Develop and Deploy Application Using Elastic Beanstalk with CDN

(LAB-M13-01)

Version Control	
Document	Develop and Deploy Application Using Elastic Beanstalk with CDN
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Version	2.2
Last Change	29th May 2024
Description of Change	Task steps updated

Lab duration: **30 minutes**

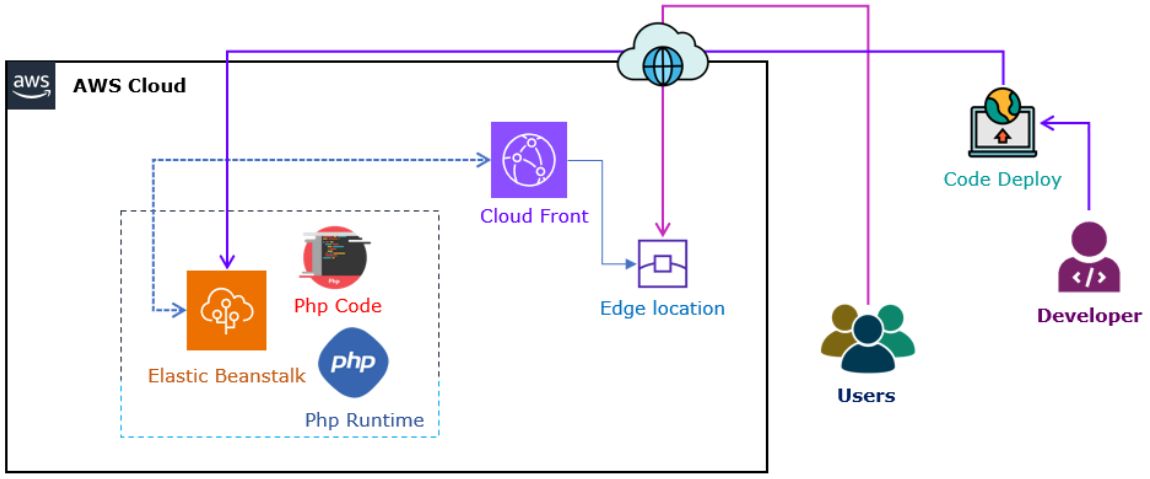
Lab scenario

IYou have several web apps, which include organisation website. This web app used by the users who are spread across the globe.

In this lab, you will deploy the web app including database using aws orchestration service. You also need to integrate the web app using the cdn service to access from the nearest location using low latency.

Lab exercises

- Deploy web application using elastic beanstalk.
- Create content delivery network (cdn).



Task 1: Develop the Php Code

In this task, you will develop the Php code to deploy using Elastic Beanstalk.

Step 1: Develop the Code

1. **Unzip** the **eb-code-v1.0** (*Php code*).

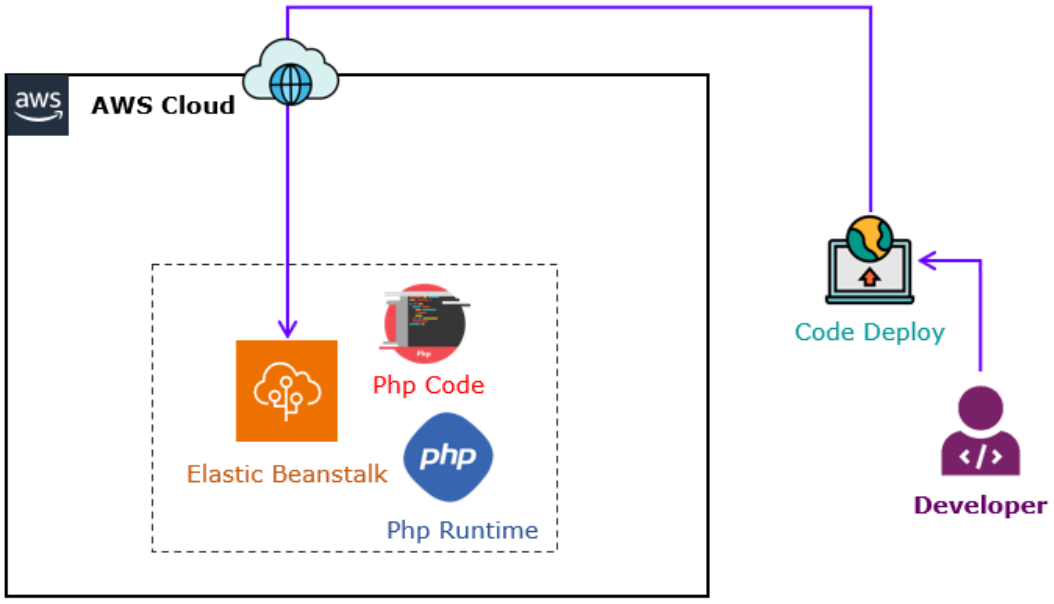
Note: **eb-code-v1.0** code is available with the **Lab manual**.

2. **Unzip** the **eb-code-v2.0** (*Php code*).

Note: **eb-code-v2.0** code is available with the **Lab manual**.

Task 2: Create an Elastic Beanstalk

In this task, you will create the environment to deploy the Php code using the elastic beanstalk.



Step 1: Create VPC

1. In the **AWS Management Console**, on the **Services** menu, search and select **CloudFormation**.
2. Choose the **YOUR ALLOCATED REGION** list to the right of your account information on the navigation bar.
3. Select **Create stack** and configure:
   a. In the **Create stack** page:
      i. **Prepare template**: Select **Template is ready**.
      ii. **Template source**: Select **Upload a template file**.
      iii. **Choose file**: Click on **Choose file**.
         a) **Navigate** and **select** the **LAB-EB**.yaml file.

Note: **lab-eb.yaml** template is provided with the **Lab manual**.

Note: AWS template **performing** the **following** tasks:
1. **Creating VPC** with **2 Web subnet** and **2 DB subnet**.
2. **Creating IAM Role** and attached **policies** for **ElasticBeanstalk**.

      iv. Select **Next**.
   b. In the **Specify stack details** page:
      i. **Stack name**: Write **LAB-EB**.

Note: Leave other details as default.

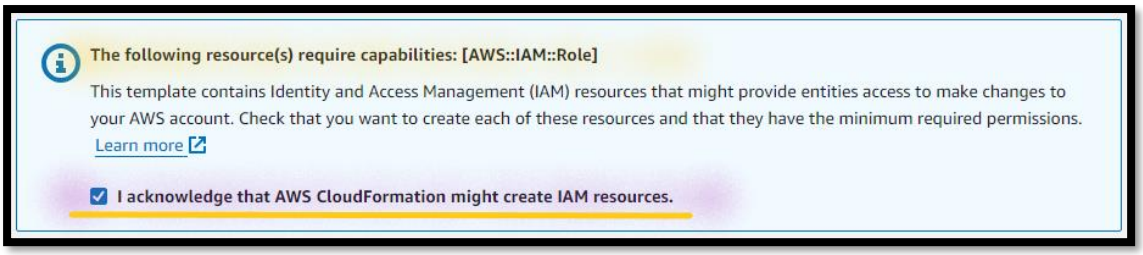
      ii. Select **Next**.
   c. In the **Configure stack options** page:

Note: Leave all the details as default.

      i. Select **Next**.

d. In the **Review and create** page:

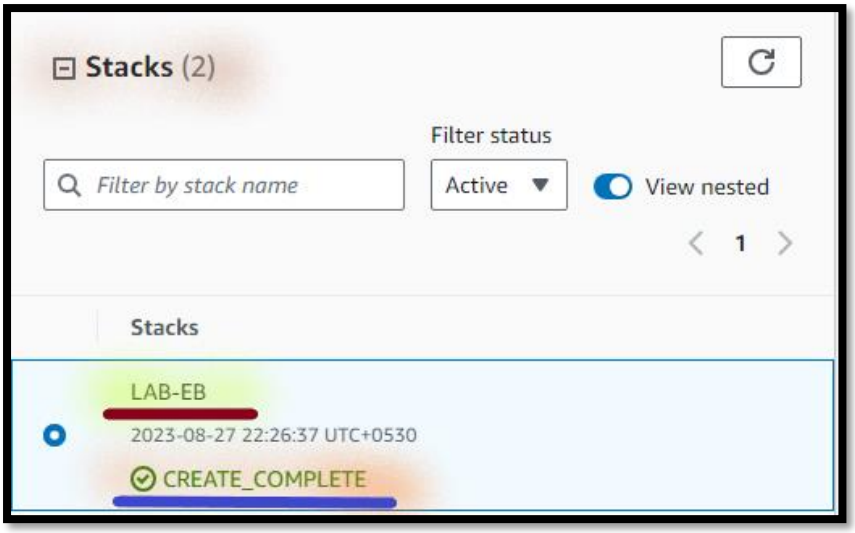
i. **I acknowledge that AWS CloudFormation might create IAM resources**: **Enable** the **Checkmark**.



ii. Select **Submit**.

Note: You can see the **Stack** status as **CREATE_IN_PROGRESS**.

Note: **Wait**, till you can see the **Stack** status as **CREATE_COMPLETE**. You can **Refresh** your screen



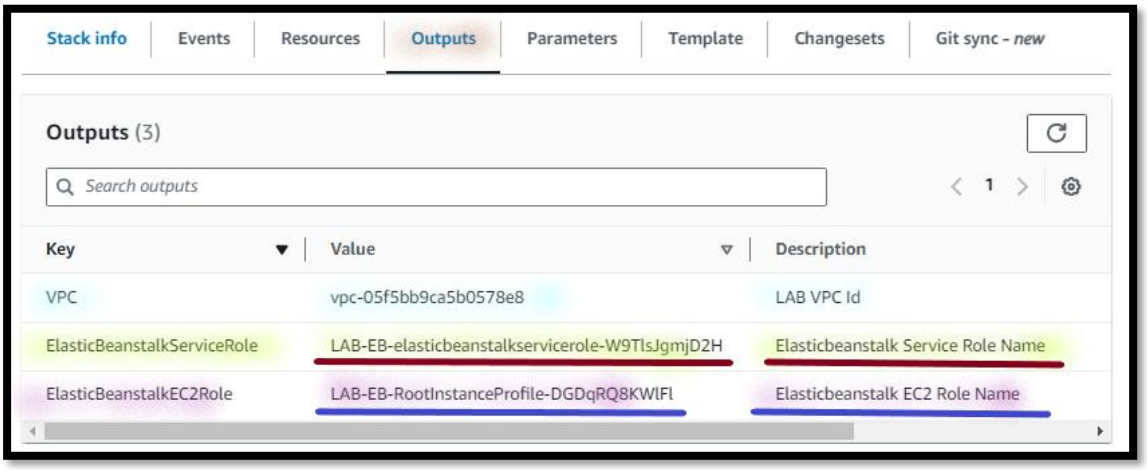
Step 2: View the Output

4. **From** the **LAB-EB** **CloudFormation** console:

a. Select **Outputs**.

Note: **Copy** the **Elasticbeanstalks Service Role Name Value** in the **Notepad**.

Note: **Copy** the **Elasticbeanstalk EC2 Role Name Value** in the **Notepad**.



Step 3: Create Application

5. In the **AWS Management Console**, on the **Services** menu, search and select **Elastic Beanstalk**.

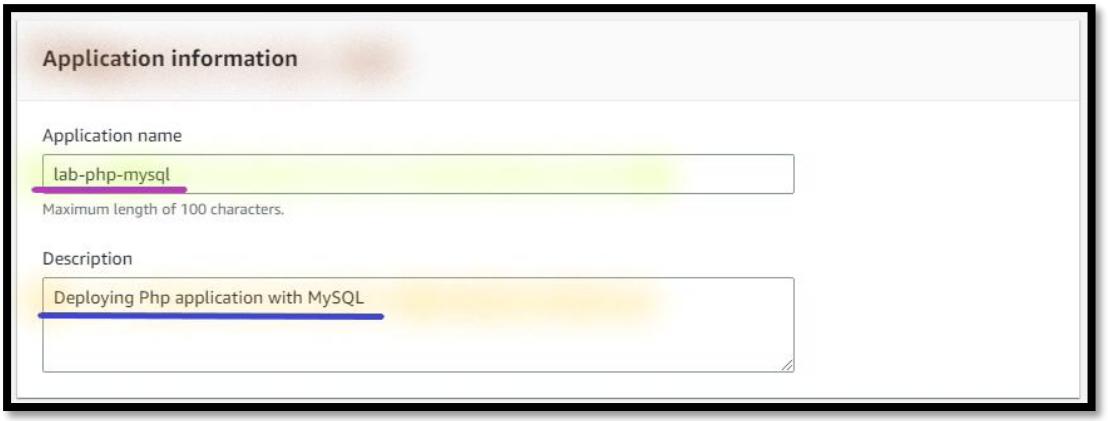
6. Choose the **YOUR ALLOCATED REGION** list to the right of your account information on the navigation bar.

7. Select **Applications**.

    a. Select **Create application**.

        i. **Application Name**: Write **lab-php-mysql**.

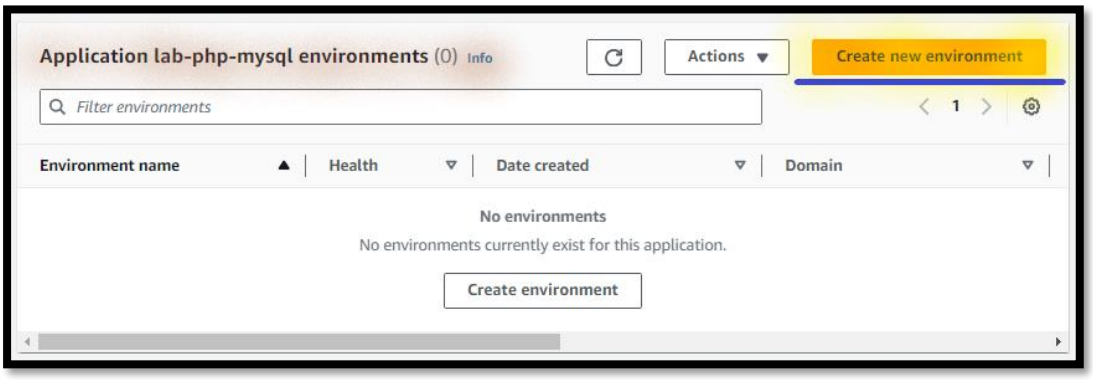
        ii. **Description**: Write **Deploying Php application with MySQL**.



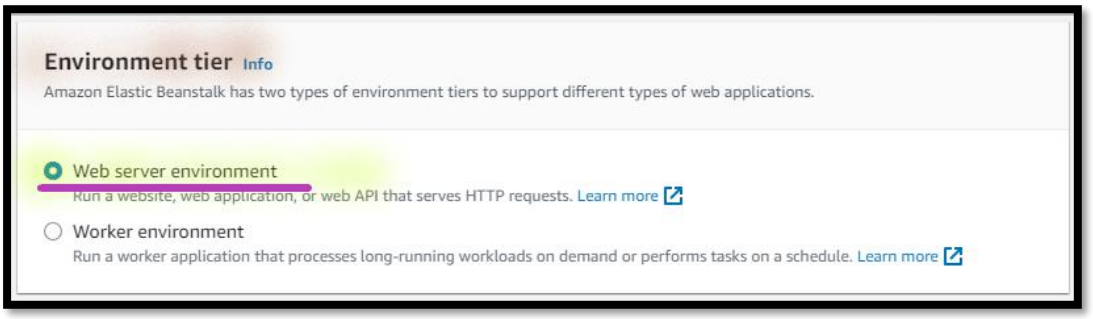
        iii. Select **Create**.

Step 3: Create an Application Environment

8. **From** the **Elastic Beanstalk** console.
    a. Select **Applications**.
        i. Open **lab-php-mysql**.
            a) Select **Create environment**.



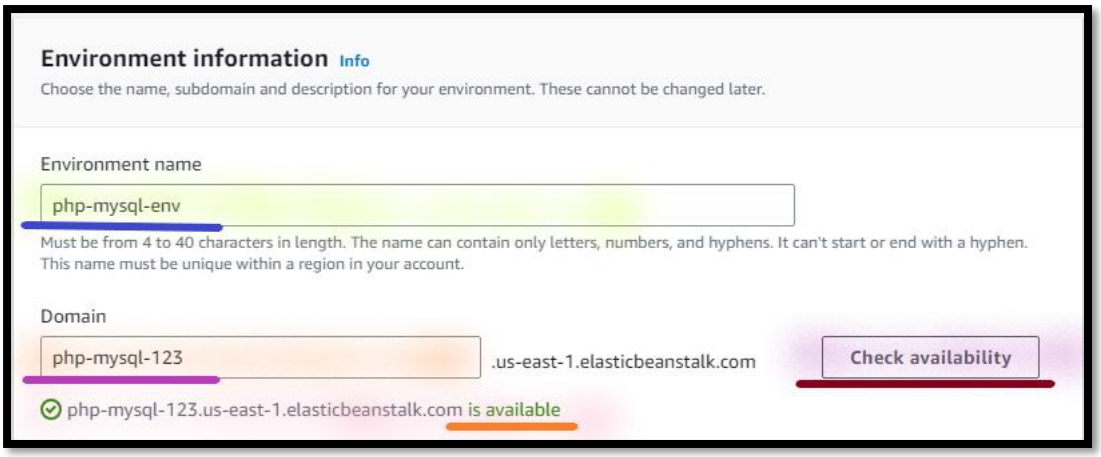
    b. From the **Configure environment** page:
        i. In the **Environment tier** section:
            a) Select **Web server environment**.



        ii. In the **Environment information** section:
            a) **Environment name**: Write **php-mysql-env**.
            b) **Domain name**: Write **php-mysql-123**.
                1) Select **Check availability**.

Note: You can see the **Domain name** is **available**.

Note: **Replace 123** to make the **Domain name unique**.

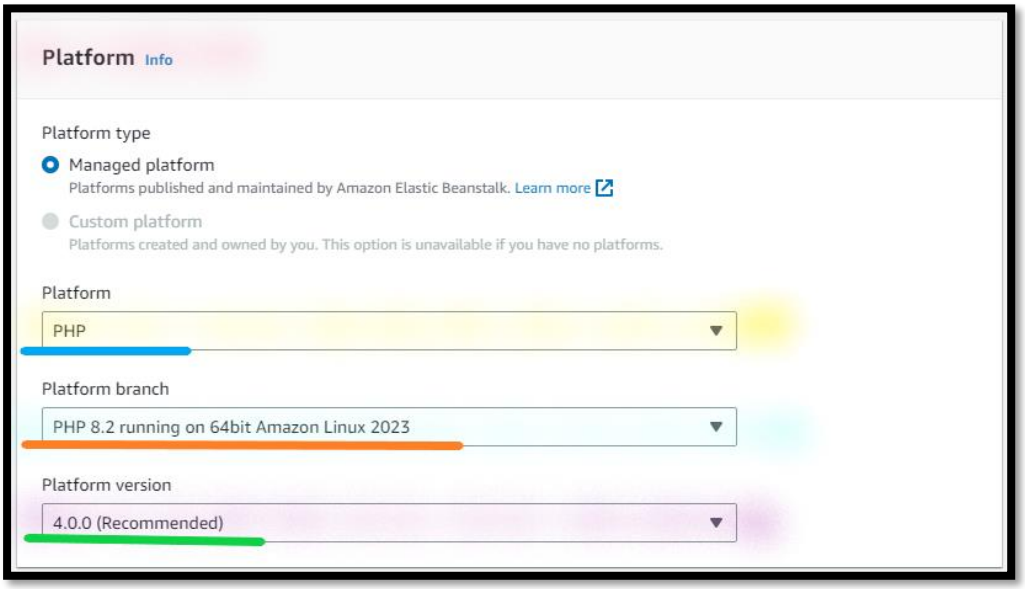


iii. In the **Platform** section:

a) **Platform**: Dropdown and select **PHP**.

b) **Platform branch**: Dropdown and select **PHP 8.2 [Amazon Linux 2023]**.

c) **Platform version**: Dropdown and select **Latest version**.



iv. In the **Application code** section:

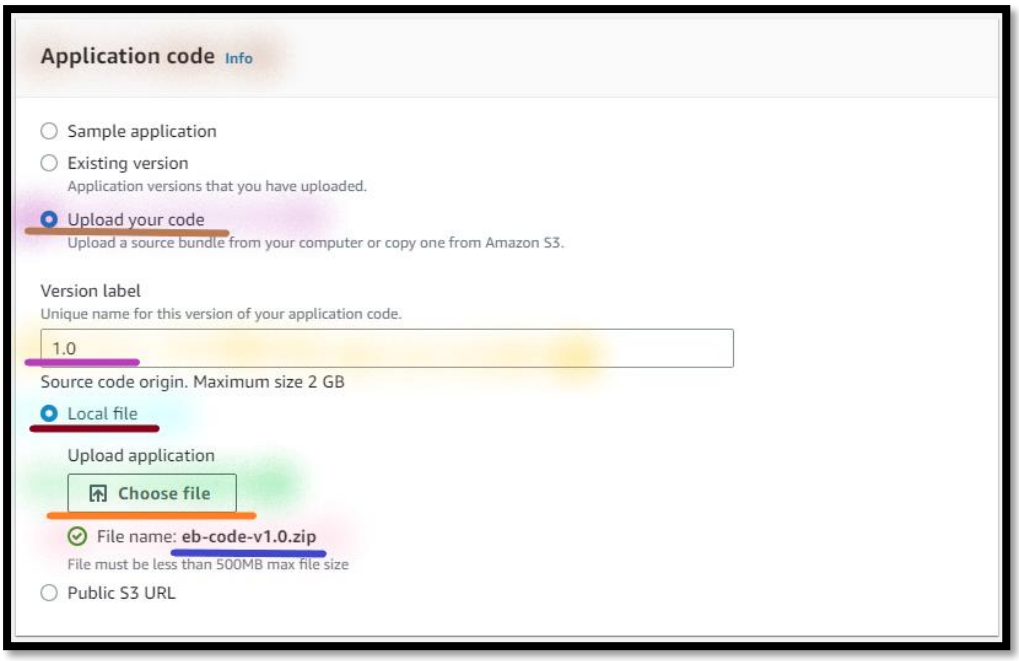
a) Select **Upload your code**.

b) **Version label**: Write **1.0**.

c) Select **Local file**.

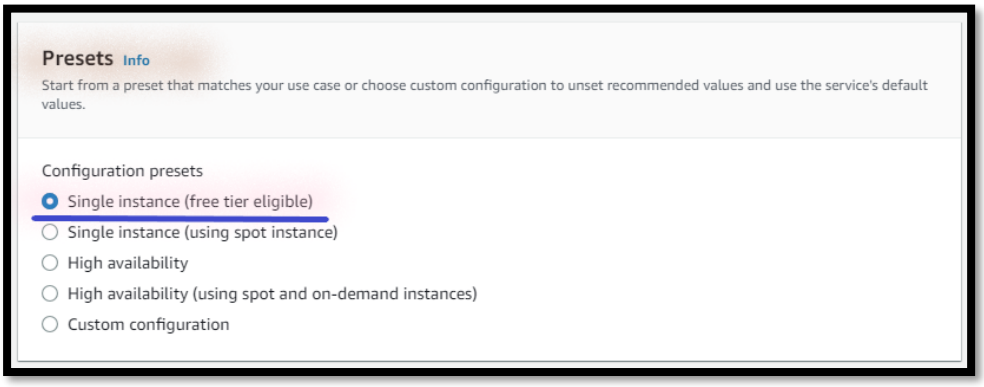
1) **Choose file**: **Navigate** and select **eb-code-v1.0.zip**.

Note: **eb-code-v1.0** is available with the **Lab manual**.



v. In the **Preset** section:

a) Select **Single instance** (*free tier eligible*).



b) Select **Next**.

c. From the **Configure service access** page:

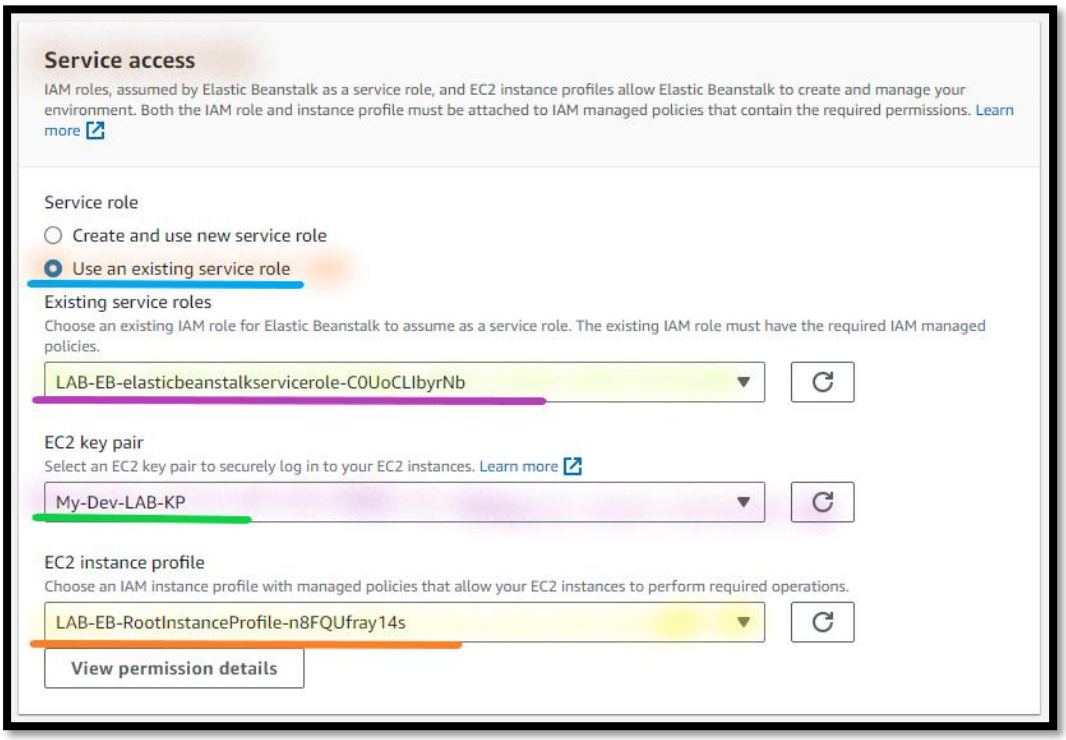
i. In the **Service access** section:

a) **Service role**: Select **Use an existing service role**.

1) **Existing service roles**: Dropdown and select **LAB-EB-elasticbeanstalkec2role-xx** role (*which you have created in the previous step*).

2) **EC2 key pair**: Dropdown and select **My-Dev-LAB-KP**.

3) **EC2 instance profile**: Dropdown and select **LAB-EB-RootInstanceProfile-xx** role (*which you have created in the previous step*.

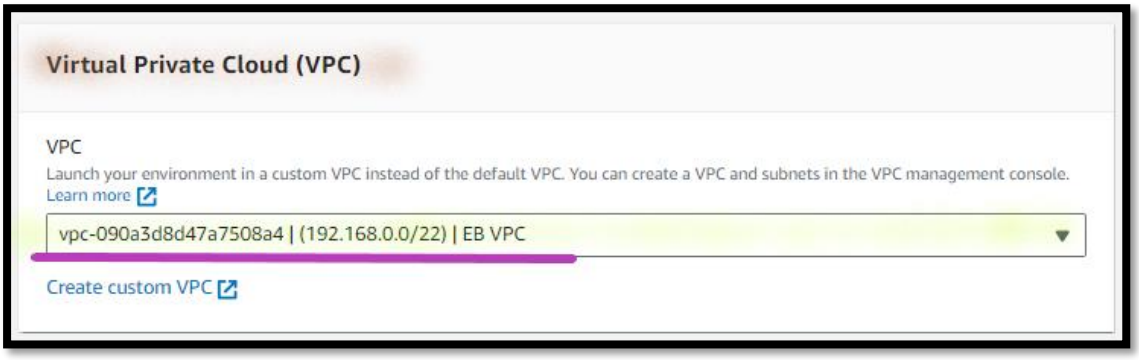


b) Select **Next**.

d. From the **Set up networking, database, and tags** page:

i. In the **Virtual Private Cloud** section:

a) **VPC**: Dropdown and select **EB VPC**.

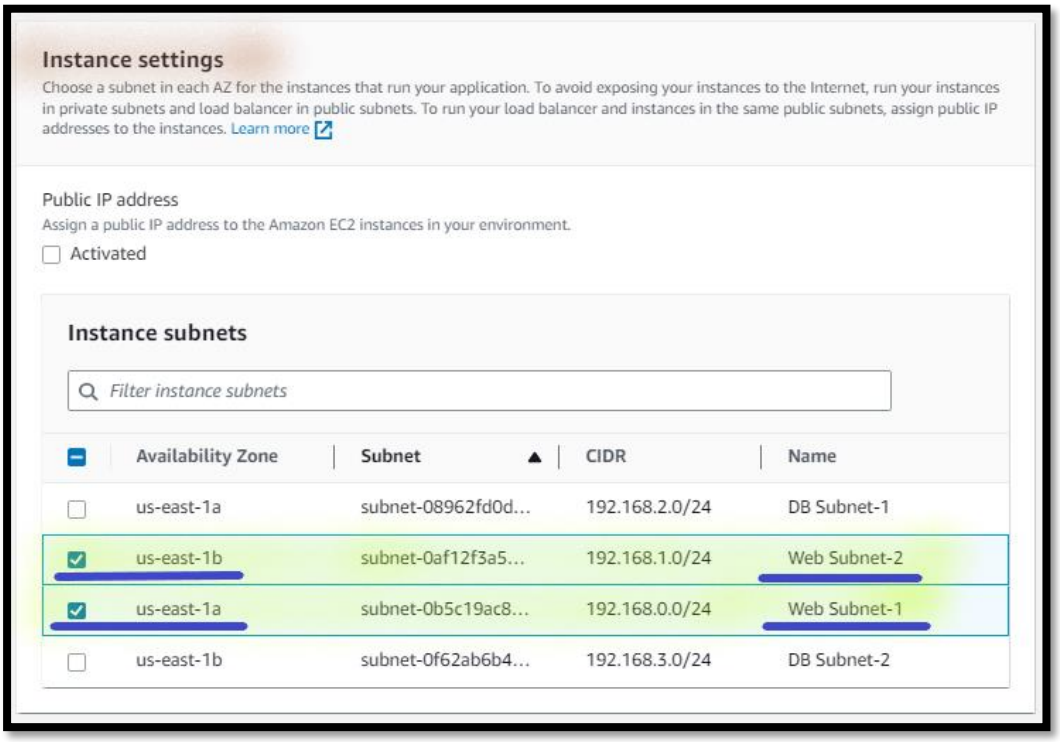


ii. In the **Instance settings** section:

a) **Instance subnet**:

1) Select **Web Subnet-1**.

2) Select **Web Subnet-2**.

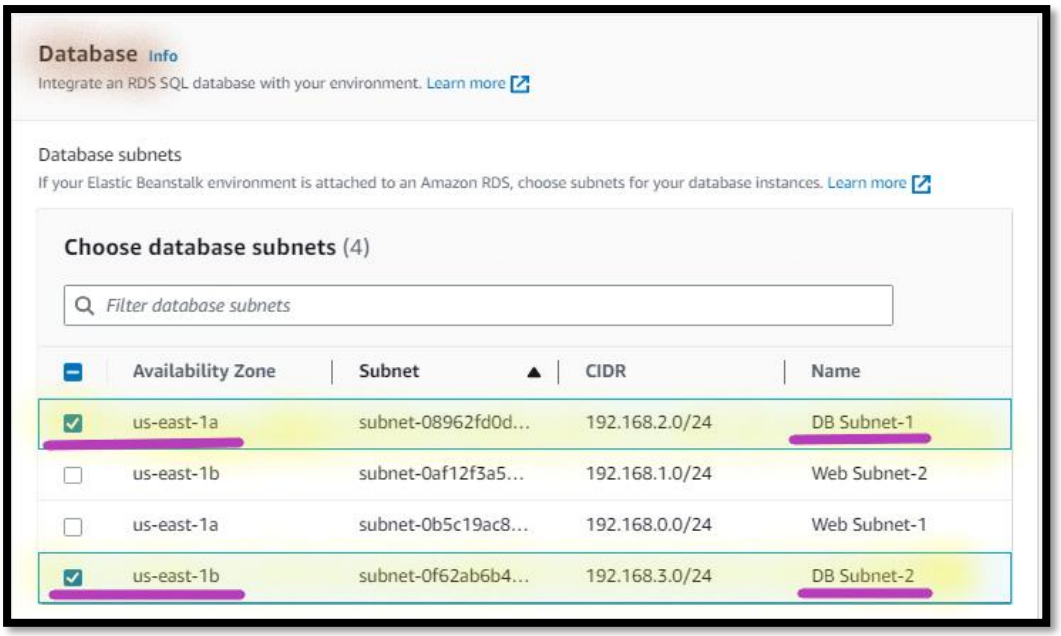


iii. In the **Database** section:

a) **Choose database subnet**:

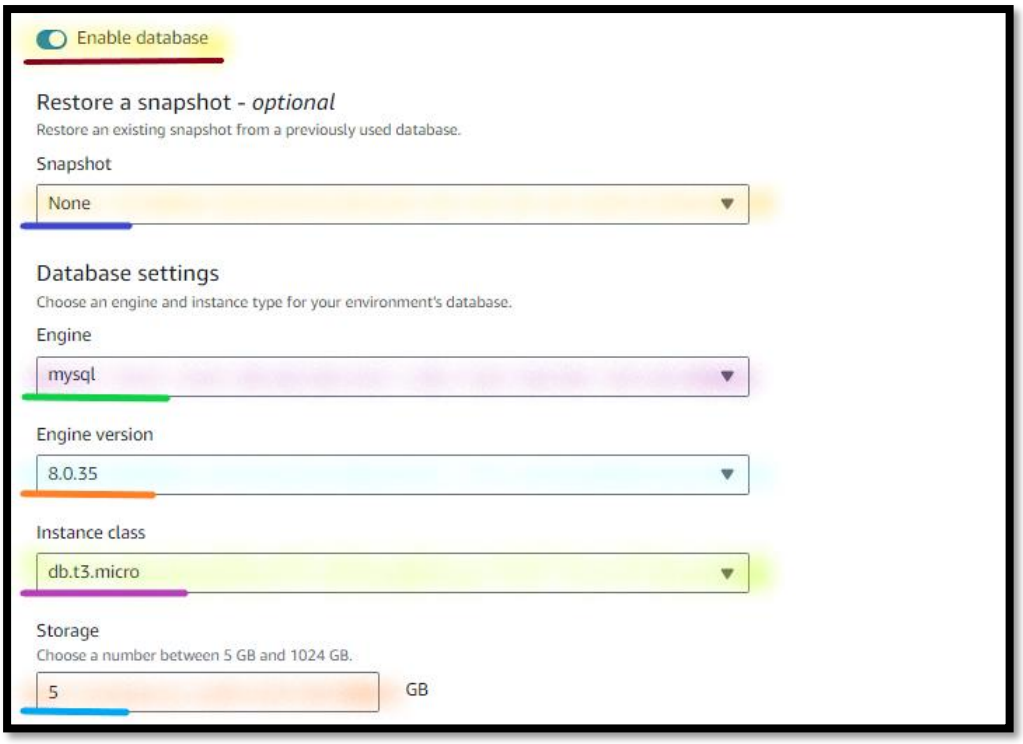
1) Select **Db Subnet-1**.

2) Select **Db Subnet-2**.



b) **Enable database**: **Enable** the **Option**.

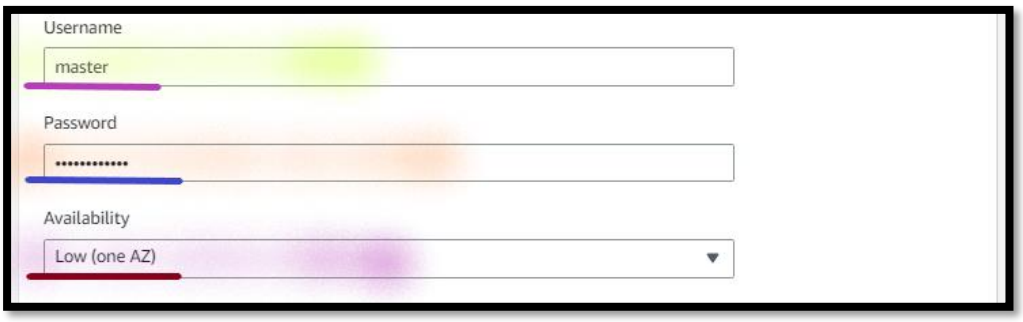
1) **Snapshot**: Dropdown and select **None**.
2) **Engine**: Dropdown and select **mysql**.
3) **Engine version**: Dropdown and select **Default version**.
4) **Instance class**: Dropdown and select **db.t3.micro**.
5) **Storage**: Write **5** (*GB*).



6) **User:** Write **master**.

7) **Password**: Write **lab-password**.

8) **Availability**: Dropdown and select **Low (one AZ)**.



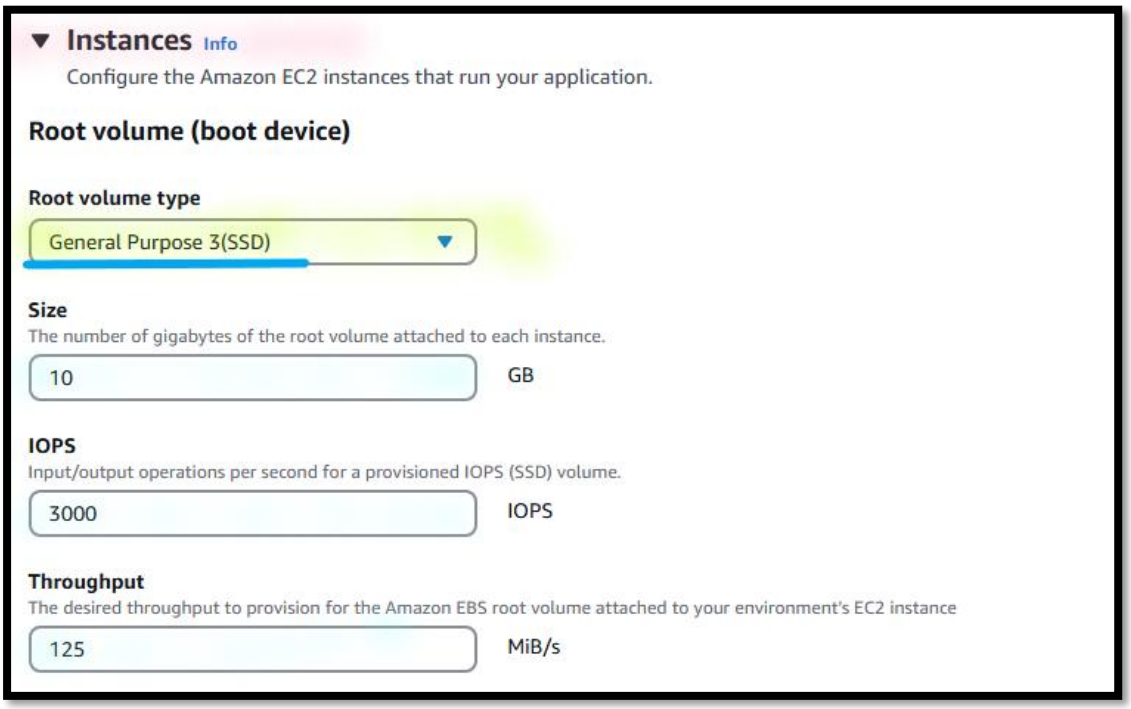
Note: Leave the other details as default.

c) Select **Next**.

e. From the **Configure instance traffic and scaling** page:

i. In the **Instances** section:

a) **Root volume type**: Dropdown and select **General Purpose 3(SSD)**.



ii. In the **Capacity** section:

a) **Instance types**:

1) Remove the **t3.small** instances.

Note: Ensure, you can **only see** the **t3.micro** instance under **Instance types**.

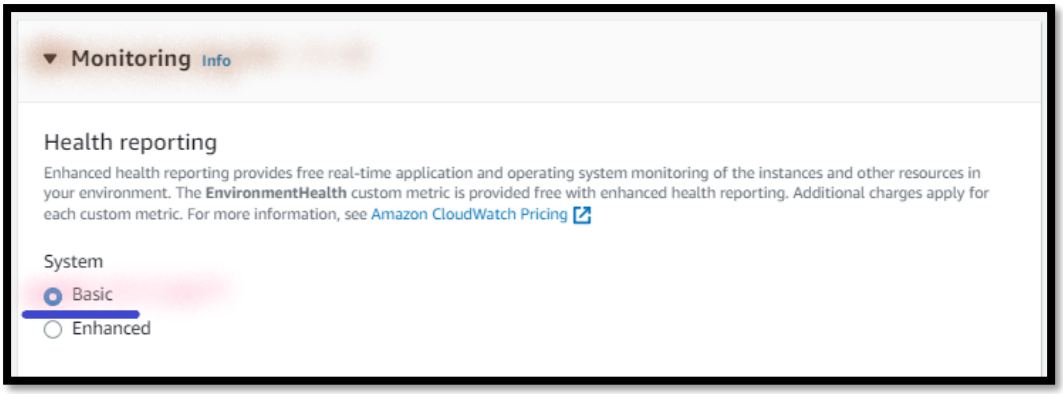
Note: Leave the other details as default.

b) Select **Next**.

f. From the **Configure updates, monitoring, and logging** page:

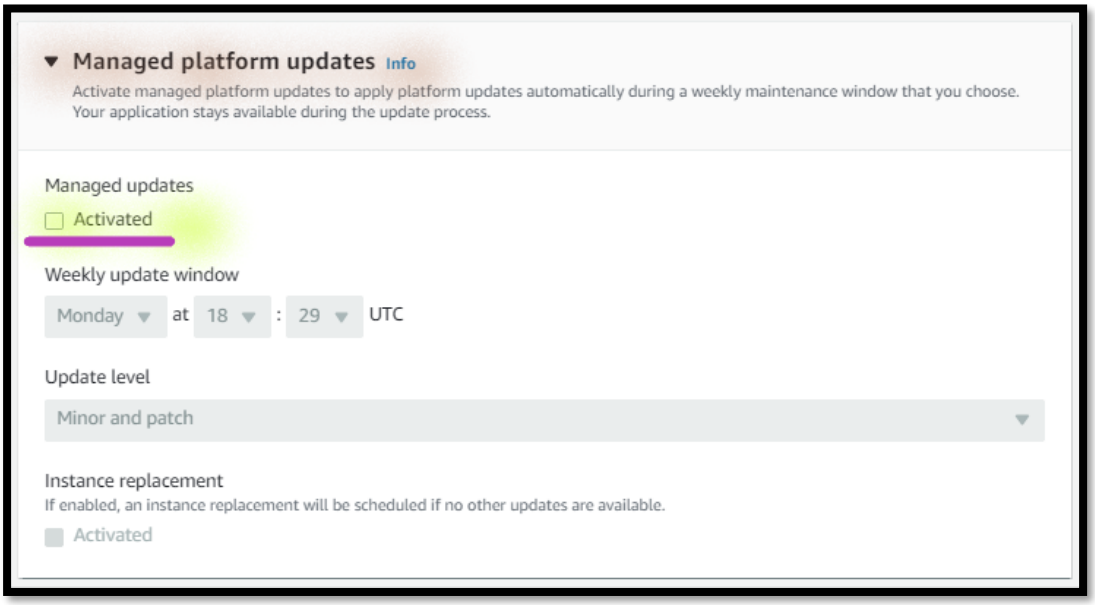
i. In the **Monitoring** section:

a) **System**: Select **Basic**.



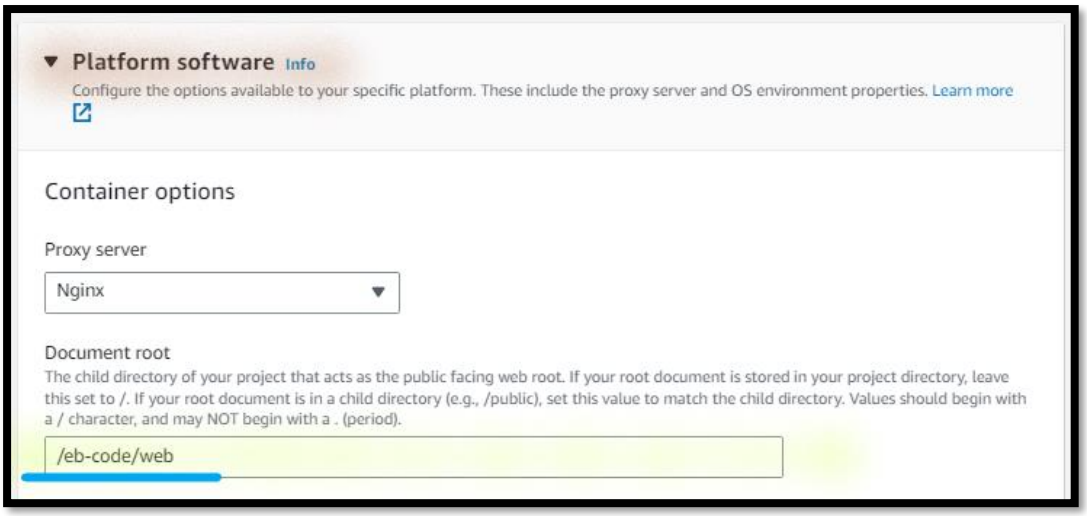
ii. In the **Managed platform updates** section:

a) **Managed updates**: **Disable** the **Checkmark**.



iii. In the **Platform software** section:

a) **Document root**: Write **/eb-code/web**.



Note: Leave the other details as default.

b) Select **Next**.

g. From the **Review** page:

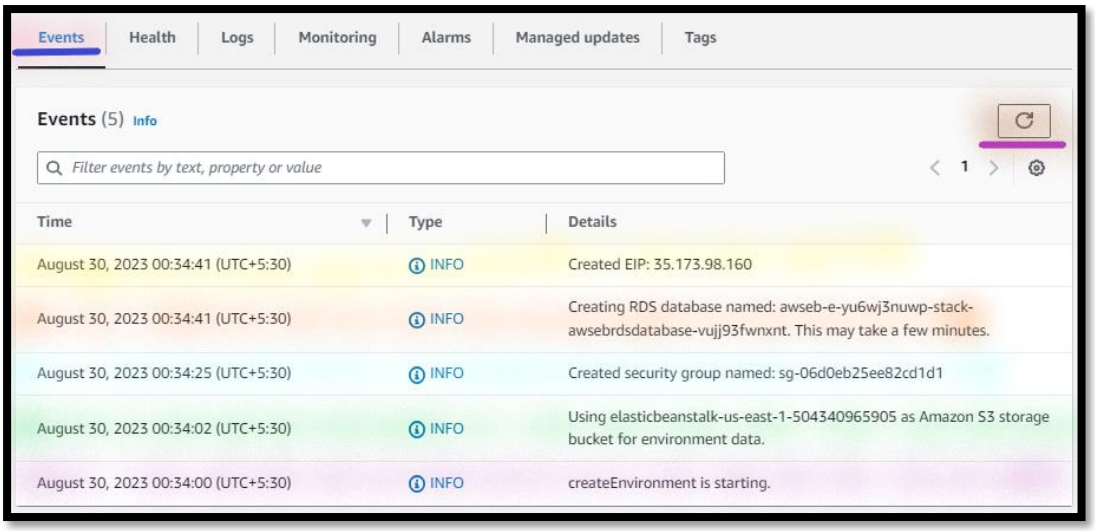
Note: **Review** the **details**.

i. Select **Submit**.

Note: You can see the "**Elastic Beanstalk is launching your environment**" message.

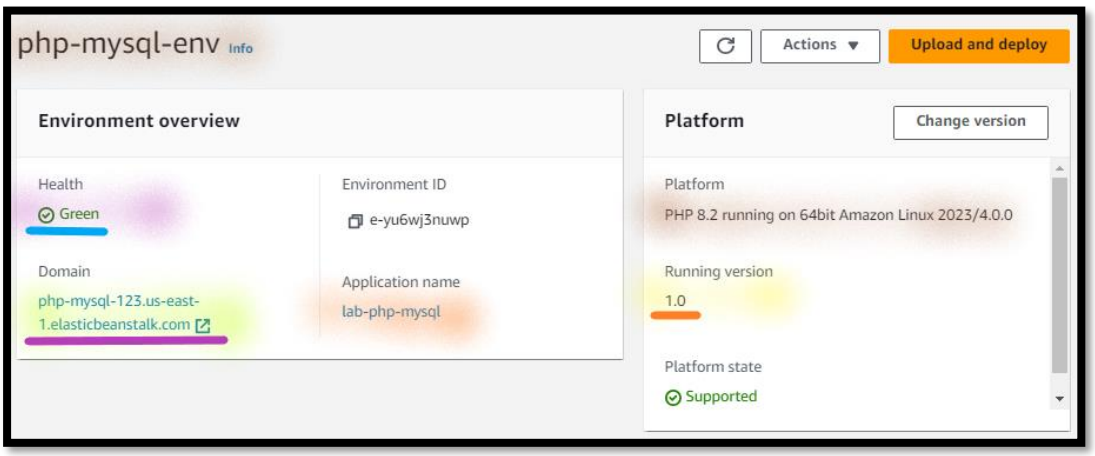
Note: During the **environment creation process**, you can see the **events**.

Note: You can **Refresh** to see the **events**.



Note: **Wait** (**~15 mnts.**) till **deployment** gets **completed** and **Health** status as **Green**.

a) **Copy** the **Domain** name in the **Notepad**.



Step 4: Review the Created Resources

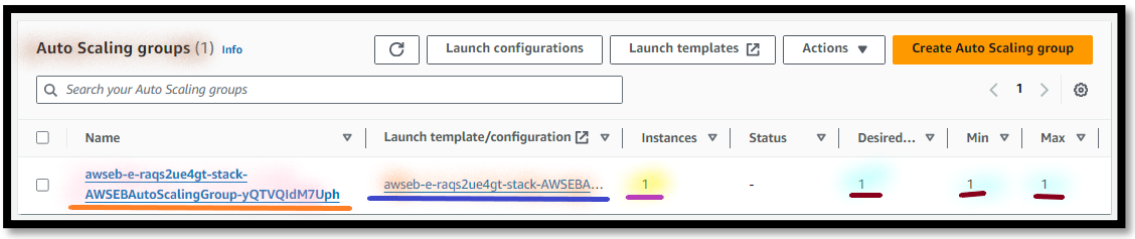
View the Auto Scaling

9. In the **AWS Management Console**, on the **Services** menu, search and select **EC2**.

10. Choose the **YOUR ALLOCATED REGION** list to the right of your account information on the navigation bar.

    a. Select **Auto Scaling Groups**.

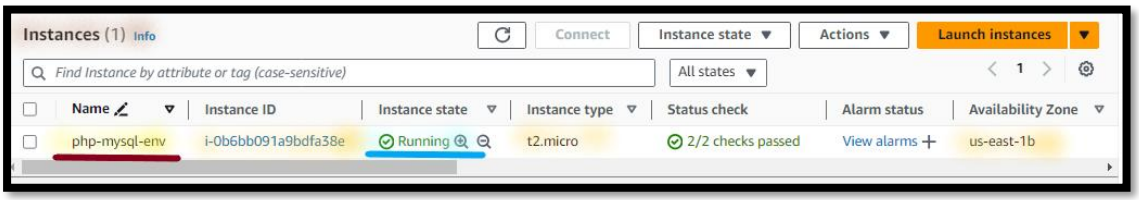
Note: You can see the **Auto Scaling Group** with **1 Instance**.



View the Instance

11. **From** the **EC2** console.
    a. Select **Instances**.

Note: You can see the **php-mysql-env** instance.

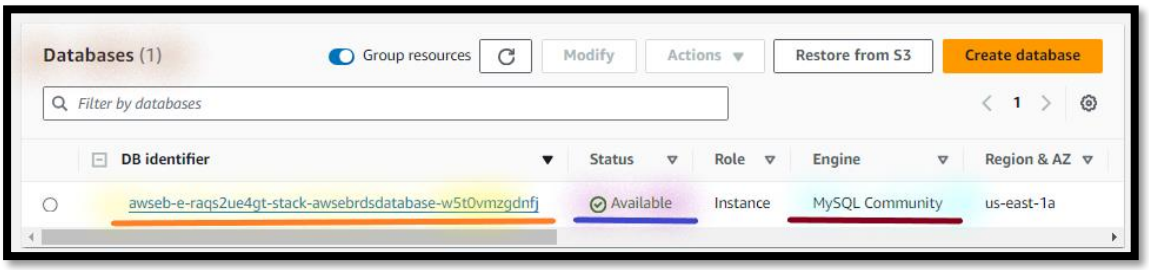


View the Database

12. In the **AWS Management Console**, on the **Services** menu, search and select **RDS**.

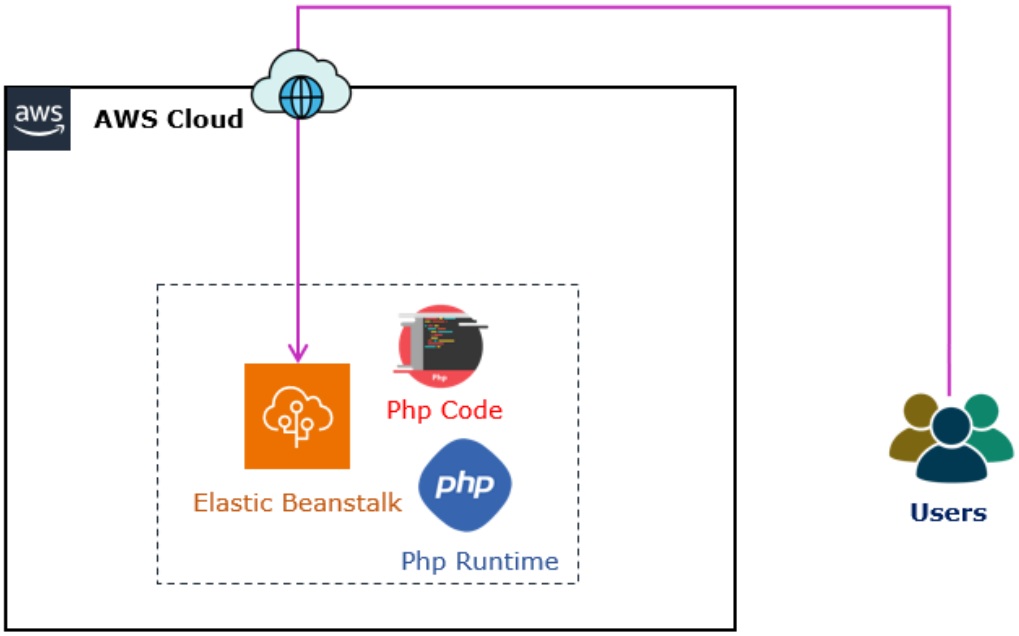
13. Choose the **YOUR ALLOCATED REGION** list to the right of your account information on the navigation bar.
    a. Select **Databases**

Note: You can see the **MySQL** database.



Task 3: Access Application

In this task, you will access the web application.



Step 1: Access the Application

14. **From** your **Local Desktop/ Laptop** (*Windows desktop*) open the **Browser**, write **Domain name** of the **Elastic Beanstalk**, to access the **website**.

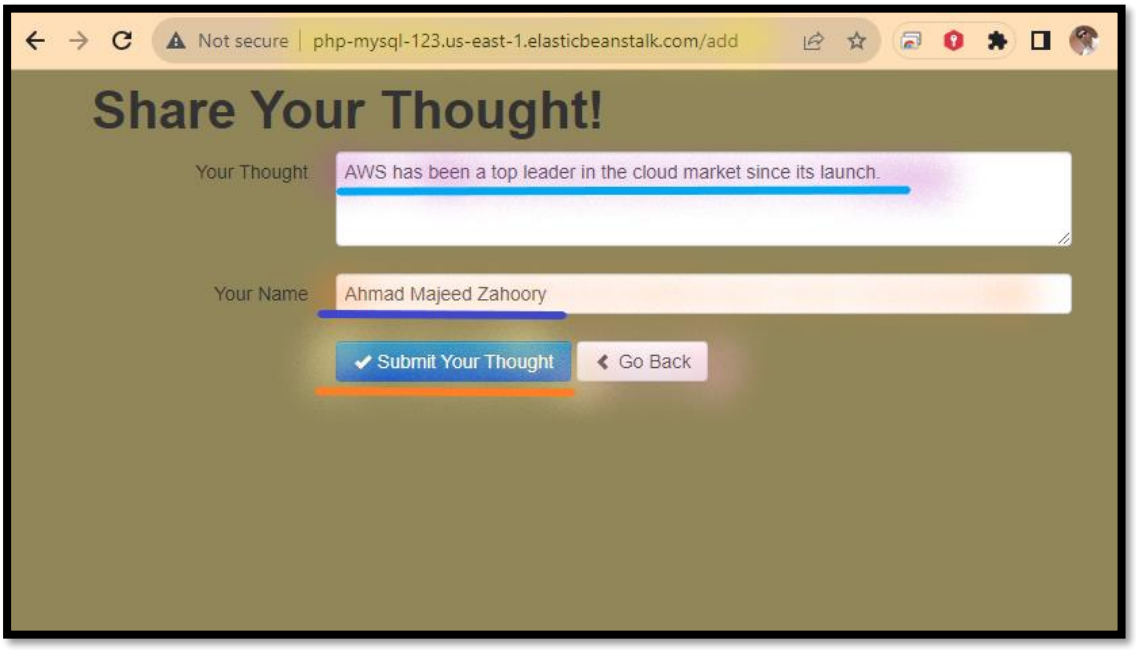
Note: You can see the **Php Application** web page.

a. Click on **Share Your Thought**.

i. Write **your Thought**.

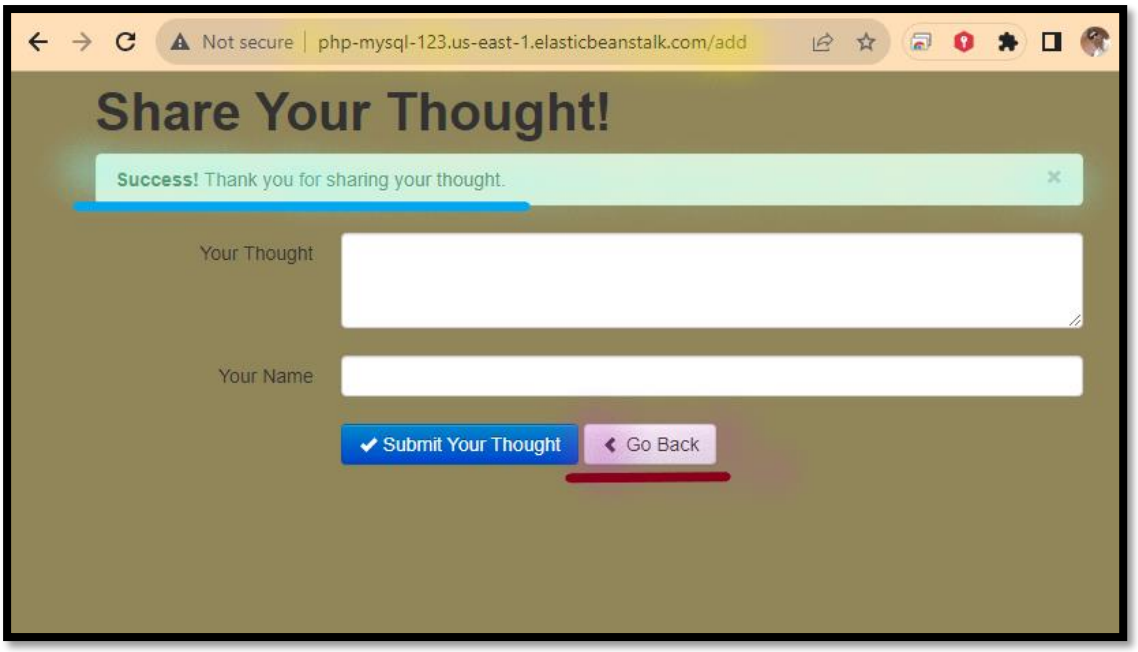
ii. Write **your Name**.

a) Select **Submit your thought**.

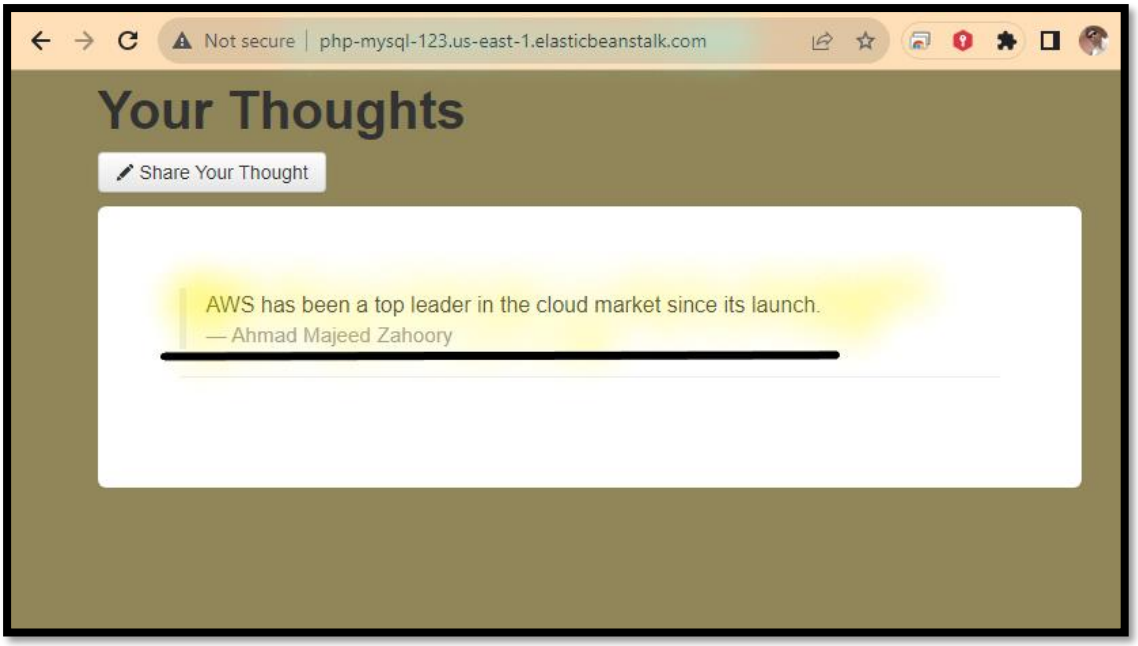


Note: You can see the **Success** message.

b) Select **Go back**.



Note: You can see the **Submitted** thoughts.



Task 4: Deploy the Updated Code

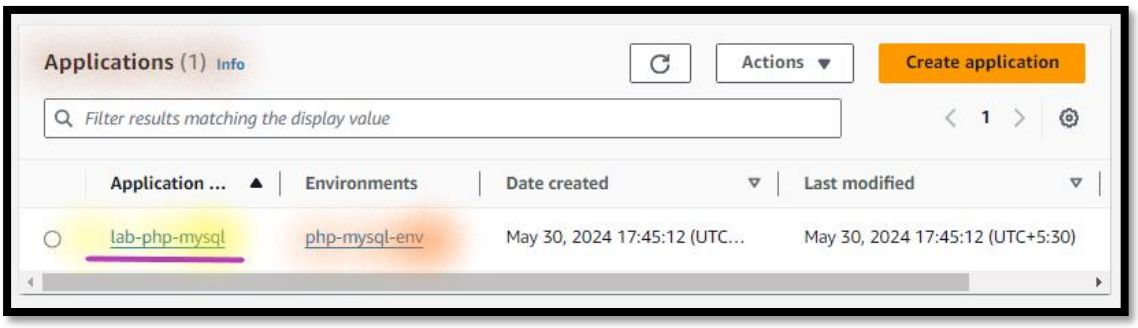
In this task, you will update the code deployed using cloud beanstalk.

Step 1: Upload the Code v2.0

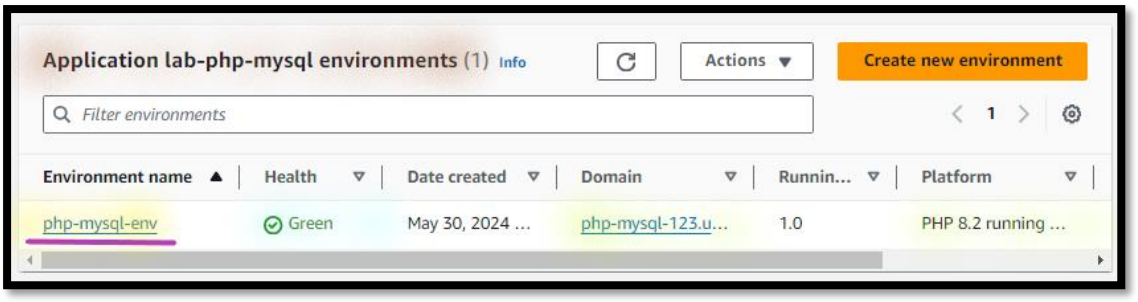
15. In the **AWS Management Console**, on the **Services** menu, search and select **Elastic Beanstalk**.

16. Choose the **YOUR ALLOCATED REGION** list to the right of your account information on the navigation bar.

17. Open **lab-php-mysql**.



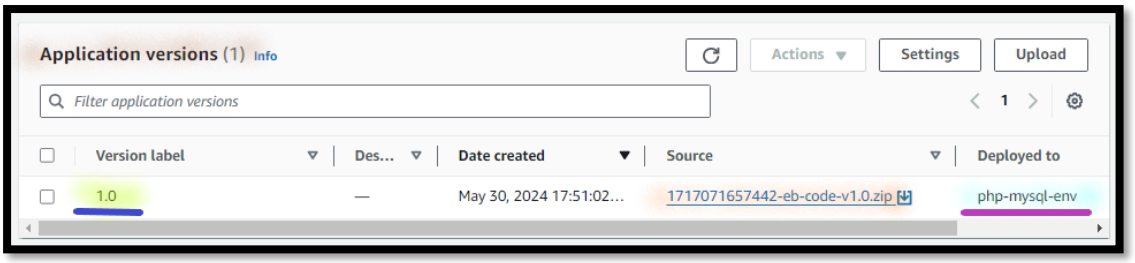
Note: You can see the **Application environment**.



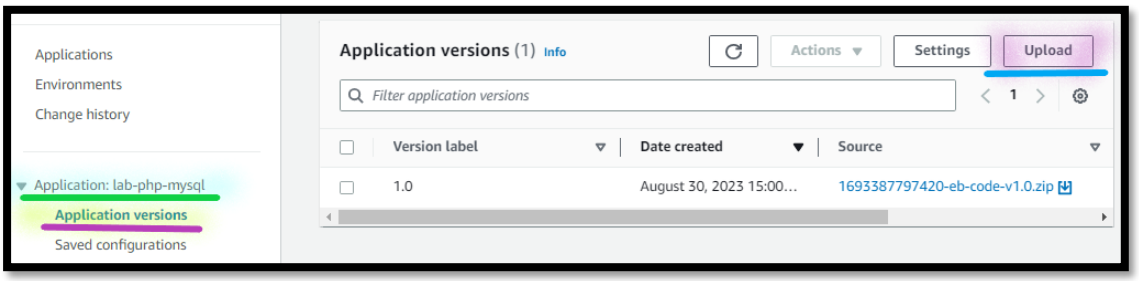
a. Select **Application: lab-php-mysql**.

   i. Select **Application versions**.

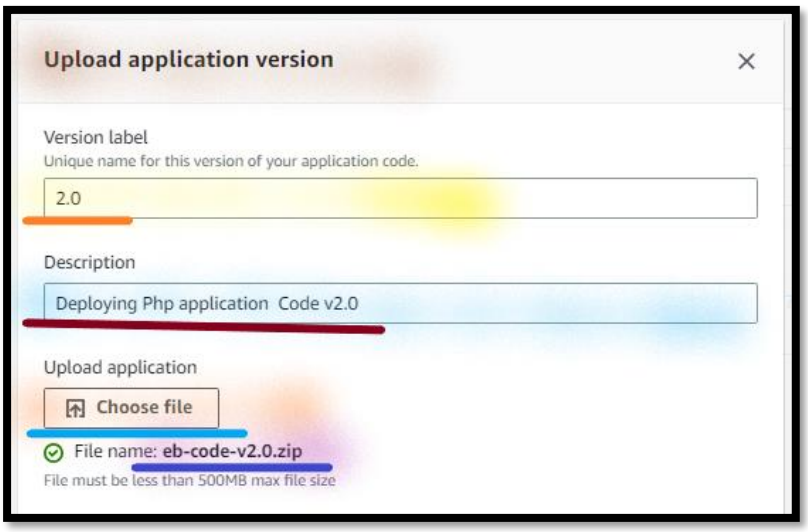
Note: You can see the **Application version 1.0**.



a) Select **Upload**.

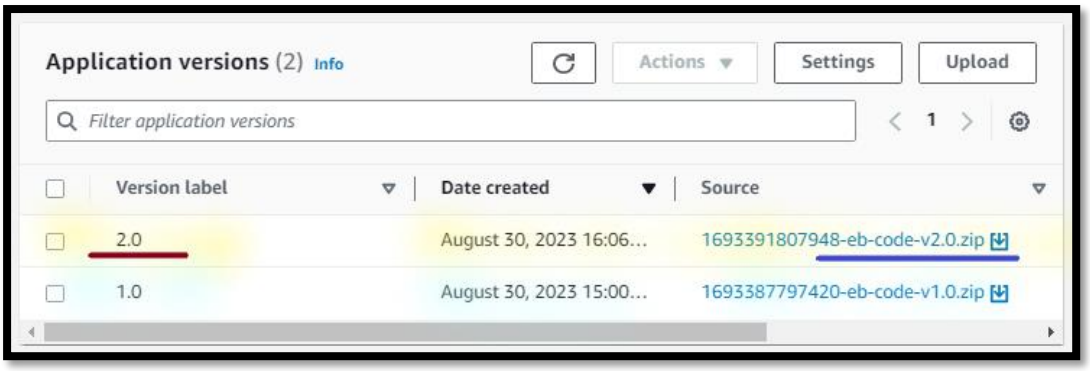


1) **Version label**: Write **2.0**.
2) **Description**: Write **Deploying Php application Code v2.0**.
3) **Choose file**: **Navigate** and select **eb-code-v2.0 zip**.



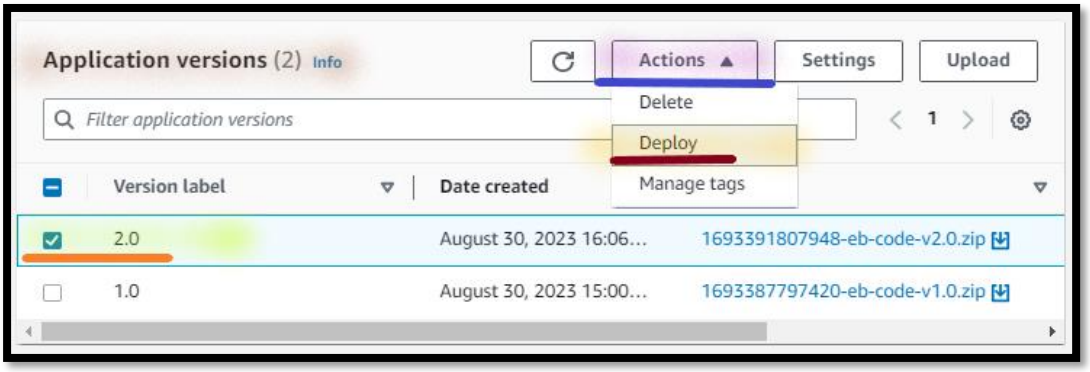
b) Select **Upload**.

Note: You can see the **2.0** version under **Application versions**.



Step 2: Deploy the Code v2.0

18. **From** the **Elastic Beanstalk** console.
19. Select **Application: lab-php-mysql**.
    a. Select **Application versions**.
        i. Select **2.0**.
            a) Select **Actions**.
                1) Select **Deploy**.



2) From the **Deploy application version** page:
    I. **Environment**: Dropdown and select **php-mysql-env**.

II. Select **Deploy**.

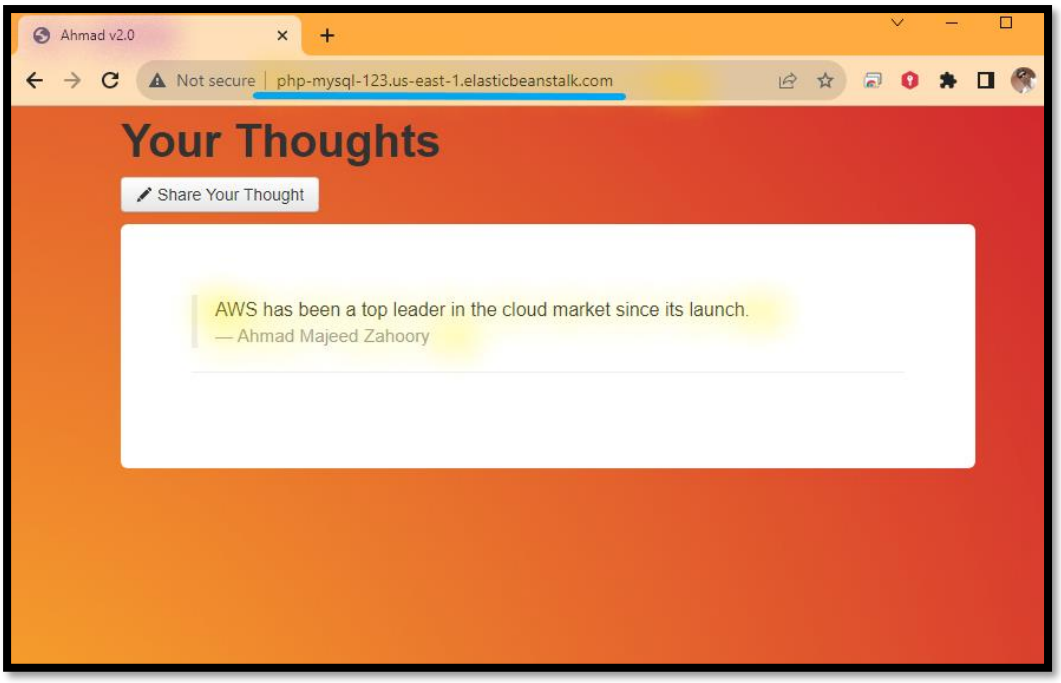
Note: You can see the "**The deployment to php-mysql-env started successfully**" message.

Step 3: Access the Application

20. **From** your **Local Desktop/ Laptop**, (*Windows desktop*) open the **Browser**, write **Domain name** of the **Elastic Beanstalk**, to access the **website**.

Note: You can see the **Updated Php Application** web page.

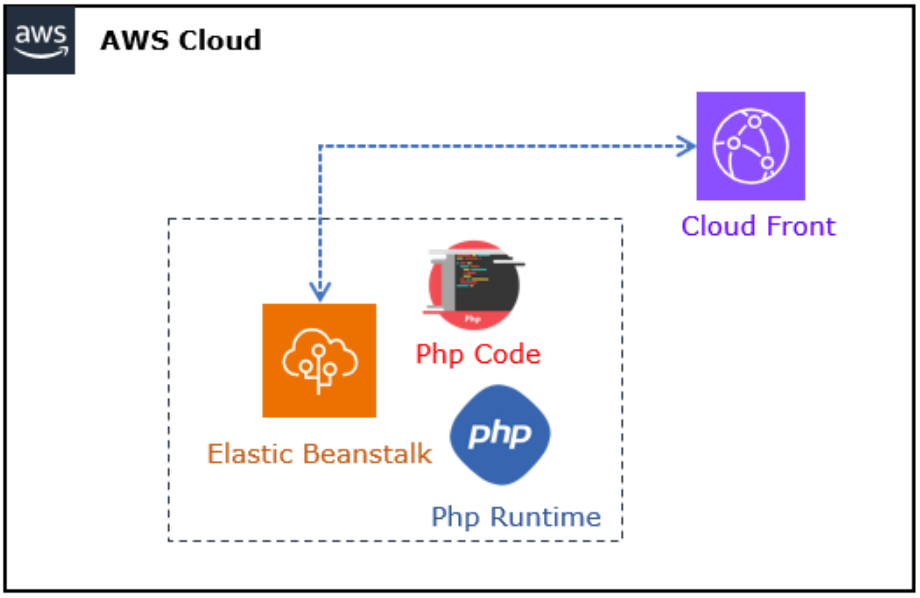
Note: If **not** able to **see** the **new web page**, Press **Ctrl+F5** (multiple times) to **clear** the **cache** to see the new web page.



Note: You can **add additional thoughts** also.

Task 5: Create CDN

In this task, you would integrate the web application via CDN.



Step 1: Create Cloud Front Distribution

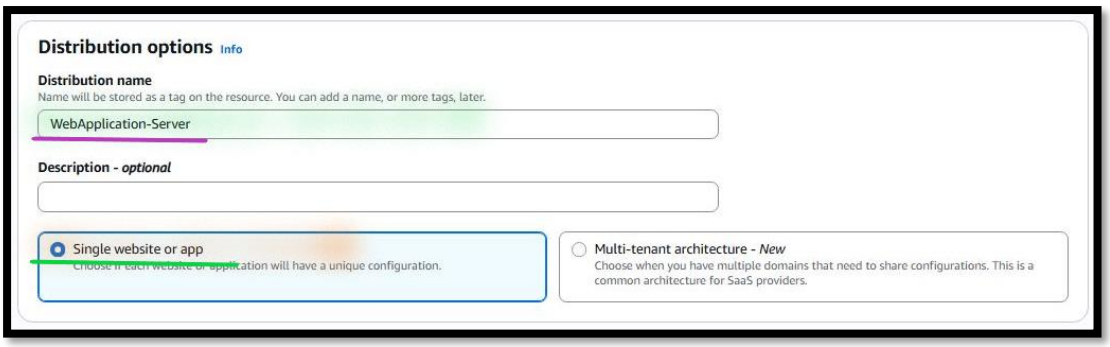
21. In the **AWS Management Console**, on the **Services** menu, search and select **CloudFront**.

22. Select **Create a CloudFront distribution**.

    a. In the **Get Started** page:

        i. **Distribution Name**: Write **Elastic Beanstalk Server-YOUR-ID**.

        ii. Select **Single website or app**.



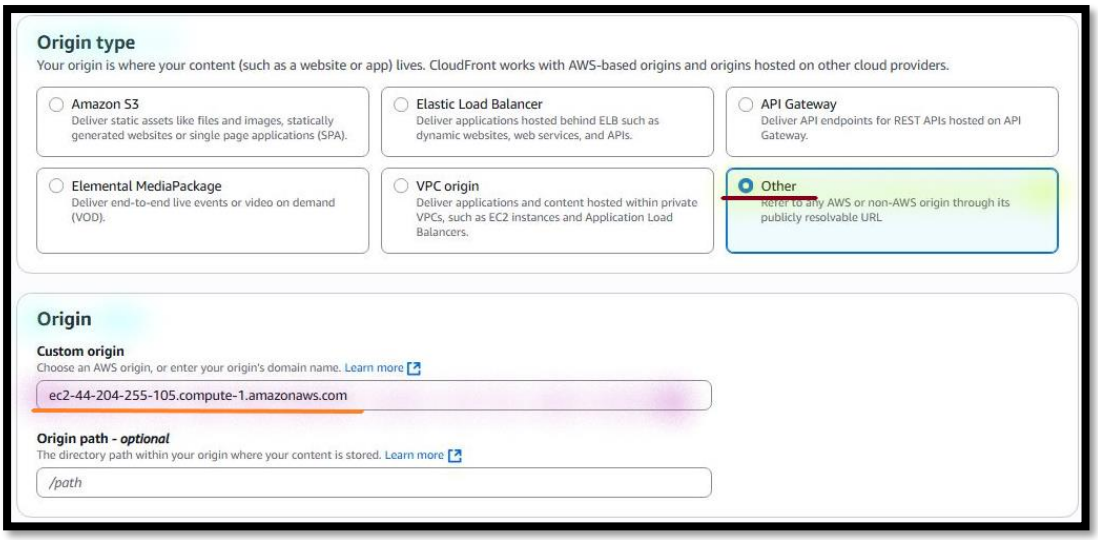
        a) Select **Next**.

    b. In the **Specify origin** page:

        i. **Origin type**: Select **Other**.

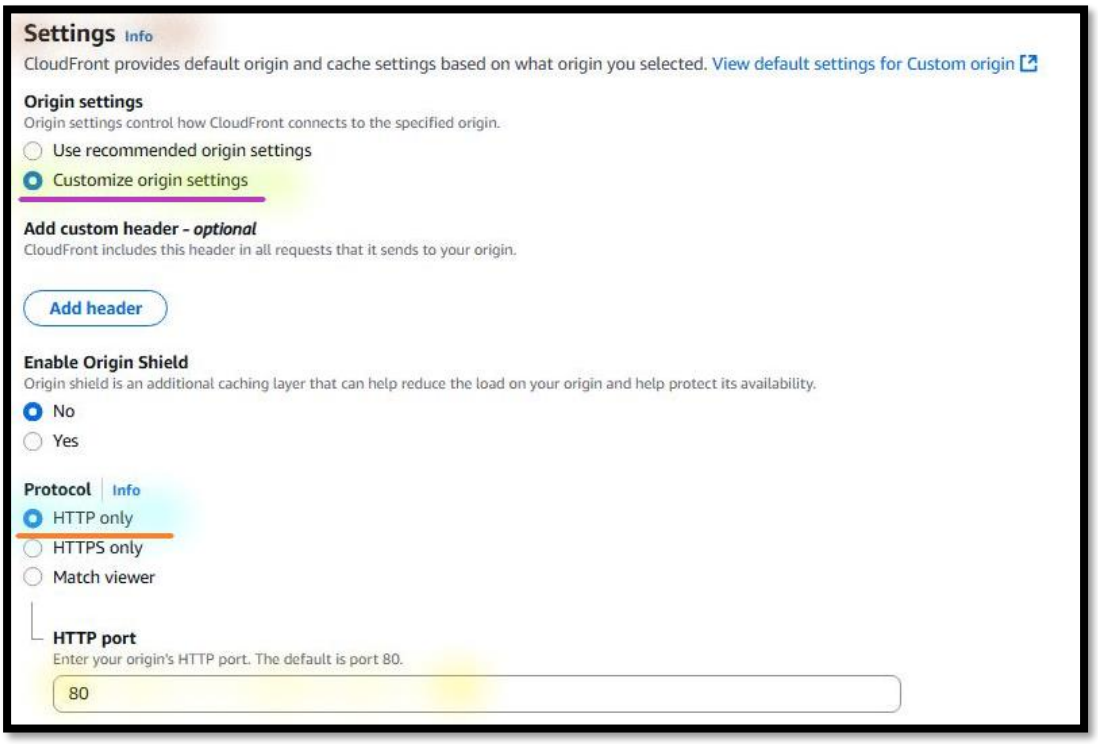
        ii. **Custom domain:** **Copy** **Domain name** of the **Elastic Beanstalk** (*without* ***http://***).

> **Info**: An origin is the location where you store the original version of your content. When CloudFront gets a request for your files, it goes to the origin to get the files that it distributes at edge locations.



iii. **Settings**: Select **Customize origin settings**.

a) **Protocol**: Select the **HTTP Only**

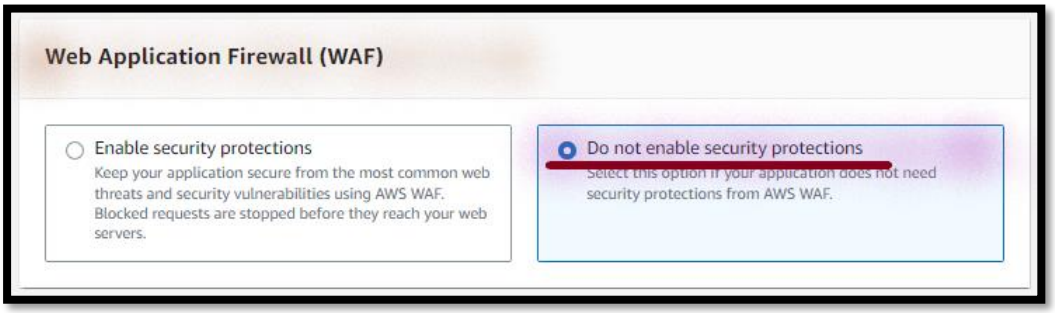


Note: Leave the other options as default.

b) Select **Next**.

iv. In the **Enable security** page:

a) **Web Application Firewall (WAF)**: Select **Do not enable security protections**.



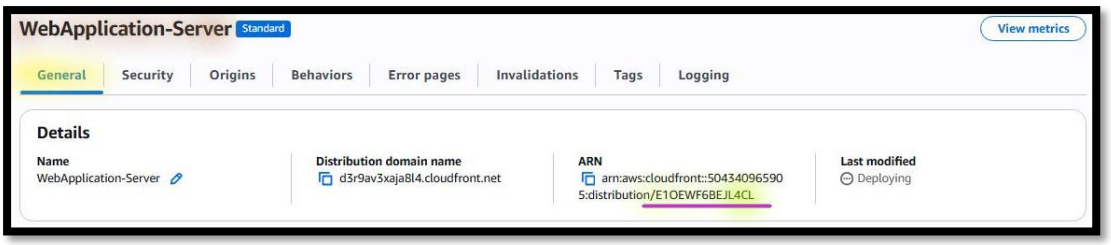
b) Select **Next**.

v. In the **review and Create** page:

a) Select the **Create Distribution**.

Note: **Wait**, till you can see the **message** "**Successfully created new distribution**".

b) **Copy** the **Distribution ID** in the **Notepad**.



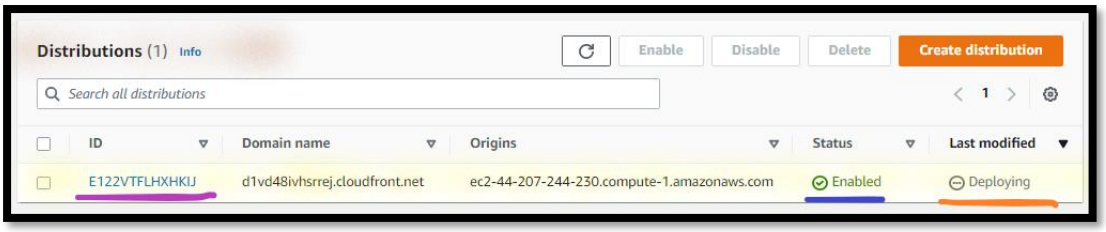
Step 2: Verify the CloudFront Distribution Status

23. **From** the **CloudFront** console.

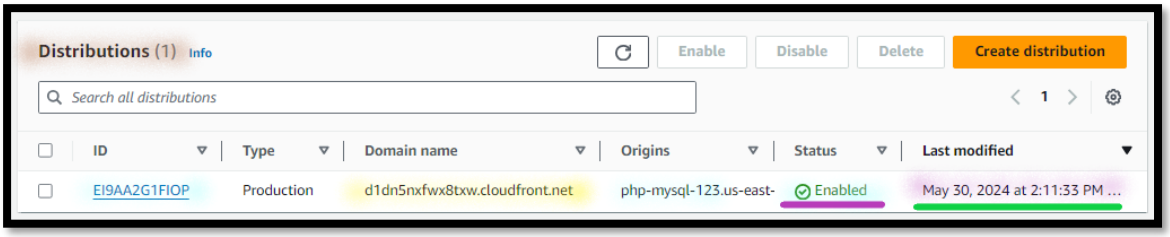
24. Select the **Distributions** (***identify via*** **Distribution Id**).

Note: You can see the distribution **Status** as **Enabled**.

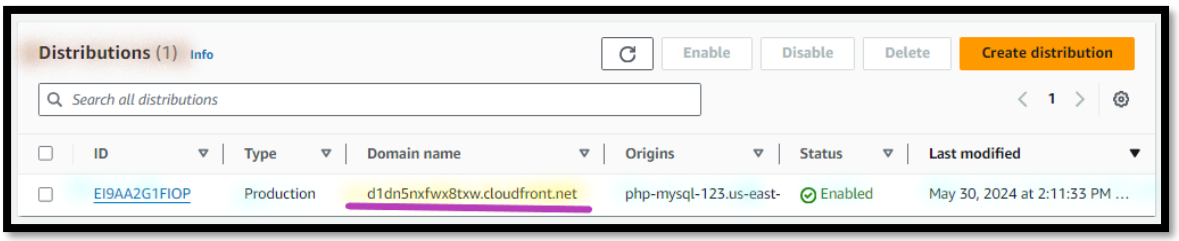
Note: You can see the distribution **Last modified** status as **Deploying**.



Note: **Wait**, till you can see the **Last modified** status as **Deployed day/ time**. Keep **Refresh** unless last modified status.

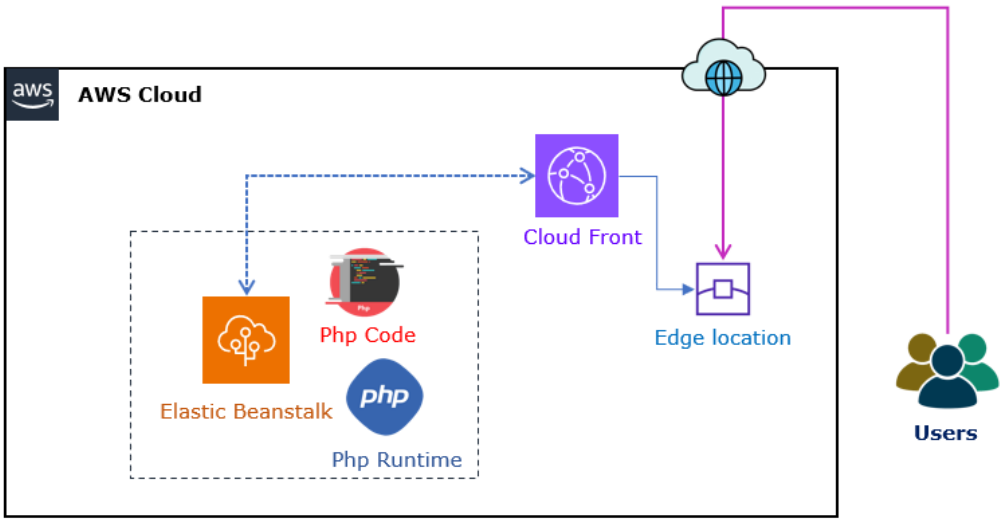


a. **Copy** the **Domain name** in the **Notepad**.



Task 6: Access Web Application

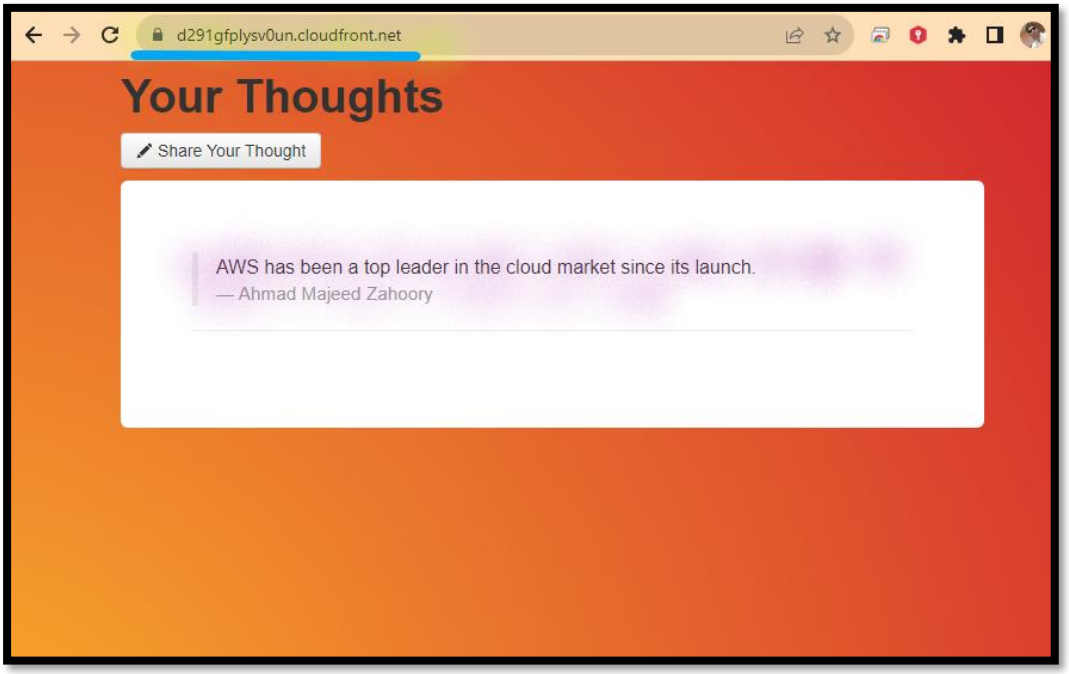
In this task, you would access web application via cdn (edge locations).



Step 1: Access Application using CDN

25. **From** your **Local Desktop/ Laptop**, (*Windows desktop*) open the **Browser**, write **Domain name** of the **CDN**, to access the **website**.

Note: You can see the **Php Application** web page.



a. Click on **Share Your Thought**.

i. Write **your Thought**.

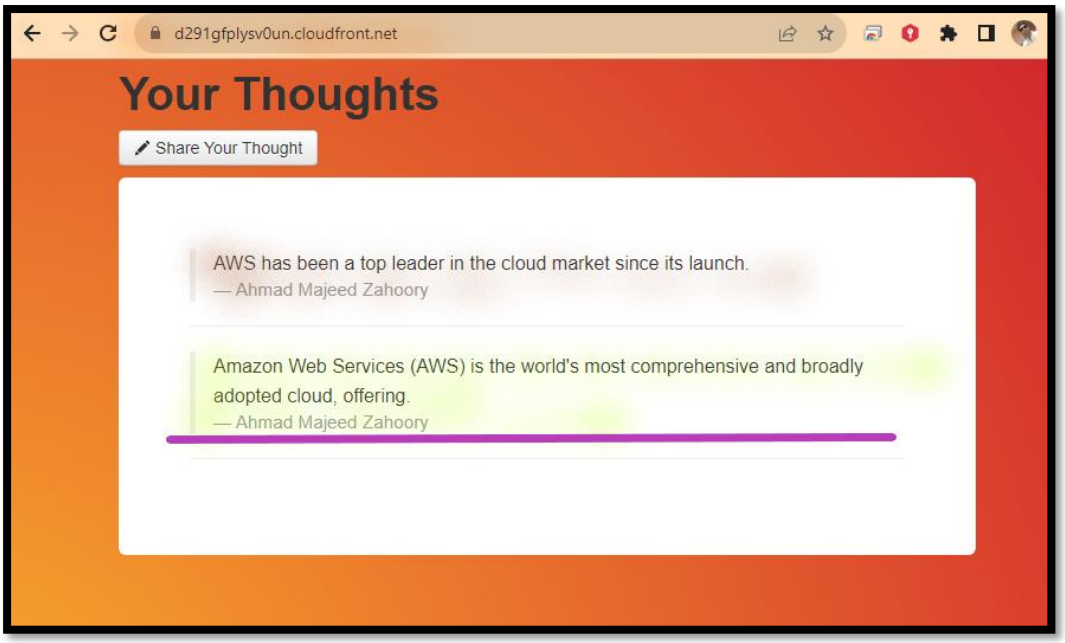
ii. Write **your Name**.

a) Select **Submit your thought**.

Note: You can see the **Success** message.

b) Select **Go back**.

Note: You can see the **Submitted** thoughts.



Task 7: Delete Environment

Step 1: Delete the CloudFront Distribution

26. In the **AWS Management Console**, on the **Services** menu, search and select **CloudFront**.

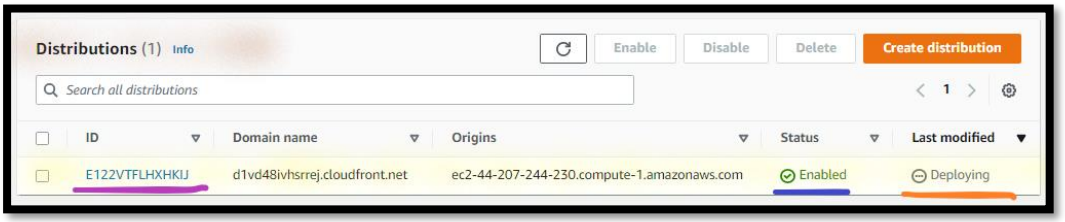
27. Select the **Distibutions**.

    a. Select your **Cloud Front Distribution** (***identify via*** **Distribution Id**).

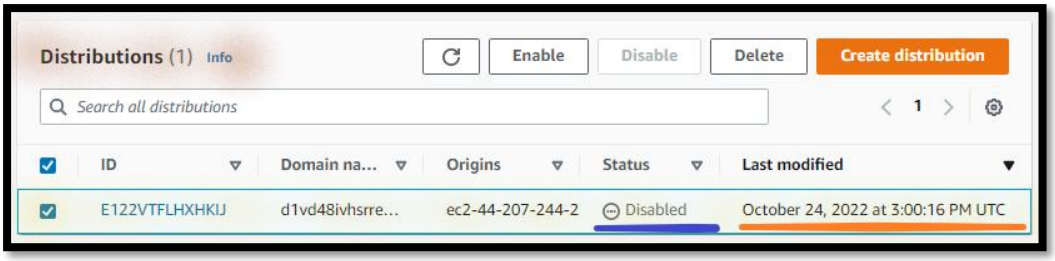
        i. Select **Disable**.

            a) Select **Disable**.

Note: You can see the distribution **Status** as **Enabled** and **Last modified** status as **Deploying**.



Note: **Wait** (**~5 mnts.**), till you can see the **Status** as **Disabled** and **Last modified** status as **Deployed day/time**.



b. Select your **Cloud Front Distribution** (***identify via*** **Distribution Id**).

i. Select **Delete**.

a) Select **Delete**.

Step 2: Delete the Elastic Beanstalk

28. In the **AWS Management Console**, on the **Services** menu, search and select **Elastic Beanstalk**.

29. Choose the **YOUR ALLOCATED REGION** list to the right of your account information on the navigation bar.

30. Select **Application**

a. Select **lab-php-mysql**.

i. Select **Actions**.

a) Select **Delete application**.

1) When you **get prompt**, write **lab-php-mysql**.

2) Select **Delete**.

Note: **Wait** (**~15 mnts**), till **appplication** gets **deleted**.

Step 3: Delete CloudFormation Stack

31. In the **AWS Management Console**, on the **Services** menu, search and select **CloudFormation**.
32. Choose the **YOUR ALLOCATED REGION** list to the right of your account information on the navigation bar.
33. Select the **Stack**.
    a. Select **LAB-EB** stack.
        i. Select **Delete**.
            a) Select **Delete**.

Step 4: Delete the S3 Bucket

34. In the **AWS Management Console**, on the **Services** menu, search and select **S3**.
35. Choose the **YOUR ALLOCATED REGION** list to the right of your account information on the navigation bar.
36. Select **Buckets**.
    a. Select **cf-template....** bucket.
        i. Select **Empty**.
            a) Type **permanently delete** to *Delete all the objects*.
            b) Select **Empty**.
            c) Select **Exit**.
    b. Select **cf-template....** ***bucket***.
        i. Select **Delete**.
            a) Type **Bucket name**, to *Delete the bucket.*
            b) Select **Delete bucket**.