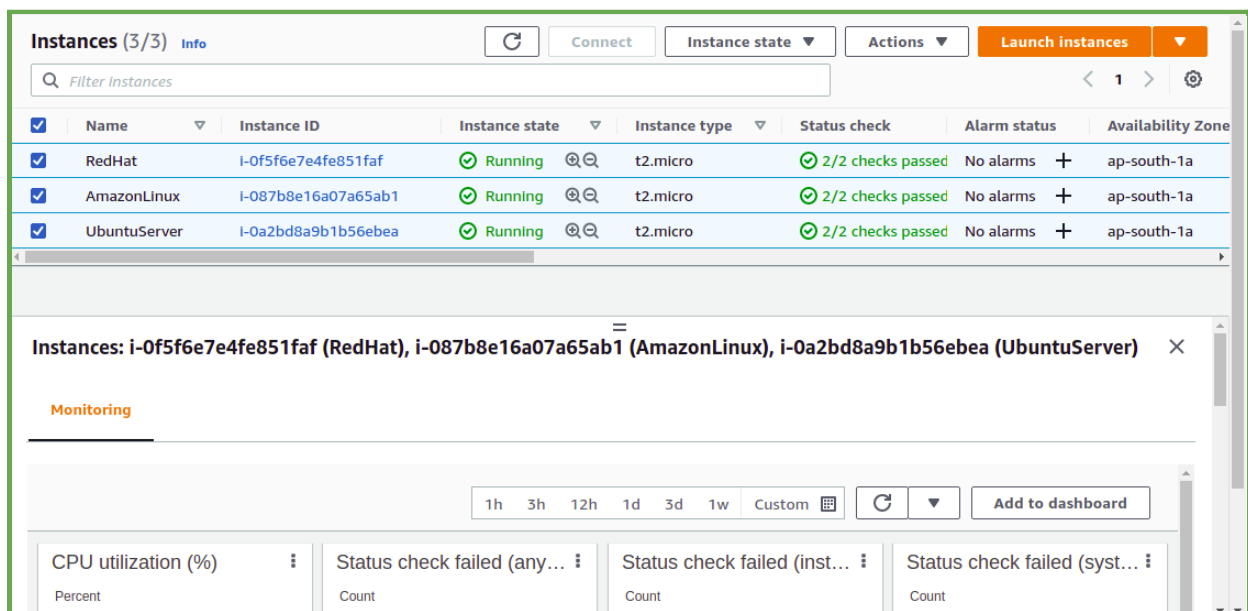


## Module-3: ELB Assignment -1

1. Create a classic load balancer and register 3 EC2 instance with different web pages running in them
2. Migrate the classic load balancer into an application load balancer

### Create three instances

1. Red Hat
2. Amazon Linux
3. Ubuntu



The screenshot displays the AWS Management Console's 'Instances' page. At the top, there are buttons for 'Connect', 'Instance state', 'Actions', and 'Launch instances'. Below these is a search bar labeled 'Filter instances'. The main table lists three instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
RedHat	i-0f5f6e7e4fe851faf	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a
AmazonLinux	i-087b8e16a07a65ab1	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a
UbuntuServer	i-0a2bd8a9b1b56ebea	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a

Below the table, there is a section titled 'Instances: i-0f5f6e7e4fe851faf (RedHat), i-087b8e16a07a65ab1 (AmazonLinux), i-0a2bd8a9b1b56ebea (UbuntuServer)'. Under this, there is a 'Monitoring' section with a graph area and a table of metrics:

CPU utilization (%)	Status check failed (any...)	Status check failed (inst...)	Status check failed (syst...)
Percent	Count	Count	Count

### Now take remote of every instance

1. Take remote of Red Hat by using php with apache2

Now get the permission of private key

Using command: **chmod 400 Key name.pem**

This is the explanation of the SSH command:

- ssh: Command to use SSH protocol
- -i: Flag that specifies an alternate identification file to use for public key authentication.
- username: Username that uses your instance
- ip-address: IP address given to your instance

Using command **ssh -i key name.pem username@Public-ip-address**

```

root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads# chmod 400 Mymumbaikey.pem
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads# ssh -i "Mymumbaikey.pem" ec2-user@ec2-65-2-30-229.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-65-2-30-229.ap-south-1.compute.amazonaws.com (65.2.30.229)' can't be established.
ECDSA key fingerprint is SHA256:gQWva7g8WmIMpngU3m9ErkZVU8jG+7y5tME/BHbe1vA.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-65-2-30-229.ap-south-1.compute.amazonaws.com,65.2.30.229' (ECDSA) to the list of known hosts.

```

Switch to the Super user by using: **sudo su**

Connect to your EC2 instance and install the Apache web server

Command: **sudo yum install httpd**

```

[ec2-user@ip-172-31-33-229 ~]$
[ec2-user@ip-172-31-33-229 ~]$ sudo su
[root@ip-172-31-33-229 ec2-user]#
[root@ip-172-31-33-229 ec2-user]#
[root@ip-172-31-33-229 ec2-user]#
[root@ip-172-31-33-229 ec2-user]# yum install httpd
Updating Subscription Management repositories.
Unable to read consumer identity

```

```

[root@ip-172-31-33-229 ec2-user]#
[root@ip-172-31-33-229 ec2-user]# yum install httpd --disablerepo=jbappplatform-6-*
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered to Red Hat Subscription Management. You can use subscription-manager to register.

No repository match: jbappplatform-6-*
Last metadata expiration check: 0:00:18 ago on Wednesday 10 November 2021 05:30:39 AM UTC.
Package httpd-2.4.37-43.module+el8.5.0+13064+c4b14997.x86_64 is already installed.

```

Checking your Web server

1. **systemctl start httpd.service**
2. **systemctl enable httpd.service**
3. **systemctl status httpd.service**

Install php in Red Hat by using command: **sudo dnf install php php-cli php-common**

```
[root@ip-172-31-33-229 ec2-user]#  
[root@ip-172-31-33-229 ec2-user]# systemctl start httpd.service  
[root@ip-172-31-33-229 ec2-user]#  
[root@ip-172-31-33-229 ec2-user]#  
[root@ip-172-31-33-229 ec2-user]#  
[root@ip-172-31-33-229 ec2-user]# sudo dnf install php php-cli php-common  
Updating Subscription Management repositories.  
Unable to read consumer identity  
  
This system is not registered to Red Hat Subscription Management. You can use  
subscription-manager to register.  
  
Last metadata expiration check: 0:00:53 ago on Wednesday 10 November 2021 05:3  
0:39 AM UTC.  
Dependencies resolved.
```

Make php file

```
[root@ip-172-31-33-229 ec2-user]#  
[root@ip-172-31-33-229 ec2-user]# cd /var/www/html  
[root@ip-172-31-33-229 html]# vi index.php  
[root@ip-172-31-33-229 html]#
```

Restart apache2 service using command: **systemctl restart httpd.service**

```
[root@ip-172-31-33-229 html]#  
[root@ip-172-31-33-229 html]# systemctl restart httpd.service
```

## 2. Take remote of Amazon Linux by using php with apache2

Now get the permission of private key

Using command: **chmod 400 Key name.pem**

This is the explanation of the SSH command:

- ssh: Command to use SSH protocol
- -i: Flag that specifies an alternate identification file to use for public key authentication.
- username: Username that uses your instance
- ip-address: IP address given to your instance

Using command **ssh -i key name.pem username@Public-ip-address**

```

root@Varonica:/home/aayushi/Downloads# chmod 400 Mymumbaikey.pem
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads# ssh -i "Mymumbaikey.pem" ec2-user@ec2-13-
233-174-31.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-13-233-174-31.ap-south-1.compute.amazonaws.com (13
.233.174.31)' can't be established.
ECDSA key fingerprint is SHA256:jfBZTLkyahbBzkLBW3854lhvwjd2CmPdPWy2U5kHUG0.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-13-233-174-31.ap-south-1.compute.amazonaws.com,1
3.233.174.31' (ECDSA) to the list of known hosts.

  ____|_  ____|_  )
  _|_  (  _|_  /   Amazon Linux 2 AMI
  ____|_  ____|_  /

https://aws.amazon.com/amazon-linux-2/
1 package(s) needed for security, out of 14 available
Run "sudo yum update" to apply all updates.

```

Go to super user by using: **sudo su**

Connect to your EC2 instance and install the Apache web server

Command: **sudo yum install httpd**

```

[ec2-user@ip-172-31-42-7 ~]$ sudo su
[root@ip-172-31-42-7 ec2-user]#
[root@ip-172-31-42-7 ec2-user]#
[root@ip-172-31-42-7 ec2-user]# yum install httpd
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.4.51-1.amzn2 will be installed

```

Checking your Web server

1. **systemctl start httpd.service**
2. **systemctl enable httpd.service**
3. **systemctl status httpd.service**

```

[root@ip-172-31-42-7 ec2-user]# systemctl start httpd.service
[root@ip-172-31-42-7 ec2-user]#

```

```

[root@ip-172-31-42-7 ec2-user]# systemctl enable httpd.service
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service t
o /usr/lib/systemd/system/httpd.service.
[root@ip-172-31-42-7 ec2-user]#

```

```
[root@ip-172-31-42-7 ec2-user]# systemctl status httpd.service
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor prese
t: disabled)
   Active: active (running) since Wed 2021-11-10 05:13:45 UTC; 11s ago
     Docs: man:httpd.service(8)
  Main PID: 3400 (httpd)
    Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes se
rved/sec:  0 B/sec"
    CGroup: /system.slice/httpd.service
            └─3400 /usr/sbin/httpd -DFOREGROUND
              └─3401 /usr/sbin/httpd -DFOREGROUND
                └─3402 /usr/sbin/httpd -DFOREGROUND
                  └─3403 /usr/sbin/httpd -DFOREGROUND
                    └─3404 /usr/sbin/httpd -DFOREGROUND
                      └─3405 /usr/sbin/httpd -DFOREGROUND
```

Install php in Amazon Linux by using command: **yum install libapache2-mod-php php**

```
[root@ip-172-31-42-7 ec2-user]# yum install libapache2-mod-php php
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
No package libapache2-mod-php available.
Resolving Dependencies
--> Running transaction check
---> Package php.x86_64 0:5.4.16-46.amzn2.0.2 will be installed
```

Restart apache2 service using command: **systemctl restart httpd.service**

Now create php file

```
[root@ip-172-31-42-7 ec2-user]# systemctl restart httpd.service
[root@ip-172-31-42-7 ec2-user]#
[root@ip-172-31-42-7 ec2-user]#
[root@ip-172-31-42-7 ec2-user]#
[root@ip-172-31-42-7 ec2-user]#
[root@ip-172-31-42-7 ec2-user]# cd /var/www/html
[root@ip-172-31-42-7 html]#
[root@ip-172-31-42-7 html]#
[root@ip-172-31-42-7 html]#
[root@ip-172-31-42-7 html]# vi index.php
[root@ip-172-31-42-7 html]#
```

## 1. Take remote of ubuntu by using php with apache2

Now get the permission of private key

Using command: **chmod 400 Key name.pem**

This is the explanation of the SSH command:

- ssh: Command to use SSH protocol
- -i: Flag that specifies an alternate identification file to use for public key authentication.

- username: Username that uses your instance
- ip-address: IP address given to your instance

Using command **ssh -i key name.pem username@Public-ip-address**

```
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads# chmod 400 Mymumbaikey.pem
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads#
root@Varonica:/home/aayushi/Downloads# ssh -i "Mymumbaikey.pem" ubuntu@ec2-3-108-40-207.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-3-108-40-207.ap-south-1.compute.amazonaws.com (3.108.40.207)' can't be established.
ECDSA key fingerprint is SHA256:UCnYAtyPEfEHdmkDFRdJDlJmwjoNtVt5ZZw02DFnSwo.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-108-40-207.ap-south-1.compute.amazonaws.com,3.108.40.207' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.11.0-1020-aws x86_64)
```

Check the status of apache2 by using command: **dpkg -s apache2**

```
ubuntu@ip-172-31-40-149:~$ dpkg -s apache2
dpkg-query: package 'apache2' is not installed and no information is available
Use dpkg --info (= dpkg-deb --info) to examine archive files.
```

Go to super user by using: **sudo su**

Install apache2 in ubuntu using command: **apt-get install apache2**

```
ubuntu@ip-172-31-40-149:~$ sudo su
root@ip-172-31-40-149:/home/ubuntu#
root@ip-172-31-40-149:/home/ubuntu#
root@ip-172-31-40-149:/home/ubuntu#
root@ip-172-31-40-149:/home/ubuntu#
root@ip-172-31-40-149:/home/ubuntu#
root@ip-172-31-40-149:/home/ubuntu#
root@ip-172-31-40-149:/home/ubuntu# apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4 liblua5.2-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
  openssl-blacklist
The following NEW packages will be installed:
```

Install php in ubuntu by using command: **yum install libapache2-mod-php php**



```

root@ip-172-31-40-149:/home/ubuntu#
root@ip-172-31-40-149:/home/ubuntu# sudo apt install php libapache2-mod-php
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libapache2-mod-php7.4 php-common php7.4 php7.4-cli php7.4-common php7.4-json
  php7.4-opcache php7.4-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php7.4 php php-common php7.4 php7.4-cli
  php7.4-common php7.4-json php7.4-opcache php7.4-readline
0 upgraded, 10 newly installed, 0 to remove and 18 not upgraded.
Need to get 4022 kB of archives.
After this operation, 18.0 MB of additional disk space will be used.
Do you want to continue? [Y/n] y

```

Now create php file

Restart apache2 service using command: **systemctl restart httpd.service**

```

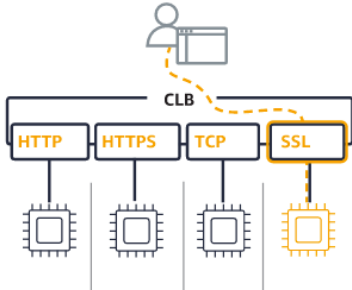
root@ip-172-31-40-149:/home/ubuntu# cd /var/www/html
root@ip-172-31-40-149:/var/www/html#
root@ip-172-31-40-149:/var/www/html#
root@ip-172-31-40-149:/var/www/html# vi index.php
root@ip-172-31-40-149:/var/www/html#
root@ip-172-31-40-149:/var/www/html#
root@ip-172-31-40-149:/var/www/html#
root@ip-172-31-40-149:/var/www/html# sudo systemctl restart apache2
root@ip-172-31-40-149:/var/www/html#

```

## Create Classic Load Balancer

▼ Classic Load Balancer - previous generation

### Classic Load Balancer [Info](#)



Choose a Classic Load Balancer when you have an existing application running in the EC2-Classic network.

*i* AWS will be retiring the EC2-Classic network on August 15, 2022. [Learn more](#)

Create

1. Define load balancer

1. Define Load Balancer2. Assign Security Groups3. Configure Security Settings4. Configure Health Check5. Add EC2 Instances6. Add Tags7. 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 then be able 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 to route traffic to a standard web server on port 80.

Load Balancer name:

Only a-z, A-Z, 0-9 and hyphens are allowed

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
<div>Add</div>			

## 2. Assign security group

1. Define Load Balancer2. Assign Security Groups3. Configure Security Settings4. Configure Health Check5. Add EC2 Instances6. Add Tags7. Review

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
<input checked="" type="checkbox"/>	sg-06fed9fa5ca83ccbd	default	default VPC security group	<a href="#">Copy to new</a>
<input type="checkbox"/>	sg-05d3f23aaa33a3560	MumbaiSecurityGroup	launch-wizard-1 created 2021-11-09T00:31:58.877+05:30	<a href="#">Copy to new</a>

## 3. Configure health check

1. Define Load Balancer2. Assign Security Groups3. Configure Security Settings4. Configure Health Check5. Add EC2 Instances6. Add Tags7. Review

Step 4: Configure Health Check

Your 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	5	seconds
Interval	30	seconds
Unhealthy threshold	2	
Healthy threshold	10	

Cancel

Previous

Next: Add EC2 Instances



#### 4. Add EC2 instance

1. Define Load Balancer2. Assign Security Groups3. Configure Security Settings4. Configure Health Check5. Add EC2 Instances6. Add Tags7. 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-0f30b1944d89e7f58 (172.31.0.0/16)

<input type="checkbox"/>	Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
<input type="checkbox"/>	i-0f5f6e7e4fe851faf	RedHat	running	MumbaiSecurityGroup	ap-south-1a	subnet-07ee28c...	172.31.32.0/20
<input type="checkbox"/>	i-087b8e16a07a65ab1	AmazonLinux	running	MumbaiSecurityGroup	ap-south-1a	subnet-07ee28c...	172.31.32.0/20
<input type="checkbox"/>	i-0a2bd8a9b1b56ebea	UbuntuServer	running	MumbaiSecurityGroup	ap-south-1a	subnet-07ee28c...	172.31.32.0/20

Availability Zone Distribution

3 instances in ap-south-1a

☒ Enable Cross-Zone Load Balancing ⓘ

CancelPreviousNext: Add Tags

#### 5. Add tags

1. Define Load Balancer2. Assign Security Groups3. Configure Security Settings4. Configure Health Check5. Add EC2 Instances6. Add Tags7. Review

Step 6: Add Tags

Apply 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
<input type="text" value="Name"/>	<input type="text" value="ClassicLB"/>

Create Tag

CancelPreviousReview and Create

#### 6. Create load balancer

Activities Google Chrome Nov 10 11:30 AM

Start Course x Untitled docu x WhatsApp x EC2 Managem x 13.233.174.31 x 3.108.40.207/ x 65.2.30.229/ x +

ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#LoadBalancers:sort=loadBalancerName

aws Services Search for services, features, marketplace products, and docs [Alt+S] Aayushi Mumbai Support

Create Load Balancer Actions

Filter by tags and attributes or search by keyword 1 to 1 of 1

Name	DNS name	State	VPC ID	Availability Zones	Type	Created
CLoadBalancer	CLoadBalancer-307843089...		vpc-0f30b1944d89e7f58	ap-south-1a, ap-south-...	classic	Novembe

Basic Configuration

Name	CLoadBalancer	Creation time	November 10, 2021 at 11:29:33 AM UTC+5:30
* DNS name	CLoadBalancer-307843089.ap-south-1.elb.amazonaws.com (A Record)	Hosted zone	ZP97RAFLXTNZK
Type	Classic (Migrate Now)	Status	0 of 3 instances in service
Scheme	internet-facing	VPC	vpc-0f30b1944d89e7f58
Availability Zones	subnet-02167e6d923a96baa - ap-south-1b, subnet-07ee28c9b7f5724fa - ap-south-1a, subnet-0c815a50d9d6d6a3f - ap-south-1c		

Port Configuration

## Launch ALB migration

Create Load Balancer Actions

Filter by tags and attributes or search by keyword 1 to 2 of 2

Name	DNS name	State	VPC ID	Availability Zones	Type
CLoadBalancer	CLoadBalancer-307843089...		vpc-0f30b1944d89e7f58	ap-south-1a, ap-south-...	classic

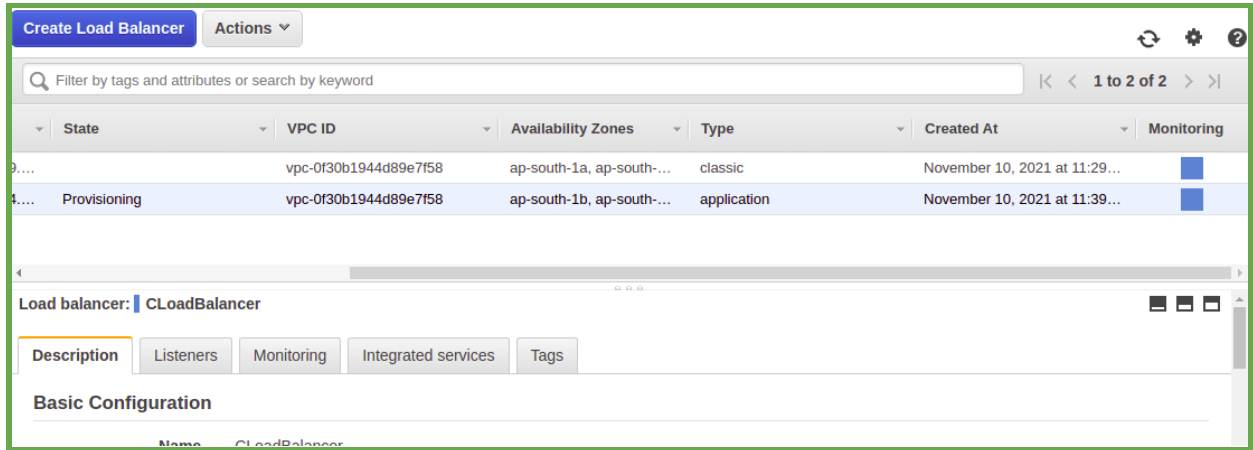
Load balancer: CLoadBalancer

Description Instances Health check Listeners Monitoring Tags Migration

Migrate this Classic Load Balancer to a next generation load balancer. See [Comparison of Elastic Load Balancing Products](#).

Launch ALB Migration Wizard

## Application Load Balancer



Now check the browser and click again and again and you find the result

