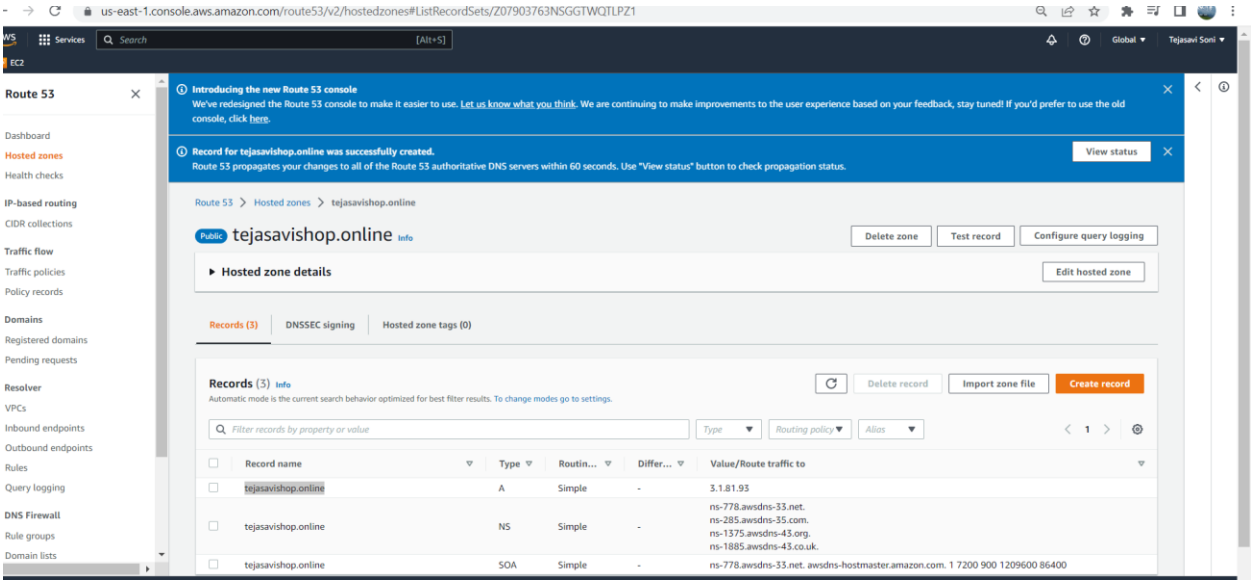

NOS MENU
Search for Features, Domains, and Help
Domains & SSL > tejasavishop.online
Use custom name servers
You can enter custom name servers if you want to transfer the DNS administration for your domain to another provider or if you want to operate your own name server.
Please note that your IONOS DNS zone settings are no longer used with custom name servers.
Before you switch, the necessary DNS entries must be made with the respective provider or external name server.
Name Server 1
ns-778.awsdns-33.net
Name Server 2
ns-285.awsdns-35.com
Name Server 3
(Optional)
ns-1375.awsdns-43.org
Name Server 4
(Optional)
ns-1885.awsdns-43.co.uk
Cancel
Save


MENU
Search for Features, Domains, and Help
Domains & SSL > tejasavishop.online
Name server successfully changed
Your custom name servers will be applied
It can take up to 48 hours for the changes to take effect with the other provider or your own name server. Your IONOS DNS zone settings will then be deactivated.
Open DNS settings
Go to Domain Overview
Recommended help topics
Using Your Own Name Servers for a Domain
Configuring Glue Records for Name Servers
Resetting Your Domain's DNS Settings

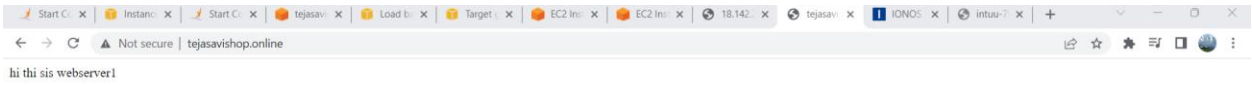


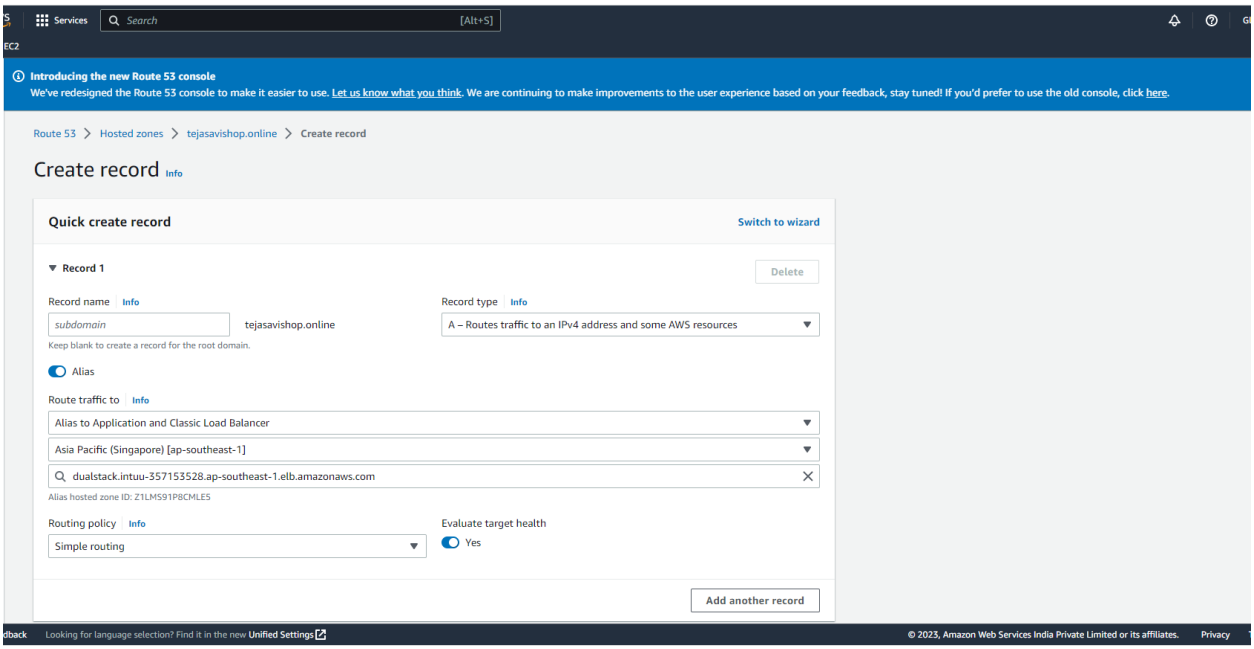
Click on create record :



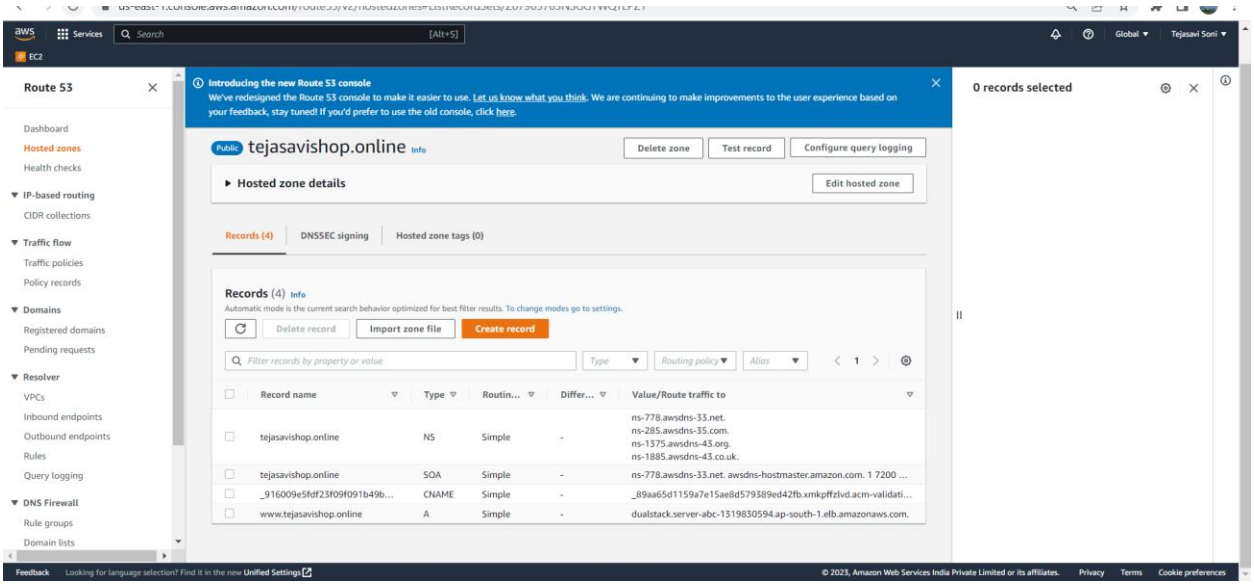


While typing tejasavishop.online:





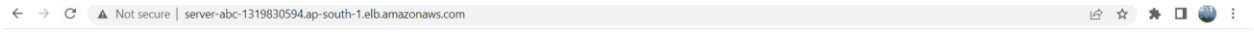
For routing load balancer traffic →



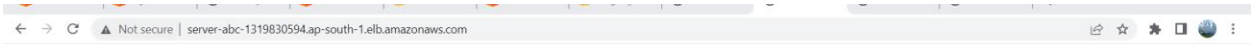
Create record with alias name as application load balancer .

Now search with :

www.tejasavishop.online in the browser and refresh the page ,we will see website traffic is routing to serever1 and server2 simultaneously .



this is server222



hi this is swerver1

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