

Capstone Project: Web Server and Database Deployment Across Two EC2 Instances

Objective: Students will set up a simple web server on one EC2 instance and a MySQL database on another EC2 instance. They will then create a basic web application where users can add records to the database through a web interface.

Project Overview:

Setting up the Database EC2 Instance:

- Launch an EC2 instance dedicated to the MySQL database.
- Install MySQL server and secure the installation.
- Create a new database and user with the necessary permissions.
- Configure the MySQL server to allow connections from the web server's IP address.
- Adjust the security group to allow MySQL traffic (typically port 3306) only from the web server instance.

Setting up the Web Server EC2 Instance:

- Launch another EC2 instance for the web server.
- Install a web server software, e.g., Apache.
- Install PHP (or any other preferred backend language that supports MySQL connections) to interact with the MySQL database on the other EC2 instance.
- Adjust the security group to allow HTTP traffic (typically port 80).

Developing the Web Application:

- Create a simple web page with a form where users can input data (e.g., a guestbook where visitors can leave messages).
- When the form is submitted, the data should be sent to the backend (e.g., a PHP script) which will then add the record to the MySQL database on the other instance.
- Optionally, display the records from the database on the web page.

Testing the Setup:

- Access the web page via the public IP/DNS of the web server EC2 instance.
- Input data into the form and ensure it gets saved in the database on the other EC2 instance.
- Verify that you can retrieve and display saved records on the web page.

Documentation:

- Students should document the entire process: from setting up the EC2 instances, configuring MySQL and the web server, to the coding of the web application.
- Challenges faced and the solutions or workarounds they found should also be included.

Presentation:

- Students showcase their setup and demonstrate the functioning of their web application.
- Discuss the importance of separating the database from the web server in real-world scenarios.

Learning Outcomes:

- Understanding the setup and management of two separate AWS EC2 instances.
- Experience with installing and configuring a web server and a database server.
- Basic web application development and database interaction.
- Appreciating the architecture of separating the web server and the database server.

This project provides a foundational understanding of deploying applications in a multi-server environment, which mimics many real-world setups. It also introduces them to basic database operations, all while keeping everything within the confines of their known toolset (EC2).