Lab 1 - Build A Server

The objective of this lab is to build a functional Ubuntu 18.04 based web server with apache. This server will be the focus of your attention through nearly all of the labs in this course.

Preparing for the lab

All labs are designed to be completed individually, but feel free to help each other out as long as you cite and document any support your receive.

To perform this lab you will connect to cyber.moboard.com, just as you did in the previous course, but this time you will be creating your own virtual machine.

Create the Virtual Machine

We expect you to figure things out as you go, your instructor can help guide you in the right direction, but the discovery should be yours. Do not be afraid to make mistakes, this is the best way to learn, but do not expect the instructor to walk you through each step, there is **no** learning that way.

Using the cyber.moboard.com you will need to create a virtual machine (note that the majority of this has already been done for security reasons, you just need to ensure the settings were deployed correctly). **Hint:** Using Google Chrome tends to make things a bit easier as Firefox does not show the virtual machine list as nicely within the interface. Below are the settings we expect you to have for your vm, go through the VM that was set up for you and make sure that the settings are correct, updating the configuration as needed.

1. **VM Name** - 9999_m209999_LastName - With your section number (either 1131, 3331, 4341, or 5531) replacing 9999

2. **Number of cores** - 2

3. **Amount of memory** - 4GB

4. **Disk Size** - 16GB

5. **VM Network** - Student - Your VM will be connected to the Student network

6. **CD/DVD** - Ubuntu 18.04 Server - Located within the SSD datastore

7. **NTP Time Sync** - Enabled - Enable the time sync so that all of your VMs are using the same clock

Install Ubuntu 18.04 Server LTS

You will now need to start the virtual machine and install ubuntu server. Carefully consider the options that it provides during install. Use DHCP during the install, you will change the address later.

After you have successfully installed and rebooted your server, perform the actions below. **Note:** You should SSH into your machines for all of the remaining work. The web interface is only necessary if you have network issues.

1. **Configure a static IP address** - See this link to find your IP address

2. **Install apache2** - You will want at least one service, it might as well be web.

3. **Edit the default web page** - This is the page we get when we go to your IP address, at a minimum put a Image URL link to your favorite XKCD comic. (See: www.xkcd.com, the author is nice enough to even provide

you with the URL to use for embedding!)

4. **Add an account for your instructor** - I'd recommend against giving them root access! This is the perfect time to have them come by to demo your work, and have them enter in a password. **Hint:** the *useradd* or *adduser* commands are very useful.

Demo

Demo your work to the instructor and quickly walk them through your process. SSH into the gateway, like we did in the previous lab, and use curl to grab your the headers for your webpage from your STATIC IP address (as noted below).

- **Also show them your web page by opening a browser inside another VM (you could use your kali box from SY401) and type in your static IP Address ie. 10.10.2.21** Extra Credit - and not required - If you wanted to try to config your yaml file so you could see it via the via the external network, it's link will be similar to:

  - **http://cyber.moboard.com/m209999** - Change m209999 to your mAlpha

Final Steps

1. Run the following command, which will connect you to the local (and cached) apt repository - this will make updates much much faster:

```
echo 'Acquire::http::Proxy "http://10.10.0.19:3142";' | sudo tee /etc/apt/apt.conf.d/00aptpr
```

2. Use curl to get the headers from your web server, this can be accomplished via the command below running from the gateway ssh server:

```
curl -I http://10.10.2.xx -o headers.html
      cat headers.html
```

Replace the IP address with your IP address, and then use SCP to transfer this file back to your workstation from the gateway server and submit as well. **Note:** please use SCP to do this, even if it is just practice, later when you want to move files around you will have to do so via this gateway server.

3. When finished setting up your VM (after the network has been configured and rebooted) run the following command, which will provide information to the instructors. This will allow us to know you have installed your VM correctly:

```
echo "*.* @10.10.0.18:514" | sudo tee -a /etc/rsyslog.d/50-default.conf
      sudo service rsyslog restart
```

What to submit

When you have completed the lab submit all requested materials via email to your Professor, **via a single PDF**. Any file other than a PDF submitted will reduce the overall grade by 10 points.

The email subject line should be **SY402 [Section Number] Lab [X]: Title of Lab** (e.g., SY402 1111 Lab 1: Build A Server). Email sent with a different subject line will reduce the overall grade by 5 points.

The PDF should contain (3 items):

- 1) A screenshot of the configuration file (.yaml)
- 2) A screenshot of the result after running the command below (do so from within your VM when being accessed via SSH):

```
cat /etc/network/interfaces
```

- 3) A link to your website. For example, https://cyber.moboard.com/m209999.