Module 4: ELB Assignment

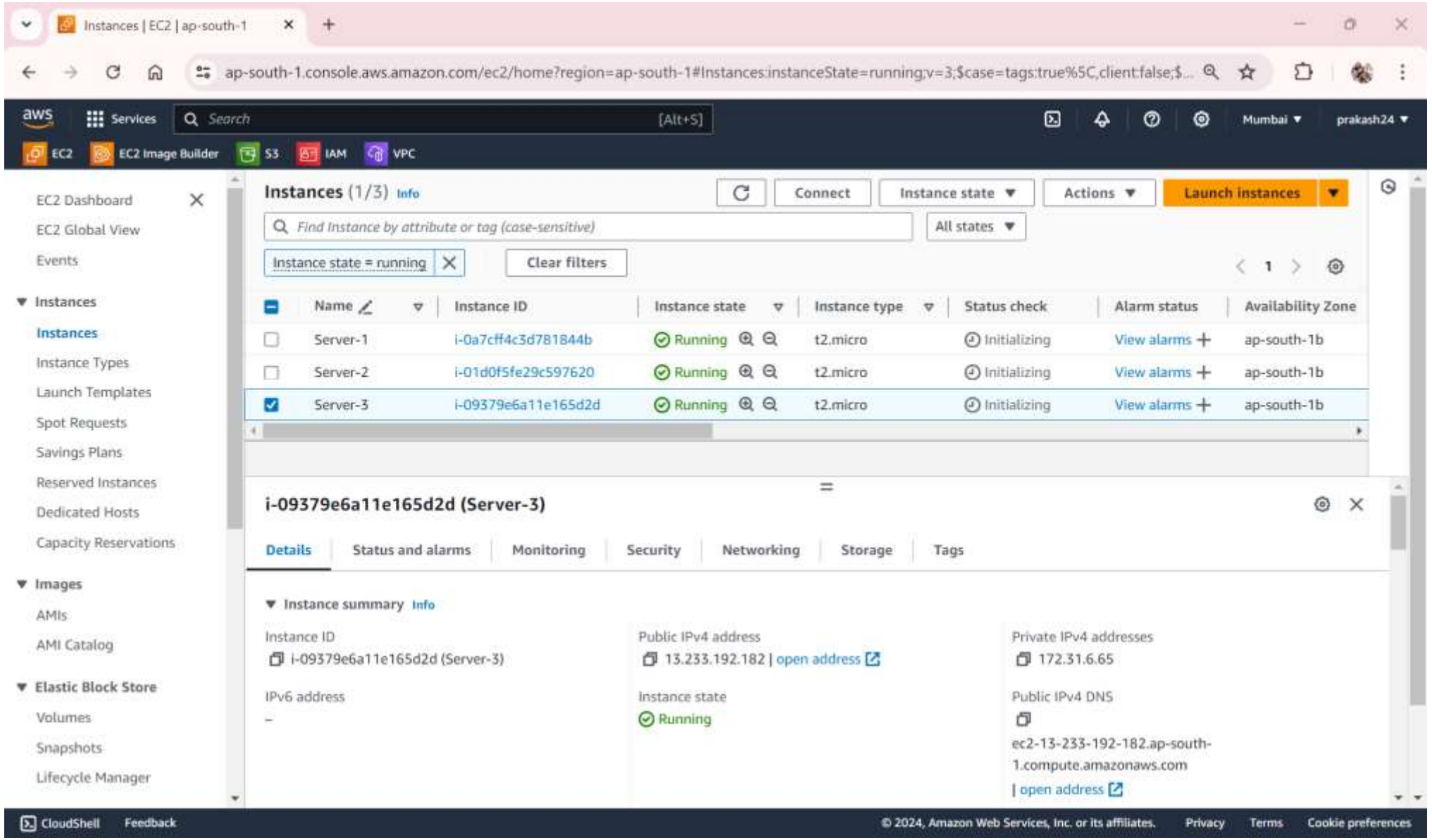
Problem Statement:

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 has to buy more systems almost on a regular basis. Realizing the need to cut down the expenses on systems, they decided to move their infrastructure to AWS.

Tasks To Be Performed:

1. Create a Classic Load Balancer and register 3 EC2 instances with different web pages running in them.
2. Migrate the Classic Load Balancer into an Application Load Balancer.

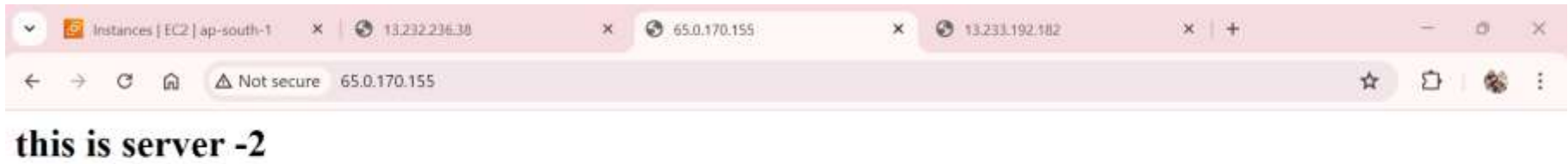
3 ec2 instance in running status



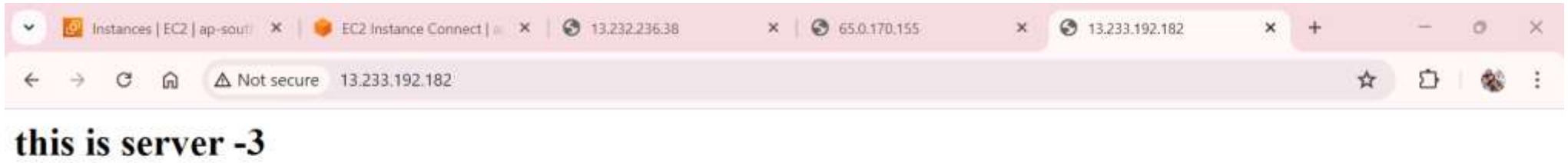
Server -1


SecurityGroup | EC2 | ap
EC2 Instance Connect |
EC2 Instance Connect |
EC2 Instance Connect |
13.232.236.38
Not secure
13.232.236.38
this is server -1

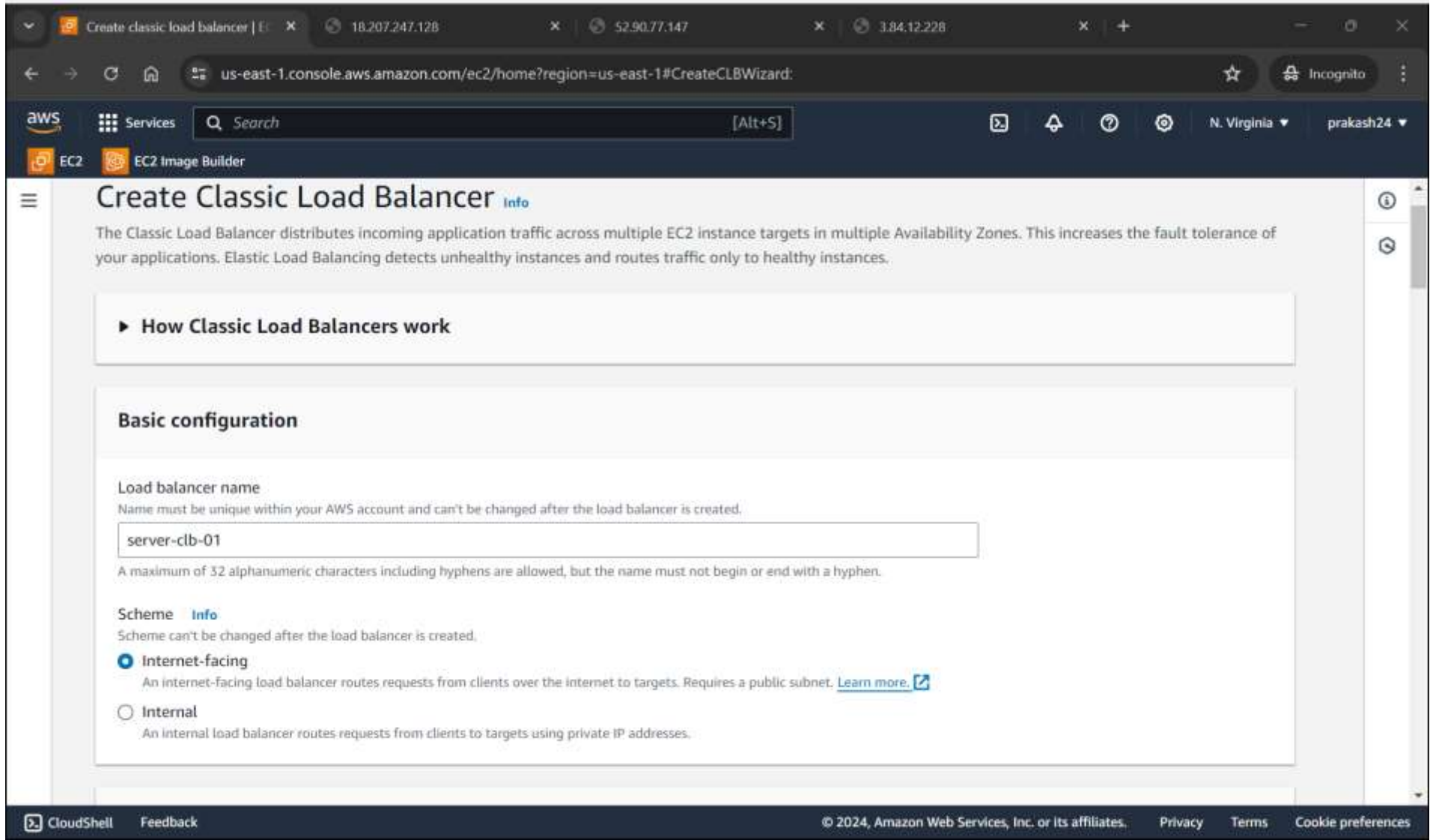
Server 2

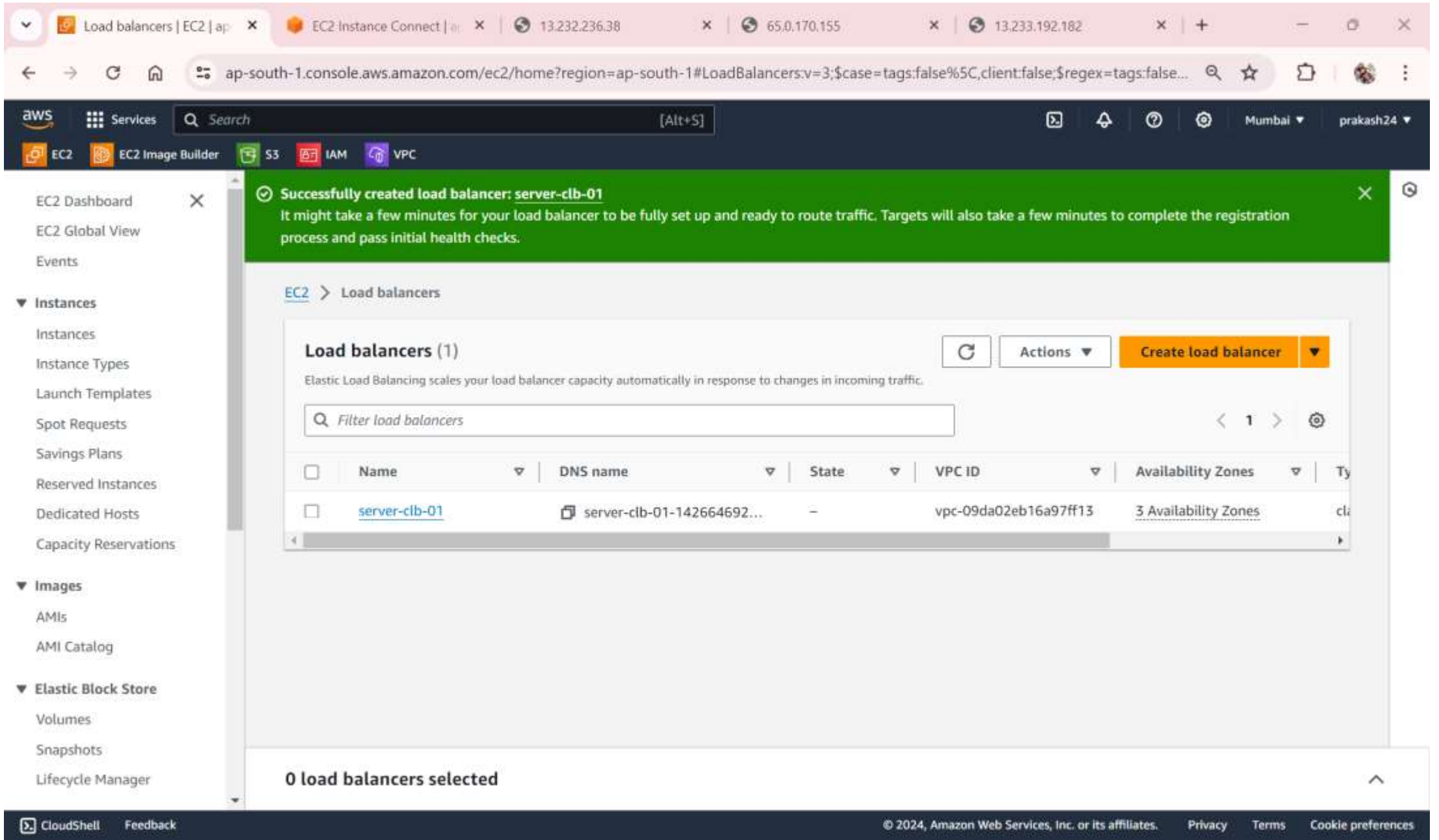

Instances | EC2 | ap-south-1
13.232.236.38
65.0.170.155
13.233.192.182
Not secure
65.0.170.155
this is server -2

Server 3


Instances | EC2 | ap-sout
EC2 Instance Connect |
13.232.236.38
65.0.170.155
13.233.192.182
Not secure
13.233.192.182
this is server -3

Create Load Balancer




Load balancers | EC2 | ap
EC2 Instance Connect |
13.232.236.38
65.0.170.155
13.233.192.182
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancers:v=3;$case=tags:false%5C,client:false;$regex=tags:false...
aws
Services
Search
[Alt+S]
Mumbai
prakash24
EC2
EC2 Image Builder
S3
IAM
VPC
EC2 Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Successfully created load balancer: server-clb-01
It might take a few minutes for your load balancer to be fully set up and ready to route traffic. Targets will also take a few minutes to complete the registration process and pass initial health checks.
EC2 > Load balancers
Load balancers (1)
Actions
Create load balancer
Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.
Filter load balancers
1
Name
DNS name
State
VPC ID
Availability Zones
server-clb-01
server-clb-01-142664692...
–
vpc-09da02eb16a97ff13
3 Availability Zones
0 load balancers selected
CloudShell
Feedback
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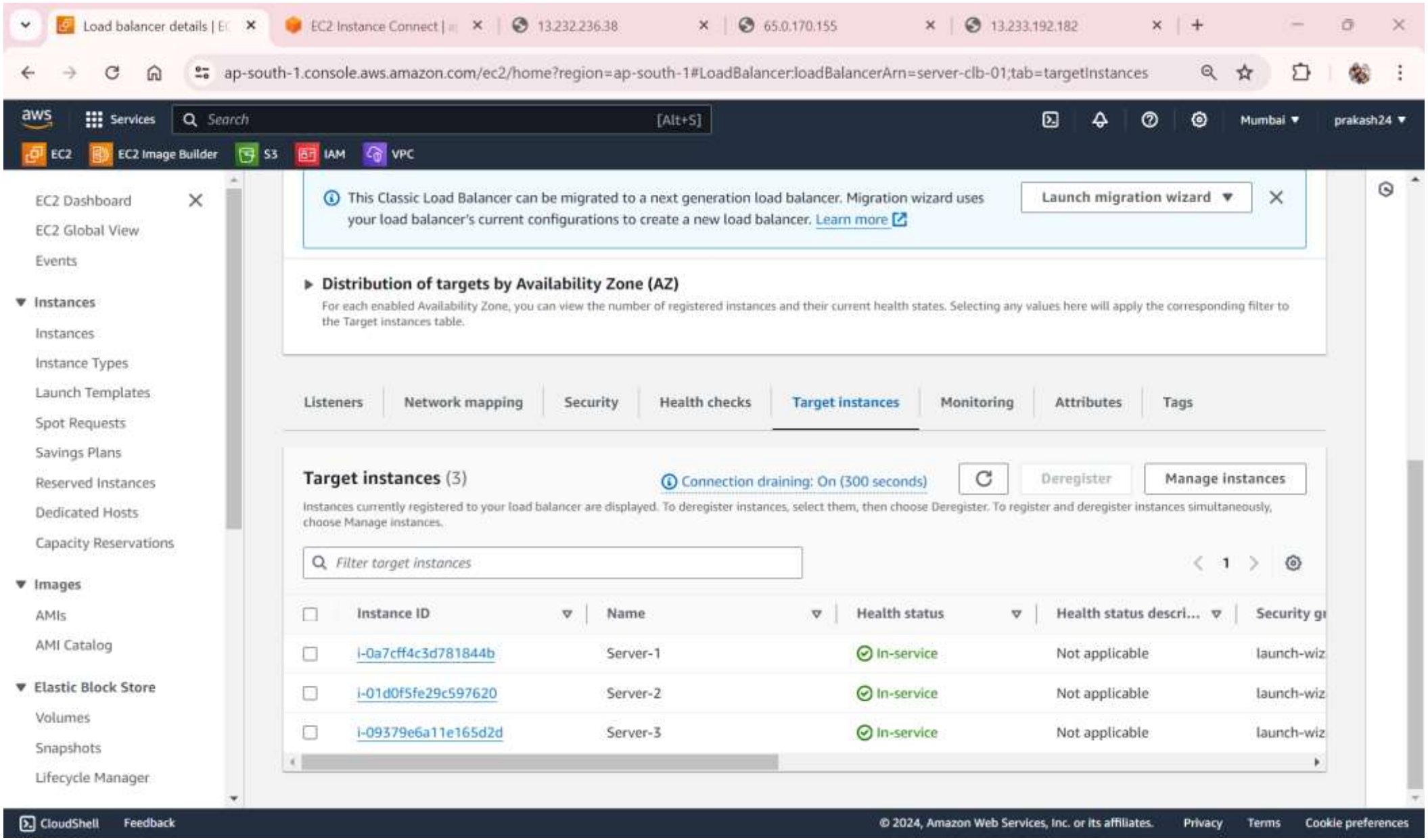
Load balancer details | E
EC2 Instance Connect |
13.232.236.38
65.0.170.155
13.233.192.182
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancer:loadBalancerArn=server-clb-01;tab=targetInstances
aws
Services
Search
[Alt+S]
Mumbai
prakash24
EC2
EC2 Image Builder
S3
IAM
VPC
EC2 Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
This Classic Load Balancer can be migrated to a next generation load balancer. Migration wizard uses your load balancer's current configurations to create a new load balancer. Learn more
Launch migration wizard
Distribution of targets by Availability Zone (AZ)
For each enabled Availability Zone, you can view the number of registered instances and their current health states. Selecting any values here will apply the corresponding filter to the Target instances table.
Listeners
Network mapping
Security
Health checks
Target instances
Monitoring
Attributes
Tags
Target instances (3)
Connection draining: On (300 seconds)
Deregister
Manage instances
Instances currently registered to your load balancer are displayed. To deregister instances, select them, then choose Deregister. To register and deregister instances simultaneously, choose Manage instances.
Filter target instances
1
Instance ID
Name
Health status
Health status descri...
Security gr
i-0a7cff4c3d781844b
Server-1
In-service
Not applicable
launch-wiz
i-01d0f5fe29c597620
Server-2
In-service
Not applicable
launch-wiz
i-09379e6a11e165d2d
Server-3
In-service
Not applicable
launch-wiz
CloudShell
Feedback
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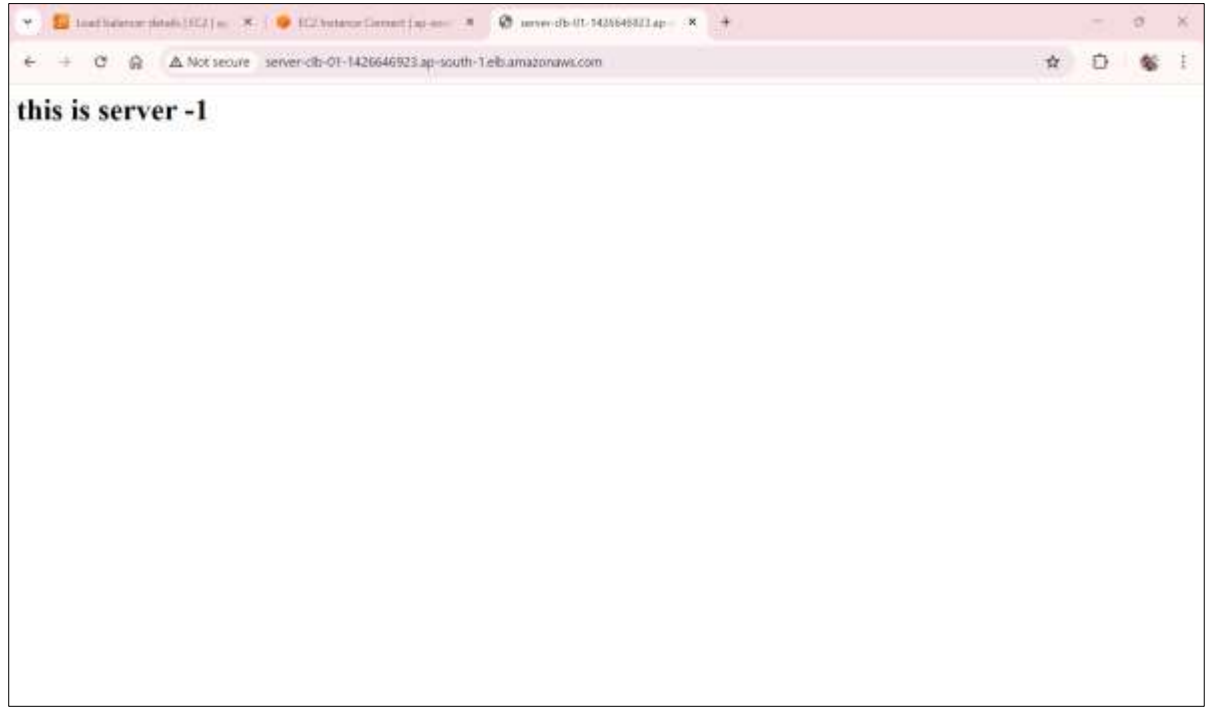
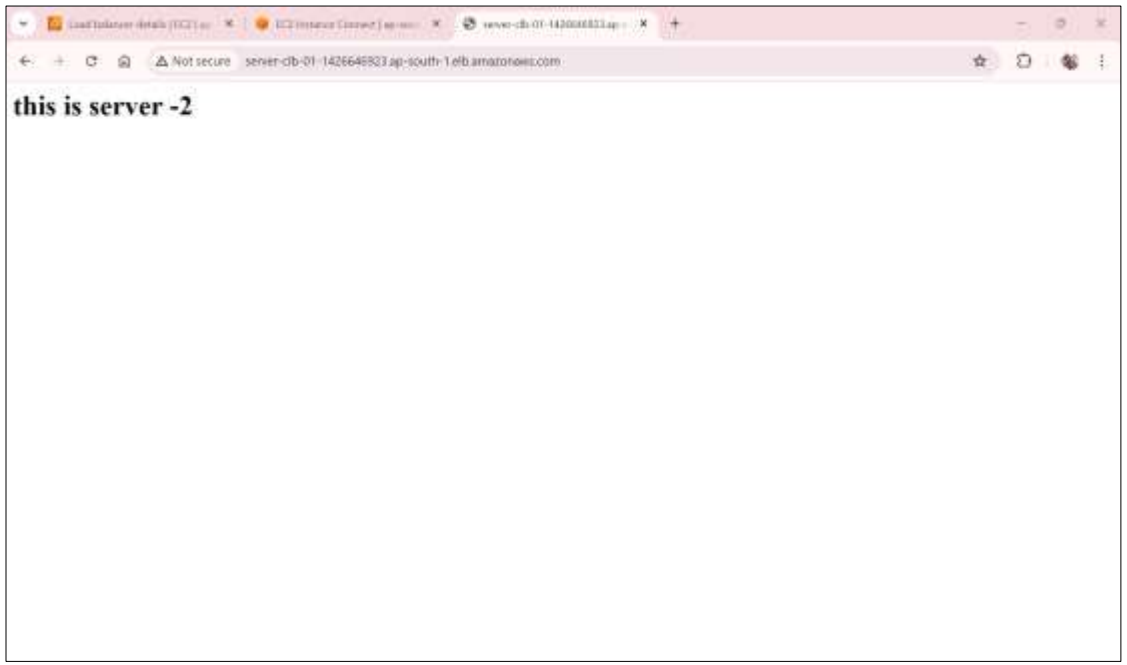
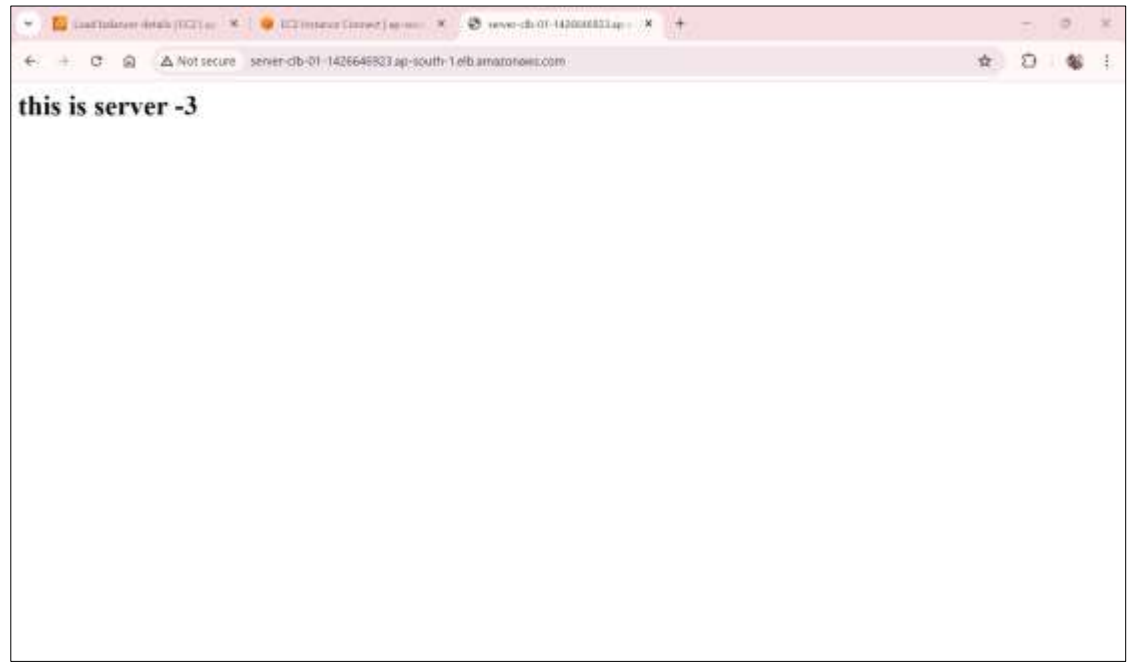
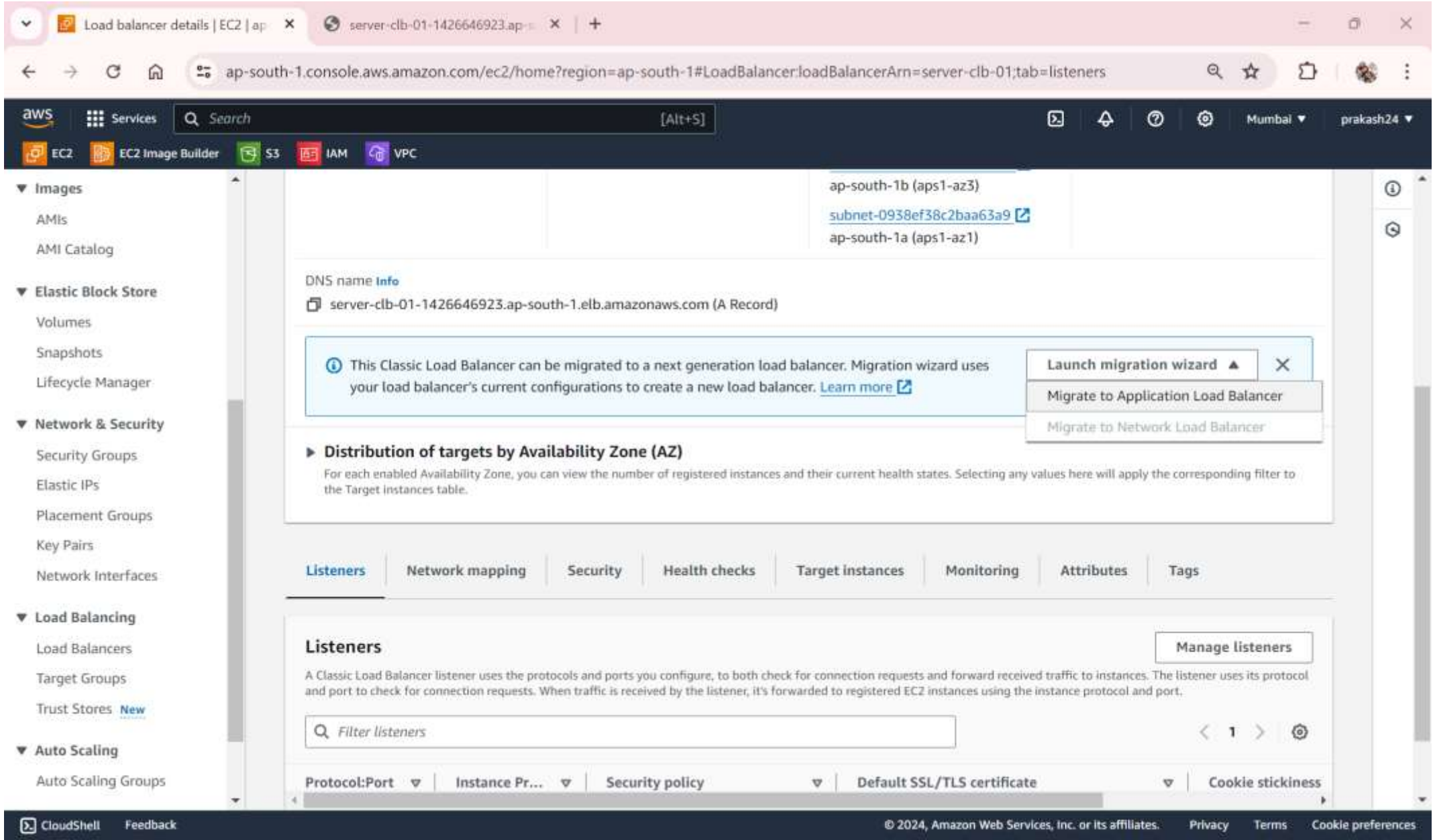

Not secure
server-clb-01-1426646923.ap-south-1.elb.amazonaws.com
this is server -1


Not secure
server-clb-01-1426646923.ap-south-1.elb.amazonaws.com
this is server -2


Not secure
server-clb-01-1426646923.ap-south-1.elb.amazonaws.com
this is server -3


Load balancer details | EC2 | ap
server-clb-01-1426646923.ap-s
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancer:loadBalancerArn=server-clb-01;tab=listeners
aws
Services
Search
[Alt+S]
Mumbai
prakash24
EC2
EC2 Image Builder
S3
IAM
VPC
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups
Trust Stores New
Auto Scaling
Auto Scaling Groups
ap-south-1b (aps1-az3)
subnet-0938ef38c2baa63a9
ap-south-1a (aps1-az1)
DNS name Info
server-clb-01-1426646923.ap-south-1.elb.amazonaws.com (A Record)
This Classic Load Balancer can be migrated to a next generation load balancer. Migration wizard uses your load balancer's current configurations to create a new load balancer. Learn more
Launch migration wizard
Migrate to Application Load Balancer
Migrate to Network Load Balancer
Distribution of targets by Availability Zone (AZ)
For each enabled Availability Zone, you can view the number of registered instances and their current health states. Selecting any values here will apply the corresponding filter to the Target instances table.
Listeners
Network mapping
Security
Health checks
Target instances
Monitoring
Attributes
Tags
Listeners
Manage listeners
A Classic Load Balancer listener uses the protocols and ports you configure, to both check for connection requests and forward received traffic to instances. The listener uses its protocol and port to check for connection requests. When traffic is received by the listener, it's forwarded to registered EC2 instances using the instance protocol and port.
Filter listeners
1
Protocol:Port
Instance Pr...
Security policy
Default SSL/TLS certificate
Cookie stickiness
CloudShell
Feedback
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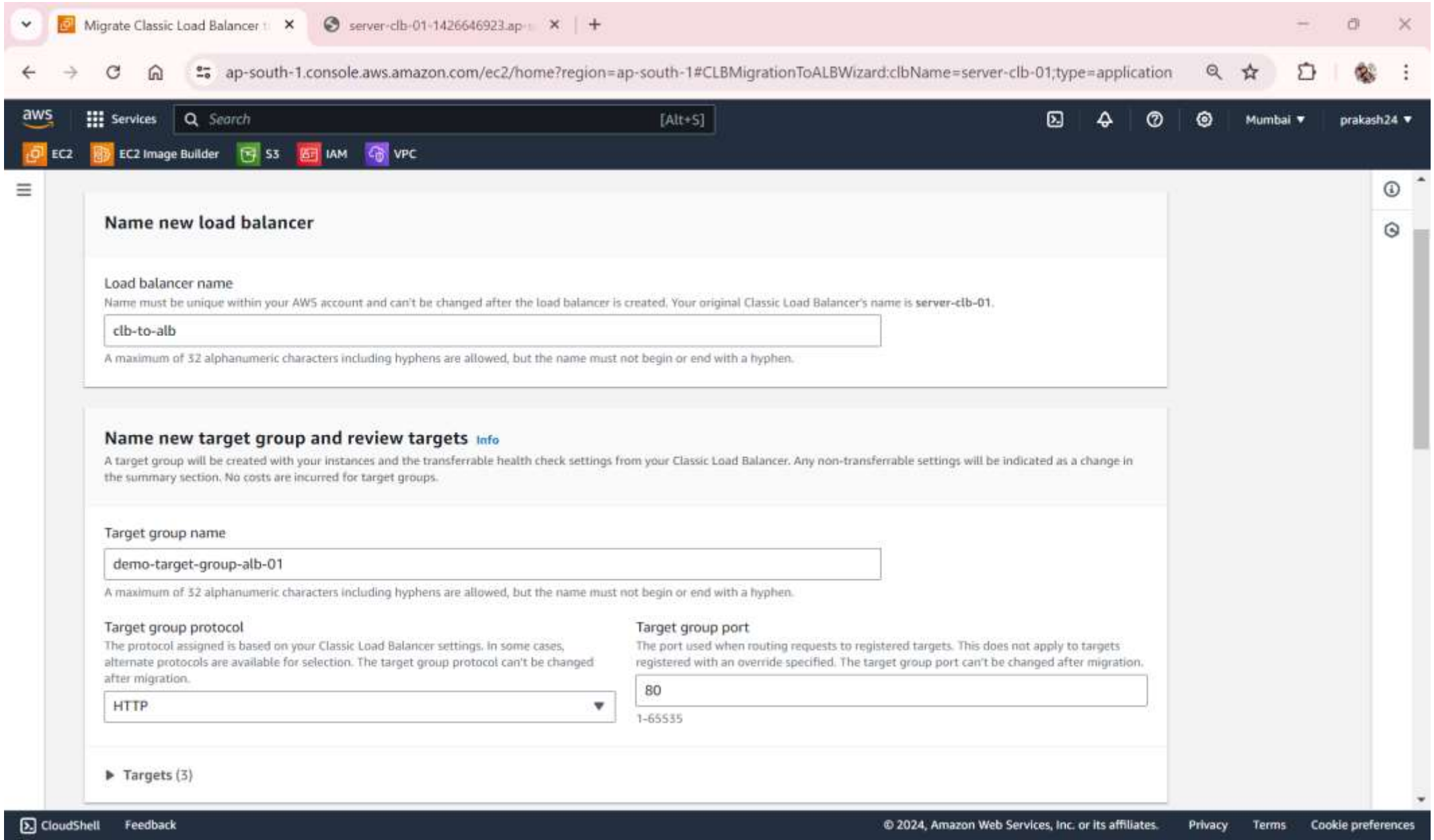
Privacy
Terms
Cookie preferences


Migrate Classic Load Balancer
server-clb-01-1426646923.ap
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CLBMigrationToALBWizard:clbName=server-clb-01;type=application
aws
Services
Search
[Alt+S]
Mumbai
prakash24
EC2
EC2 Image Builder
S3
IAM
VPC
Name new load balancer
Load balancer name
Name must be unique within your AWS account and can't be changed after the load balancer is created. Your original Classic Load Balancer's name is server-clb-01.
clb-to-alb
A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.
Name new target group and review targets Info
A target group will be created with your instances and the transferrable health check settings from your Classic Load Balancer. Any non-transferrable settings will be indicated as a change in the summary section. No costs are incurred for target groups.
Target group name
demo-target-group-alb-01
A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.
Target group protocol
The protocol assigned is based on your Classic Load Balancer settings. In some cases, alternate protocols are available for selection. The target group protocol can't be changed after migration.
HTTP
Target group port
The port used when routing requests to registered targets. This does not apply to targets registered with an override specified. The target group port can't be changed after migration.
80
1-65535
Targets (3)
CloudShell
Feedback
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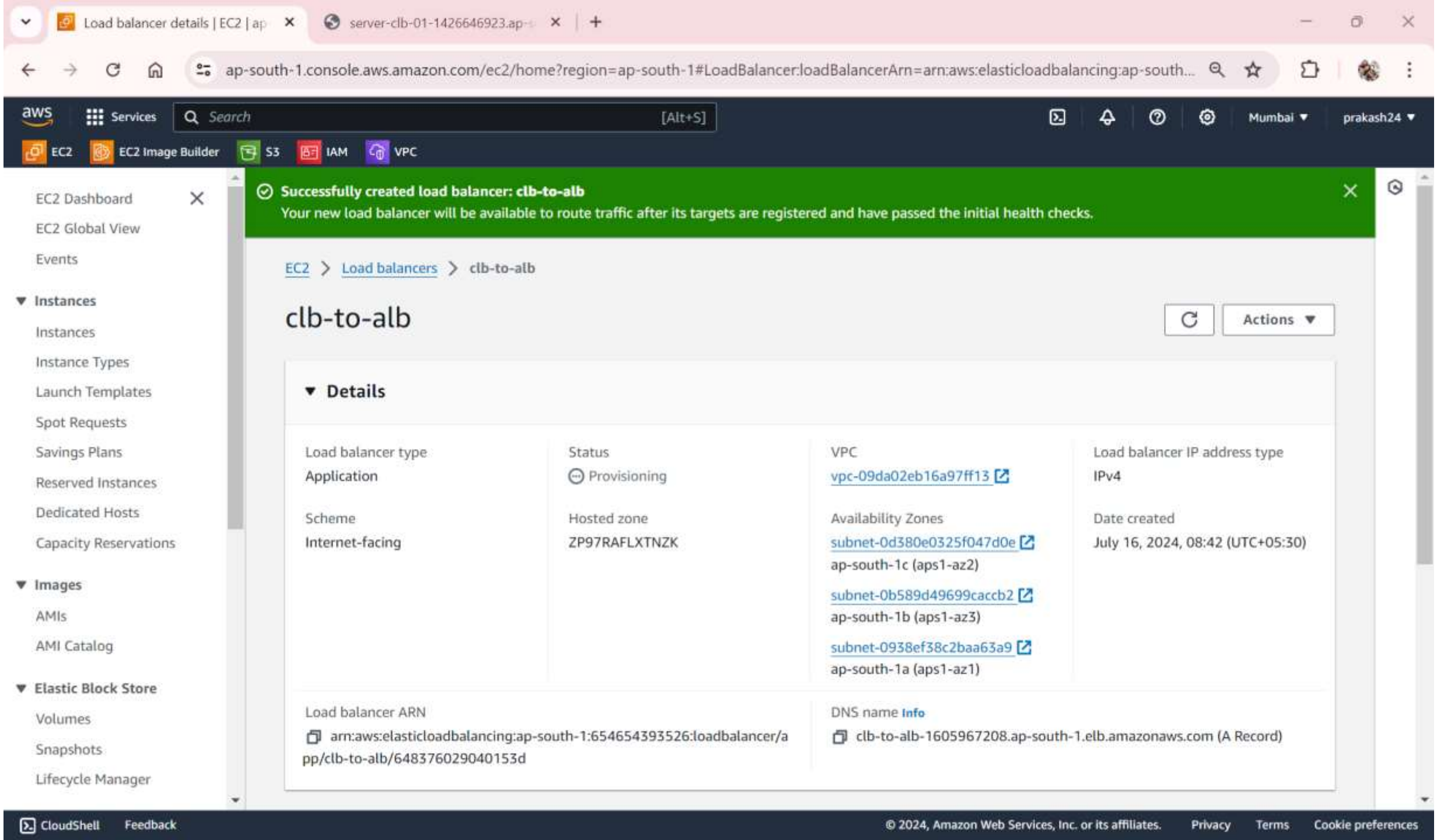
Load balancer details | EC2 | ap
server-clb-01-1426646923.ap
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancer:loadBalancerArn=arn:aws:elasticloadbalancing:ap-south...
aws
Services
Search
[Alt+S]
Mumbai
prakash24
EC2
EC2 Image Builder
S3
IAM
VPC
EC2 Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Successfully created load balancer: clb-to-alb
Your new load balancer will be available to route traffic after its targets are registered and have passed the initial health checks.
EC2 > Load balancers > clb-to-alb
clb-to-alb
Actions
Details
Load balancer type
Application
Status
Provisioning
VPC
vpc-09da02eb16a97ff13
Load balancer IP address type
IPv4
Scheme
Internet-facing
Hosted zone
ZP97RAFLXTNZK
Availability Zones
subnet-0d380e0325f047d0e
ap-south-1c (aps1-az2)
subnet-0b589d49699caccb2
ap-south-1b (aps1-az3)
subnet-0938ef38c2baa63a9
ap-south-1a (aps1-az1)
Date created
July 16, 2024, 08:42 (UTC+05:30)
Load balancer ARN
arn:aws:elasticloadbalancing:ap-south-1:654654393526:loadbalancer/app/clb-to-alb/648376029040153d
DNS name Info
clb-to-alb-1605967208.ap-south-1.elb.amazonaws.com (A Record)
CloudShell
Feedback
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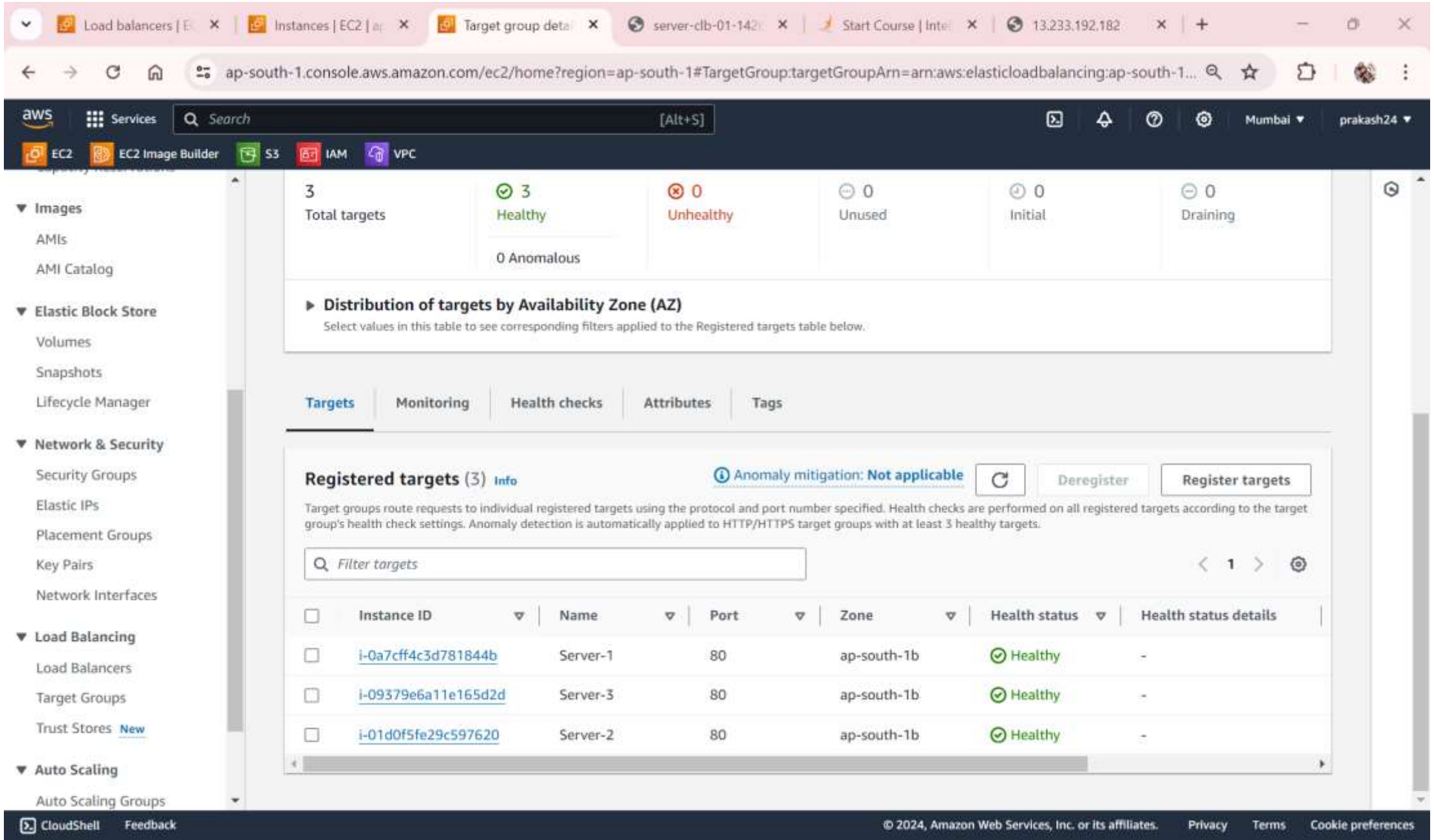
Load balancers | E
Instances | EC2 | a
Target group deta
server-clb-01-142
Start Course | Inte
13.233.192.182
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#TargetGroup:targetGroupArn=arn:aws:elasticloadbalancing:ap-south-1...
aws
Services
Search
[Alt+S]
Mumbai
prakash24
EC2
EC2 Image Builder
S3
IAM
VPC
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups
Trust Stores New
Auto Scaling
Auto Scaling Groups
3
Total targets
3
Healthy
0 Anomalous
0
Unhealthy
0
Unused
0
Initial
0
Draining
Distribution of targets by Availability Zone (AZ)
Select values in this table to see corresponding filters applied to the Registered targets table below.
Targets
Monitoring
Health checks
Attributes
Tags
Registered targets (3) Info
Anomaly mitigation: Not applicable
Deregister
Register targets
Target groups route requests to individual registered targets using the protocol and port number specified. Health checks are performed on all registered targets according to the target group's health check settings. Anomaly detection is automatically applied to HTTP/HTTPS target groups with at least 3 healthy targets.
Filter targets
1
Instance ID
Name
Port
Zone
Health status
Health status details
i-0a7cff4c3d781844b
Server-1
80
ap-south-1b
Healthy
-
i-09379e6a11e165d2d
Server-3
80
ap-south-1b
Healthy
-
i-01d0f5fe29c597620
Server-2
80
ap-south-1b
Healthy
-
CloudShell
Feedback
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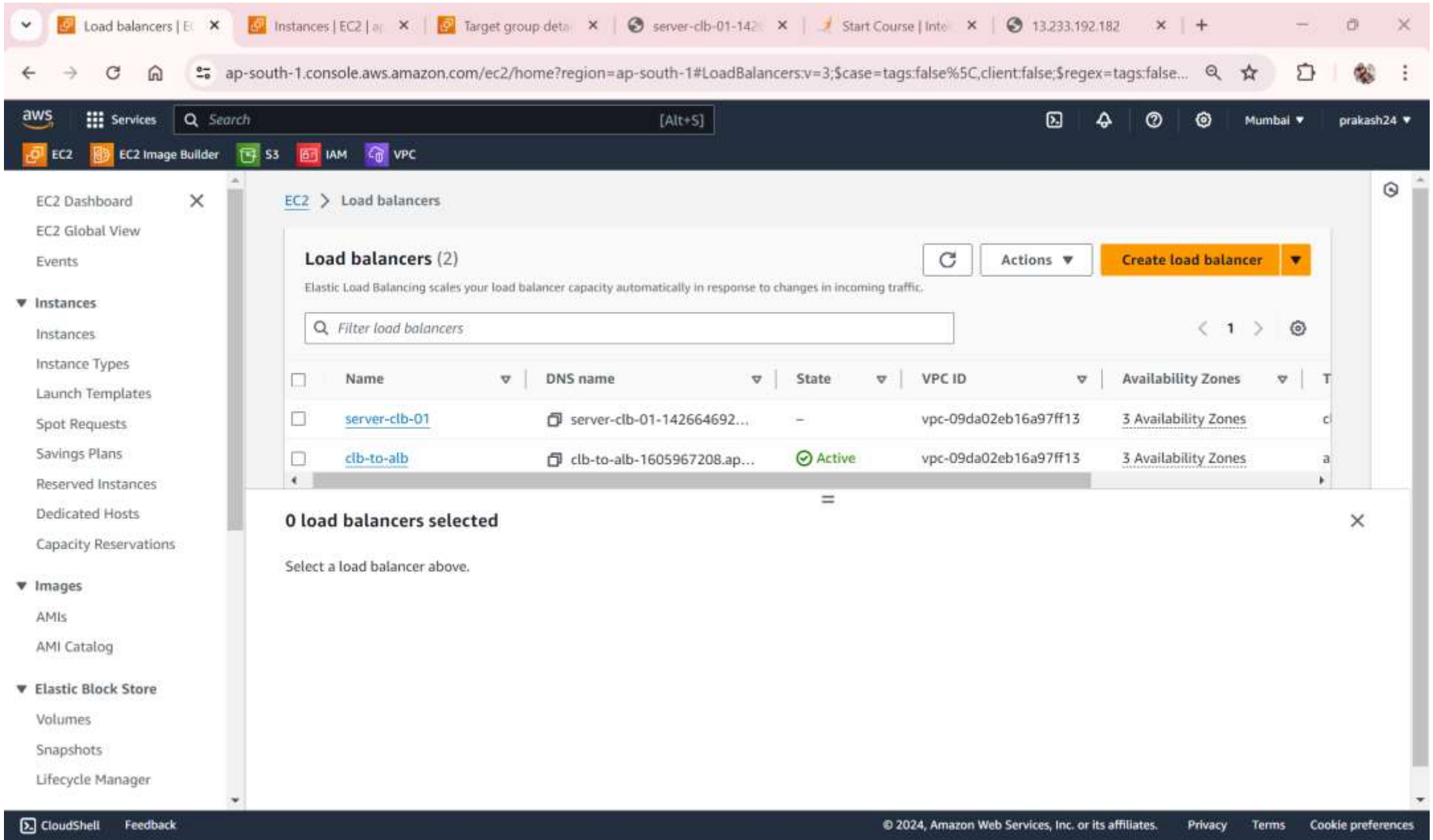
Load balancers | E
Instances | EC2 | a
Target group deta
server-clb-01-142
Start Course | Inte
13.233.192.182
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancers:v=3;$case=tags:false%5C,client:false;$regex=tags:false...
aws
Services
Search
[Alt+S]
Mumbai
prakash24
EC2
EC2 Image Builder
S3
IAM
VPC
EC2 Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
EC2 > Load balancers
Load balancers (2)
Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.
Actions
Create load balancer
Filter load balancers
1
Name
DNS name
State
VPC ID
Availability Zones
server-clb-01
server-clb-01-142664692...
–
vpc-09da02eb16a97ff13
3 Availability Zones
clb-to-alb
clb-to-alb-1605967208.ap...
Active
vpc-09da02eb16a97ff13
3 Availability Zones
0 load balancers selected
Select a load balancer above.
CloudShell
Feedback
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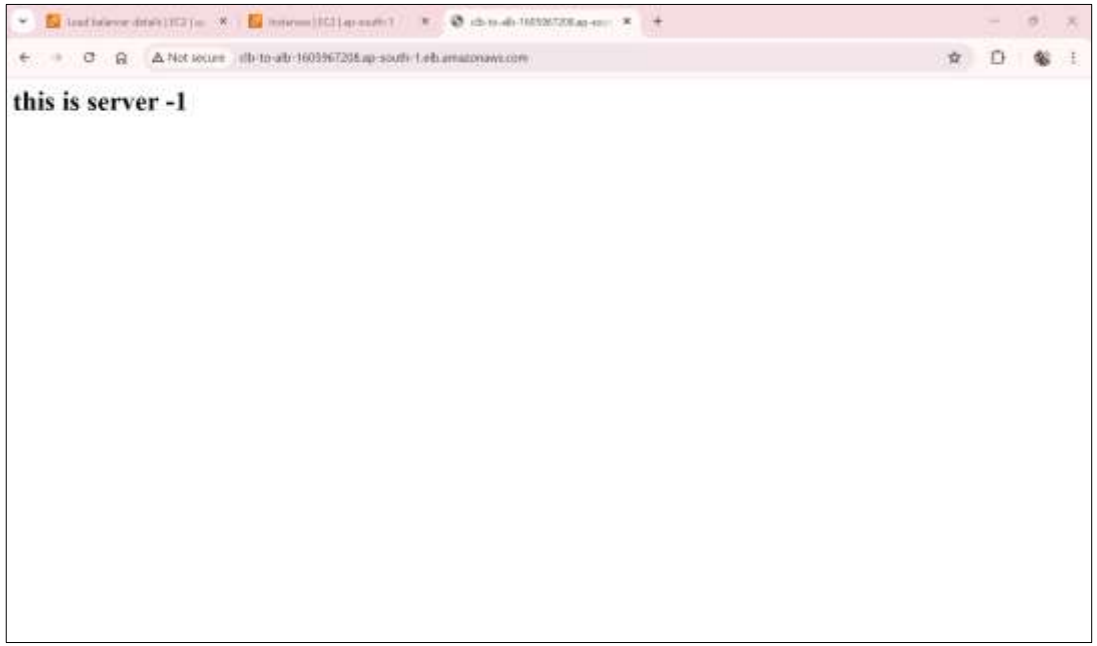
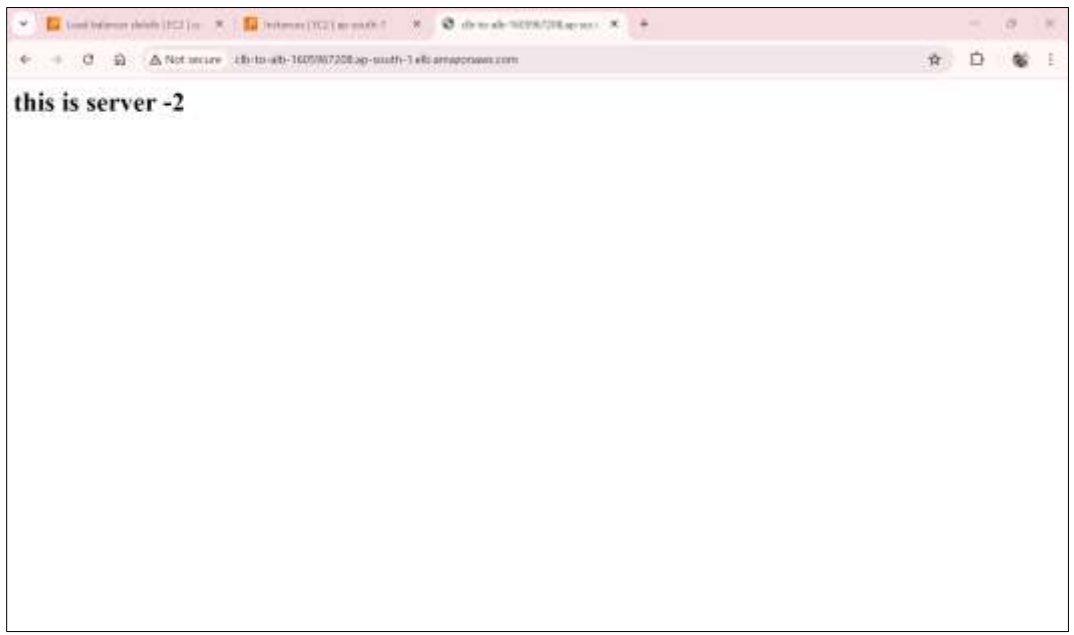
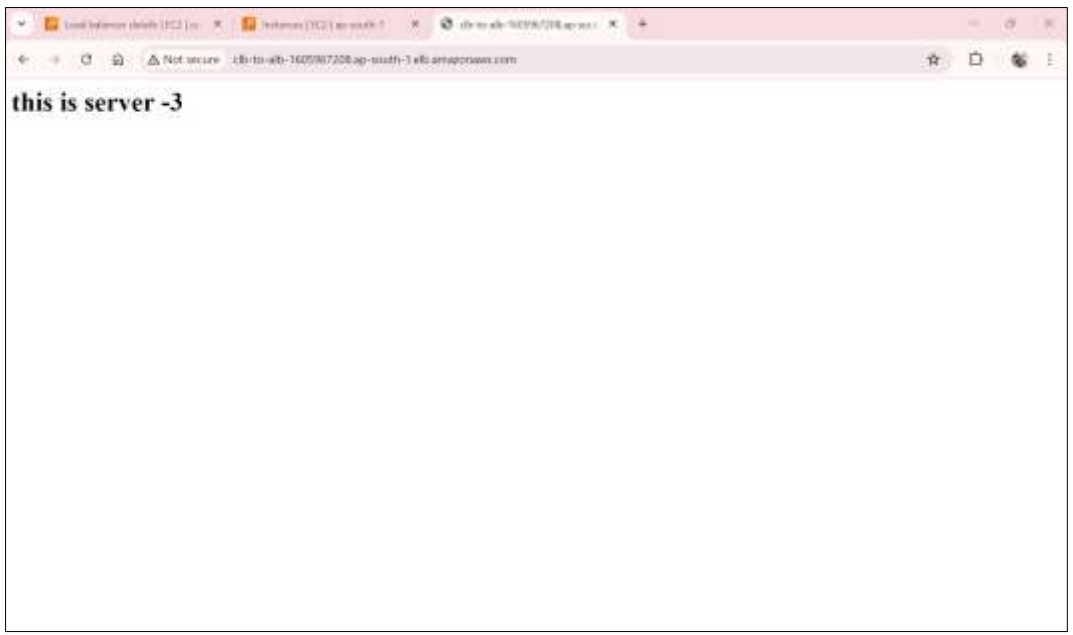
Privacy
Terms
Cookie preferences


this is server -1


this is server -2


this is server -3

Module 4: Case Study - 1

Problem Statement:

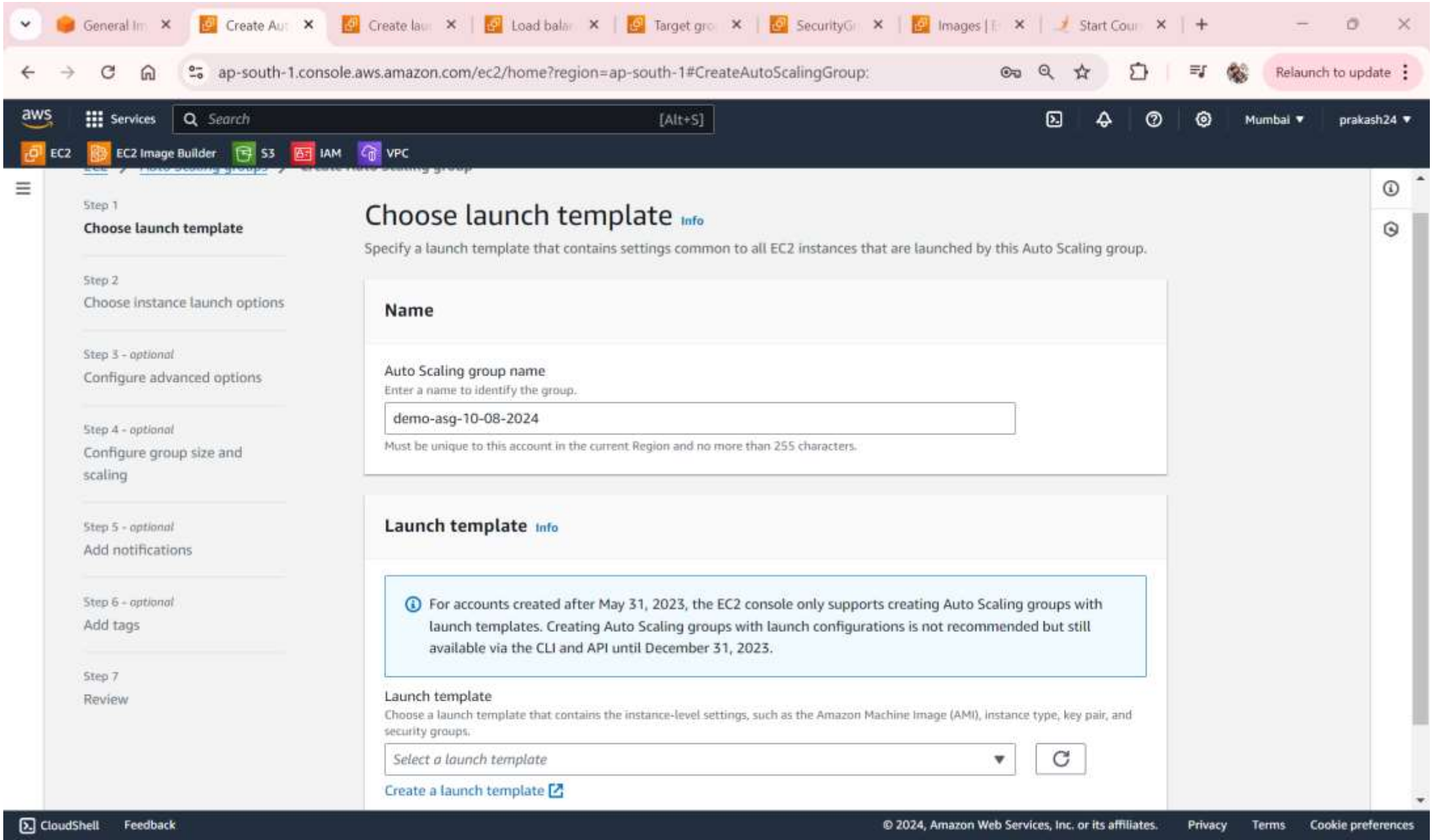
You work for XYZ Corporation that uses on premise solutions and a limited number of systems. With the increase in requests in their application, the load also increases. So, to handle the load the corporation has to buy more systems almost on a regular basis. Realizing the need to cut down the expenses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

Tasks To Be Performed:

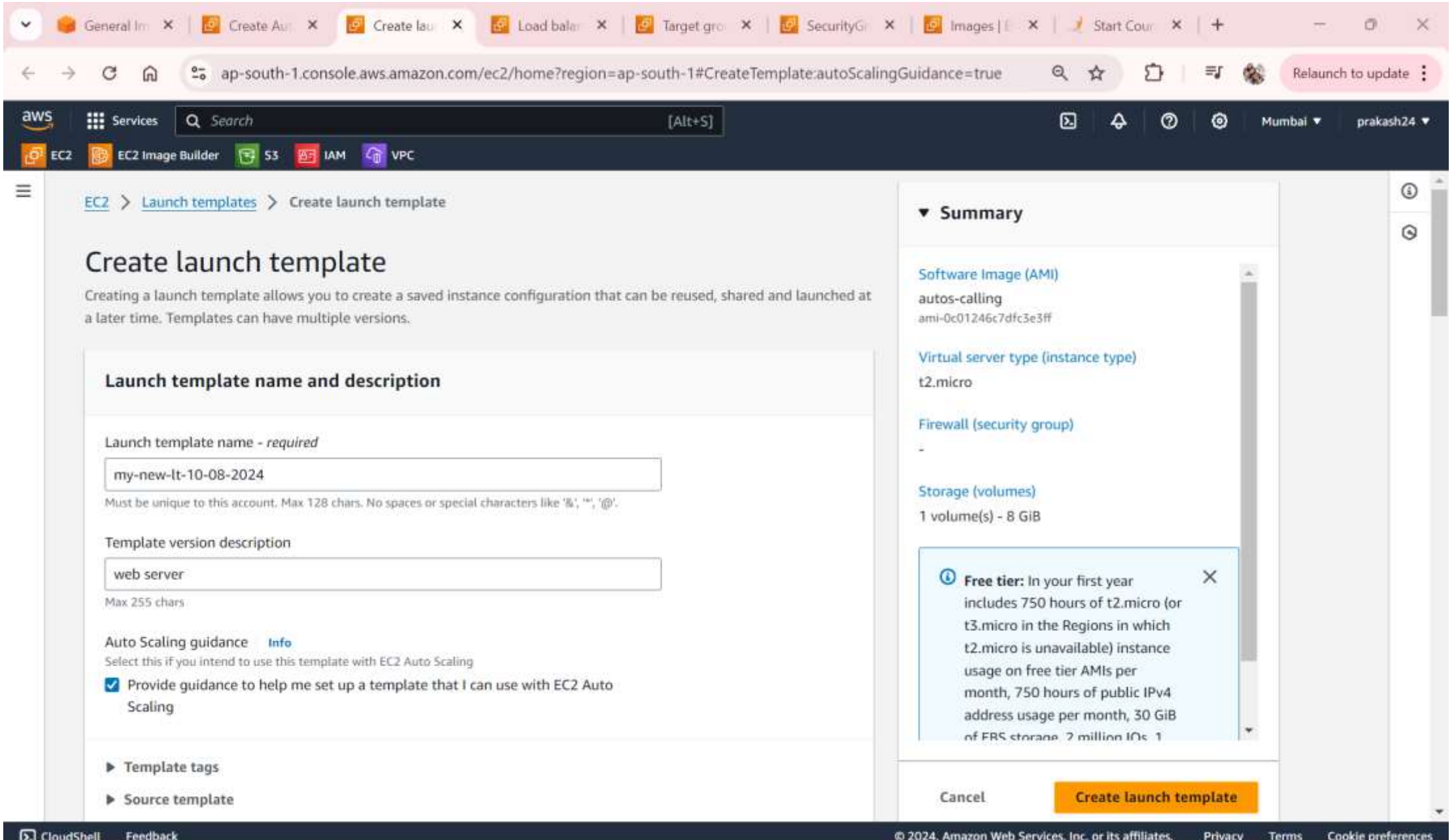
1. Manage the scaling requirements of the company by:
    a. Deploying multiple compute resources on the cloud as soon as the load increases and the CPU utilization exceeds 80%
    b. Removing the resources when the CPU utilization goes under 60%

2. Create a load balancer to distribute the load between compute resources.
3. Route the traffic to the company's domain.

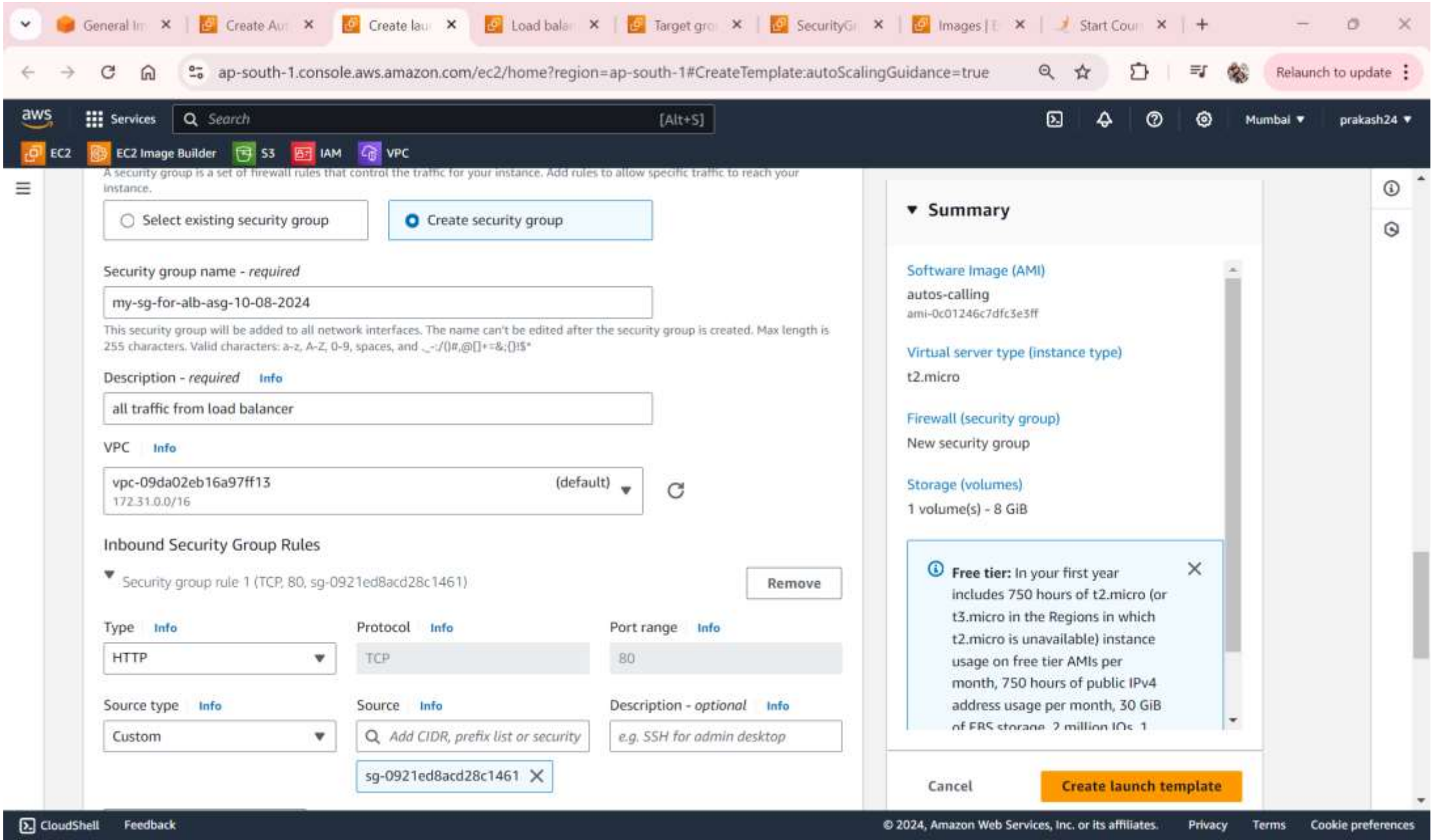
Choosing Auto Scaling Group Name



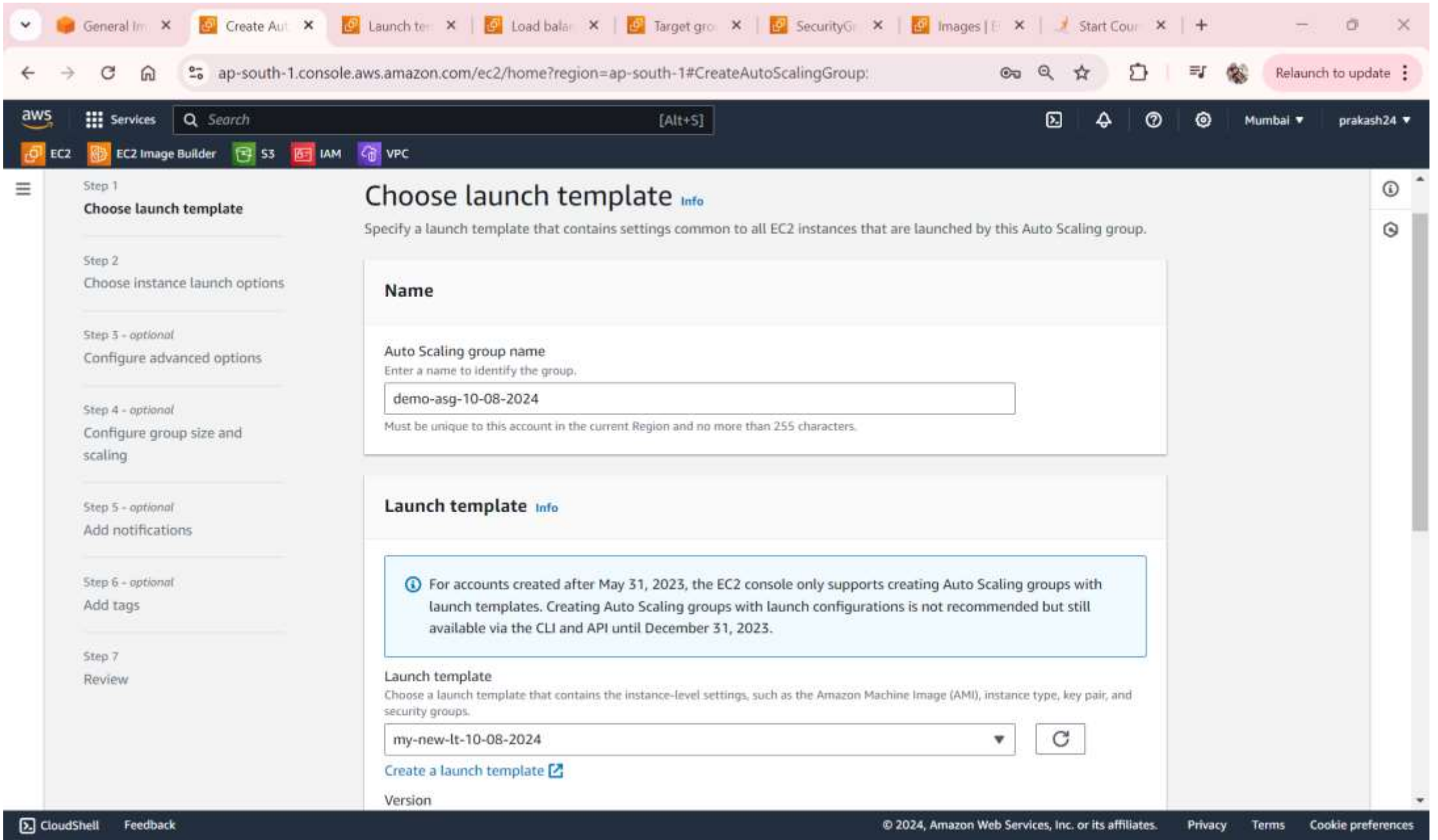
Creating a launching template



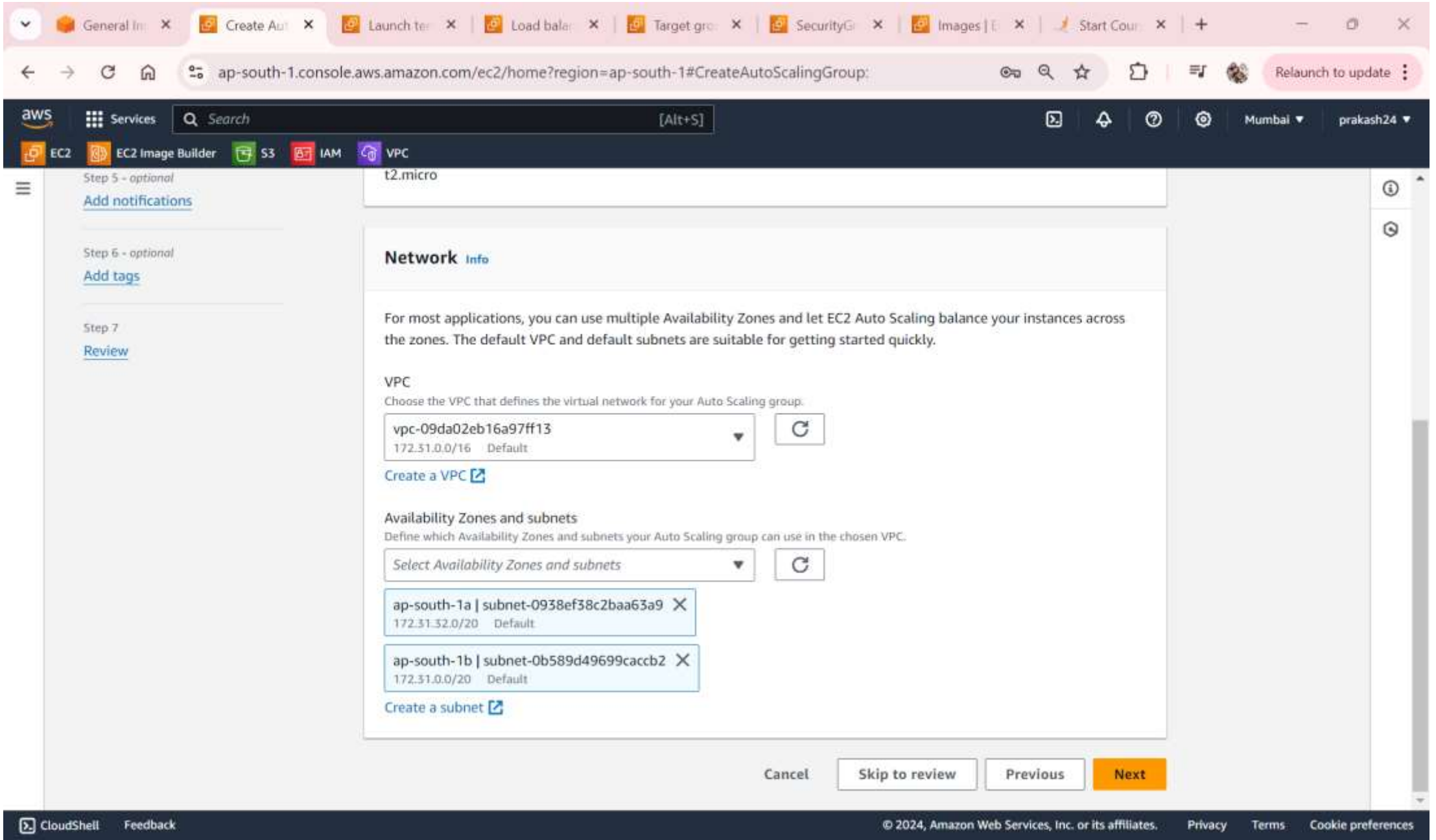
Creating a launching template –Setting Up Security



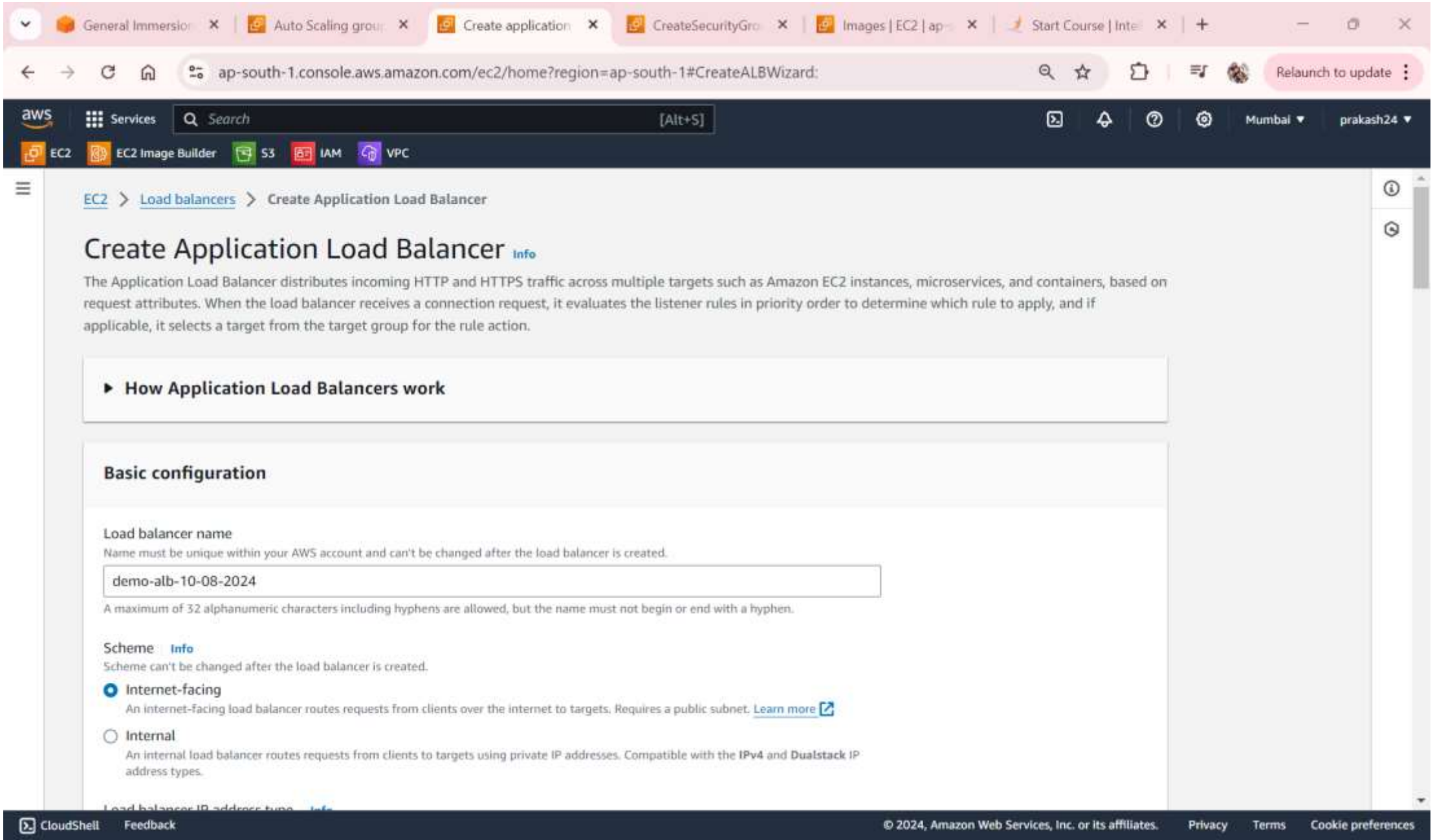
Choosing launching template we created in previous step



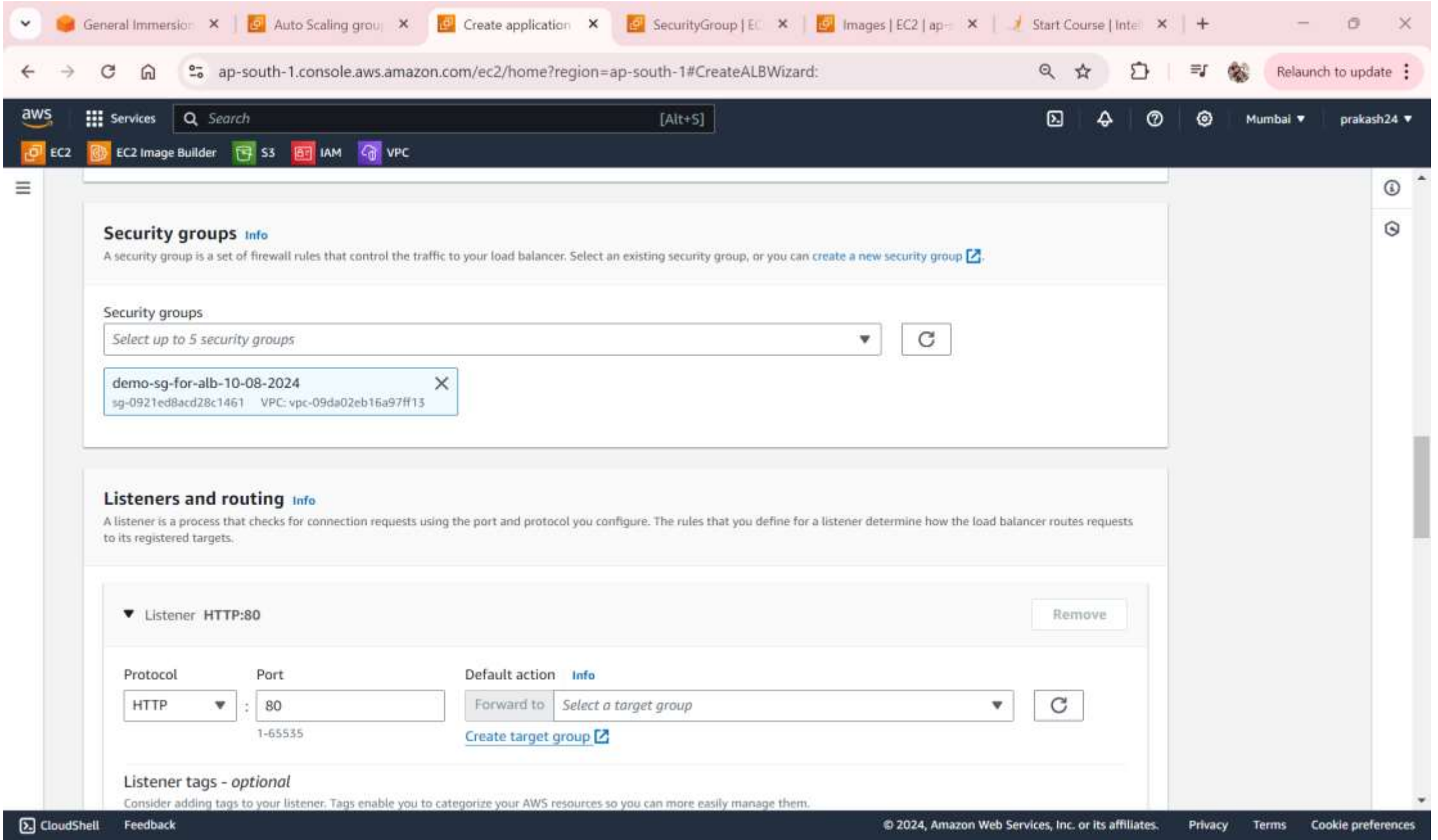
Assign AZ & Subnets



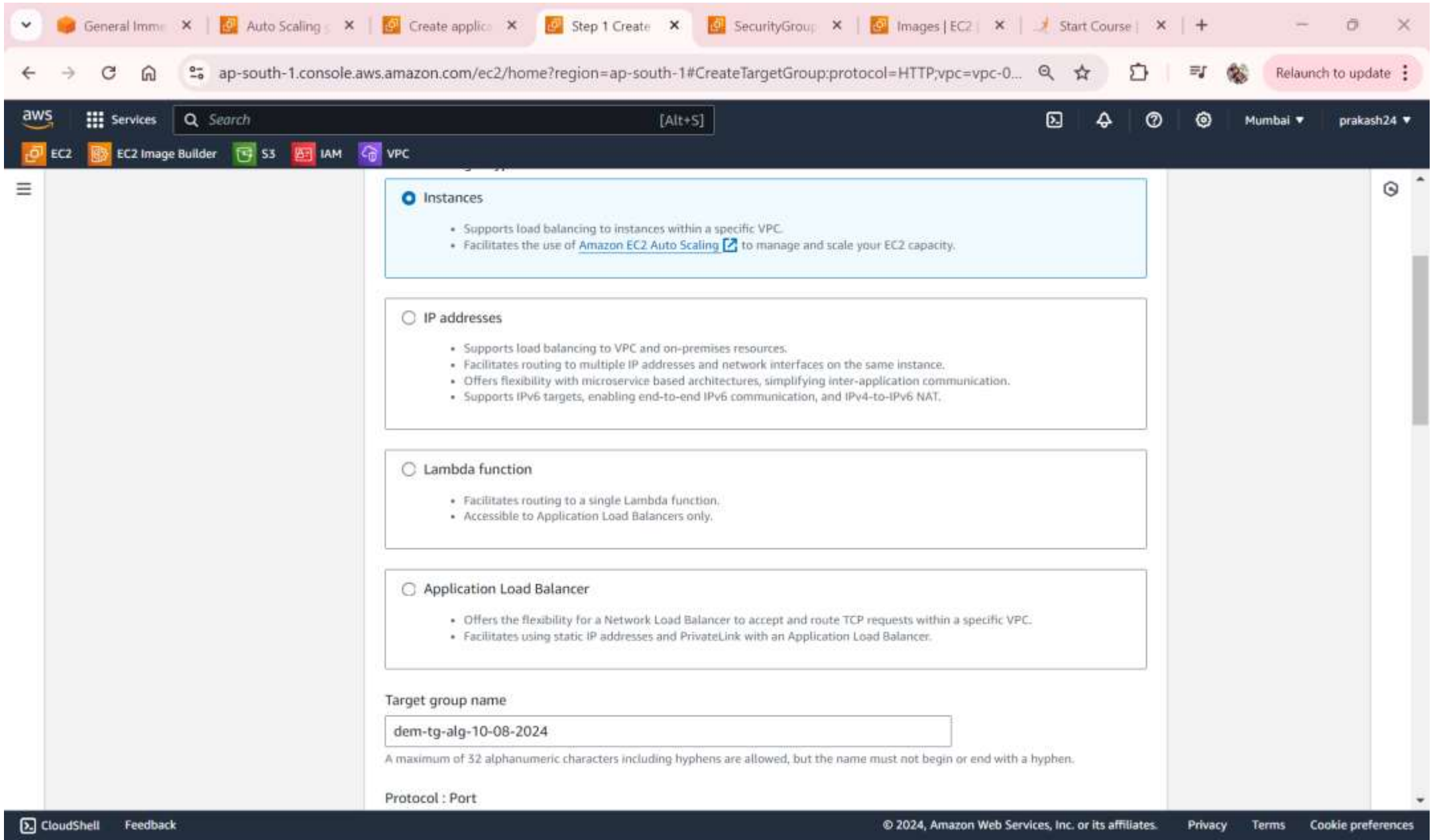
Creating Application Load Balancer



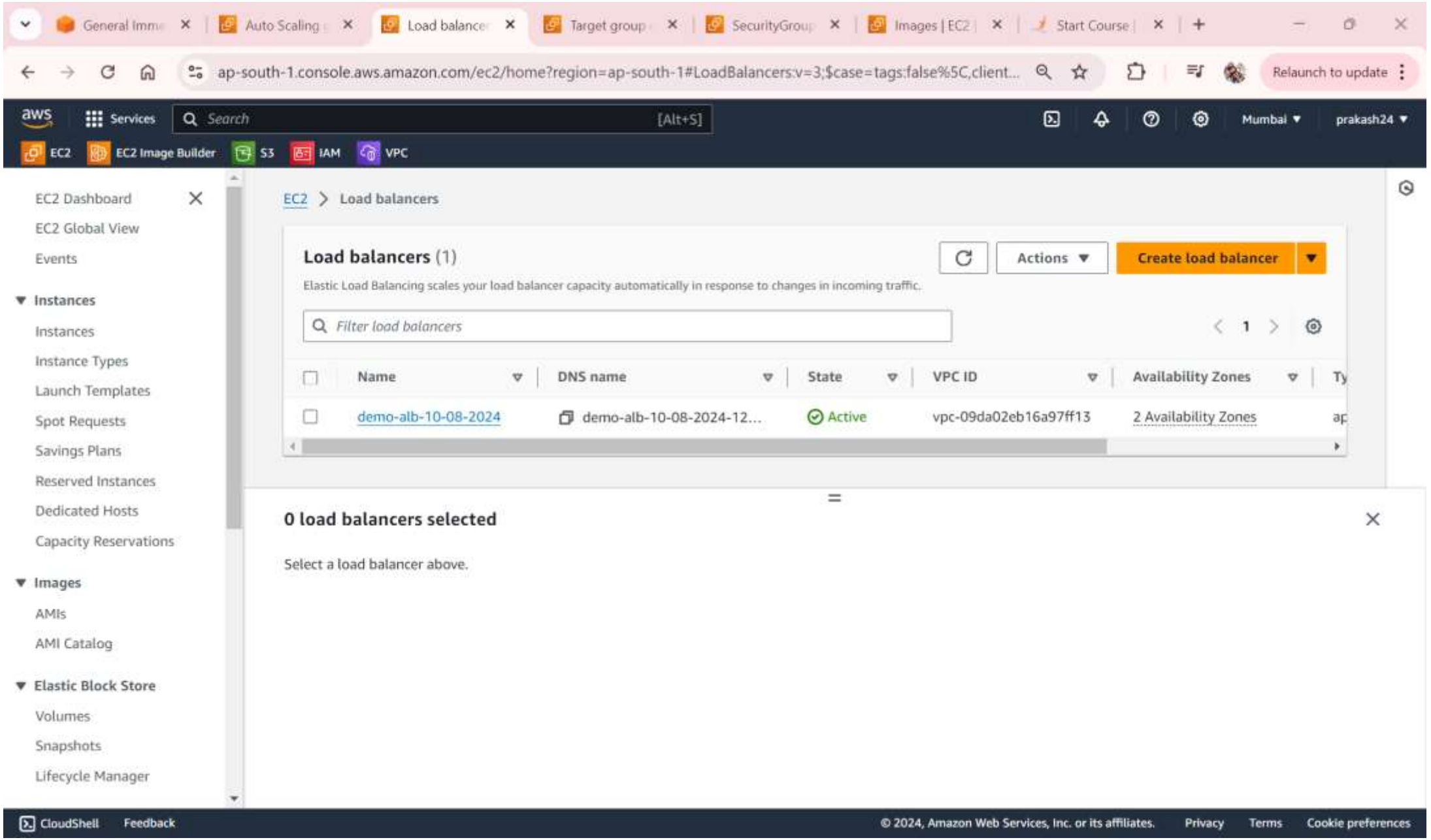
Assign Security Group to Application Load Balancer



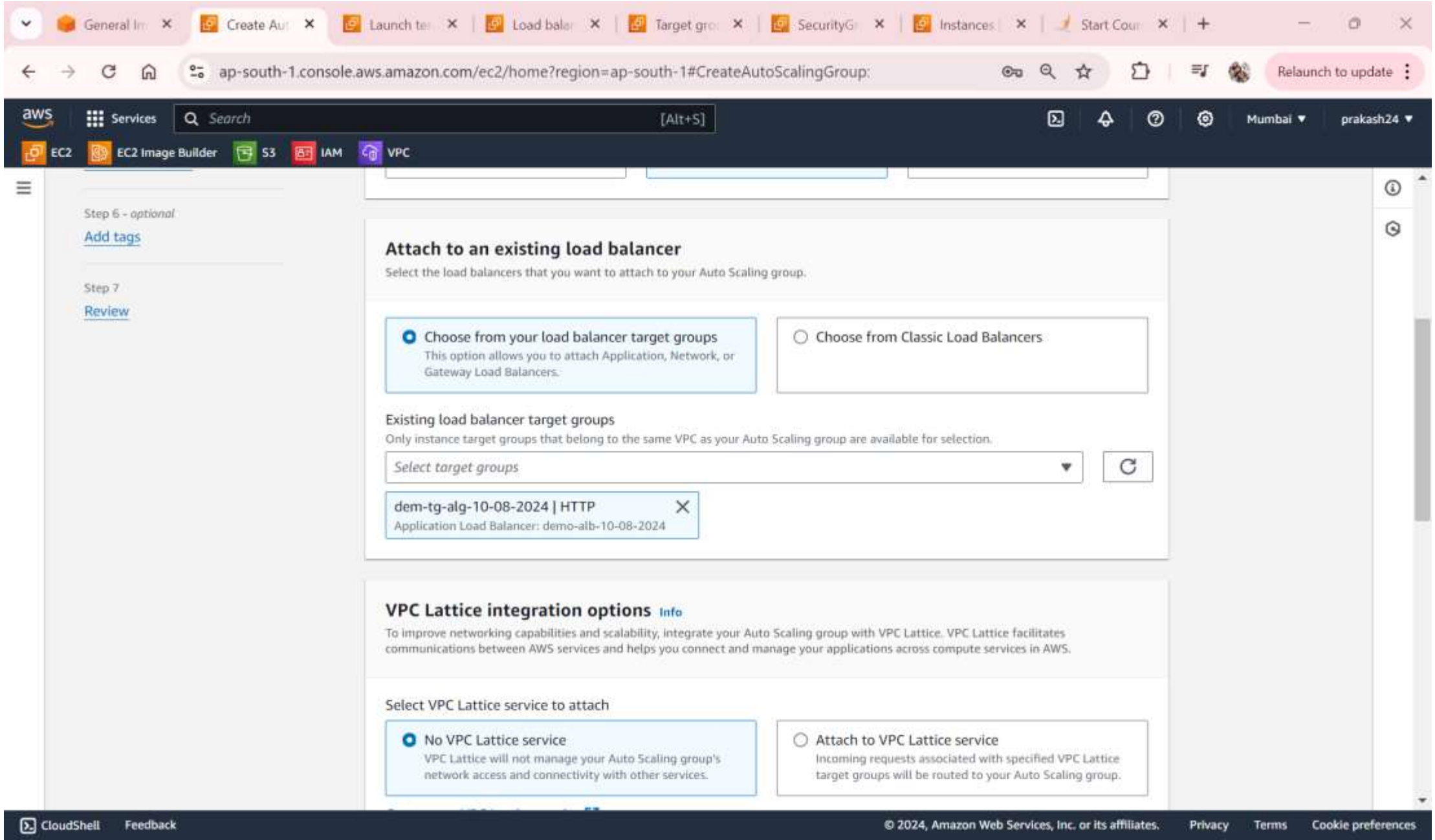
Selecting Instances type while creating Target Group



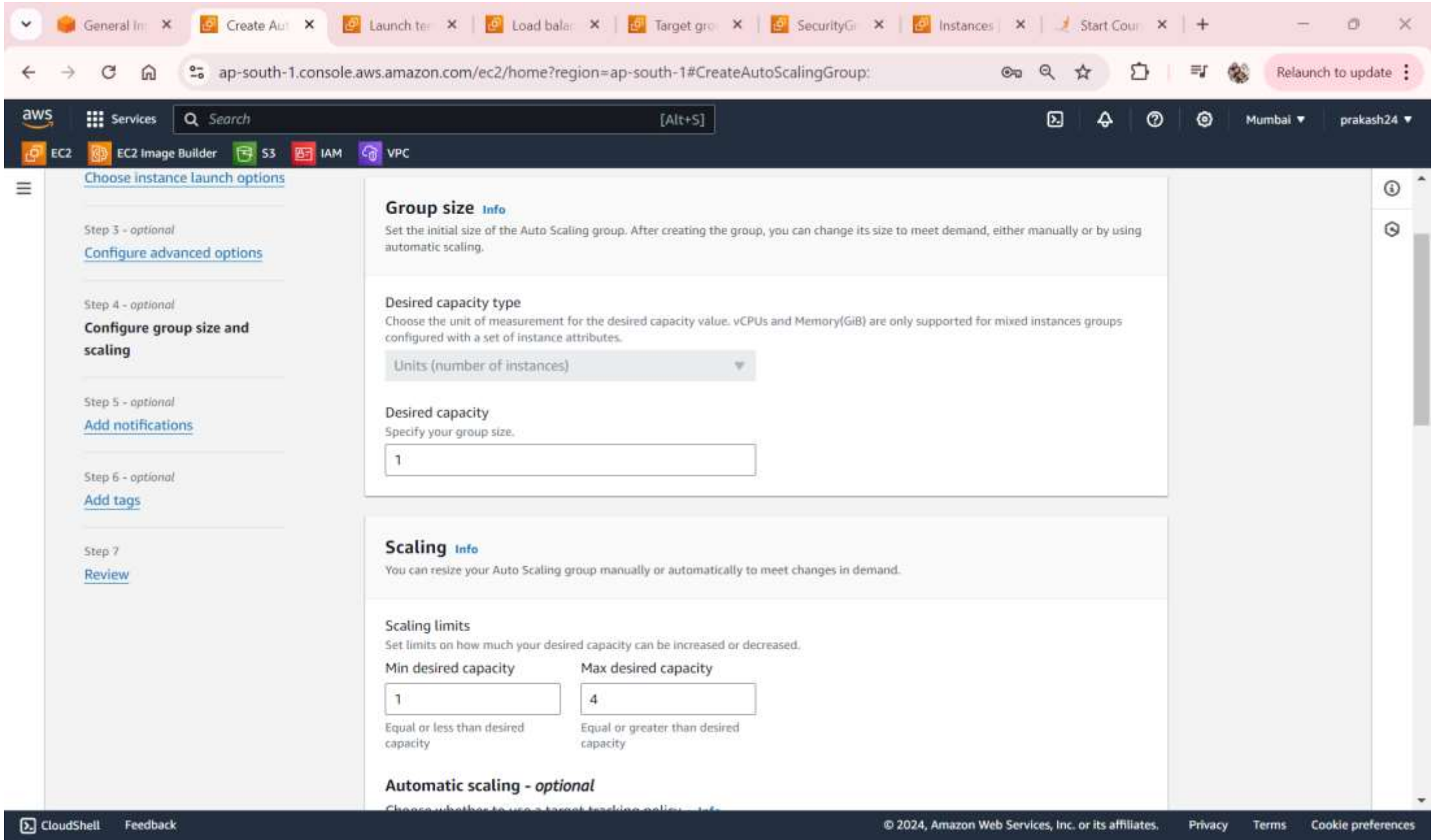
Application Load Balancer is ready to use



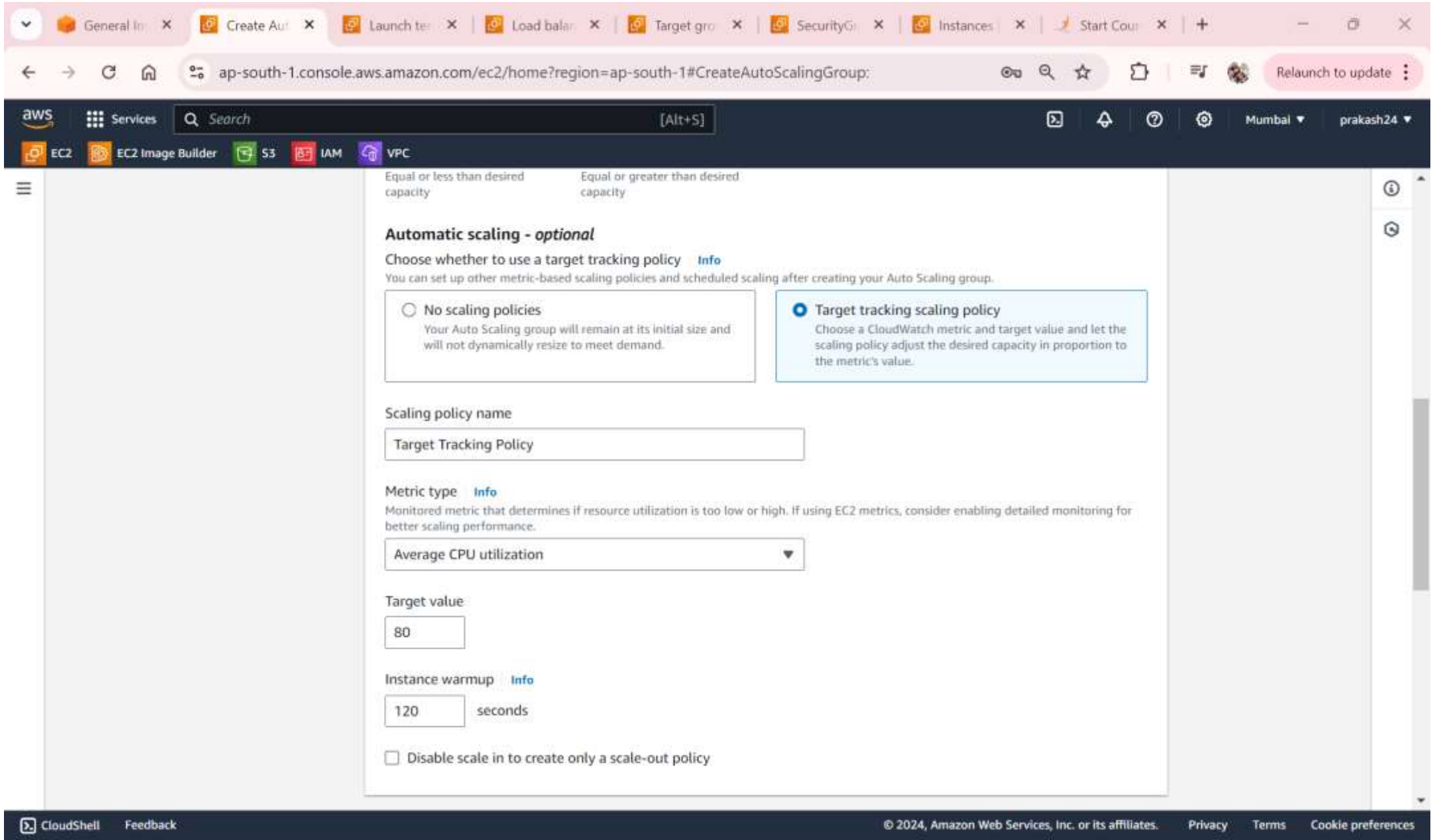
Choosing Application Load Balancer while creating auto scaling group



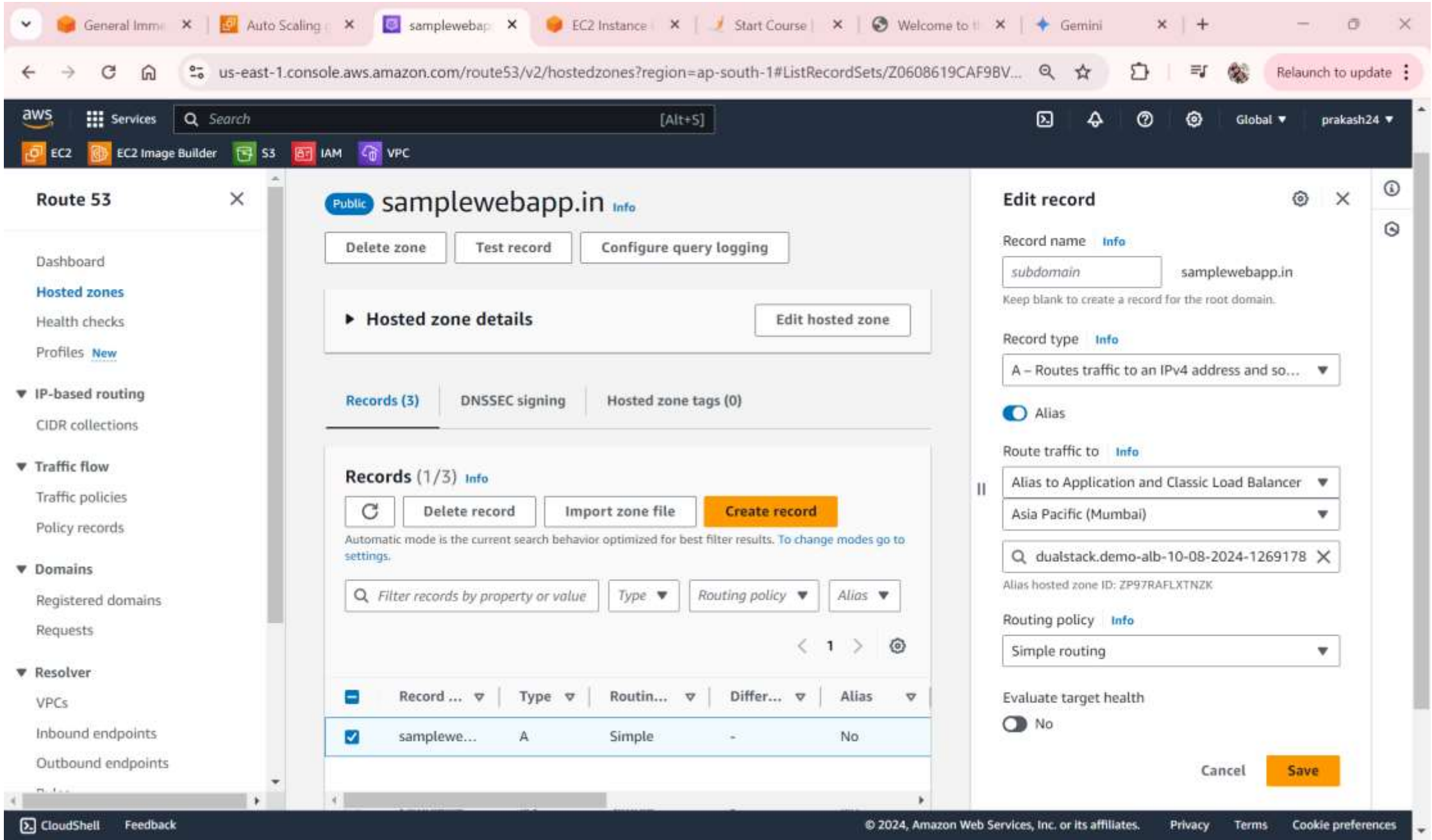
Defining the Desired capacity and scaling



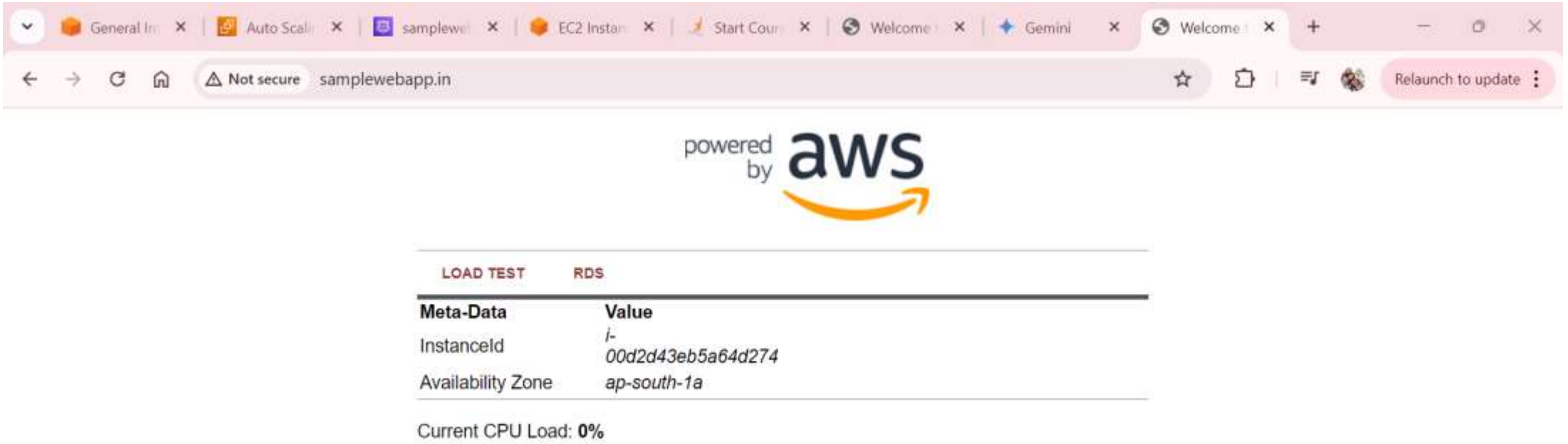
Setting Target Tracking scaling policy



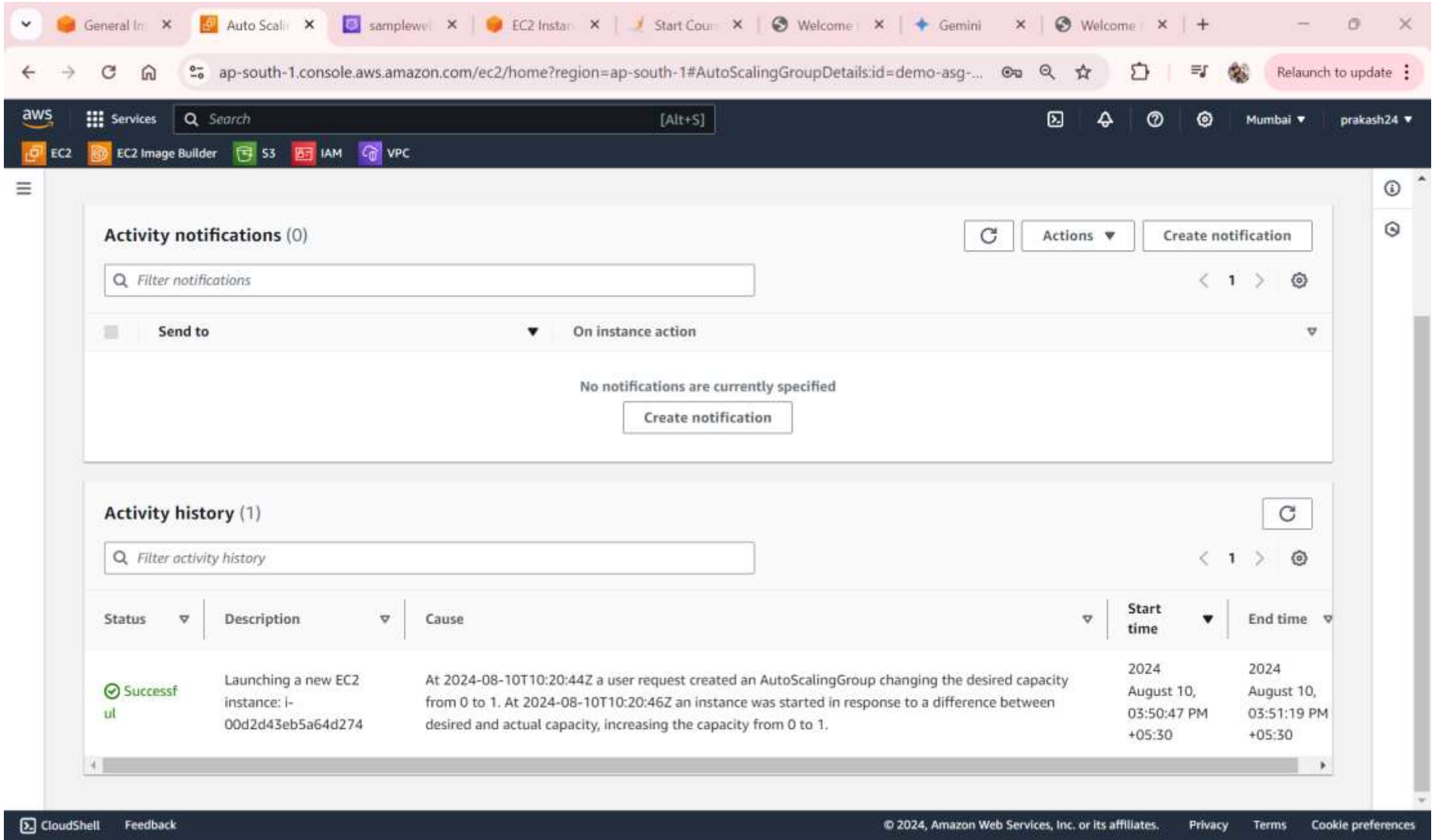
Mapping load balancer URL to domain name using route 53



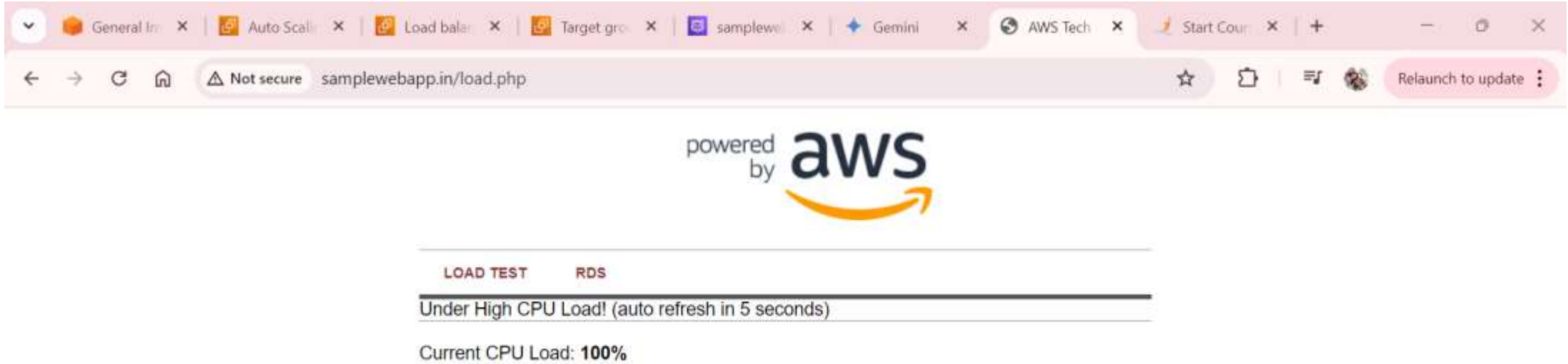
Launching home page using the domain name



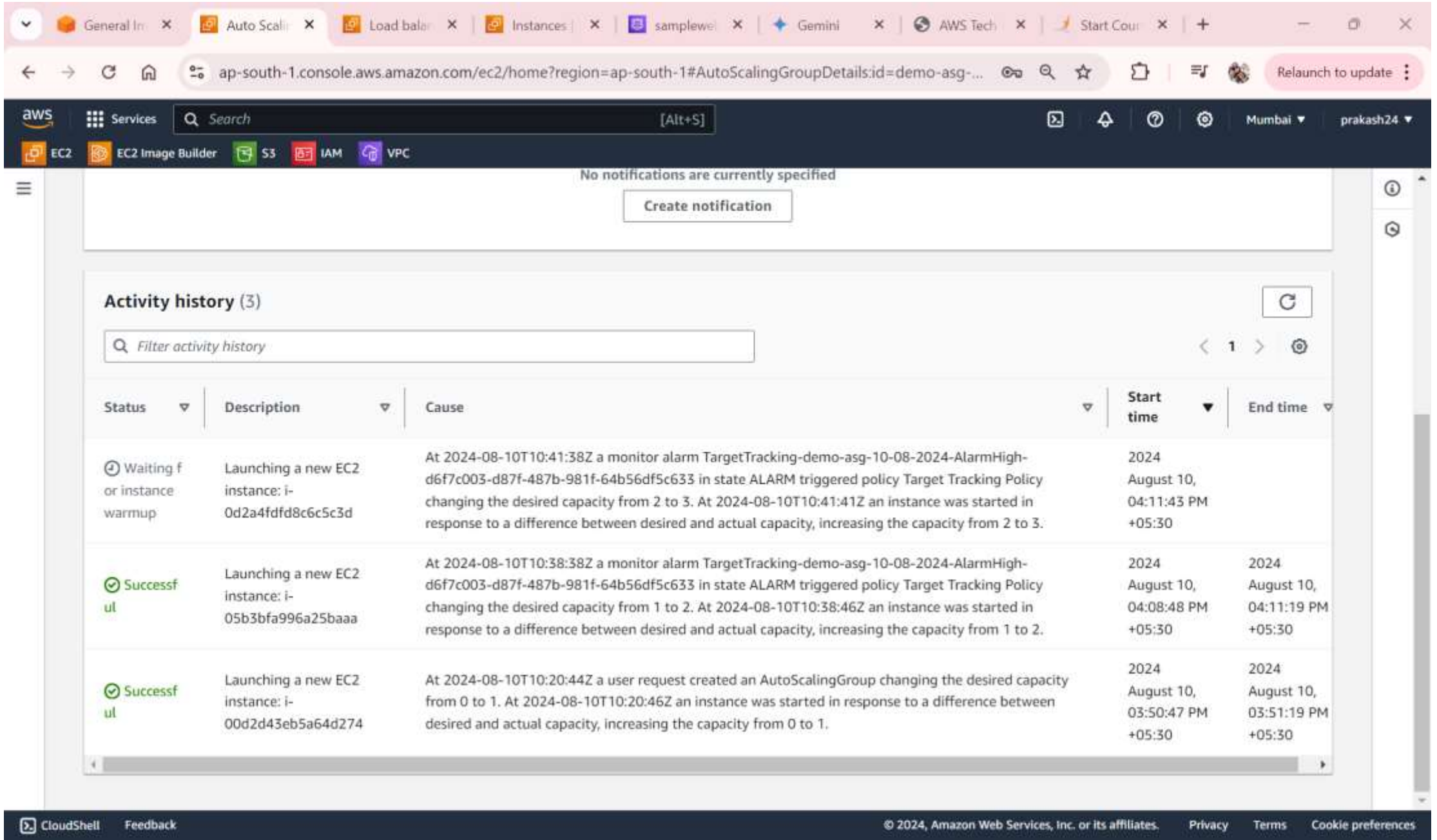
Instance is launched by Auto Scaling Group



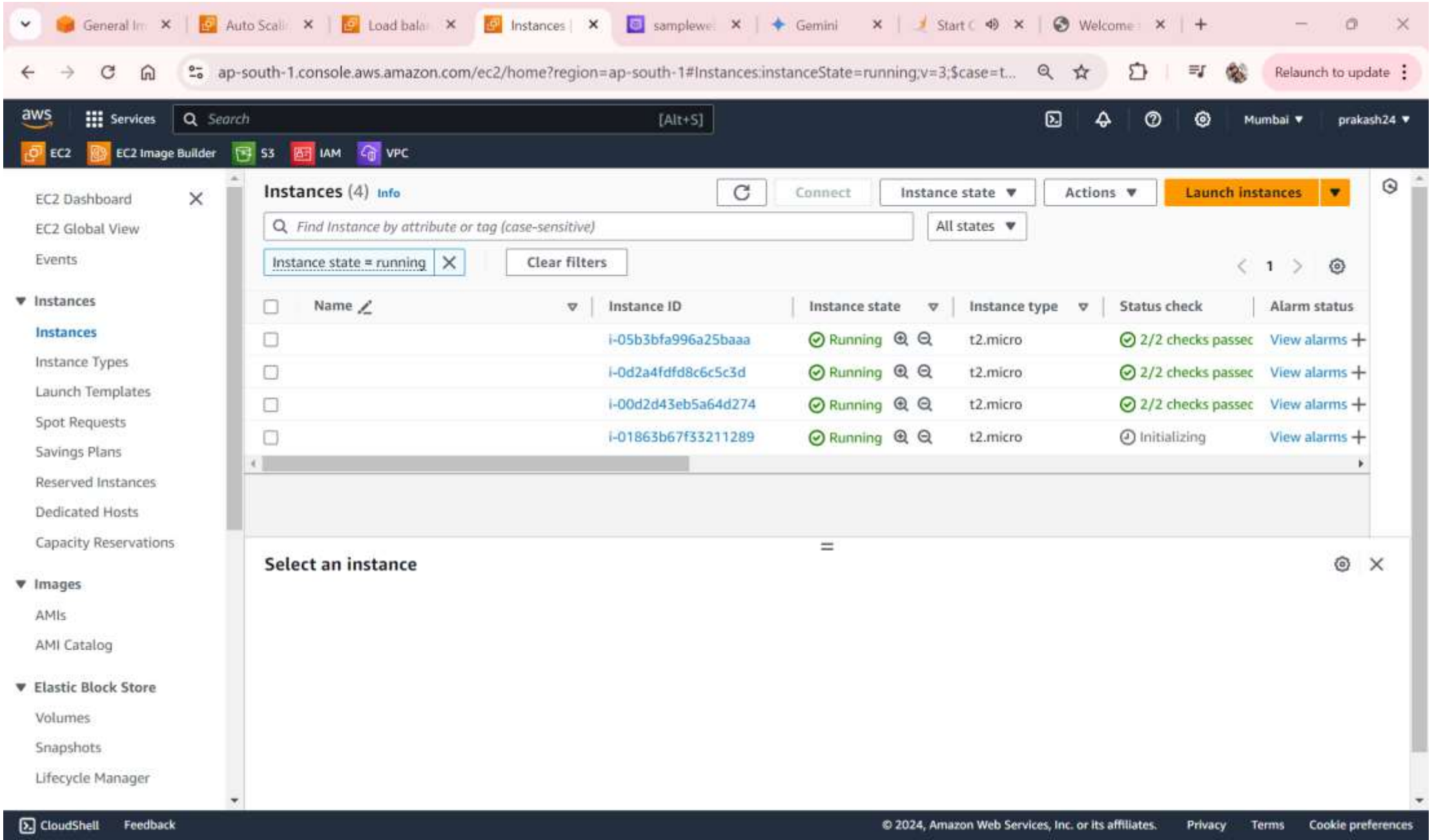
Load Test so Auto scaling group will add more instance to mange CPU load as per policy



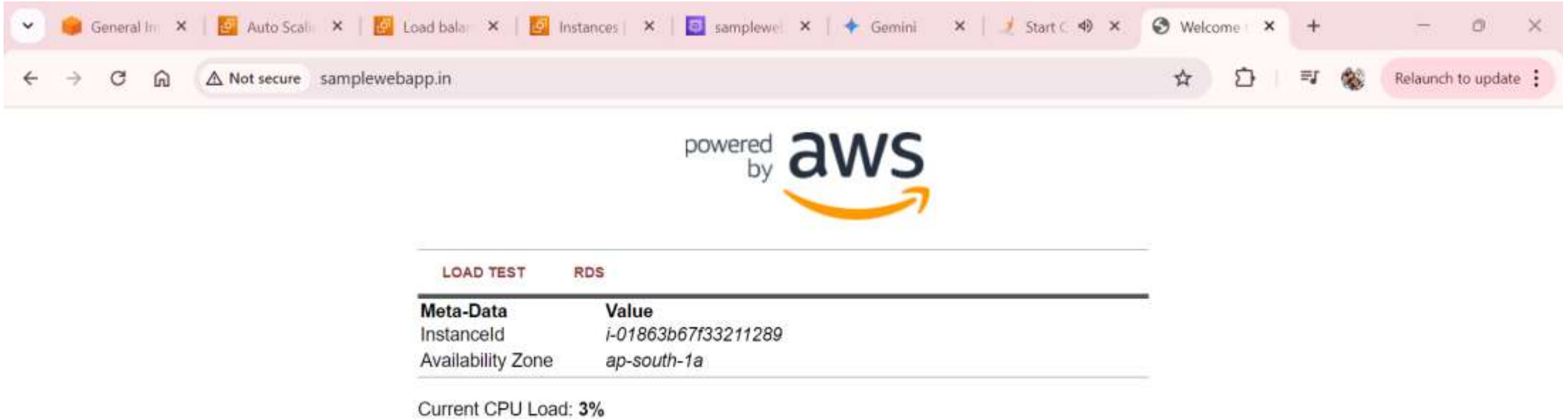
We can see more instance are add by Auto scaling group



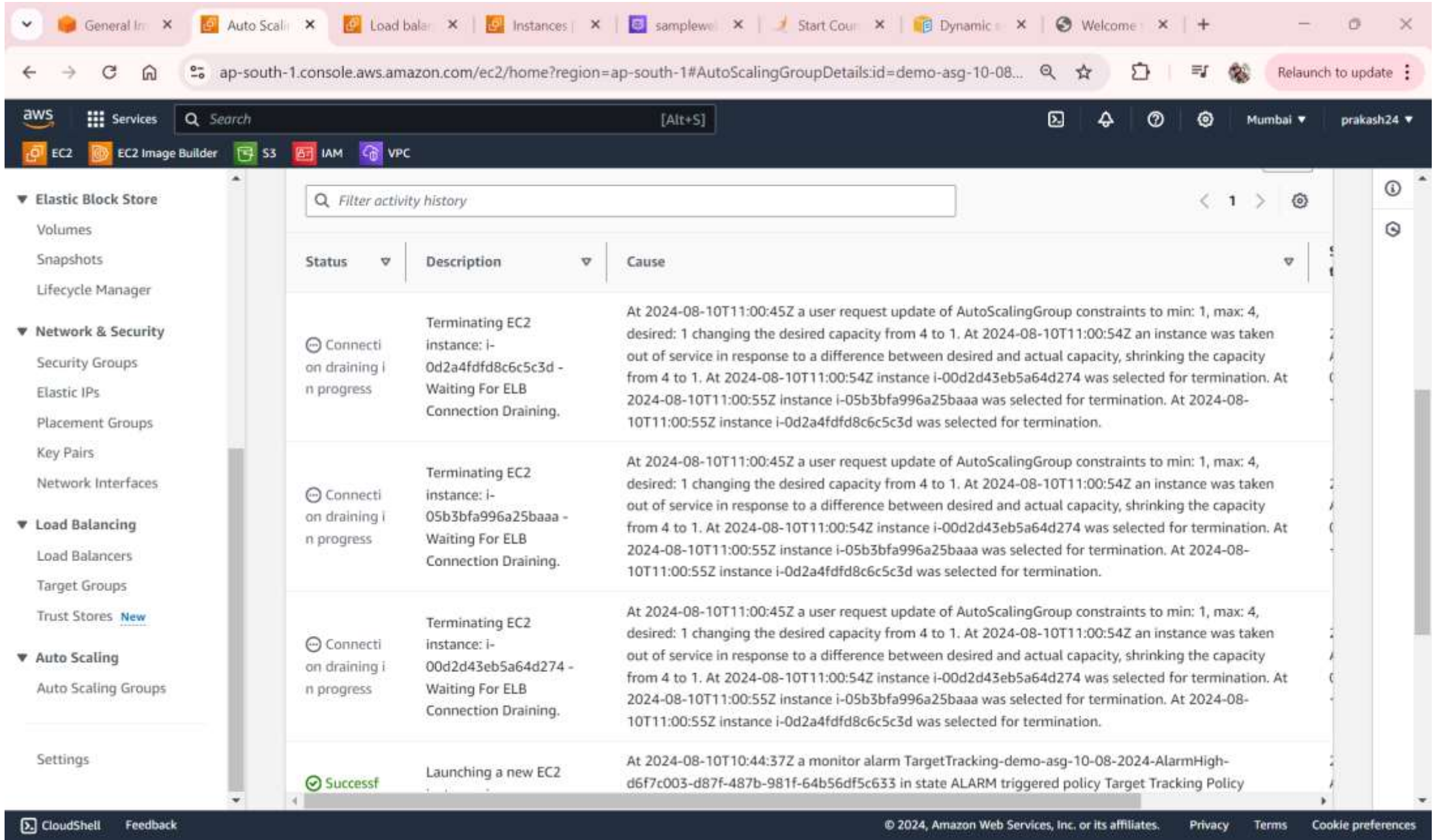
Total 4 instance is launched by ASG to maintained desired and max capacity as per policy



Now CPU load is very less



Auto Scaling Group terminating the instance to maintained desired capacity



We can see the terminated the instance