Lab 1: Deploy Web Services within a Cloud Environment

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The objective of this lab assignment was to deploy a LAMP (Linux, Apache, MySQL, PHP) server within Amazon AWS, based on examples by Mark Drake in "How To Install Linux, Apache, MySQL, PHP (LAMP) stack on Ubuntu 18.04" and Brian Boucheron in "How To Install WordPress with LAMP on Ubuntu 18.04." The purpose of deploying such a server is to create a robust web service environment capable of running a variety of web applications, with WordPress as the primary example.

Discusions

Initially, I encountered difficulties using Cyberapolis VM on a Mac to execute the necessary steps for this lab. When attempting to connect to the AWS instance via SSH, I received the following error: ssh: connect to host 18.191.62.78 port 22: Operation timed out. This was a significant hurdle that halted my progress. Upon consulting with the professor, it was suggested that I use OpenSSH to connect directly from my Mac to the Ubuntu VM. He advised me to refer to the extracted slides from the previous week's presentation, which provided a clear set of instructions tailored for Mac users:

1. **Change the permissions of the PEM key file using:**
    - chmod 400 /path/key.pem
2. **Connect to the AWS Ubuntu VM using:**
    - ssh -i /path/key.pem ubuntu@aws_ip

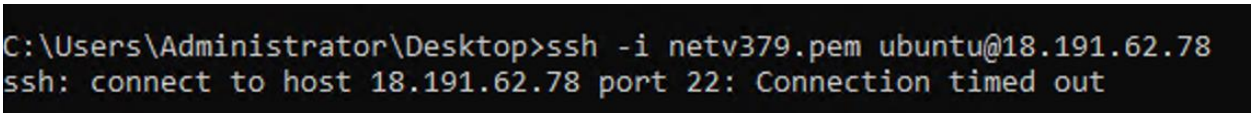
Figure 1

- Similar to Windows 10, permissions must be restricted to the pem file, from Mac Terminal:
  - chmod 400 /pathtokeyfile/key.pem
- To now SSH to your EC2 instance from your Mac enter:
  - ssh -i /pathtokeyfile/key.pem **ubuntu**@aws_ip

Following these steps, I successfully connected to the AWS instance. The professor's guidance was instrumental in overcoming the initial SSH connection issue.

However, after switching to the Mac terminal, I realized that the original instance was no longer accessible. Therefore, I had to create a new instance with a different IP address. Here is the screenshot of the initial connection attempt error:

Figure 2



Once connected, I followed the steps outlined in the lab and supplementary video to install WordPress on Ubuntu. The process involved several stages, including setting up the LAMP stack and configuring WordPress.

Supporting Artifacts

1. **Connecting to AWS Ubuntu VM:**

Figure 3

```
adamg@Adams-MacBook-Air ~ % ssh -i ~/Desktop/netv-379.pem ubuntu@3.135.215.69
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1017-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

  System information as of Wed Jun  5 15:27:00 UTC 2024
```

2. **Installation Steps:**

- Apache Installation:

Figure 4

```
sudo apt update
sudo apt install apache2
sudo systemctl status apache2
```

- MySQL Installation:

Figure 5

```
sudo apt install mysql-server
```

- PHP Installation:

Figure 6

```
sudo apt install php libapache2-mod-php php-mysql
```

- WordPress Installation:

Figure 7

```
cd /tmp
wget -c http://wordpress.org/latest.tar.gz
tar -xzvf latest.tar.gz
```

During the WordPress installation, I carefully followed the instructions, ensuring each component was correctly configured. Any missteps or deviations could have led to significant setbacks.

Observations & Conclusions

The lab provided valuable hands-on experience in deploying a LAMP server and configuring WordPress on an AWS Ubuntu instance. Despite the initial connectivity issue, the lab was a success, demonstrating the importance of troubleshooting and seeking guidance when

faced with obstacles. Below is a screenshot demonstrating the successful completion of the WordPress installation:

Figure 8

References

Liu, F., Tong, J., Mao, J., Bohn, R., Messina, J., Badger, L., & Leaf, D. (2011). NIST Cloud Computing Reference Architecture. Recommendations of the National Institute of Standards and Technology.

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