

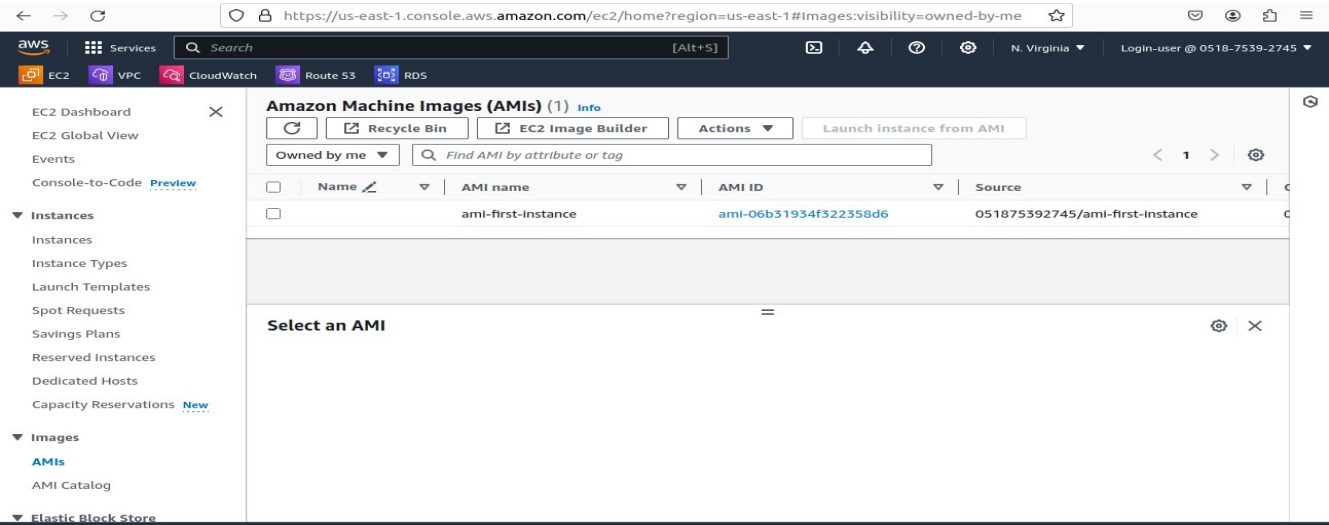
1. Manage the scaling requirements of the company by:
 - a. Deploying multiple compute resources on the cloud as soon as the load increases and the CPU utilization exceeds 80%
 - b. Removing the resources when the CPU utilization goes under 60%

AN EC2 INSTANCE IS CREATED:

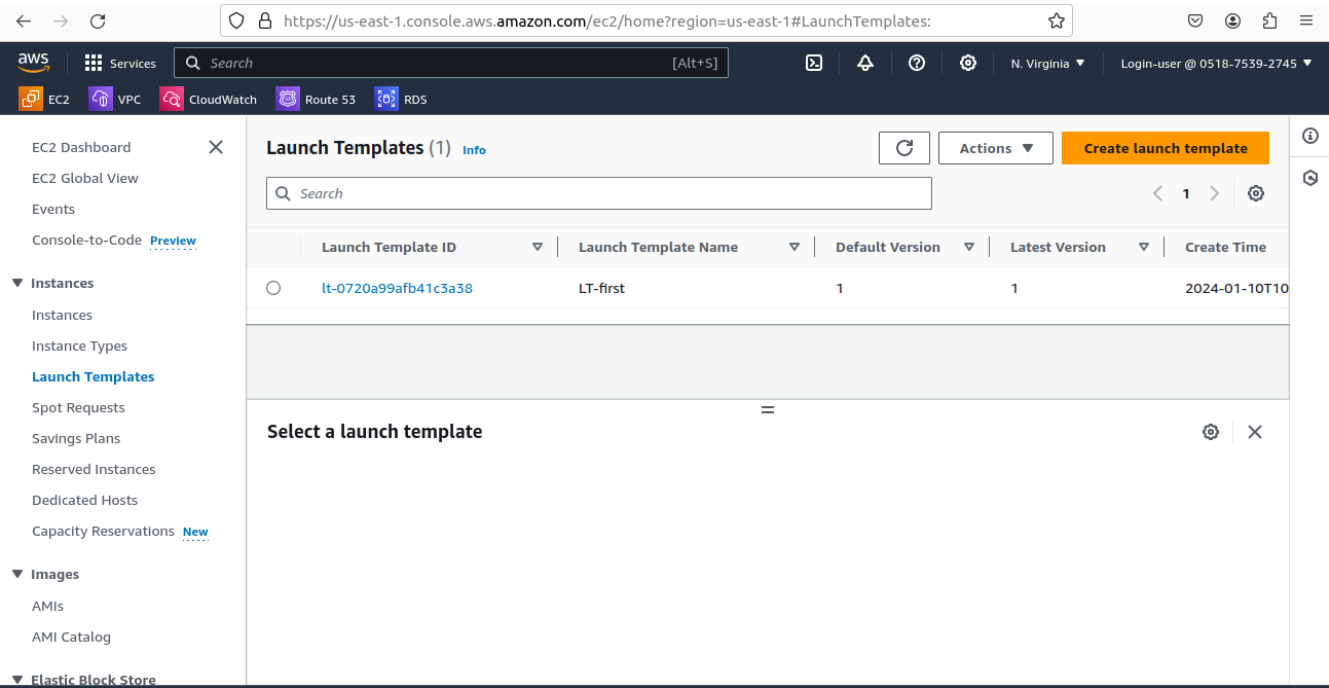
The screenshot displays the AWS Management Console interface for the EC2 service. The top navigation bar includes the AWS logo, a search bar, and the current region (N. Virginia) and user profile (Login-user @ 0518-7539-2745). The left sidebar shows the navigation menu with categories like EC2 Dashboard, EC2 Global View, Events, Console-to-Code, and a list of services including EC2, VPC, CloudWatch, Route 53, and RDS. The main content area is titled 'Instances (1)' and features a search bar, a table of instances, and a 'Launch instances' button. The table lists one instance named 'first-Instance' with ID 'i-0295c024a0b92f85b', which is in a 'Running' state and has a 't2.micro' instance type. Below the table, there is a 'Select an instance' modal window.

Name	Instance ID	Instance state	Instance type	Status check	Alarm
first-Instance	i-0295c024a0b92f85b	Running	t2.micro	2/2 checks passed	View

IMAGE IS CREATED



CREATE LAUNCH TEMPLATE



CREATE AUTO SCALING GROUP

←

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↺

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup: ☆

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aws

Services 🔍 Search [Alt+S]

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N. Virginia ▼ Login-user @ 0518-7539-2745 ▼

EC2 VPC CloudWatch Route 53 RDS

☰

EC2 > Auto Scaling groups > Create Auto Scaling group

📘🔍

Step 1
[Choose launch template](#)

Step 2
[Choose instance launch options](#)

Step 3 - optional
Configure advanced options

Step 4 - optional
[Configure group size and scaling](#)

Step 5 - optional
[Add notifications](#)

Step 6 - optional
[Add tags](#)

Step 7

Configure advanced options - optional [Info](#)

Integrate your Auto Scaling group with other services to distribute network traffic across multiple servers using a load balancer or to establish service-to-service communications using VPC Lattice. You can also set options that give you more control over health check replacements and monitoring.

Load balancing [Info](#)

Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.

☒ **No load balancer**
Traffic to your Auto Scaling group will not be fronted by a load balancer.

☐ **Attach to an existing load balancer**
Choose from your existing load balancers.

☐ **Attach to a new load balancer**
Quickly create a basic load balancer to attach to your Auto Scaling group.

VPC Lattice integration options [Info](#)

To improve networking capabilities and scalability, integrate your Auto Scaling group with VPC Lattice. VPC Lattice facilitates communications between AWS services and helps you connect and manage your applications across compute services in AWS.

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https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup: ☆

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Services 🔍 Search [Alt+S]

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EC2 VPC CloudWatch Route 53 RDS

☰

EC2 > Auto Scaling groups > Create Auto Scaling group

📘🔍

Step 3 - optional
[Configure advanced options](#)

Step 4 - optional
Configure group size and scaling

Step 5 - optional
[Add notifications](#)

Step 6 - optional
[Add tags](#)

Step 7
[Review](#)

Group size [Info](#)

Set the initial size of the Auto Scaling group. After creating the group, you can change its size to meet demand, either manually or by using automatic scaling.

Desired capacity type

Choose the unit of measurement for the desired capacity value. vCPUs and Memory(GiB) are only supported for mixed instances groups configured with a set of instance attributes.

Units (number of instances) ▼

Desired capacity

Specify your group size.

3

Scaling [Info](#)

You can resize your Auto Scaling group manually or automatically to meet changes in demand.

Scaling limits

Set limits on how much your desired capacity can be increased or decreased.

Min desired capacity

2

Equal or less than

Max desired capacity

5

Equal or greater than

← → ↻ https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#AutoScalingGroups: ☆

aws Services 🔍 Search [Alt+S] N. Virginia Login-user @ 0518-7539-2745

EC2 VPC CloudWatch Route 53 RDS

EC2 > Auto Scaling groups

Auto Scaling groups (1) Info ↻ Launch configurations Launch templates ⌕ Actions ▾ Create Auto Scaling group

🔍 Search your Auto Scaling groups < 1 > ⚙️

<input type="checkbox"/>	Name ▾	Launch template/configuration ⌕ ▾	Instances ▾	Status ▾	Desired capacity ▾	Min
<input type="checkbox"/>	ASG-first	LT-first Version Default	3	-	3	2

0 Auto Scaling groups selected ^

Ips OF THE INSTANCES CREATED BY ASG ALL HAS THE HTTPD MESSAGE-STATUS AS THE ORIGINAL INSTANCE



CREATE ALARM IN CLOUDWATCH

← → ↺

https://us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#alarmsV2:create?~(Page-

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aws

Services 🔍 Search [Alt+S]

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EC2 VPC CloudWatch Route 53 RDS

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CloudWatch

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Step 1 Specify

Step 2 Configure

Step 3 Add name

Step 4 Preview

Untitled graph ↗

1h 3h 12h 1d 3d 1w Custom UTC timezone Line

1 0.5 0

07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 09:45 10:00 10:15 10:30

Your CloudWatch graph is empty.
Select some metrics to appear here.

Browse Multi source query - new Graphed metrics Options Source

Add math Add query

Metrics (1,208) Alarm recommendations

N. Virginia Search for any metric, dimension, resource id or account id

ApplicationELB 81 EBS 139 EC2 332

EC2

Cancel Select a single metric to continue

← → ↺

https://us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#alarmsV2:create?~(Page-

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aws

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N. Virginia Login-user @ 0518-7539-2745

EC2 VPC CloudWatch Route 53 RDS

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CloudWatch

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Step 1 Specify

Step 2 Configure

Step 3 Add name

Step 4 Preview

1.96 1.01 0.056

07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 09:45 10:00 10:15 10:30

Browse Multi source query - new Graphed metrics (1) Options Source

Add math Add query

☐ ASG-first MetadataNoToken No alarm

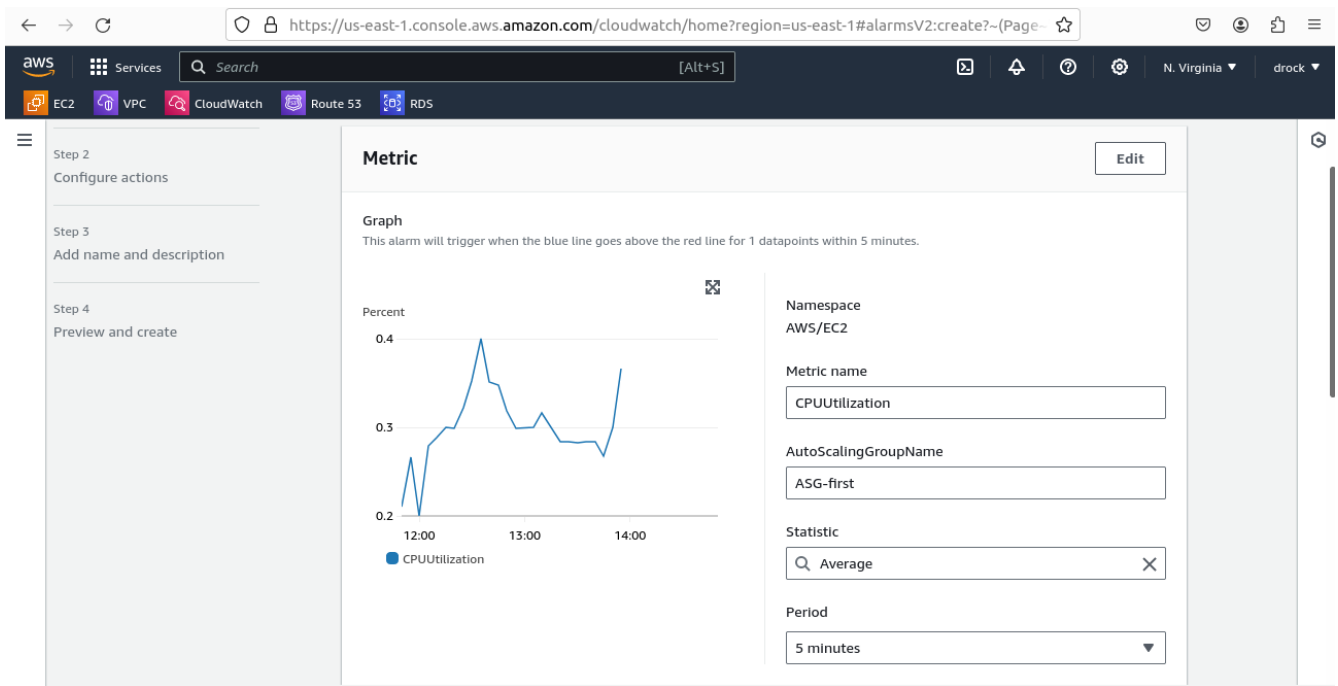
☐ ASG-first NetworkOut No alarm

☐ ASG-first NetworkPacketsIn No alarm

☐ ASG-first NetworkPacketsOut No alarm

☒ ASG-first CPUUtilization No alarm

Cancel Select metric



CPU utilization exceeds 80%

← → ↻ [https://us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#alarmsV2:create?~\(Page~](https://us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#alarmsV2:create?~(Page~) N. Virginia Login-user @ 0518-7539-2745

aws Services Search [Alt+S] EC2 VPC CloudWatch Route 53 RDS

Conditions

Threshold type

☒ Static
Use a value as a threshold

☐ Anomaly detection
Use a band as a threshold

Whenever CPUUtilization is...
Define the alarm condition.

☒ Greater
> threshold

☐ Greater/Equal
>= threshold

☐ Lower/Equal
<= threshold

☐ Lower
< threshold

than...
Define the threshold value.

80

Must be a number

► Additional configuration

Cancel Next

.....when the CPU utilization goes under 60%

← → ↺

https://us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#alarmsV2:create?-(Page- ☆

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aws

Services 🔍 Search [Alt+S]

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EC2 VPC CloudWatch Route 53 RDS

☰

Period

5 minutes

Conditions

Threshold type

☒ Static
Use a value as a threshold

☐ Anomaly detection
Use a band as a threshold

Whenever CPUUtilization is...

Define the alarm condition.

☐ Greater
> threshold

☐ Greater/Equal
>= threshold

☐ Lower/Equal
<= threshold

☒ Lower
< threshold

than...

Define the threshold value.

60

Must be a number

Additional configuration

← → ↺

https://us-east-1.console.aws.amazon.com/cloudwatch/home?region=us-east-1#alarmsV2: ☆

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aws

Services 🔍 Search [Alt+S]

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EC2 VPC CloudWatch Route 53 RDS

CloudWatch

☒

☑️ Successfully created alarm Alarm-60. View alarm ☒

Favorites and recents

CloudWatch > Alarms

Dashboards

Alarms ⚠️ 0 🟢 0 🟡 2

In alarm

All alarms

Billing

Logs

Log groups

Log Anomalies

Live Tail

Logs Insights

Metrics New

X-Ray traces

Events

Alarms (2)

☐ Hide Auto Scaling alarms

Clear selection

🔄

Create composite alarm

Actions ⌵

Create alarm

🔍 Search

Any state ⌵

Any type ⌵

Any actions ... ⌵

< 1 > ⚙️

<input type="checkbox"/>	Name ⌵	State ⌵	Last state update ⌵	Conditions	Action
<input type="checkbox"/>	Alarm-60	🟡 Insufficient data	2024-01-11 14:59:01	CPUUtilization < 60 for 1 datapoints within 5 minutes	No ac
<input type="checkbox"/>	Alarm-80	🟡 Insufficient data	2024-01-11 14:56:44	CPUUtilization > 80 for 1 datapoints within 5 minutes	No ac

MOVE BACK TO AUTO SCALING GROUP : for policy update

ASG-first

Details | Activity | **Automatic scaling** | Instance management | Monitoring | Instance refresh

Scaling policies resize your Auto Scaling group to meet changes in demand. With reactive dynamic scaling policies, you can track specific CloudWatch metrics and take action when the CloudWatch alarm threshold is met. Use predictive scaling policies along with dynamic scaling policies in the following situations: when your application demand changes quickly, but with a recurring pattern, or when your EC2 Instances require more time to initialize.

Dynamic scaling policies (0) [Info](#) [Refresh](#) [Actions](#) [Create dynamic scaling policy](#)

No dynamic scaling policies have been created

Dynamic scaling policies use real-time data to scale your group based on configurable metrics.

[Create dynamic scaling policy](#)

POLICY1: ADD 2 INSTANCE @>80%

Create dynamic scaling policy

Policy type: Simple scaling

Scaling policy name: Policy-80

CloudWatch alarm: Choose an alarm that can scale capacity whenever: >80% [Create a CloudWatch alarm](#)

breaches the alarm threshold: CPUUtilization > 80 for 1 consecutive periods of 300 seconds for the metric dimensions:

AutoScalingGroupName = ASG-first

Take the action: Add 2 capacity units

← → ↻ <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#AutoScalingGroupDetails:id=ASG> N. Virginia drock

aws Services Search [Alt+S] EC2 VPC CloudWatch Route 53 RDS

Dynamic scaling policy created or edited successfully.

Dynamic scaling policies (1) Info

policy-80 ☐

Simple scaling

Enabled

Alarm-80
breaches the alarm threshold: CPUUtilization > 80 for 1 consecutive periods of 300 seconds for the metric dimensions:
AutoScalingGroupName = ASG-first

Add 2 capacity units

300 seconds before allowing another scaling activity

Actions Create dynamic scaling policy

POLICY 2: REMOVE 2 INSTANCE @<60%

← → ↻ <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#DynamicScalingPolicy:id=ASG-firs> N. Virginia Login-user @ 0518-7539-2745

aws Services Search [Alt+S] EC2 VPC CloudWatch Route 53 RDS

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

Scaling policy name

Policy 60

CloudWatch alarm

Choose an alarm that can scale capacity whenever:

<60%

Create a CloudWatch alarm

breaches the alarm threshold: CPUUtilization < 60 for 1 consecutive periods of 300 seconds for the metric dimensions:

AutoScalingGroupName = ASG-first

Take the action

Remove 2 capacity units

And then wait

300 seconds before allowing another scaling activity

Cancel Create

← → ↻

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#AutoScalingGroupDetails:id=ASG

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Services

Search

[Alt+S]

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N. Virginia

Login-user @ 0518-7539-2745

EC2

VPC

CloudWatch

Route 53

RDS

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

🟢 Dynamic scaling policy created or edited successfully.

Dynamic scaling policies (2) [Info](#)

🔄

Actions ▼

Create dynamic scaling policy

< 1 >

Policy 60

Simple scaling

Enabled

<60%

breaches the alarm threshold: CPUUtilization < 60 for 1 consecutive periods of 300 seconds for the metric dimensions:
AutoScalingGroupName = ASG-first

Remove 2 capacity units

300 seconds before allowing another scaling activity

Policy-80

Simple scaling

Enabled

>80%

breaches the alarm threshold: CPUUtilization > 80 for 1 consecutive periods of 300 seconds for the metric dimensions:
AutoScalingGroupName = ASG-first

Add 2 capacity units

300 seconds before allowing another scaling activity

Review targets

Targets (3) Remove all pending

☐ Show only pending

< 1 > ⚙

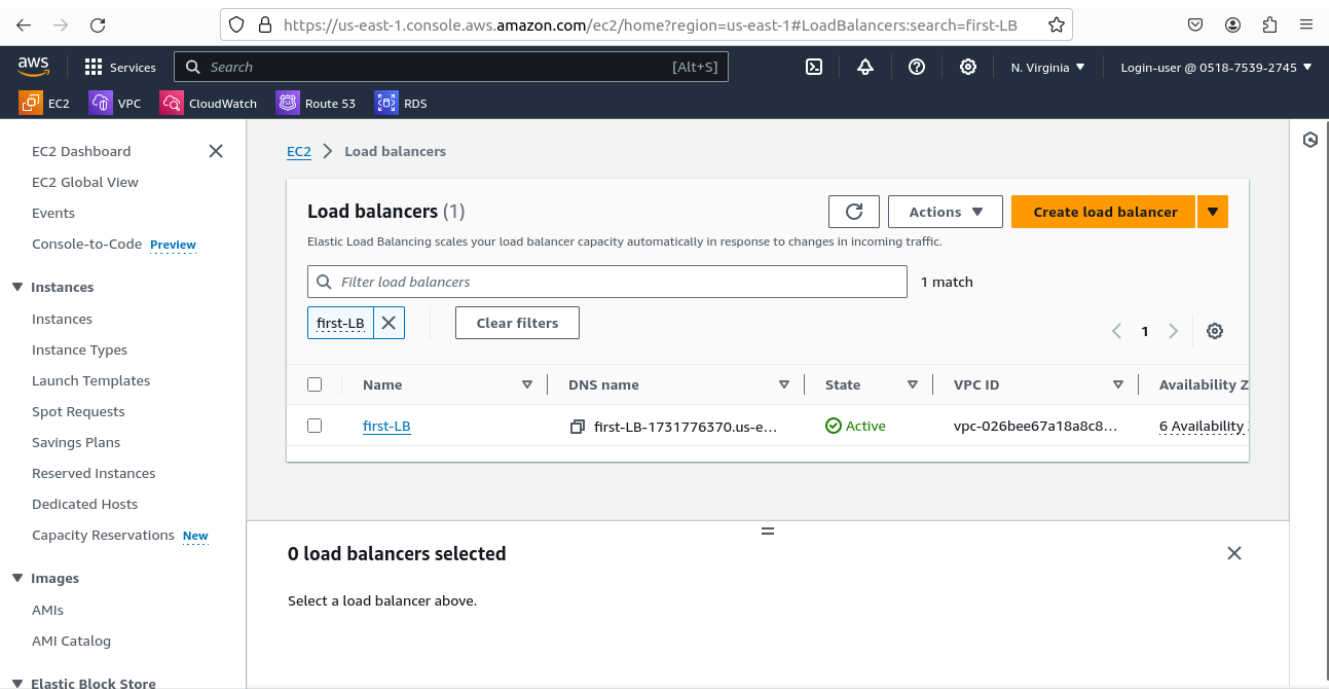
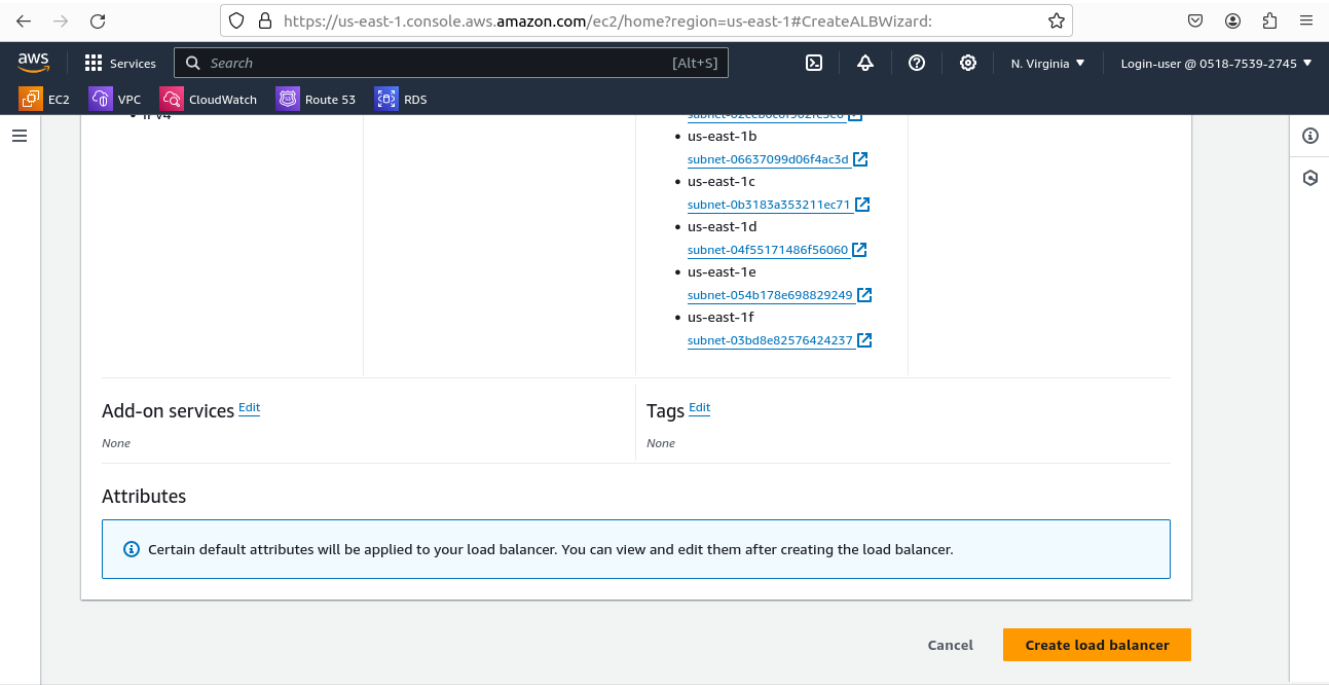
Remove	Health status ▾	Instance ID ▾	Name ▾	Port ▾	State ▾	Security
✕	Pending	i-079961679e332b8d6		80	Running	default
✕	Pending	i-0ee32c6d6751b3482		80	Running	default
✕	Pending	i-0295c024a0b92f85b	first-instance	80	Running	default

3 pending Cancel Previous Create target group

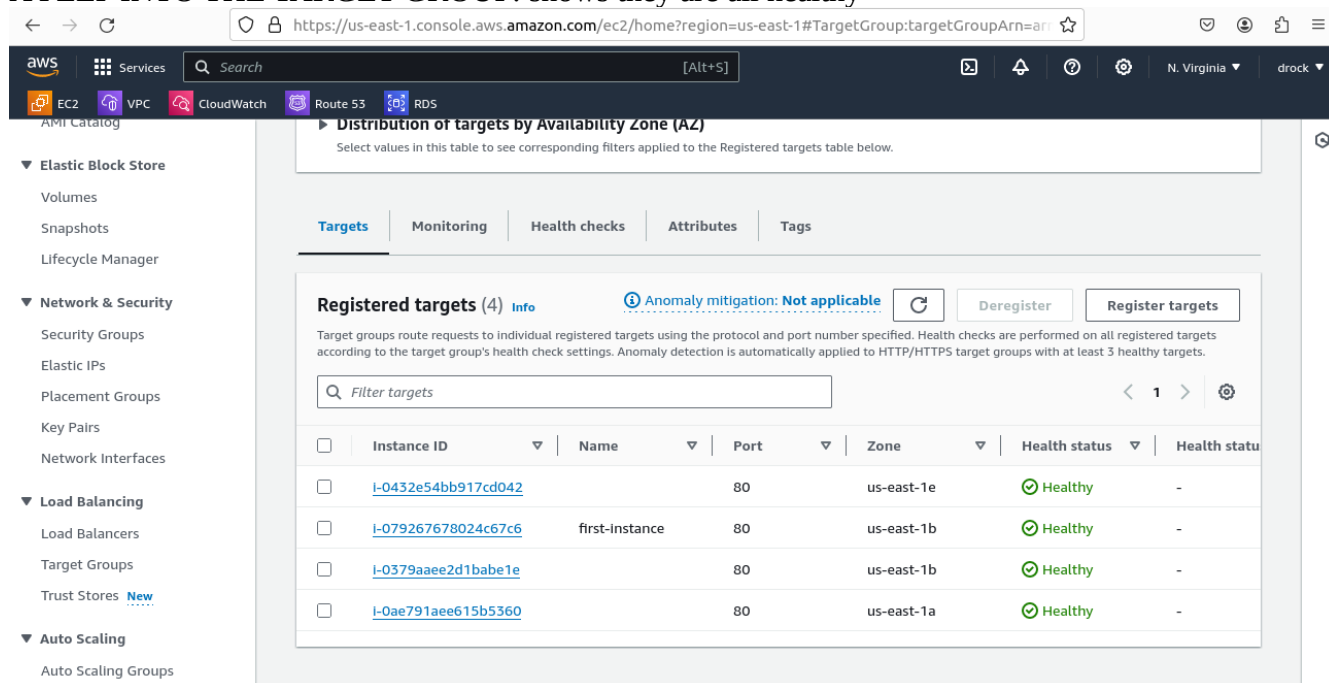
The screenshot shows the AWS Management Console interface. The top navigation bar includes the AWS logo, a search bar, and various service icons (EC2, VPC, CloudWatch, Route 53, RDS). The left sidebar contains a navigation menu with options like 'EC2 Dashboard', 'Instances', 'Images', and 'Elastic Block Store'. The main content area is titled 'Distribution of targets by Availability Zone (AZ)' and includes a sub-header 'Select values in this table to see corresponding filters applied to the Registered targets table below.' Below this, there are tabs for 'Targets', 'Monitoring', 'Health checks', 'Attributes', and 'Tags'. The 'Targets' tab is active, showing a section for 'Registered targets (4)' with a link to 'Anomaly mitigation: Not applicable'. A search bar labeled 'Filter targets' is present. The main table lists the registered targets with the following data:

<input type="checkbox"/>	Instance ID	Name	Port	Zone	Health status	Health status details
<input type="checkbox"/>	i-0432e54bb917cd042		80	us-east-1e	Unused	Target group is not
<input type="checkbox"/>	i-079267678024c67c6	first-instance	80	us-east-1b	Unused	Target group is not
<input type="checkbox"/>	i-0379aaee2d1babe1e		80	us-east-1b	Unused	Target group is not
<input type="checkbox"/>	i-0ae791aee615b5360		80	us-east-1a	Unused	Target group is not

CREATE LOAD BALANCER



A PEEP INTO THE TARGET GROUP: shows they are all healthy



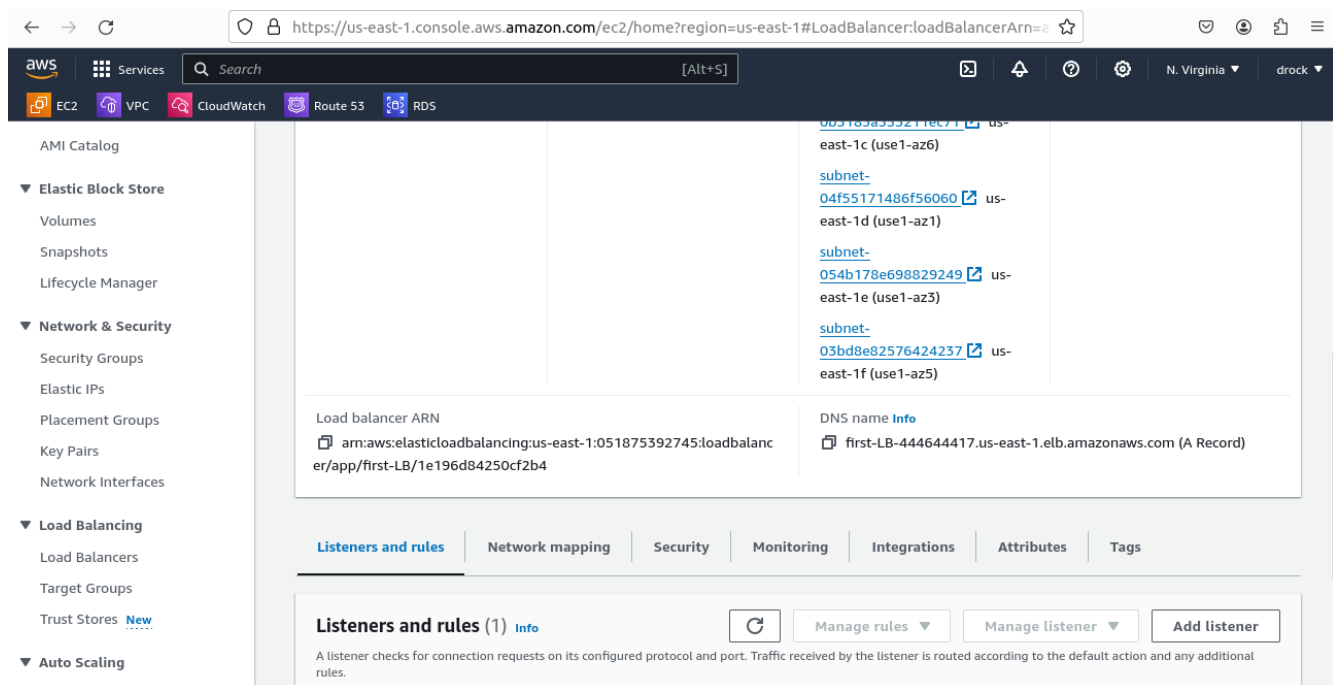
The screenshot shows the AWS Management Console interface for a Target Group. The left sidebar contains navigation links for various AWS services. The main content area displays the 'Registered targets' page, which includes a table of registered targets and their health status.

Registered targets (4) [Info](#) [Anomaly mitigation: Not applicable](#) [Refresh](#) [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.

<input type="checkbox"/>	Instance ID	Name	Port	Zone	Health status	Health statu
<input type="checkbox"/>	i-0432e54bb917cd042		80	us-east-1e	Healthy	-
<input type="checkbox"/>	i-079267678024c67c6	first-instance	80	us-east-1b	Healthy	-
<input type="checkbox"/>	i-0379aee2d1babe1e		80	us-east-1b	Healthy	-
<input type="checkbox"/>	i-0ae791aee615b5360		80	us-east-1a	Healthy	-

LOAD BALANCER : CLICK ON IT TO VIEW THE DNS



The screenshot shows the AWS Management Console interface for a Load Balancer. The left sidebar contains navigation links for various AWS services. The main content area displays the 'Listeners and rules' page, which includes the Load balancer ARN and the DNS name.

Listeners and rules (1) [Info](#) [Refresh](#) [Manage rules](#) [Manage listener](#) [Add listener](#)

A listener checks for connection requests on its configured protocol and port. Traffic received by the listener is routed according to the default action and any additional rules.

Load balancer ARN
[arn:aws:elasticloadbalancing:us-east-1:051875392745:loadbalancer/app/first-LB/1e196d84250cf2b4](#)

DNS name [Info](#)
[first-LB-444644417.us-east-1.elb.amazonaws.com \(A Record\)](#)

DNS PASTED ON URL

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first-lb-444644417.us-east-1.elb.amazonaws.com

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This is to Manage the scaling requirements of the company

TO INTEGRATE ASG AND LB
CLICK INSIDE THE AUTO SCALING GROUP , MOVE DOWN TO LOAD BALANCER AND
EDIT TO ADD TARGET GROUP

The screenshot shows the AWS Management Console interface for an Auto Scaling Group named 'first-ASG'. The breadcrumb navigation is 'EC2 > Auto Scaling groups > first-ASG'. The page title is 'first-ASG'. Below the title are tabs for 'Details', 'Activity', 'Automatic scaling', 'Instance management', 'Monitoring', and 'Instance refresh'. The 'Details' tab is selected, showing a 'Group details' section with an 'Edit' button. The details are organized into a table with four columns: 'Auto Scaling group name', 'Desired capacity', 'Desired capacity type', and 'Amazon Resource Name (ARN)'. The 'Auto Scaling group name' is 'first-ASG'. The 'Desired capacity' is '3'. The 'Desired capacity type' is 'Units (number of Instances)'. The 'Amazon Resource Name (ARN)' is 'arn:aws:autoscaling:us-east-1:051875392745:autoScalingGroup:c88dae0e-3a99-4569-bca0-dc1660b0f251:autoScalingGroupName/first-ASG'. Below the table is a 'Launch template' section with an 'Edit' button.

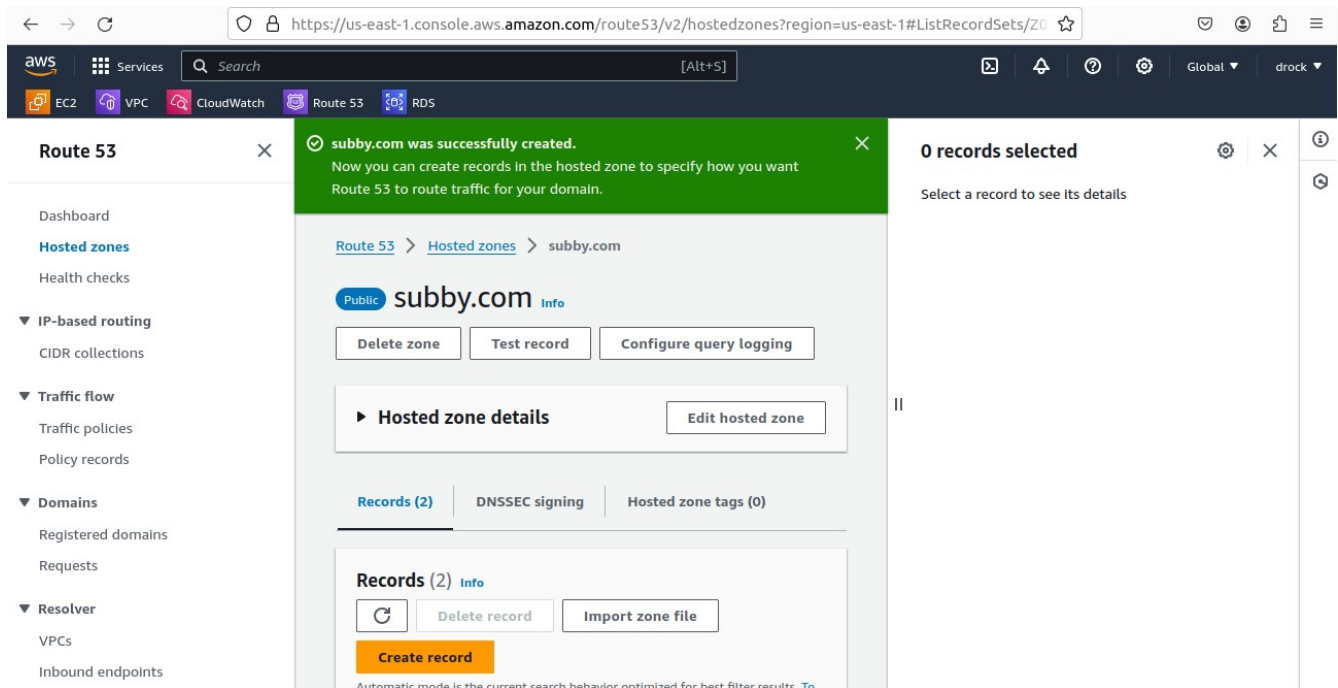
Auto Scaling group name	Desired capacity	Desired capacity type	Amazon Resource Name (ARN)
first-ASG	3	Units (number of Instances)	arn:aws:autoscaling:us-east-1:051875392745:autoScalingGroup:c88dae0e-3a99-4569-bca0-dc1660b0f251:autoScalingGroupName/first-ASG
Date created Thu Jan 11 2024 15:47:13 GMT+0100 (West Africa Standard Time)	Minimum capacity 2	Status -	
	Maximum capacity 5		

The screenshot shows the 'Edit first-ASG' page in the AWS Management Console. The breadcrumb navigation is 'EC2 > Auto Scaling groups > first-ASG'. The page title is 'Edit first-ASG'. Below the title is a section titled 'Load balancing - optional'. Inside this section is a 'Load balancers' subsection. There is a checkbox labeled 'Application, Network or Gateway Load Balancer target groups' which is checked. Below this checkbox is a note: 'Only instance target groups that belong to the same VPC as your Auto Scaling group are available for selection.' Below the note is a 'Select target groups' dropdown menu. The dropdown menu is open, showing a list of target groups. The first item in the list is 'first-TG | HTTP' with a subtext 'Application Load Balancer: first-LB'. Below the dropdown menu is a checkbox labeled 'Classic Load Balancers' which is unchecked. At the bottom of the 'Load balancing - optional' section is a button labeled 'Add a new load balancer'.

3. Route the traffic to the company's domain Configure DNS Settings:

Equipped with the Company the domain, go to the Route 53 dashboard.

- Choose "Hosted zones"



2. Create Record Sets:

- Create a new record set for your ELB and EC2 instance:
 - Click "Create Record Set."
 - Enter the subdomain (e.g., www) and configure the type of record you need (e.g., Alias record for ELB).
 - Associate the record set with the corresponding resources, such as the ELB

Quick create record

Record 1

Record name: .subby.com

Record type: A - Routes traffic to an IPv4 address and some AWS resources

Alias

Route traffic to: Alias to Application and Classic Load Balancer

US East (N. Virginia)

Alias hosted zone ID: Z355XDTRQ7X7K

Routing policy: Simple routing

Evaluate target health: Yes

Add another record

Quick create record

Record 1

Record name: .subby.com

Record type: A - Routes traffic to an IPv4 address and some AWS resources

Alias

Route traffic to: Alias to Application and Classic Load Balancer

US East (N. Virginia)

Alias hosted zone ID: Z355XDTRQ7X7K

Routing policy: Simple routing

Evaluate target health: Yes

Add another record

Cancel Create records

3. Configure DNS Settings:

- If the domain is registered with a different registrar, go to that registrar's website.
- Update the domain's name servers to the ones provided in the Route 53 hosted zone settings.
- **Verify DNS Configuration:**
- After making changes, wait for DNS propagation....to verify that your domain is resolving to the correct DNS names.
- **Check ELB Configuration:**
- Ensure that your ELB is properly configured to handle traffic for your domain.