

Scalable 3-Tier Web Application on AWS

(Designing Robust Web Application on AWS)

Summary: This AWS architecture diagram shows a reliable web application built with three parts. Users find the application through Route 53, a DNS service. The application is protected in a virtual private network (VPC) on AWS, spread across different availability zones to ensure it keeps working even if one zone fails. The user-facing part of the application uses multiple servers (EC2 Instances) for better performance, with an Application Load Balancer (ALB) sharing the traffic evenly. The business logic is handled in another part, possibly using a database service. Data is securely stored in a separate part, using a database service RDS. This setup provides a strong base for web applications on AWS, with the flexibility to add more services for advanced features.

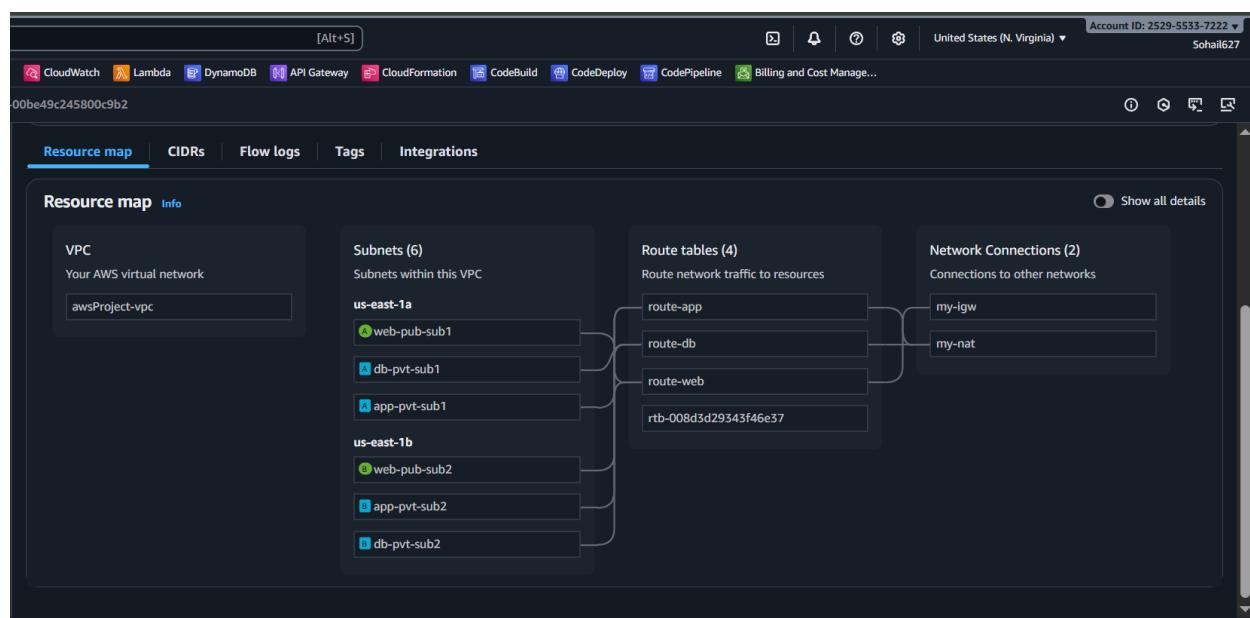
Part 1 :- VPC Construct

- Create a VPC named awsProject-vpc with a CIDR block of 20.0.0.0/20.
 - web-pub-sub1 with CIDR block 20.0.1.0/24 in us-east-1a
 - web-pub-sub2 with CIDR block 20.0.2.0/24 in us-east-1b
- Create 2 public subnets:
 - app-pvt-sub1 with CIDR block 20.0.3.0/24 in us-east-1a
 - app-pvt-sub2 with CIDR block 20.0.4.0/24 in us-east-1b
- Create 2 private subnets for applications:
 - db-pvt-sub1 with CIDR block 20.0.5.0/24 in us-east-1a
 - db-pvt-sub2 with CIDR block 20.0.6.0/24 in us-east-1b
- Create 2 private subnets for databases:
- Create a NAT Gateway named my-nat, provide the subnet as web-pub-sub1, and allocate an Elastic IP.
- Create an Internet Gateway named my-igw and attach it to the VPC awsProject-vpc.
- Create 3 route tables named route-web, route-app, and route-db.
- Associate the subnets with the route tables as follows:
 - Select route-web and associate it with the subnets web-pub-sub1 and web-pub-sub2.
 - Select route-app and associate it with the subnets app-pvt-sub1 and app-pvt-sub2.
 - Select route-db and associate it with the subnets db-pvt-sub1 and db-pvt-sub2.

Now add the routes Select route-web, go to routes and click edit routes, add route select the Destination as 0.0.0.0/0, Target Internet Gateway(my-igw) and click on save changes

Select route-app, go to routes and click edit routes, add route select the Destination as 0.0.0.0/0, Target NAT Gateway(my-nat) and click on save changes

Select route-db, go to routes and click edit routes, add route select the Destination as 0.0.0.0/0, Target NAT Gateway(my-nat) and click on save changes



Part 2 :- Ec2 Instances

Create 3 EC2 instances in which 1 in public subnet with publicIP enable which acts as Jump server or bastion host and 2 private subnet with publicIP disable in which we will download phpMyAdmin and apache server

- 1) Launch an Instance with name jump-server, AMI (Amazon Linux), Instance type (t2.micro), Create a new keypair as (projectkey) , click on edit button on right side of Network settings select vpc(awsProject-vpc), Subnet (web-pub-sub1), Auto-assign IP (Enable), Create security group [Security group name (jump-sg)], allow port SSH (22) and HTTP (80) now Launch instance
- 2) Create a security group as alb-sg and allow port HTTP (80)
- 3) Launch an Instance with name app-server1, AMI (Amazon Linux), Instance type (t2.micro), Select the keypair as (projectkey) , click on edit button on right side of Network settings select vpc (awsProject-vpc), Subnet (app-pvt-sub1), Auto-assign IP (Disable), Create security group [Security group name (app-sg)], allow port SSH (22) and Click on Add security group rule select Type (All traffic ,) Source type (Custom) and Source (here select your [alb-sg] you created) now Launch instance
- 4) Launch an Instance with name app-server2, AMI (Amazon Linux), Instance type (t2.micro), Select the keypair as (projectkey) , click on edit button on right side of Network settings select vpc (awsProject-vpc), Subnet (app-pvt-sub2), Auto-assign IP (Disable), Select existing security group as (app-sg), now Launch instance

Instances (3) Info														
Find Instance by attribute or tag (case-sensitive) Last updated 4 minutes ago Connect Instance state Actions Launch instances														
	Name	Instance ID	Instanc...	Instanc...	Status check	Alarm status	Availabil...	Public I...	Public I...	Elastic IP	IPv6 IPs	Mc		
	app-server2	i-0973b03e...	Runn...	Q C	t2.micro	2/2 checks p:	View alarms +	us-east-1b	-	-	-	-	dis	
	app-server1	i-0123299...	Runn...	Q C	t2.micro	2/2 checks p:	View alarms +	us-east-1a	-	-	-	-	dis	
	jump-server	i-06a69a22...	Runn...	Q C	t2.micro	2/2 checks p:	View alarms +	us-east-1a	-	54.175.171...	-	-	dis	

Instances (3) Info															
Find Instance by attribute or tag (case-sensitive) Last updated 5 minutes ago Connect Instance state Actions Launch instances															
stic IP	IPv6 IPs	Monitoring	Security group name	Key name	Launch time	Platform...	Managed	Operator							
-	disabled	app-sg	projectkey		2025/08/31 14:20 GMT+5:30	Linux/UNIX	false	-							
-	disabled	app-sg	projectkey		2025/08/31 14:19 GMT+5:30	Linux/UNIX	false	-							
-	disabled	jump-sg	projectkey		2025/08/31 14:13 GMT+5:30	Linux/UNIX	false	-							

Part 3 :- Server configuration

1. Copy the private key in your jump-server instance

```
SOHAIL@SOHAIL MINGW64 /e
$ scp -i projectkey.pem projectkey.pem ec2-user@54.175.171.131:/home/ec2-user/
projectkey.pem          100% 1674      0.9KB/s   00:01

[ec2-user@ip-20-0-1-40 ~]$ ls
[ec2-user@ip-20-0-1-40 ~]$ pwd
/home/ec2-user
[ec2-user@ip-20-0-1-40 ~]$ ls
projectkey.pem
[ec2-user@ip-20-0-1-40 ~]$ chmod 400 projectkey.pem
[ec2-user@ip-20-0-1-40 ~]$ |
```

2. Now ssh into app-server1 and run the below commands

```
[ec2-user@ip-20-0-1-40 ~]$ ssh -i projectkey.pem ec2-user@20.0.3.30
The authenticity of host '20.0.3.30 (20.0.3.30)' can't be established.
ED25519 key fingerprint is SHA256:1++68a+Z0dSJTO4PUlvzbzbCIjJgIIkL+a9It+rElsI.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.0.3.30' (ED25519) to the list of known hosts.

,           #
~\_\_ #####_          Amazon Linux 2023
~~ \_\_#####\_
~~ \_\#\#\|
~~ \_\#\#/
~~ \_\#\#V~'__->  https://aws.amazon.com/linux/amazon-linux-2023
~~~ ._. / \
~~~ ._. / \
~~~ ._. / \
[ec2-user@ip-20-0-3-30 ~]$
```

```
# Update the system
```

```
>> sudo yum update -y
[ec2-user@ip-20-0-3-30 ~]$ sudo yum update -y
Amazon Linux 2023 Kernel Livepatch repository 123 kB/s | 19 kB     00:00
Dependencies resolved.
Nothing to do.
Complete!
```

```
# Install PHP 8.2
```

```
>> sudo dnf install php8.2
[ec2-user@ip-20-0-3-30 ~]$ sudo dnf install php8.2
Last metadata expiration check: 0:00:20 ago on Sun Aug 31 09:14:42 2025.
Dependencies resolved.
=====
 Package          Arch      Version           Repository      Size
 =====
 Installing:
  php8.2          x86_64    8.2.29-1.amzn2023.0.1  amazonlinux  9.7 k
 Installing dependencies:
>> sudo yum install php8.2-mysqlnd
```

```
[ec2-user@ip-20-0-3-30 ~]$ sudo yum install php8.2-mysqld
Last metadata expiration check: 0:00:57 ago on Sun Aug 31 09:14:42 2025.
Dependencies resolved.
=====
 Package           Arch    Version            Repository      Size
=====
Installing:
 php8.2-mysqld   x86_64  8.2.29-1.amzn2023.0.1      amazonlinux   148 k

Transaction Summary
=====
Install 1 Package

Total download size: 148 k
Installed size: 442 k
Is this ok [y/N]: y
Downloading Packages:
```

Install Apache Web Server

```
>> sudo yum install -y httpd
# Start and Enable Apache
>> sudo systemctl start httpd
>> sudo systemctl enable httpd
>> sudo systemctl is-enabled httpd
```

```
[ec2-user@ip-20-0-3-30 ~]$ sudo yum install -y httpd
Last metadata expiration check: 0:01:20 ago on Sun Aug 31 09:14:42 2025.
Package httpd-2.4.64-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
```

Nothing to do.

Complete!

```
[ec2-user@ip-20-0-3-30 ~]$ sudo systemctl start httpd
[ec2-user@ip-20-0-3-30 ~]$ sudo systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /u
sr/lib/systemd/system/httpd.service.
[ec2-user@ip-20-0-3-30 ~]$ sudo systemctl is-enabled httpd
enabled
```

Add User to Apache Group

```
>> sudo usermod -a -G apache ec2-user
```

Change Ownership and Permissions for Web Directory

```
>> sudo chown -R ec2-user:apache /var/www
>> sudo chmod 2775 /var/www && find /var/www -type d -exec sudo chmod 2775 {} \;
>> find /var/www -type f -exec sudo chmod 0664 {} \;
```

```
[ec2-user@ip-20-0-3-30 ~]$ sudo usermod -a -G apache ec2-user
[ec2-user@ip-20-0-3-30 ~]$ sudo chown -R ec2-user:apache /var/www
[ec2-user@ip-20-0-3-30 ~]$ sudo chmod 2775 /var/www && find /var/www -type d -
exec sudo chmod 2775 {} \;
[ec2-user@ip-20-0-3-30 ~]$ find /var/www -type f -exec sudo chmod 0664 {} \;
[ec2-user@ip-20-0-3-30 ~]$ |
```

Install Additional PHP Modules

```
>> sudo yum install php-mbstring php-xml -y
>> sudo yum install php-fpm
```

```
[ec2-user@ip-20-0-3-30 ~]$ sudo yum install php-mbstring php-xml -y
Last metadata expiration check: 1:00:08 ago on Sun Aug 31 09:14:42 2025.
Package php8.2-mbstring-8.2.29-1.amzn2023.0.1.x86_64 is already installed.
Package php8.2-xml-8.2.29-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
```

Nothing to do.

Complete!

```
[ec2-user@ip-20-0-3-30 ~]$ sudo yum install php-fpm
Last metadata expiration check: 1:00:20 ago on Sun Aug 31 09:14:42 2025.
Package php8.2-fpm-8.2.29-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
```

Nothing to do.

Complete!

```
[ec2-user@ip-20-0-3-30 ~]$
```

Restart Apache and PHP-FPM

```
>> sudo systemctl restart httpd
>> sudo systemctl restart php-fpm
```

```
[ec2-user@ip-20-0-3-30 ~]$ sudo systemctl restart httpd  
[ec2-user@ip-20-0-3-30 ~]$ sudo systemctl restart php-fpm
```

```
# Download and Set Up phpMyAdmin
```

```
>> cd /var/www/html  
>> wget https://www.phpmyadmin.net/downloads/phpMyAdmin-latest-all-languages.tar.gz  
[ec2-user@ip-20-0-3-30 ~]$ cd /var/www/html  
[ec2-user@ip-20-0-3-30 html]$ wget https://www.phpmyadmin.net/downloads/phpMyAdmin-latest-all-languages.tar.gz  
--2025-08-31 10:16:44-- https://www.phpmyadmin.net/downloads/phpMyAdmin-latest-all-languages.tar.gz  
Resolving www.phpmyadmin.net (www.phpmyadmin.net)... 79.127.206.207, 79.127.206.234, 2a02:6ea0:c400::53, ...  
Connecting to www.phpmyadmin.net (www.phpmyadmin.net)|79.127.206.207|:443... connected.  
HTTP request sent, awaiting response... 302 Found
```

```
>> mkdir phpMyAdmin && tar -xvzf phpMyAdmin-latest-all-languages.tar.gz -C  
phpMyAdmin --strip-components 1
```

```
[ec2-user@ip-20-0-3-30 html]$ mkdir phpMyAdmin && tar -xvzf phpMyAdmin-latest-all-languages.tar.gz -C phpMyAdmin --strip-components 1  
phpMyAdmin-5.2.2-all-languages/.rtlcssrc.json  
phpMyAdmin-5.2.2-all-languages/CONTRIBUTING.md  
phpMyAdmin-5.2.2-all-languages/ChangeLog  
phpMyAdmin-5.2.2-all-languages/LICENSE  
phpMyAdmin-5.2.2-all-languages/README  
phpMyAdmin-5.2.2-all-languages/RELEASE-DATE-5.2.2  
phpMyAdmin-5.2.2-all-languages/babel.config.json  
phpMyAdmin-5.2.2-all-languages/composer.json  
phpMyAdmin-5.2.2-all-languages/composer.lock  
phpMyAdmin-5.2.2-all-languages/config.sample.inc.php  
phpMyAdmin-5.2.2-all-languages/doc/  
phpMyAdmin-5.2.2-all-languages/doc/html/  
>> rm phpMyAdmin-latest-all-languages.tar.gz  
phpMyAdmin-5.2.2-all-languages/vendor/williamdes/mariadb-mysql-kbs/src/slimData.php  
phpMyAdmin-5.2.2-all-languages/yarn.lock  
[ec2-user@ip-20-0-3-30 html]$ rm phpMyAdmin-latest-all-languages.tar.gz  
[ec2-user@ip-20-0-3-30 html]$ |
```

```
# Create a Test Page and Test the Server
```

```
>> echo "PHP server 1" > /var/www/html/index.html
```

```
>> curl http://localhost
```

```
[ec2-user@ip-20-0-3-30 html]$ echo "PHP server 1" > /var/www/html/index.html  
[ec2-user@ip-20-0-3-30 html]$ curl http://localhost  
PHP server 1  
[ec2-user@ip-20-0-3-30 html]$ exit  
Logout  
Connection to 20.0.3.30 closed.  
[ec2-user@ip-20-0-1-40 ~]$ |
```

3. Now ssh into app-server2 and run the below commands

```
[ec2-user@ip-20-0-1-40 ~]$ ls  
projectkey.pem  
[ec2-user@ip-20-0-1-40 ~]$ ssh -i projectkey.pem ec2-user@20.0.4.6  
The authenticity of host '20.0.4.6 (20.0.4.6)' can't be established.  
ED25519 key fingerprint is SHA256:PH9g1SJZYBDWud9Scx/XR31PIv1qh0/GtgMP8d7dYM.  
This key is not known by any other names  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '20.0.4.6' (ED25519) to the list of known hosts.  
#_ _ _ _ _  
~ \_ _ _ _ _ Amazon Linux 2023  
~~ \_ _ _ _ _\ https://aws.amazon.com/linux/amazon-linux-2023  
~~ \_ _ _ _ _\  
~~ \_ _ _ _ _\ /  
~~ \_ _ _ _ _\ /  
~~ \_ _ _ _ _\ /  
~~ \_ _ _ _ _\ /  
[ec2-user@ip-20-0-4-6 ~]$ |
```

```
# Update the system
```

```
>> sudo yum update -y
```

```
[ec2-user@ip-20-0-4-6 ~]$ sudo yum update -y
Amazon Linux 2023 Kernel Livepatch repository 130 kB/s | 19 kB     00:00
Dependencies resolved.
Nothing to do.
Complete!
```

Install PHP 8.2

```
>> sudo dnf install php8.2
```

```
[ec2-user@ip-20-0-4-6 ~]$ sudo dnf install php8.2
Last metadata expiration check: 0:00:12 ago on Sun Aug 31 10:24:35 2025.
Dependencies resolved.
```

Package	Arch	Version	Repository	Size
Installing:				
php8.2	x86_64	8.2.29-1.amzn2023.0.1	amazonlinux	9.7 k
Installing dependencies:				
apr	x86_64	1.7.5-1.amzn2023.0.4	amazonlinux	129 k

```
>> sudo yum install php8.2-mysqlnd
```

```
[ec2-user@ip-20-0-4-6 ~]$ sudo yum install php8.2-mysqlnd
Last metadata expiration check: 0:00:31 ago on Sun Aug 31 10:24:35 2025.
Dependencies resolved.
```

Package	Arch	Version	Repository	Size
Installing:				
php8.2-mysqlnd	x86_64	8.2.29-1.amzn2023.0.1	amazonlinux	148 k
Transaction Summary				
Install 1 Package				
Total download size: 148 k				
Installed size: 442 k				
Is this ok [y/N]: y				
Downloading Packages:				

Install Apache Web Server

```
>> sudo yum install -y httpd
```

Start and Enable Apache

```
>> sudo systemctl start httpd
```

```
>> sudo systemctl enable httpd
```

```
>> sudo systemctl is-enabled httpd
```

```
[ec2-user@ip-20-0-4-6 ~]$ sudo yum install -y httpd
Last metadata expiration check: 0:02:01 ago on Sun Aug 31 10:24:35 2025.
Package httpd-2.4.64-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

```
[ec2-user@ip-20-0-4-6 ~]$ sudo systemctl start httpd
[ec2-user@ip-20-0-4-6 ~]$ sudo systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr/lib/systemd/system/httpd.service.
[ec2-user@ip-20-0-4-6 ~]$ sudo systemctl is-enabled httpd
enabled
[ec2-user@ip-20-0-4-6 ~]$
```

Add User to Apache Group

```
>> sudo usermod -a -G apache ec2-user
```

Change Ownership and Permissions for Web Directory

```
>> sudo chown -R ec2-user:apache /var/www
```

```
>> sudo chmod 2775 /var/www && find /var/www -type d -exec sudo chmod 2775 {} \;
```

```
>> find /var/www -type f -exec sudo chmod 0664 {} \;
```

```
[ec2-user@ip-20-0-4-6 ~]$ sudo usermod -a -G apache ec2-user
[ec2-user@ip-20-0-4-6 ~]$ sudo chown -R ec2-user:apache /var/www
[ec2-user@ip-20-0-4-6 ~]$ sudo chmod 2775 /var/www && find /var/www -type d -exec sudo chmod 2775 {} \;
[ec2-user@ip-20-0-4-6 ~]$ find /var/www -type f -exec sudo chmod 0664 {} \;
[ec2-user@ip-20-0-4-6 ~]$
```

Install Additional PHP Modules

```
>> sudo yum install php-mbstring php-xml -y
```

```
>> sudo yum install php-fpm
```

Restart Apache and PHP-FPM

```
>> sudo systemctl restart httpd
```

```
>> sudo systemctl restart php-fpm
```

```
[ec2-user@ip-20-0-4-6 ~]$ sudo yum install php-mbstring php-xml -y
Last metadata expiration check: 0:04:19 ago on Sun Aug 31 10:24:35 2025.
Package php8.2-mbstring-8.2.29-1.amzn2023.0.1.x86_64 is already installed.
Package php8.2-xml-8.2.29-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-20-0-4-6 ~]$ sudo yum install php-fpm
Last metadata expiration check: 0:04:30 ago on Sun Aug 31 10:24:35 2025.
Package php8.2-fpm-8.2.29-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-20-0-4-6 ~]$ sudo systemctl restart httpd
[ec2-user@ip-20-0-4-6 ~]$ sudo systemctl restart php-fpm
[ec2-user@ip-20-0-4-6 ~]$ |
```

Download and Set Up phpMyAdmin

```
>> cd /var/www/html
```

```
>> wget https://www.phpmyadmin.net/downloads/phpMyAdmin-latest-all-languages.tar.gz
```

```
[ec2-user@ip-20-0-4-6 ~]$ cd /var/www/html
[ec2-user@ip-20-0-4-6 html]$ wget https://www.phpmyadmin.net/downloads/phpMyAdmin-latest-all-languages.tar.gz
--2025-08-31 10:30:55-- https://www.phpmyadmin.net/downloads/phpMyAdmin-latest-all-languages.tar.gz
Resolving www.phpmyadmin.net (www.phpmyadmin.net)... 79.127.206.207, 79.127.206.234, 2a02:6ea0:c400::54, ...
Connecting to www.phpmyadmin.net (www.phpmyadmin.net)|79.127.206.207|:443...
HTTP request sent, awaiting response... 302 Found
Location: https://files.phpmyadmin.net/phpMyAdmin/5.2.2/phpMyAdmin-5.2.2-all-languages.tar.gz [following]
--2025-08-31 10:30:55-- https://files.phpmyadmin.net/phpMyAdmin/5.2.2/phpMyAdmin-5.2.2-all-languages.tar.gz
Resolving files.phpmyadmin.net (files.phpmyadmin.net)... 109.61.91.230, 109.61.91.195, 109.61.91.197, ...
Connecting to files.phpmyadmin.net (files.phpmyadmin.net)|109.61.91.230|:443...
```

```
>> mkdir phpMyAdmin && tar -xvzf phpMyAdmin-latest-all-languages.tar.gz -C
```

```
phpMyAdmin --strip-components 1
```

```
[ec2-user@ip-20-0-4-6 html]$ mkdir phpMyAdmin && tar -xvzf phpMyAdmin-latest-all-languages.tar.gz -C phpMyAdmin --strip-components 1
phpMyAdmin-5.2.2-all-languages/.rtlcssrc.json
phpMyAdmin-5.2.2-all-languages/CONTRIBUTING.md
phpMyAdmin-5.2.2-all-languages/ChangeLog
phpMyAdmin-5.2.2-all-languages/LICENSE
phpMyAdmin-5.2.2-all-languages/README
phpMyAdmin-5.2.2-all-languages/RELEASE-DATE-5.2.2
phpMyAdmin-5.2.2-all-languages/babel.config.json
phpMyAdmin-5.2.2-all-languages/composer.json
phpMyAdmin-5.2.2-all-languages/composer.lock
phpMyAdmin-5.2.2-all-languages/config.sample.inc.php
phpMyAdmin-5.2.2-all-languages/doc/
phpMyAdmin-5.2.2-all-languages/doc/html/
```

```
>> rm phpMyAdmin-latest-all-languages.tar.gz
```

Create a Test Page and Test the Server

```
>> echo "PHP server 2" > /var/www/html/index.html
```

```
>> curl http://localhost
```

```
[ec2-user@ip-20-0-4-6 html]$ rm phpMyAdmin-latest-all-languages.tar.gz
[ec2-user@ip-20-0-4-6 html]$ echo "PHP server 2" > /var/www/html/index.html
[ec2-user@ip-20-0-4-6 html]$ curl http://localhost
PHP server 2
[ec2-user@ip-20-0-4-6 html]$ |
```

4. Create the Target groups:

app-tg

Details

arn:aws:elasticloadbalancing:us-east-1:252955337222:targetgroup/app-tg/3c7d5e1af2b2c2f3

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC vpc-00be49c245800c9b2 [?]
IP address type IPv4	Load balancer project-alb [?]		
2 Total targets	2 Healthy	0 Unhealthy	0 Unused
	0 Anomalous		0 Initial
			0 Draining

Distribution of targets by Availability Zone (AZ)

Region	Count
us-east-1a	1
us-east-1b	1

Targets | Monitoring | Health checks | Attributes | Tags

Registered targets (2) Info

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	Instance ID	Name	Port	Zone	Health status	Health status details	Admin. overrid.	Overrid.	Launch.	Anomaly detection
<input type="checkbox"/>	i-0973b03e6448974de	app-server2	80	us-east-1b (us...)	Healthy	-	<input type="radio"/> No override.	No overrid...	August 31...	Normal
<input type="checkbox"/>	i-01232991e2a6be2b8	app-server1	80	us-east-1a (use...)	Healthy	-	<input type="radio"/> No override.	No overrid...	August 31...	Normal

(?) Anomaly mitigation: Not applicable | Deregister | Register targets

5. Create Application Load Balancer

project-alb

Details

Load balancer type Application

Status Active	VPC vpc-00be49c245800c9b2 [?]	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z355XDOTRQ7X7K	Date created August 31, 2025, 16:21 (UTC+05:30)

Load balancer ARN arn:aws:elasticloadbalancing:us-east-1:252955337222:loadbalancer/app/project-alb/af73e970789da802

DNS name Info project-alb-1759809495.us-east-1.elb.amazonaws.com (A Record)

Listeners and rules | Network mapping | Resource map | Security | Monitoring | Integrations | Attributes | Capacity | Tags

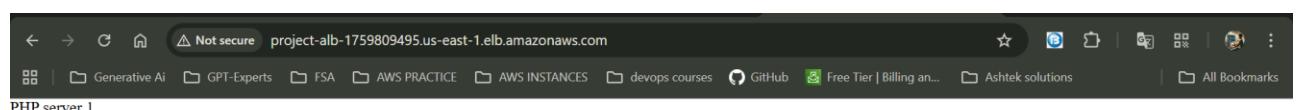
Listeners and rules (1) Info

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.

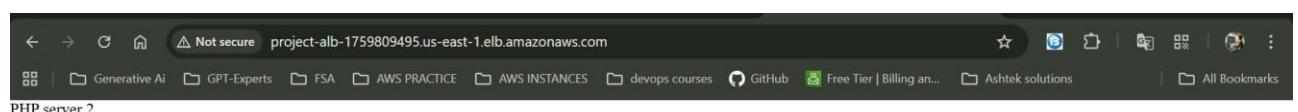
Filter listeners	Protocol/Port	Default action	Rules	ARN	Security policy	Default SSL/TLS certificate	mTLS	Trust store
<input type="checkbox"/> HTTP:80	• Forward to target group app-tg [? 1 (100%)]	1 rule	<input type="checkbox"/> ARN	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Target group stickiness: Off							

(?) Manage rules | Manage listener | Add listener

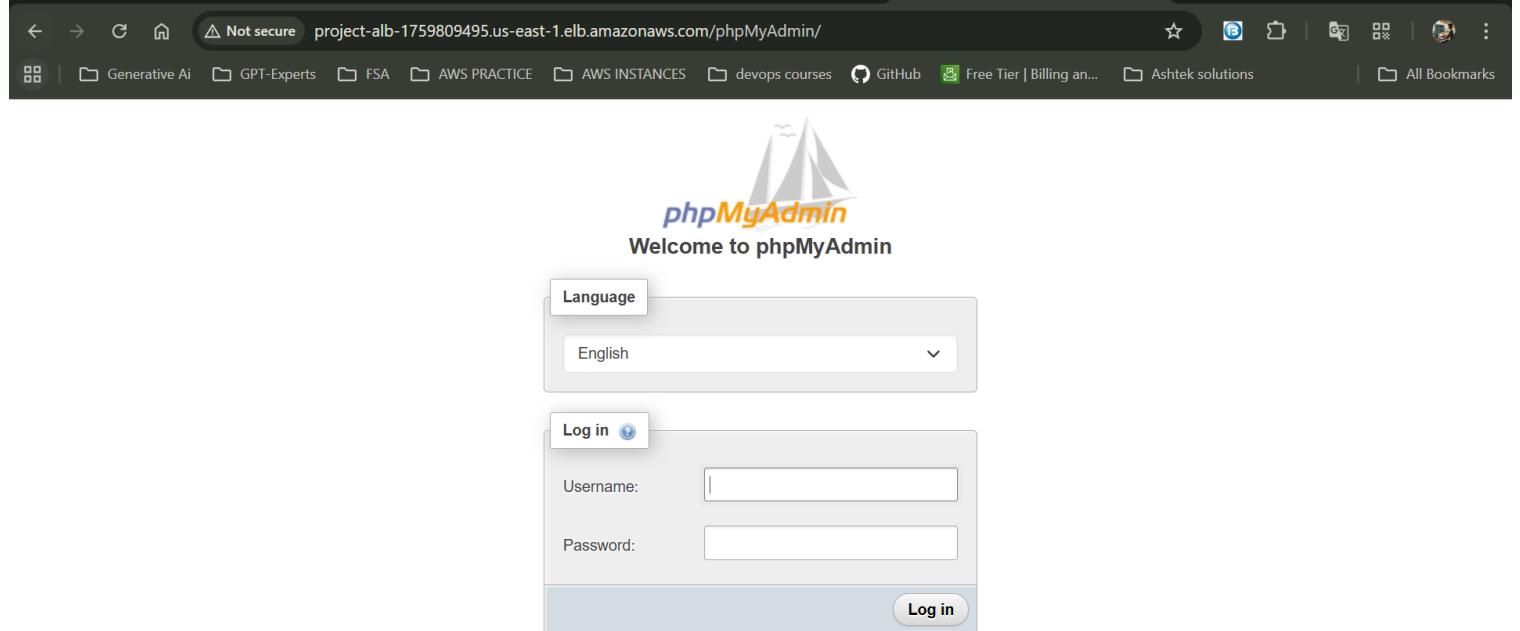
6. Test the Load balancer : Now take the load balancer DNS and past it on chrome browser you should see PHP Server 1 and when you refresh the page it should show PHP Server 2 that means your load balancing is working as expected



Refrest the page:



7. Check PhpMyAdmin :- And when you write phpMyAdmin after your domain name it should navigate to



Part 4 :- Database configurations

Now copy the Endpoint of RDS cluster and ssh into app-server1 instance and app-server2 instance

```
>>cd /var/www/html/phpMyAdmin  
>> mv config.sample.inc.php config.inc.php  
>> nano config.inc.php
```

```
[ec2-user@ip-20-0-4-6 html]$ cd /var/www/html/phpMyAdmin  
[ec2-user@ip-20-0-4-6 phpMyAdmin]$ ls  
CONTRIBUTING.md      composer.lock      libraries          templates  
ChangeLog             config.sample.inc.php  Locale            themes  
LICENSE               doc                  package.json     url.php  
README                examples            robots.txt       vendor  
RELEASE-DATE-5.2.2    favicon.ico       setup             yarn.lock  
babel.config.json    index.php          show_config_errors.php  
composer.json         js                  sql  
[ec2-user@ip-20-0-4-6 phpMyAdmin]$ mv config.sample.inc.php config.inc.php  
[ec2-user@ip-20-0-4-6 phpMyAdmin]$ nano config.inc.php
```

ec2-user@ip-20-0-4-6:/var/www/html/phpMyAdmin

```

GNU nano 8.3                         config.inc.php                         Modified
*/
$i = 0;

/**
 * First server
 */
$i++;
/* Authentication type */
$cfg['Servers'][$i]['auth_type'] = 'cookie';
/* Server parameters */
$cfg['Servers'][$i]['host'] = 'mydb-project.c65k6wsy6xkg.us-east-1.rds.amazonaws.com';
$cfg['Servers'][$i]['compress'] = false;
$cfg['Servers'][$i]['AllowNoPassword'] = false;

/**
 * phpMyAdmin configuration storage settings.
 */

/* User used to manipulate with storage */
// $cfg['Servers'][$i]['controlhost'] = '';
// $cfg['Servers'][$i]['controlport'] = '';

^G Help      ^O Write Out   ^F Where Is   ^K Cut        ^T Execute   ^C Location
^X Exit      ^R Read File   ^R Replace    ^U Paste      ^J Justify   ^L Go To Line

```

Once you enter your username and password:

The screenshot shows the phpMyAdmin configuration page for a MySQL server. The top navigation bar includes links for Generative AI, GPT-Experts, FSA, AWS PRACTICE, AWS INSTANCES, devops courses, GitHub, Free Tier | Billing an..., Ashtek solutions, and All Bookmarks. The main content area is divided into several sections:

- General settings:** Includes "Change password", "Server connection collation" set to "utf8mb4_unicode_ci", and a "More settings" link.
- Database server:** Displays server details:
 - Server: mydb-project.c65k6wsy6xkg.us-east-1.rds.amazonaws.com via TCP/IP
 - Server type: MySQL
 - Server connection: **SSL is not being used**
 - Server version: 8.0.42 - Source distribution
 - Protocol version: 10
 - User: admin@20.0.3.30
 - Server charset: UTF-8 Unicode (utf8mb4)
- Appearance settings:** Includes "Language" set to English, "Theme" set to pmahomme, and a "View all" button.
- Web server:** Displays web server details:
 - Apache/2.4.64 (Amazon Linux)
 - Database client version: libmysql - mysqlnd 8.2.29
 - PHP extension: mysqli curl mbstring sodium
 - PHP version: 8.2.29

The end