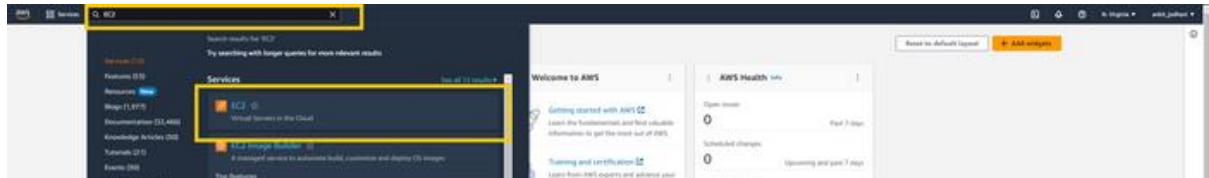


◆ Application Load balancer(ALB) and Route 53

Now it's time to set up an Application load balancer. We need two load balancers, one point to the backend server, and another point to the frontend server.

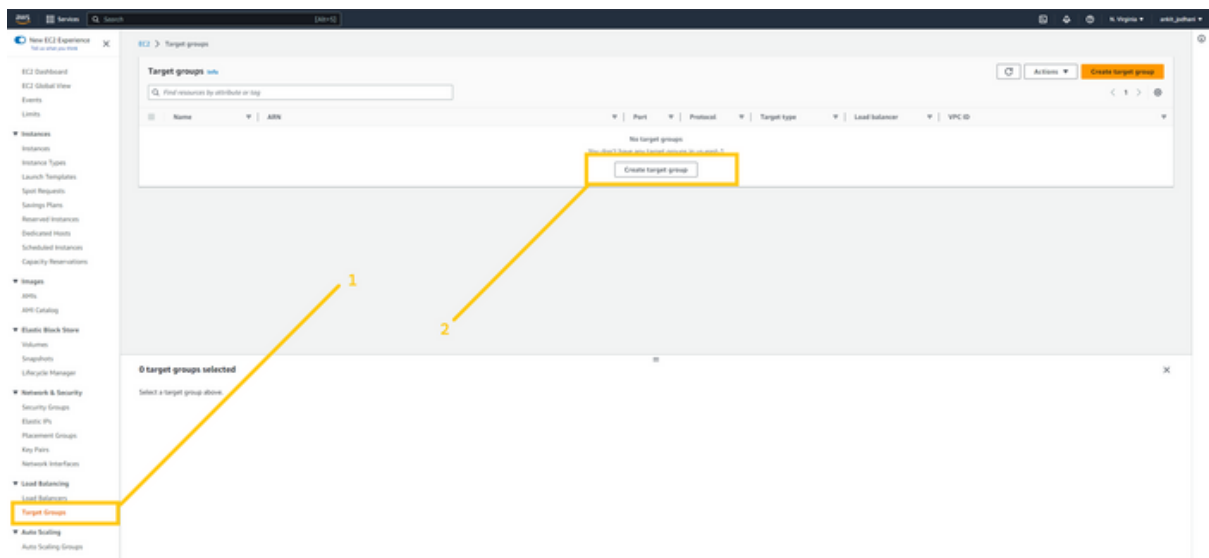
Note: I am doing setup in N.virginia (us-east-1) but you have to do the same setup for Oregon (us-west-2) or whatever region you have chosen.

Type ec2 in the AWS console. and click on the EC2 service.



Note: before we created ALB we need to create a Target group(TG). So first we will create TG for ALB-frontend and then create TG for ALB-backend.

Click the **target group** button on the bottom of the left panel. And click on the **create target group** button in the middle of the page.



Here we can configure our TG. Select the instance in the target type. You can give any name to TG but try to give some relevant name such as **ALB-frontend-TG** because we are creating TG for ALB-frontend. In the VPC section select VPC that we created earlier.

Step 2: Configure targets

Basic configuration
Settings in this section can't be changed after the target group is created.

Choose a target type

- ☒ **Instance**
 - Supports routing requests to EC2 instances or on-premises resources.
 - Enables routing to multiple IP addresses and network addresses on the same instance.
 - Offers flexibility with instance and load balancers, simplifying their application communication.
 - Supports IP-based routing and can use IP-based communication, and then to IP-based.
- ☐ **IP addresses**
 - Supports routing requests to IP addresses on on-premises resources.
 - Enables routing to multiple IP addresses and network addresses on the same instance.
 - Offers flexibility with instance and load balancers, simplifying their application communication.
 - Supports IP-based routing and can use IP-based communication, and then to IP-based.
- ☐ **Lambda Function**
 - Enables routing to a single Lambda function.
 - Available for Application Load Balancers only.
- ☐ **Application Load Balancer**
 - Offers the flexibility for a frontend load balancer to target private static TCP resources within a specific VPC.
 - Enables routing to multiple IP addresses and network addresses on the same instance.

Target group name
ALB-frontend-TG
A maximum of 25 alphanumeric characters (uppercase and lowercase letters, numbers, and hyphens) is allowed, but the name must not begin or end with a hyphen.

Protocol
HTTP

Port
80

VPC
Select the VPC with the instances that you want to include in this target group.
aws-ec2-us-east-1-vpc (id: vpc-012345678)

Backend protocol
☒ **HTTP**
☐ **HTTPS**
☐ **HTTP2**
☐ **gRPC**

Health checks
The health check can determine periodically if the target is healthy. In the target group, the health check is used to determine if the target is healthy.

Health check protocol
HTTP

Keep everything as it is, scroll down, and click on the **Next** button.

Advanced health check settings

Health check path
/

Health check port
Traffic port

Healthy threshold
5

Unhealthy threshold
2

Timeout
5 seconds

Interval
30 seconds

Success codes
200

Attributes
Custom default attributes will be applied to your target group. You can view and edit them after creating the target group.

Tags - optional
Create a list of tags for your target group. You can add tags to your target group after it is created.

Next

Click on the **create target group** button.

The screenshot shows the 'Register targets' page in the AWS Management Console. The page has two main sections: 'Available instances' and 'Review targets'. In the 'Available instances' section, there is a search bar and a table with columns: Instance ID, Name, Status, Security groups, Zone, and Subnet ID. Below the table, it says 'No available instances'. In the 'Review targets' section, there is a 'Targets' table with columns: Instance, Health status, Instance ID, Name, Port, State, Security groups, Zone, and Subnet ID. Below the table, it says 'No instances added yet'. At the bottom right, there is a yellow box containing the 'Cancel', 'Previous', and 'Create target group' buttons. A yellow arrow points to the 'Create target group' button, and the text '1.click' is written next to the arrow.

Let's create TG for **ALB-backend**. Click on the **create target group** button. Select the target type Instance. Again give some meaning full name such as **ALB-backend-TG**. Select VPC that we have created.

The screenshot shows the 'Basic configuration' page for creating a target group. The page has several sections: 'Choose a target type', 'Target group name', 'Protocol', 'Port', 'VPC', 'Protocol version', and 'Health checks'. The 'Choose a target type' section has four options: 'Instance' (selected), 'IP addresses', 'Lambda function', and 'Application Load Balancer'. The 'Target group name' section has a text input field with the value 'ALB-backend-TG'. The 'Protocol' section has a dropdown menu with the value 'HTTP'. The 'Port' section has a text input field with the value '80'. The 'VPC' section has a dropdown menu with the value 'Three-tier app VPC'. The 'Protocol version' section has three options: 'HTTP1' (selected), 'HTTP2', and 'gRPC'. The 'Health checks' section has a dropdown menu with the value 'HTTP'. A yellow box highlights the 'VPC' dropdown menu, and a yellow arrow points to it with the text '1.select'. A large yellow arrow points down from the 'Create target group' button in the previous screenshot.

Scroll down and click on the **next** button.

And click on the **create target group**. That's it.

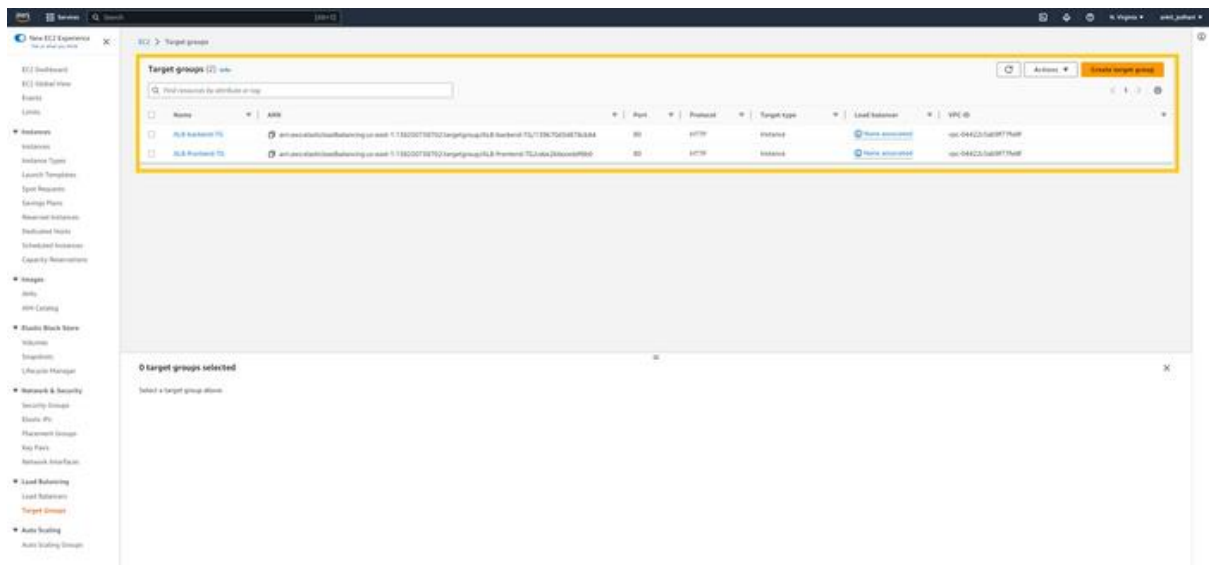
The screenshot shows the 'Register targets' page in the AWS Management Console. The page is divided into two main sections: 'Available instances' and 'Review targets'.

Available instances: This section contains a search bar and a table of available instances. The table has columns for Instance ID, Name, Status, Security groups, Zone, and Subnet ID. Below the table, it says 'No Available instances'.

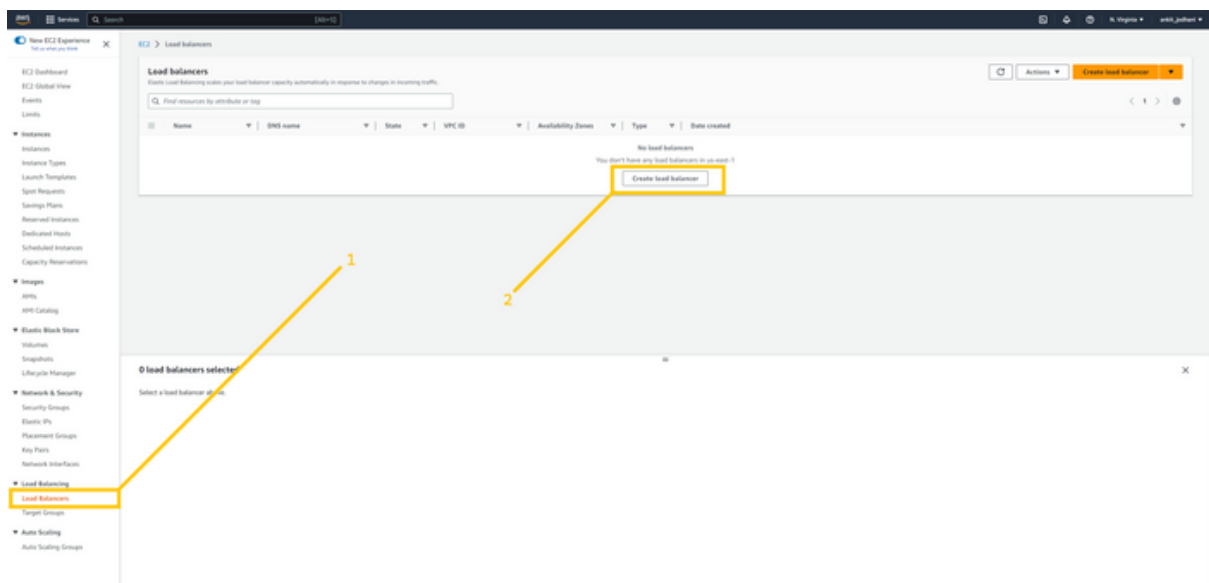
Review targets: This section contains a 'Targets' dropdown menu and a table of targets. The table has columns for Remove, Health status, Instance ID, Name, Port, State, Security groups, Zone, and Subnet ID. Below the table, it says 'No instances added yet'.

A yellow arrow points from the '1.click' label to the 'Targets' dropdown menu in the 'Review targets' section.

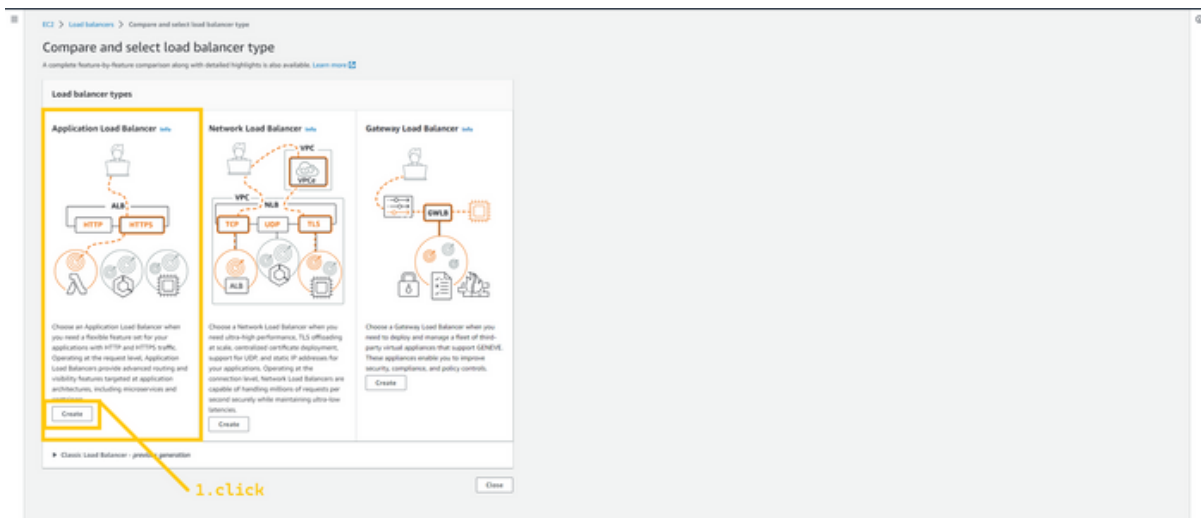
So we have two TG. **ALB-frontend-TG** and **ALB-backend-TG**.



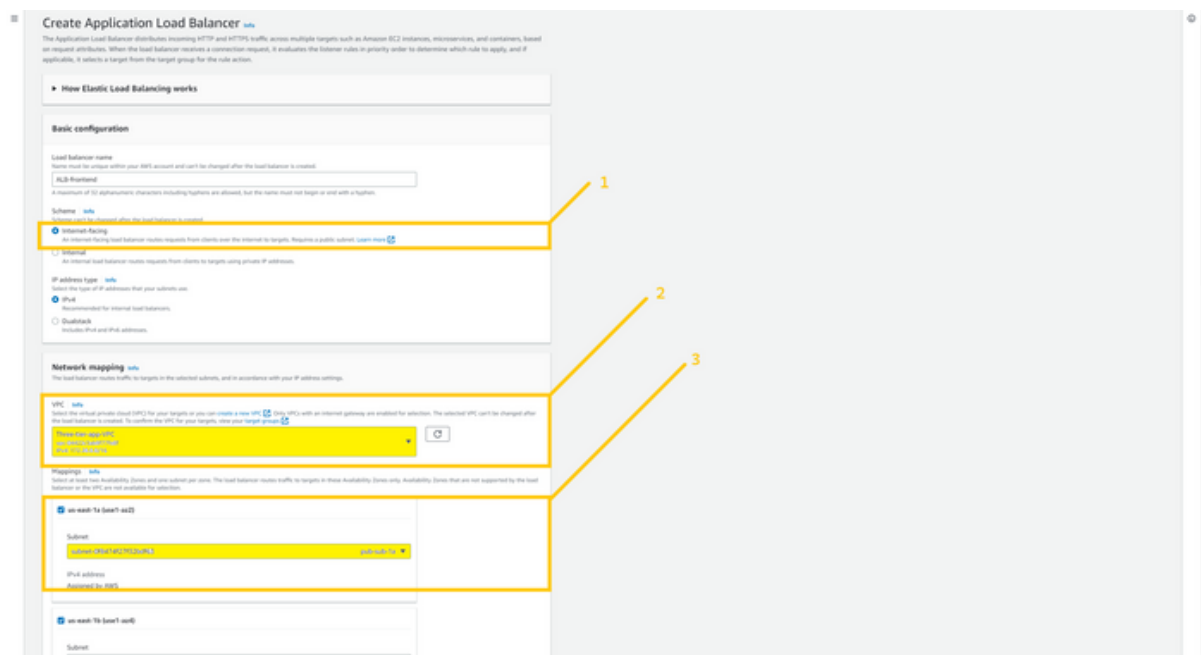
Now let's associate these TG with the load balancer. So click on the **Load Balancer** button at the bottom of the left panel and click on the **create load balancer** button. First, we will create ALB for frontend.



Choose Application load balancer and click on **create button**.



here we can configure our ALB. First, give the relevant name to ALB such as **ALB-frontend**. Select the internet-facing option. In Network mapping select VPC that we have created. Select both availability zone **us-east-1a** and **us-east-2b**. and select subnet **pub-sub-1a** and **pub-sub-2b** respectively.



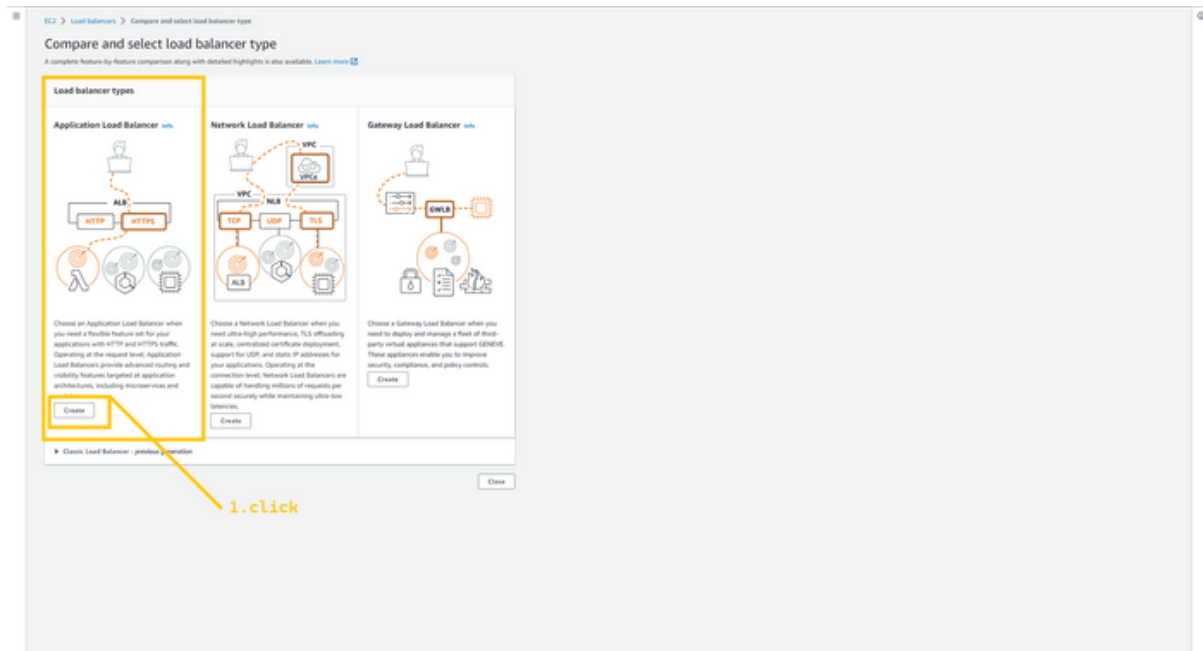
Select security group **ALB-frontend-sg**. This SG we have created for ALB-frontend. In the listener part select TG that we have just created **ALB-frontend-TG**.

The screenshot shows the AWS Management Console configuration for an ALB. The 'Listeners and routing' section is highlighted with a yellow box and labeled '3'. The 'Security groups' section is highlighted with a yellow box and labeled '2'. The 'Listeners and routing' section shows the 'Listener: HTTP80' with 'Protocol: HTTP', 'Port: 80', and 'Default action: ALB-frontend-TG'. A large yellow arrow points downwards from the 'Listeners and routing' section.

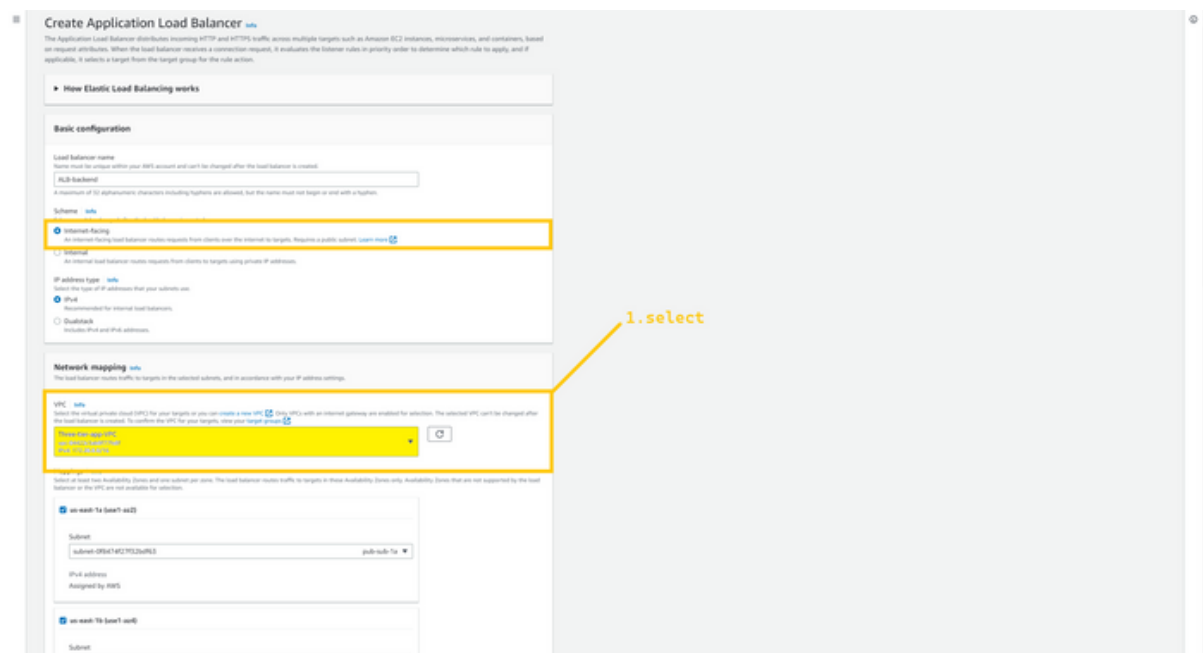
Scroll down and click on the **create load balancer** button.

The screenshot shows the AWS Management Console configuration for an ALB. The 'Listeners and routing' section is highlighted with a yellow box and labeled '1.click'. The 'Create load balancer' button is highlighted with a yellow box and labeled '1.click'.

Now, let's create ALB for backend. Again choose Application load balancer option and click on the create button.



Select Internet facing option. And select VPC that we have created.



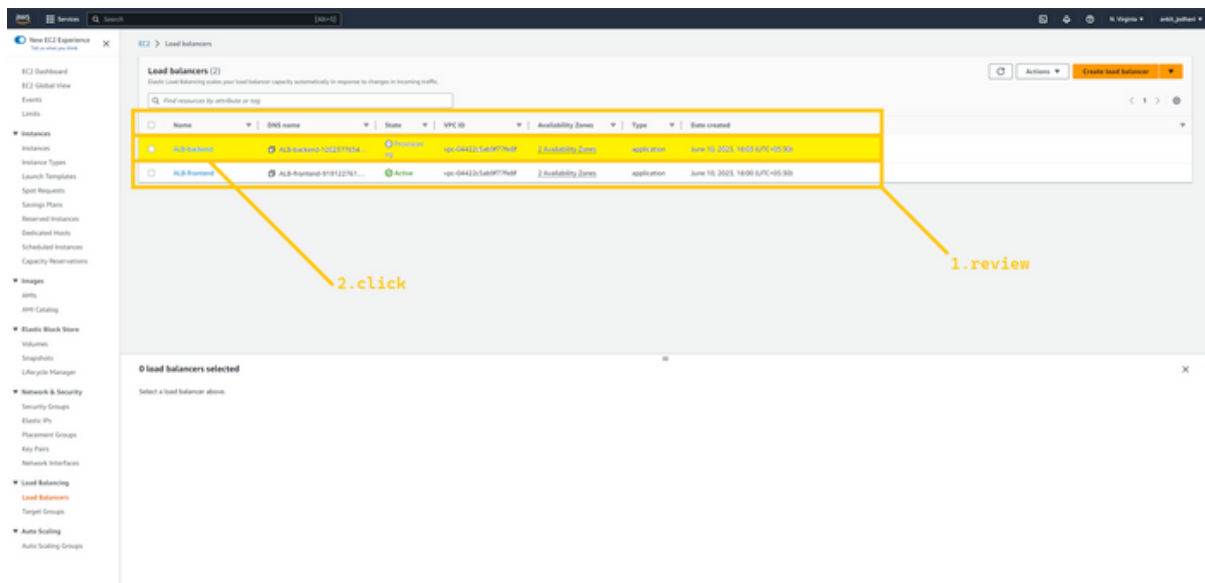
Select both availability zone **us-east-1a** and **us-east-2b**. and select subnet **pub-sub-1a** and **pub-sub2b**. select security group **ALB-backend-sg** that we created for ALB-backend. And in the listner part select TG that we just created **ALB-backend-TG**.

The screenshot shows the AWS Management Console configuration for a Load Balancer. The 'Listeners and routing' section is highlighted with a yellow box and labeled '1.select'. The 'Security groups' section is highlighted with a yellow box and labeled '2.select'. The 'Listeners and routing' section is highlighted with a yellow box and labeled '3.select'.

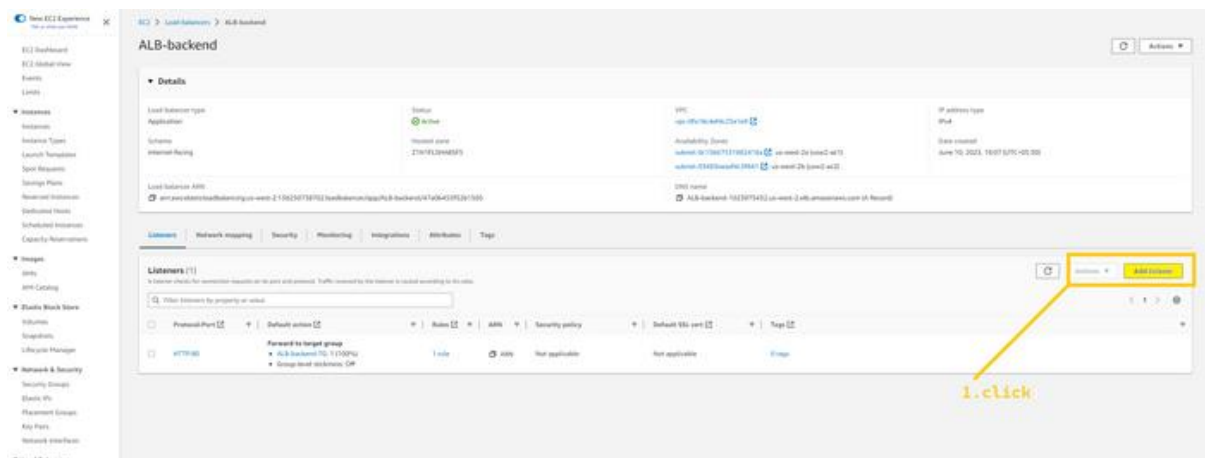
Scroll down as click on the **Created Load balancer** button.

The screenshot shows the AWS Management Console configuration for a Load Balancer. The 'Listeners and routing' section is highlighted with a yellow box and labeled '1.click'. The 'Created Load balancer' button is highlighted with a yellow box and labeled '1.click'.

Now we have two load balancers, **ALB-frontend** and **ALB-backend**. But we need to add one more listener in **ALB-backend**. So click on ALB-backend.



Click on **add listener** the button that is located on the right side.



Here In listener details select **HTTPS**. Default Action should be Forward and select **ALB-backend-TG**. Now we need to select the certificate that we have created. So in the Secure Listener setting select the certificate. And click on the **add** button below.

Listener details: https-443

Protocol: **HTTPS** (1.select)

Port: 443

Default actions: **Forward to**

Target group: **ALB-backend-TG** (2.select)

Weight: 5

Secure listener settings: **HTTPS**

Certificate: **us-east-1-cert-123456789012** (3.select)

Add button: **Add** (4.click)

So here we successfully completed the ALB setup for the **N.virginia region (us-east-1)**, and your task is to set up the same ALB for the **Oregon region (us-west-2)**.

Load balancers (2)

Find resources by attribute or tag

Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
alb-backend	alb-backend-123456789012.us-east-1.elb.amazonaws.com	Active	vpc-0123456789012345	us-east-1a, us-east-1b	application	June 10, 2025, 10:03:47 UTC-04:00
alb-backend	alb-backend-987654321098.us-west-2.elb.amazonaws.com	Active	vpc-0987654321098765	us-west-2a, us-west-2b	application	June 10, 2025, 10:03:47 UTC-08:00

1.review