Task - 1

Web Application Deployment on AWS EC2 using RHEL

1. Project Overview

This project involves deploying a web application on an AWS EC2 instance running Red Hat Enterprise Linux (RHEL). The deployment includes setting up a web server, installing required packages, configuring, and hosting the application. This setup demonstrates basic cloud infrastructure and Linux server management skills.
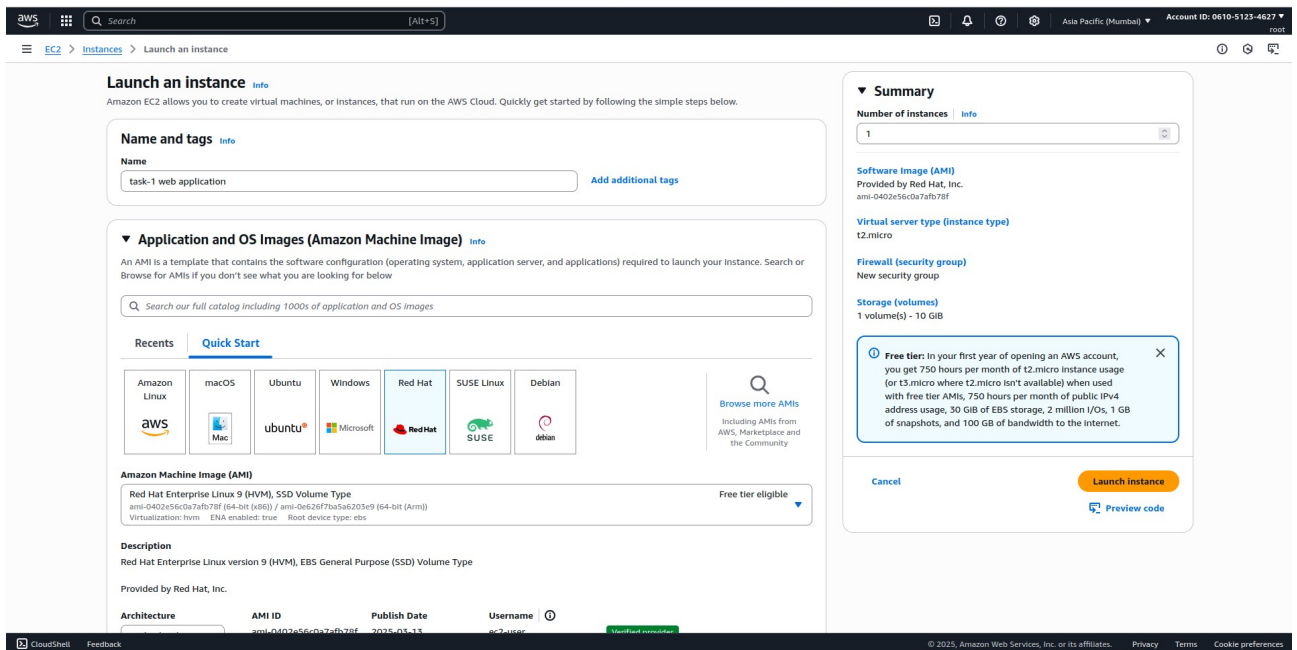
2. Objectives

- Launch an EC2 instance with RHEL OS on AWS
- Install and configure a web server
- Deploy a sample or custom web application
- Ensure accessibility via a web browser

3. Tools & Technologies Used

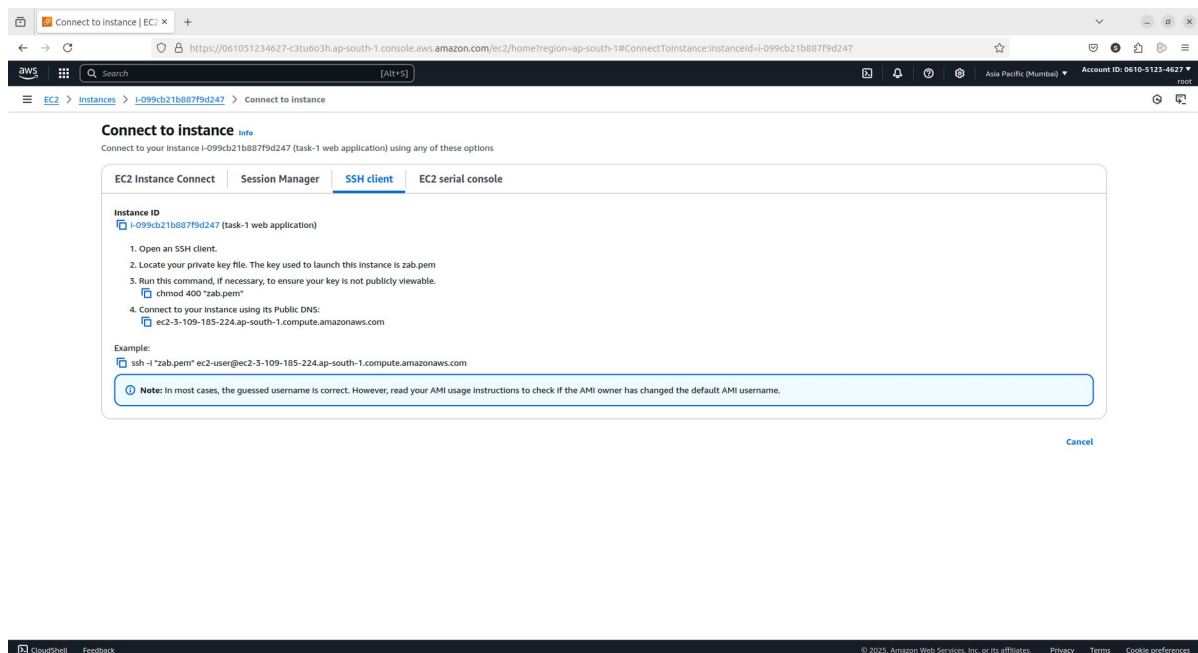| Component	Tool/Tech
Cloud Platform	AWS (Amazon Web Services)
OS	Red Hat Enterprise Linux 9
Web Server	Apache
App Language	PHP
Database	MariaDB (for PHP apps)

4. Implementation Steps

   1. Launch EC2 Instance
   - AMI: RHEL 9 (x86_64)
   - Instance Type: t2.micro
   - Key Pair: zab.pem
   - Security Group: Allow ports 22, 80, 443
   - Storage: 10GB (default)

2. Connect to EC2

ssh -i "zab.pem" ec2-user@ec2-3-109-185-224.ap-south-1.compute.amazonaws.com

3. Update Packages

sudo dnf update -y

4. Apache (LAMP Stack for PHP Apps)

sudo dnf install httpd php php-mysqlnd mariadb-server.x86_64 -y

sudo systemctl enable --now httpd mariadb

sudo systemctl start httpd mariadb

5. Deploy PHP App

This step involves uploading or creating PHP application files and placing them in the Apache web root directory.

- Clean the Default Web Root

  # sudo rm -f /var/www/html/index.html

- Create a Sample PHP Page /Upload PHP Files

  # echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/index.php

- Set Correct Permissions

  # sudo chown -R apache:apache /var/www/html/

  # sudo chmod -R 755 /var/www/html/

- Restart Apache
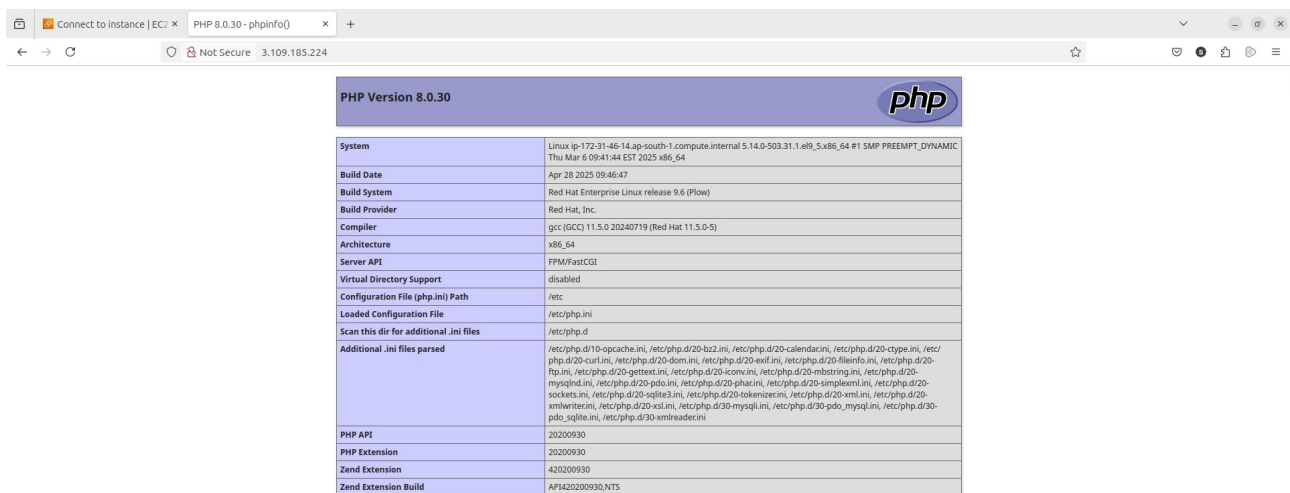
  # sudo systemctl restart httpd

- Access PHP App in Browser

  # http://3.109.185.224/

- Custom PHP sample page

    # sudo vi /var/www/html/index.php

-----code-----

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Brainwave Matrix Solutions - Internship</title>
    <style>
      body {
          font-family: Arial, sans-serif;
          background-color: #f5f7fa;
          color: #333;
          margin: 0;
          padding: 40px;
      }
      .container {
          background-color: #ffffff;
          padding: 30px;
          max-width: 800px;
          margin: auto;
          border-radius: 8px;
          box-shadow: 0 2px 8px rgba(0,0,0,0.1);
      }
      h1 {
          color: #0056b3;
      }
      .task {
          background-color: #eaf4ff;
          border-left: 6px solid #007acc;
          padding: 15px;
```

```
      margin-top: 20px;

      border-radius: 4px;

    }

    footer {

      text-align: center;

      margin-top: 40px;

      font-size: 0.9em;

      color: #777;

    }

  </style>

</head>

<body>

  <div class="container">

    <h1>Brainwave Matrix Solutions</h1>

    <h2>Internship Program</h2>

    <p>Welcome! This page is part of the initial setup for my internship at <strong>Brainwave
Matrix Solutions</strong>.</p>


    <div class="task">

      <h3>📌 First Task: Web Application Deployment</h3>

      <p><strong>Objective:</strong> Deploy a simple web application on a Red Hat Enterprise
Linux (RHEL) EC2 instance hosted on AWS.</p>

      <p><strong>Environment:</strong> RHEL 9, Apache, PHP, AWS EC2</p>

      <p><strong>Status:</strong> ✅ Completed Successfully</p>

    </div>


    <p>This deployment includes setting up the EC2 instance, installing and configuring Apache
and PHP, deploying this PHP page, and ensuring public accessibility through the instance's public
IP.</p>


    <footer>

      &copy; <?= date('Y') ?> Shanil Ahmed – Brainwave Matrix Solutions Internship

    </footer>
```
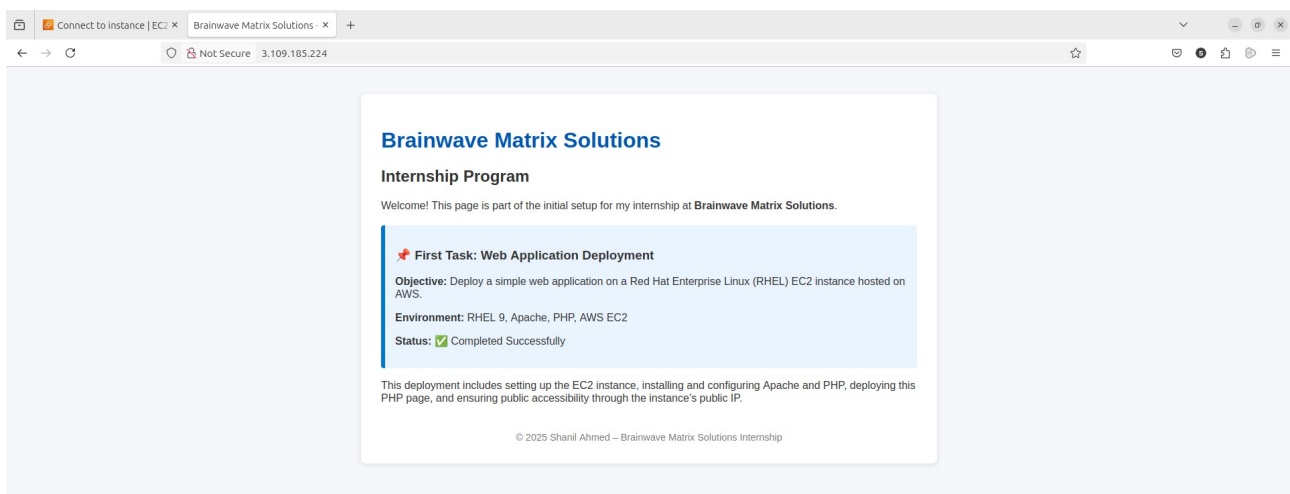
```
    </div>

</body>

</html>
```

***

- Restart Apache

  # sudo systemctl restart httpd

- Access PHP App in Browser

  # http://3.109.185.224/

5. Outcome

    ○   The web app is accessible at http://3.109.185.224/

    ○   Web server is running and starts automatically on boot

6. Conclusion

This project successfully demonstrates the deployment of a web application on a cloud-based RHEL instance. It covers essential cloud practices including server provisioning, package installation, configuration, and basic application deployment on AWS.

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