

# Dynamic Content Website with AWS integration



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# Overview

**Create a web application hosted on an EC2 instance, using PHP to handle dynamic content and AWS SDK to interact with S3 for media storage, RDS for database management, and CloudFront for content delivery.**

## Architecture Overview

**EC2 Instance: Web server setup with LAMP stack (Linux, Apache, MySQL, PHP).**

**EBS: Storage for EC2 instance for scalable and persistent storage of your application files.**

**S3: Store and retrieve images, videos, or static assets of the website.**

**RDS: Use MySQL/PostgreSQL database for storing user data, comments, or dynamic website data.**

**CloudFront: Distribute the static content globally with low latency.**

**AWS SDK (PHP): Enable programmatic access to S3 or other services from your PHP application.**

- Launch ec2, install LEMP, create one folder named “upload” in html directory and give ‘777’ Permission.
- Create ‘RDS’ create table named ‘instagram’ create table “posts” having columns id, name, s3url, cdnurl
- Create ACL\_enabled s3 bucket
- Create Cloudfront distribution
- Install php composer
- Install php AWS-SDK

**sudo yum install nginx php mariadb105-server**

```
[ec2-user@ip-172-31-8-178 ~]$
[ec2-user@ip-172-31-8-178 ~]$ ls
[ec2-user@ip-172-31-8-178 ~]$ sudo su
[root@ip-172-31-8-178 ec2-user]# ls
[root@ip-172-31-8-178 ec2-user]# sudo yum install nginx php mariadb105-server
Last metadata expiration check: 0:01:23 ago on Sat Nov 30 04:15:21 2024.
Dependencies resolved.
```

**sudo service nginx start**

**sudo service php-fpm start**

**sudo service mariadb start**

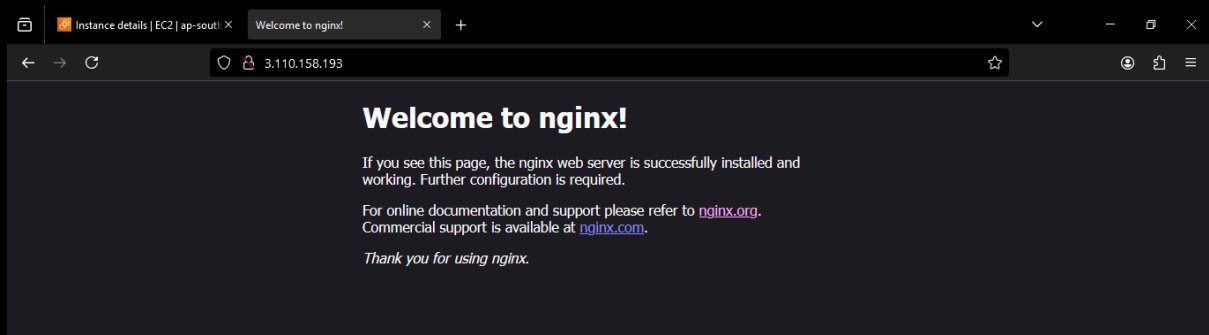
```
[root@ip-172-31-8-178 ec2-user]# sudo service nginx start
Redirecting to /bin/systemctl start nginx.service
[root@ip-172-31-8-178 ec2-user]# sudo service php-fpm start
Redirecting to /bin/systemctl start php-fpm.service
[root@ip-172-31-8-178 ec2-user]# sudo service mariadb105-server
The service command supports only basic LSB actions (start, stop, restart, try-restart, reload, reload-or-restart, try-reload-or-restart, force-reload, status, condrestart). For other actions, please try to use systemctl.
[root@ip-172-31-8-178 ec2-user]# sudo service mariadb start
Redirecting to /bin/systemctl start mariadb.service
```

**cd /usr/share/nginx/html**

**ls**

```
[root@ip-172-31-8-178 ec2-user]# cd /usr/share/nginx/html
[root@ip-172-31-8-178 html]# ls
404.html  50x.html  icons  index.html  nginx-logo.png  poweredby.png
[root@ip-172-31-8-178 html]# |
```

**Copy IP and test html page**



**Sudo nano index.php**

**Copy IP and Test.**

Instance details | EC2 | ap-south-1 x PHP 8.3.10 - phpinfo()

3.110.158.193/index.php

## PHP Version 8.3.10

System	Linux ip-172-31-8-178.ap-south-1.compute.internal 6.1.115-126.197.amzn2023.x86_64 #1 SMP PREEMPT_DYNAMIC Tue Nov 5 17:36:57 UTC 2024 x86_64
Build Date	Jul 30 2024 13:44:37
Build System	Linux
Build Provider	Amazon Linux
Compiler	gcc (GCC) 11.4.1 20230605 (Red Hat 11.4.1-2)
Architecture	x86_64
Server API	FPM/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc
Loaded Configuration File	/etc/php.ini
Scan this dir for additional .ini files	/etc/php.d
Additional .ini files parsed	/etc/php.d/10-opcache.ini, /etc/php.d/20-bz2.ini, /etc/php.d/20-calendar.ini, /etc/php.d/20-ctype.ini, /etc/php.d/20-curl.ini, /etc/php.d/20-dom.ini, /etc/php.d/20-exif.ini, /etc/php.d/20-fileinfo.ini, /etc/php.d/20-fp.ini, /etc/php.d/20-gettext.ini, /etc/php.d/20-iconv.ini, /etc/php.d/20-mbstring.ini, /etc/php.d/20-pdo.ini, /etc/php.d/20-phar.ini, /etc/php.d/20-posix.ini, /etc/php.d/20-shmop.ini, /etc/php.d/20-simplexml.ini, /etc/php.d/20-sockets.ini, /etc/php.d/20-sodium.ini, /etc/php.d/20-xml.ini, /etc/php.d/20-xmlrpc.ini, /etc/php.d/20-zlib.ini, /etc/php.d/20-zlib.ini, /etc/php.d/20-zlib.ini

## Create RDS

Instance details | EC2 | ap-south-1 x Databases | RDS | ap-south-1 x PHP 8.3.10 - phpinfo()

https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#databases:

Amazon RDS

Dashboard

Databases

Query Editor

Performance insights

Snapshots

Exports in Amazon S3

Automated backups

Reserved instances

Proxies

Subnet groups

Parameter groups

Option groups

Custom engine versions

Zero-ETL integrations [New](#)

Events

Event subscriptions

Recommendations **0**

Certificate update

**Creating database database-1**

Your database might take a few minutes to launch. You can use settings from database-1 to simplify configuration of suggested database add-ons while we finish creating your DB for you. [View credential details](#)

**Introducing Global Database writer endpoint**

Each global cluster now has a writer endpoint that you can use to send your application's requests to the writer instance in the primary cluster of your Global Database. Aurora automatically updates the endpoint upon a cross-region failover or switchover operation, ensuring that requests are routed to the writer instance in the new primary cluster without the need for changes to your application code or configuration. [Learn more](#)

**Easy path homogeneous data migrations from EC2 database to RDS**

With integrated homogenous data migration powered by AWS DMS, the Amazon RDS console leverages simple and performant data migration from EC2 database to equivalent RDS database. To get started, select an existing RDS database and choose the **Migrate data from EC2 database** in the **Actions** menu. Make sure you check the supported engine types and feature limitations. [Learn more](#)

**Databases (1)**

Group resources [Modify](#) [Actions](#) [Restore from S3](#) [Create database](#)

Filter by databases

	DB identifier	Status	Role	Engine	Region	Size	Recommendations	CPU	Current
	<a href="#">database-1</a>	Creating	Instance	MySQL Co...	-	db.m7g.la...	-	-	-

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## Create s3 ACL-enabled bucket.

Amazon S3 > Buckets > uploadimagedat

## uploadimagedat

[Objects](#) [Properties](#) [Permissions](#) [Metrics](#) [Management](#) [Access Points](#)

**Objects (0)** [Info](#) [Copy S3 URI](#) [Copy URL](#) [Download](#) [Open](#) [Delete](#) [Actions](#) [Create folder](#) [Upload](#)

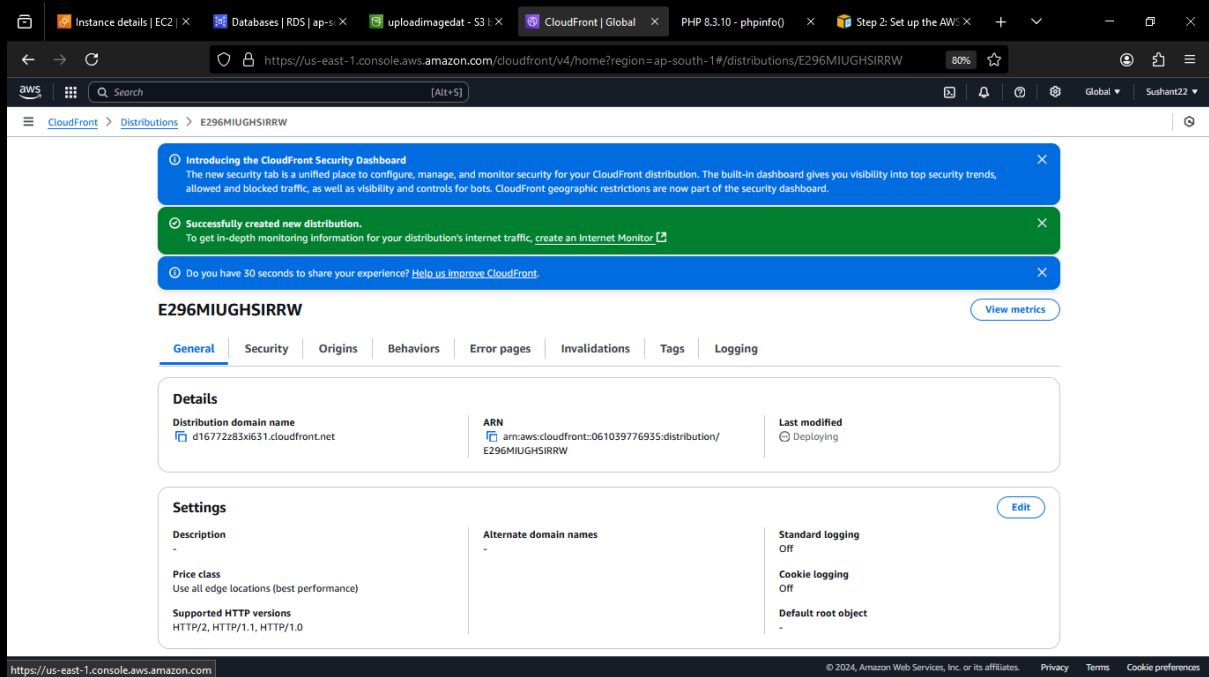
Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Find objects by prefix

Name	Type	Last modified	Size	Storage class
No objects				
You don't have any objects in this bucket.				

[Upload](#)

## Create CloudFront.



```
cd /usr/share/nginx/html
```

```
sudo mkdir uploads
```

```
sudo chmod 777 uploads
```

```
sudo mysql -u root -p -h RDS_endpoint
```

```
[root@ip-172-31-8-178 html]# mysql -u root -p -h database-1.c30i06gqged0.ap-south-1.rds.amazonaws.com
Enter password:
ERROR 2002 (HY000): Can't connect to MySQL server on 'database-1.c30i06gqged0.ap-south-1.rds.amazonaws.com' (115)
[root@ip-172-31-8-178 html]# mysql -u root -p -h database-1.c30i06gqged0.ap-south-1.rds.amazonaws.com
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 8.0.39 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.001 sec)
```

```
create database Instagram;
```

```
use Instagram;
```

```
create table posts (id int primary key auto_increment, name varchar (100), s3url varchar (100), cdnurl varchar (100));
```

```
desc posts;
```

```
exit;
```

```
exit
```

```
[root@ip-172-31-8-178 html]# mysql -u root -p -h database-1.c30i06gqged0.ap-south-1.rds.amazonaws.com
Enter password:
ERROR 2002 (HY000): Can't connect to MySQL server on 'database-1.c30i06gqged0.ap-south-1.rds.amazonaws.com' (115)
[root@ip-172-31-8-178 html]# mysql -u root -p -h database-1.c30i06gqged0.ap-south-1.rds.amazonaws.com
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 8.0.39 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
```

```
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
```

```
MySQL [(none)]> show databases;
```

```
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.001 sec)
```

## ---install AWS SDK

`sudo curl -sS https://getcomposer.org/installer | sudo php`

```
[root@ip-172-31-8-178 html]# sudo curl -sS https://getcomposer.org/installer | sudo php
All settings correct for using Composer
Downloading...

Composer (version 2.8.3) successfully installed to: /usr/share/nginx/html/composer.phar
Use it: php composer.phar

[root@ip-172-31-8-178 html]# |
```

`sudo mv composer.phar /usr/local/bin/composer`

`sudo ln -s /usr/local/bin/composer /usr/bin/composer`

`sudo composer require aws/aws-sdk-php`

```
Windows PowerShell X root@ip-172-31-8-178:/usr/sh X + v
Use it: php composer.phar

[root@ip-172-31-8-178 html]# sudo mv composer.phar /usr/local/bin/composer
[root@ip-172-31-8-178 html]# sudo ln -s /usr/local/bin/composer /usr/bin/composer
[root@ip-172-31-8-178 html]# sudo composer require aws/aws-sdk-php
Do not run Composer as root/super user! See https://getcomposer.org/root for details
Continue as root/super user [yes]? yes
./composer.json has been created
Running composer update aws/aws-sdk-php
Loading composer repositories with package information
Updating dependencies
Lock file operations: 12 installs, 0 updates, 0 removals
- Locking aws/aws-crt-php (v1.2.7)
- Locking aws/aws-sdk-php (3.331.0)
- Locking guzzlehttp/guzzle (7.9.2)
- Locking guzzlehttp/promises (2.0.4)
- Locking guzzlehttp/psr7 (2.7.0)
- Locking mtdowling/jmespath.php (2.8.0)
- Locking psr/http-client (1.0.3)
- Locking psr/http-factory (1.1.0)
- Locking psr/http-message (2.0)
- Locking ralouphie/getallheaders (3.0.3)
- Locking symfony/deprecation-contracts (v3.5.1)
- Locking symfony/polyfill-mbstring (v1.31.0)
Writing lock file
Installing dependencies from lock file (including require-dev)
Package operations: 12 installs, 0 updates, 0 removals
- Downloading psr/http-message (2.0)
- Downloading symfony/polyfill-mbstring (v1.31.0)
- Downloading mtdowling/jmespath.php (2.8.0)
- Downloading ralouphie/getallheaders (3.0.3)
- Downloading psr/http-factory (1.1.0)
- Downloading guzzlehttp/psr7 (2.7.0)
- Downloading guzzlehttp/promises (2.0.4)
- Downloading symfony/deprecation-contracts (v3.5.1)
- Downloading psr/http-client (1.0.3)
- Downloading guzzlehttp/guzzle (7.9.2)
```

`sudo nano fileupload.html`

```
root@ip-172-31-8-178:/usr/sh  GNU nano 5.8  fileupload.html
<!DOCTYPE html>
<html>
<head>
<style>
  body {
    font-family: Arial, sans-serif;
    background: #4d549e;
    margin: 0;
    padding: 0;
    display: flex;
    justify-content: center;
    align-items: center;
    height: 100vh;
    color: #fff;
  }

  form {
    background: #fff;
    padding: 25px;
    border-radius: 15px;
    box-shadow: 0 8px 15px rgba(0, 0, 0, 0.2);
    width: 350px;
    text-align: center;
    color: #333;
  }

  form h2 {
    margin-bottom: 20px;
    color: #4d549e;
    font-size: 22px;
  }

  label {
    AG Help      AO Write Out  AW Where Is   AK Cut        AT Execute    AC Location   M-U Undo      M-A Set Mark  M-J To Bracket
    AX Exit      AR Read File  AL Replace    AU Paste      AJ Justify    AL Go To Line M-E Redo      M-G Copy      AO Where Was
```

sudo nano upload.php

```
root@ip-172-31-8-178:/usr/sh  GNU nano 5.8  fileupload.html
<!DOCTYPE html>
<html>
<head>
<style>
  body {
    font-family: Arial, sans-serif;
    background: #4d549e;
    margin: 0;
    padding: 0;
    display: flex;
    justify-content: center;
    align-items: center;
    height: 100vh;
    color: #fff;
  }

  form {
    background: #fff;
    padding: 25px;
    border-radius: 15px;
    box-shadow: 0 8px 15px rgba(0, 0, 0, 0.2);
    width: 350px;
    text-align: center;
    color: #333;
  }

  form h2 {
    margin-bottom: 20px;
    color: #4d549e;
    font-size: 22px;
  }

  label {
    AG Help      AO Write Out  AW Where Is   AK Cut        AT Execute    AC Location   M-U Undo      M-A Set Mark  M-J To Bracket
    AX Exit      AR Read File  AL Replace    AU Paste      AJ Justify    AL Go To Line M-E Redo      M-G Copy      AO Where Was
```

Some Changes in upload.php

Keys , regions, \$bucket, \$servername, \$username, \$Password, \$dbname, \$sql



```
Windows PowerShell x root@ip-172-31-8-178:/usr/sh x + v
GNU nano 5.8 upload.php Modified
$key = basename($file_Path);

try {
    $result = $s3Client->putObject([
        'Bucket' => $bucket,
        'Key' => $key,
        'Body' => fopen($file_Path, 'r'),
        'ACL' => 'public-read', // Make file public
    ]);

    echo "Image uploaded successfully. Image path is: " . $result->get('ObjectURL');
    echo "</img>";

    $urls3 = $result->get('ObjectURL');
    $cfurl = str_replace("https://uploadimagedat.s3.ap-south-1.amazonaws.com", "https://d16772z83xi631.cloudfront.net", $urls3);
    echo $cfurl;

    $name = $_POST["name"];
    $servername = "database-1.c30i06gqged0.ap-south-1.rds.amazonaws.com";
    $username = "root";
    $password = "Pass1234";
    $dbname = "instagram";

    // Create connection
    $conn = mysqli_connect($servername, $username, $password, $dbname);

    // Check connection
    if (!$conn) {
        die("Connection failed: " . mysqli_connect_error());
    }

    $sql = "INSERT INTO posts(name, s3url, cdnurl) VALUES('$name', '$urls3', '$cfurl')";
    if (mysqli_query($conn, $sql)) {
        // Success
    }
} catch (Exception $e) {
    // Error
}

// Help
// Exit
// Write Out
// Read File
// Where Is
// Replace
// Cut
// Paste
// Execute
// Justify
// Location
// Go To Line
// Undo
// Redo
// Set Mark
// Copy
// To Bracket
// Where Was
```

sudo yum install php8.3-mysqld.x86\_64

```
[root@ip-172-31-8-178 html]# sudo yum install php8.3-mysqld.x86_64
Last metadata expiration check: 1:00:37 ago on Sat Nov 30 04:15:21 2024.
Dependencies resolved.
=====
Package                                Architecture      Version           Repository        Size
=====
Installing:
php8.3-mysqld                          x86_64            8.3.10-1.amzn2023.0.1  amazonlinux      147 k
Transaction Summary
=====
Install 1 Package

Total download size: 147 k
Installed size: 441 k
Is this ok [y/N]: y
Downloading Packages:
php8.3-mysqld-8.3.10-1.amzn2023.0.1.x86_64.rpm                                1.4 MB/s | 147 kB    00:00
-----
Total                                                                    977 kB/s | 147 kB    00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :
  Installing     : php8.3-mysqld-8.3.10-1.amzn2023.0.1.x86_64                1/1
  Running scriptlet: php8.3-mysqld-8.3.10-1.amzn2023.0.1.x86_64                1/1
  Verifying      : php8.3-mysqld-8.3.10-1.amzn2023.0.1.x86_64                1/1

Installed:
  php8.3-mysqld-8.3.10-1.amzn2023.0.1.x86_64

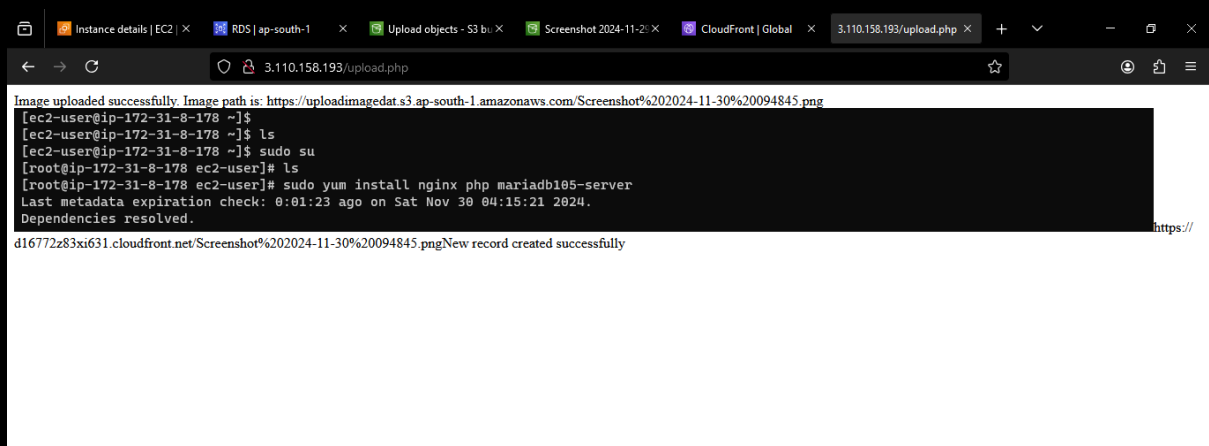
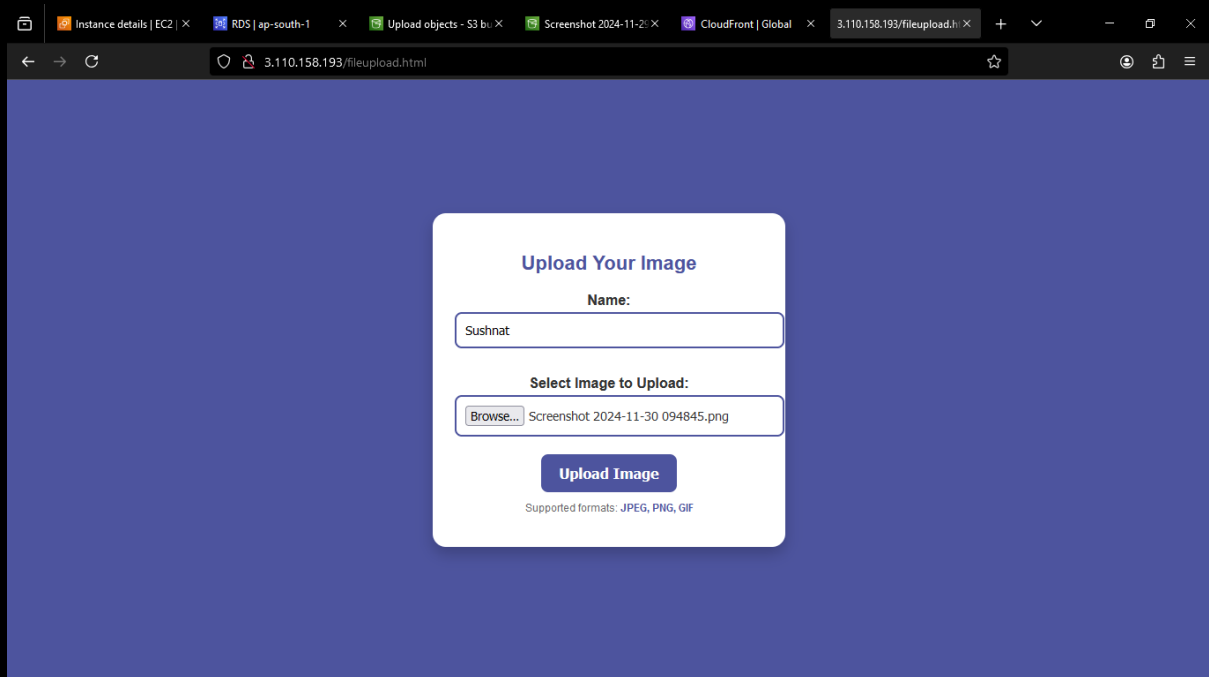
Complete!
[root@ip-172-31-8-178 html]# |
```

sudo service nginx restart

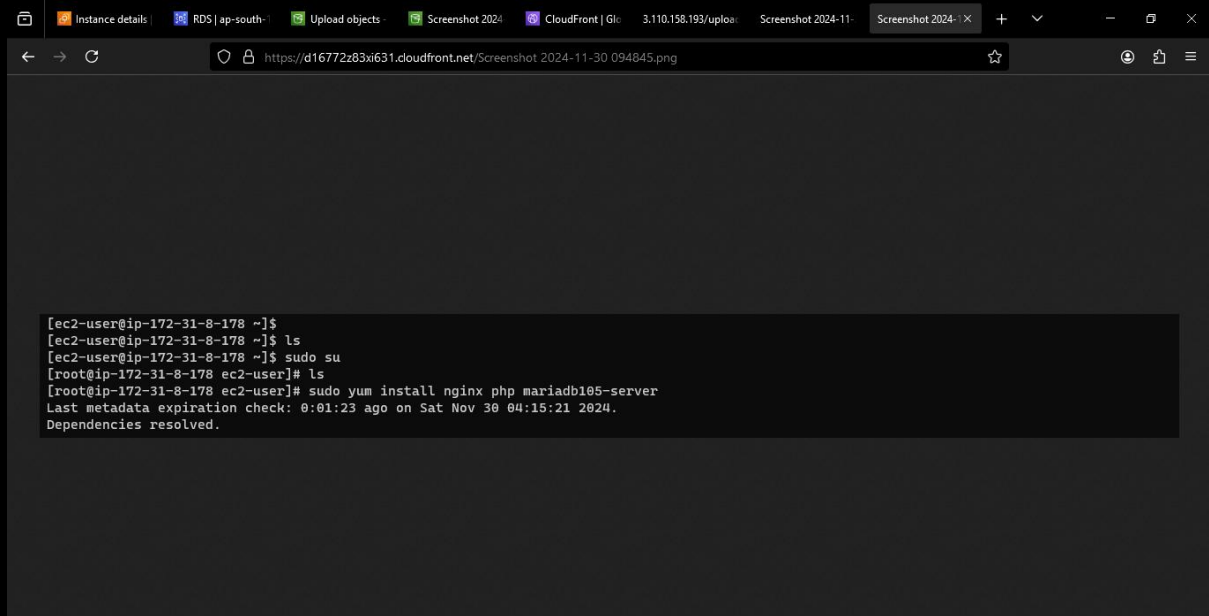
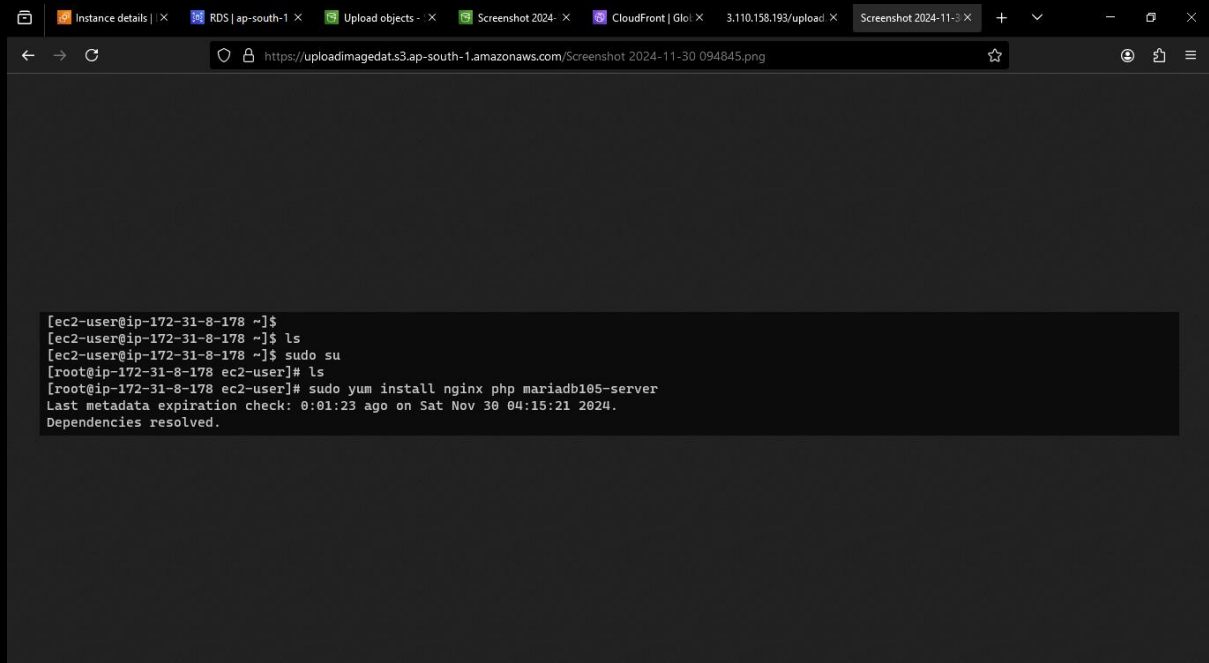
sudo service php-fpm restart

sudo service mariadb restart

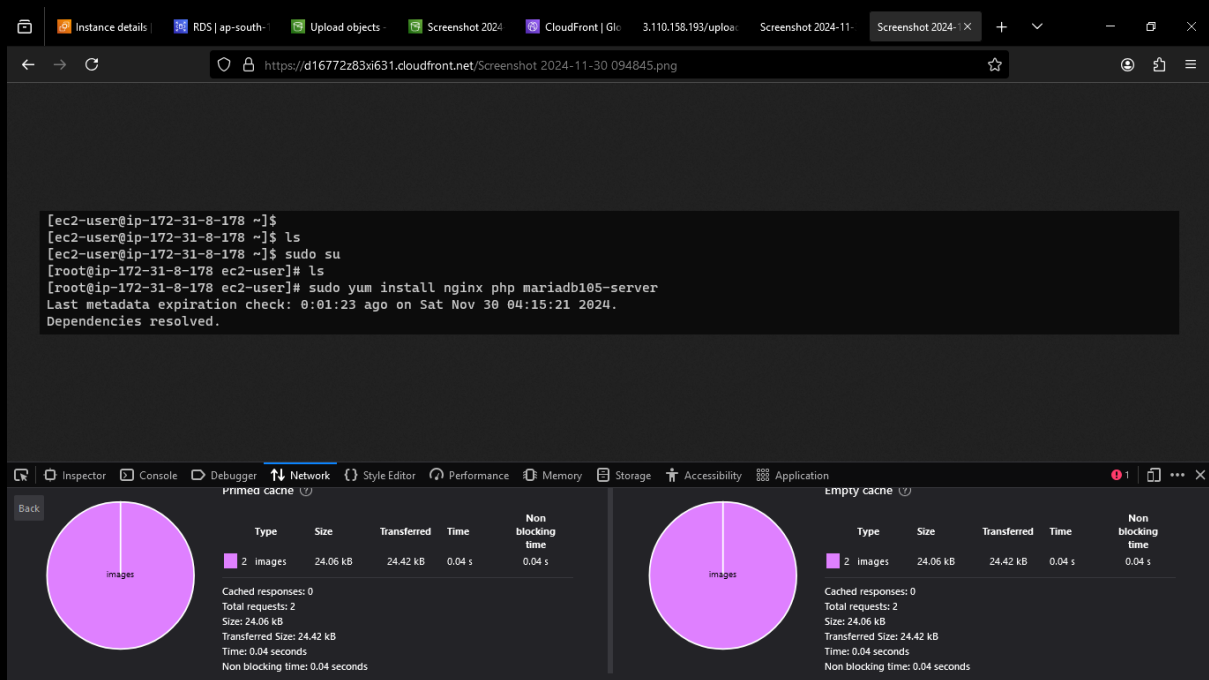
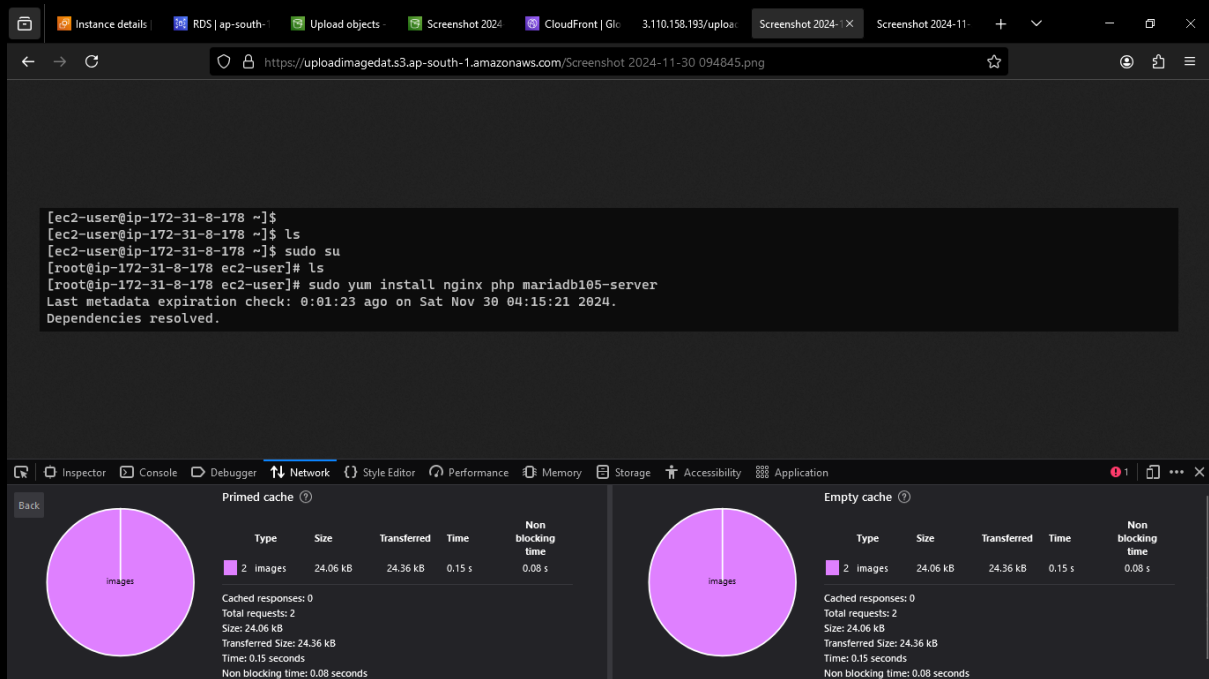
Test uploading image s3url and cdnurl.



Check s3url and cdnurl



Check Speed of getting response from s3url and cdnurl.



Check Data is insert or not to entering our RDS.

```
[root@ip-172-31-8-178 html]# mysql -u root -p -h database-1.c30i06gqged0.ap-south-1.rds.amazonaws.com
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 41
Server version: 8.0.39 Source distribution
```

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
MySQL [(none)]> use instagram;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
```

Database changed

```
MySQL [instagram]> select * from posts;
```

id	name	s3url	cdnurl
1	Sushnat	https://uploadimagadat.s3.ap-south-1.amazonaws.com/Screenshot%202024-11-30%20094845.png	https://d16772z83xi631.cloudfront.net/Screen shot%202024-11-30%20094845.png

1 row in set (0.001 sec)

```
MySQL [instagram]> |
```