Lab 01 – Virtualizing Your Machine

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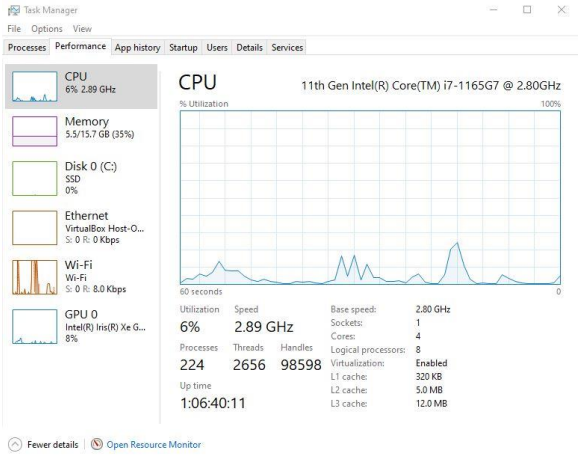
INTRODUCTION

The purpose of this lab is to allow the user/operator to confidently and safely familiarize with the use of virtual machines (VM) by setting up a VM inside a virtual machine manager (VMM) on the user's own host machine or computer. In this lab the user will be using a VM manager, Oracle VM VirtualBox Manager, and testing the functionalities of a Linux operating system, Ubuntu 20.04 LTS, on the user's existing image (Windows 10) via a VMM.

PROCESS

Checking BIOS Settings:



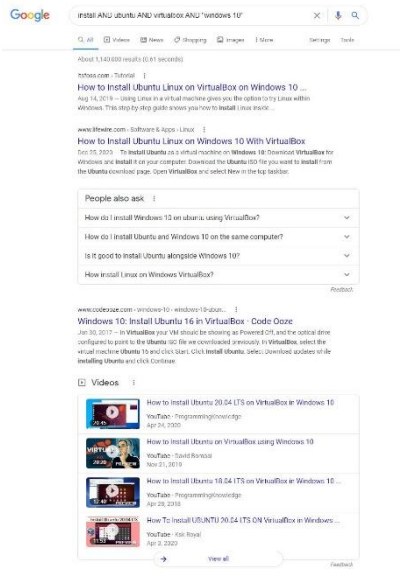
First Step was to check the BIOS settings.

Followed prescribed instructions to check BIOS settings to ensure virtualization is enabled.

Per virtualization parameter, virtualization is enabled.

Conducting Preliminary Research to Install VirtualBox and Ubuntu:

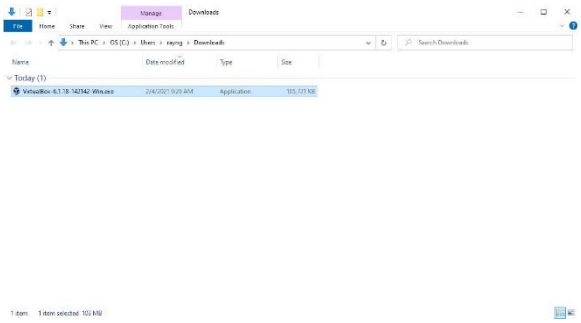
Conducted preliminary research to install a new Operating System (OS) on a virtual machine, specifically, installing Ubuntu 20.04 on VitualBox via Windows 10 OS. Searched with the following query "*install AND ubuntu AND virtualbox AND "windows 10""* via *Google.com* and yielded the following results:



Read and reviewed instructional guidance via *itsfoss.com*, *lifewire.com*, and *lifewire.com*. (Prakash, 2019) (Newell, 2020) Additionally, watched the first two YouTube videos from the search results yielded from my query via *Google.com*. (YouTube, 2020) (YouTube, 2019)

Due to limited experience, I will be defaulting and abiding by the instructions provided by instructor and guidance from *fossbytes.com*. (Kumar, 2020)

Downloading and Installing VMM:

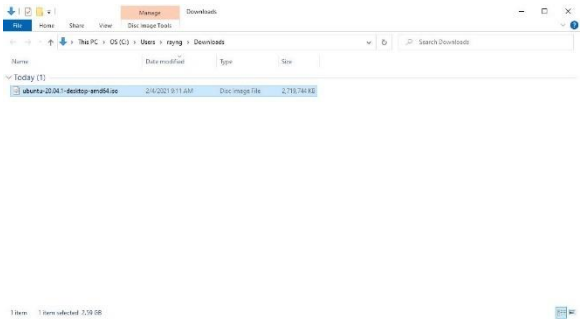


Other options are available for VMM, but due to my minimal experience working with VMMs I chose to download and install Oracle VM VirtualBox Manager, per the instructional guidance given by instructor.

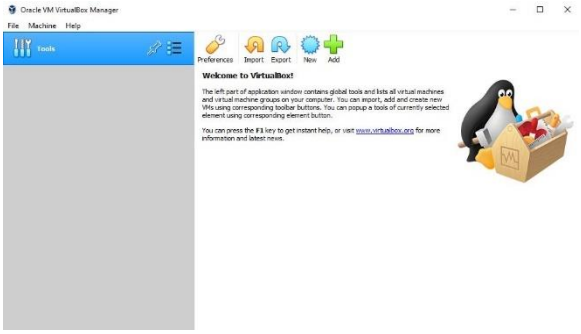
Downloaded VirualBox from *virtualbox.org*, file reflected in my Downloaded Files folder. (Oracle, n.d.)

Selecting and Downloading a Linux Distribution.

Per the instructions, I downloaded Ubuntu 20.04.1 LTS from *ubuntu.com* as shown in my downloaded files in screenshot below. (Ubuntu, 2020)

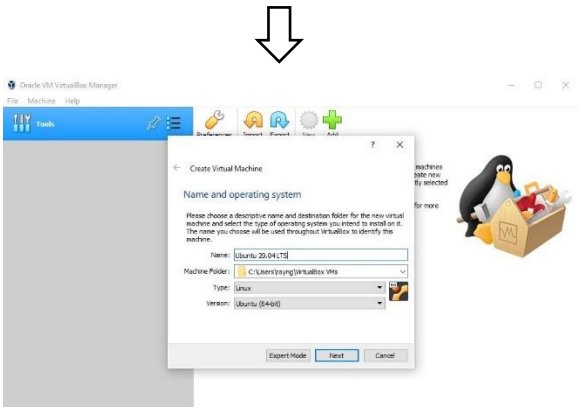


Setting Up VirtualBox:



Installed and setup Virtual Box for the first time.

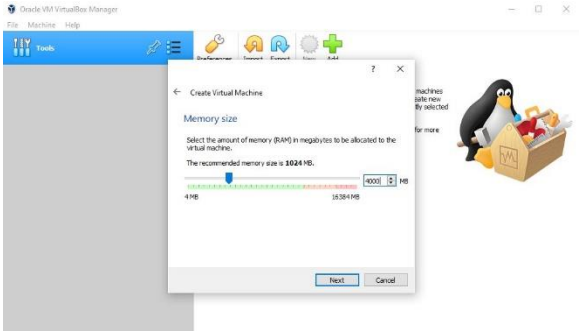
Opened up Oracle VM VirtualBox Manager for the first time (see screenshot above).



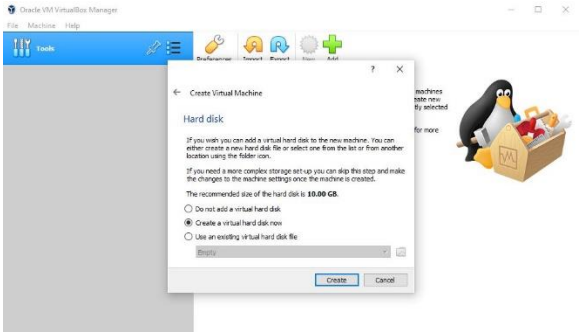
Clicked on 

to begin the process to install Ubuntu on VirtualBox.

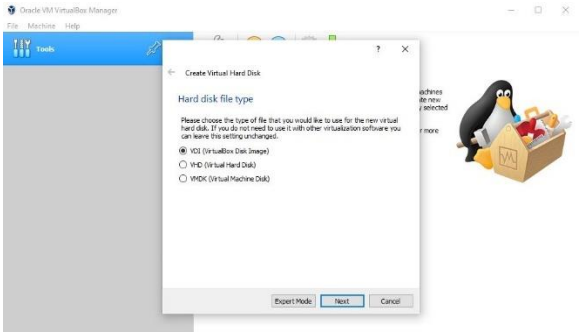
As soon as I inputted "*Ubuntu 20.02 LTS*" into the "Name" section the information in the "Machine Folder:", "Type:", "Version:" sections automatically changed, VirtualBox detected the type and version of the OS. (Kumar, 2020)



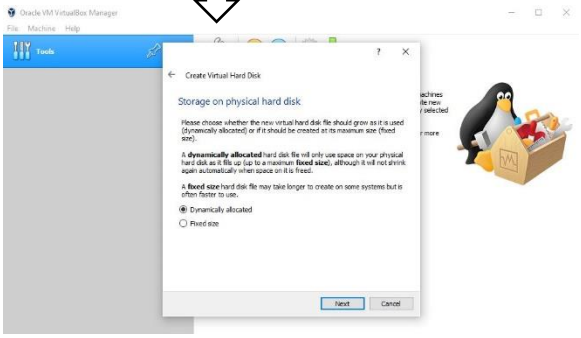
Next, I was instructed to chose memory size. I followed the instructions on *fossbytes.com* indicating that I should chose the RAM size based on my host system. My host system has 8GB of RAM so I went with half (4GB) as indicated for better performance. (Kumar, 2020)



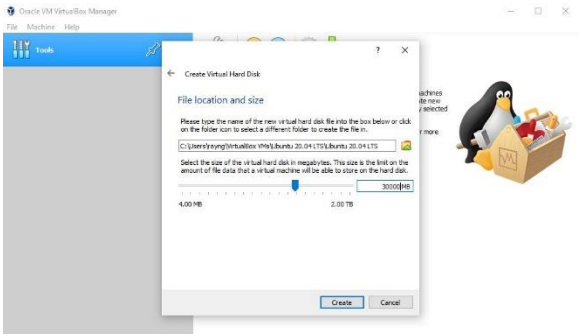
Clicked "Next" on the previous screen and took me to the next prompt of creating a virtual hard disks. I followed recommendation on fossbytes.com of creating a new disk space for Ubuntu VM. (Kumar, 2020)



After creating the virtual disk, the next window prompted me to select a file type. Per the instructions on fossbytes.com I selected .VDI file, and then clicked next, creating a single .VDI file. (Kumar, 2020)

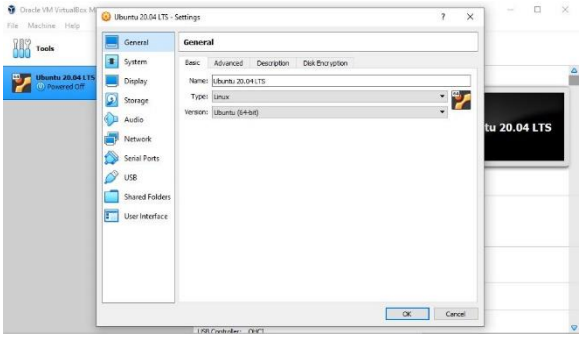


On the prompt I had the option of deciding the scalability of my virtual hard disk. Per the instruction and recommendation via *Fossbytes.com* I chose the "Dynamically Allocated" option to allow me to mount more space at a later stage. (Kumar, 2020)

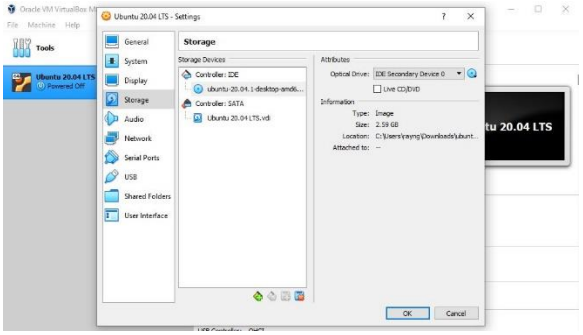


On the next prompt, VirtualBox gives me the option to store the file where I want on my host system and allocate the size based on my requirements. I left the default location because I did not have any reason to store the VDI file anywhere else and I chose the 30GB recommendation per the fossbytes.com for size. (Note: When I was selecting the size I noticed my selections don't come up as "GB", but as "MB", applied simple math and conversion, 1GB is approximately 1000MB.) (Kumar, 2020)

Clicked "Create" on the previous screen and my VM is created.

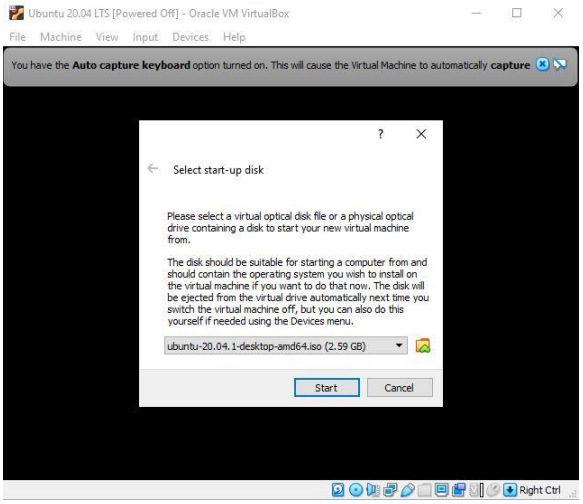


On *fossbytes.com* it indicated that if there were any misspellings or if I wanted to rename the file I could simply edit it in the Settings option. I clicked the Settings option just to view the screen and did not change or manipulate any of the default settings. (Kumar, 2020)



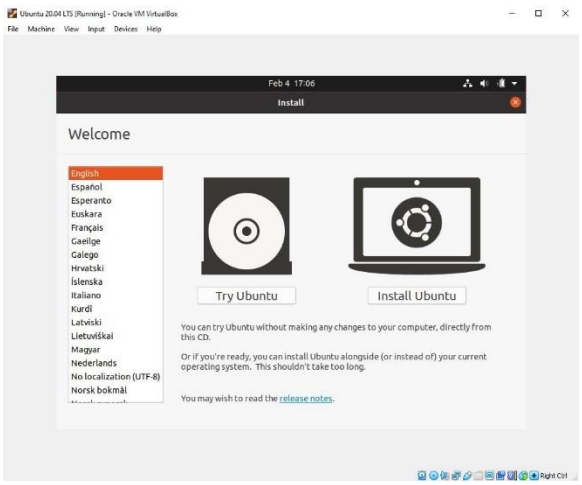
Remaining in the Settings screen I clicked on Storage so that I could load the Ubuntu ISO file located in my Downloaded Files and then clicked OK to save everything, per instructions via *fossbytes.com*. (Kumar, 2020)

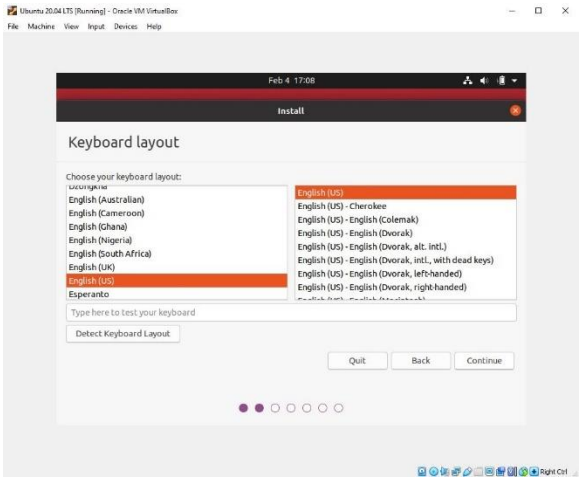
Importing Ubuntu into VitualBox:



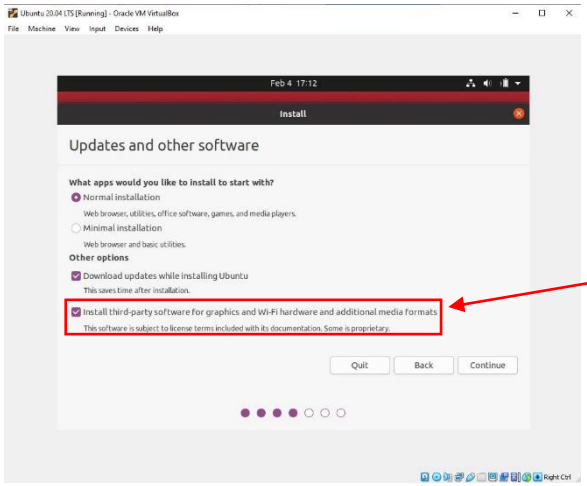
After clicking Start from the VMM window a separate window opened prompting me to select a virtual optical disk file or a physical optical drive containing a disk to start my new VM from. I browsed the files looking for the Ubuntu.iso file I had downloaded into my Downloaded Files folder in the earlier steps and then clicked ‘Start’. (Kumar, 2020)

Before I reached this screen a black and white screen appeared with animated scrolling wheel. It appeared Ubuntu was loading. It took approximately 30 seconds until the screen to the right appeared depicting language and the option for me to either 'Try Ubuntu' or 'Install Ubuntu'. Since I'm working on a VMM I didn't feel the need to click the 'Try Ubuntu' option because I will be experimenting with the software on a VMM so I clicked the 'Install Ubuntu' option. (Kumar, 2020)

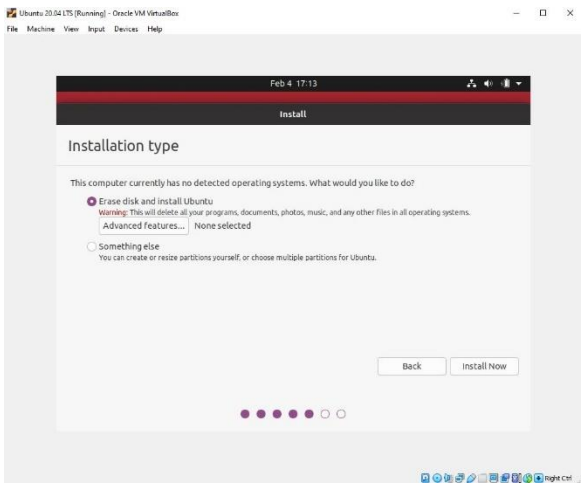




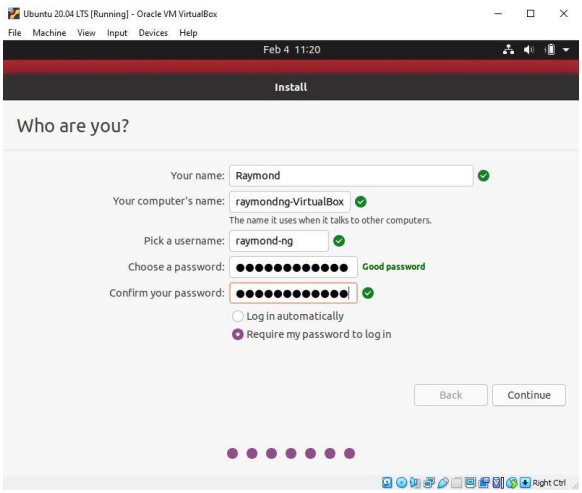
The next few steps were very straight forward. The options were already preselected—just as fossbytes.com indicated—when I got each screen and so I simply clicked "Continue" until it prompted me to the screen to setup my login information. (Kumar, 2020)



On this window, per fossbytes.com, I had to manually click on this option because it indicated that if I was connected to the internet, which I was, it will install all the required drivers and media codecs during installation. (Kumar, 2020)

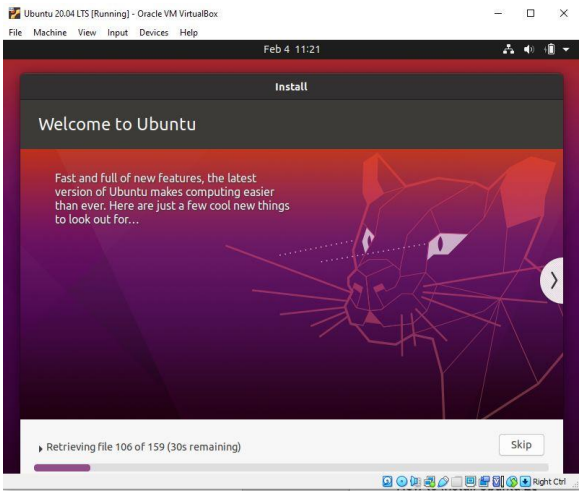


In this window I had the option of choosing “Erase disk and install Ubuntu” or “Something else”. Per the guidance on *fossbyte.com* if I chose “Something else” I would need to manually create partition tables, which is beyond my beginners skillset so I kept the default option “Erase disk and install Ubuntu” selected and skipped Step #5 on fossbytes.com per the instructors guidance. (Kumar, 2020)



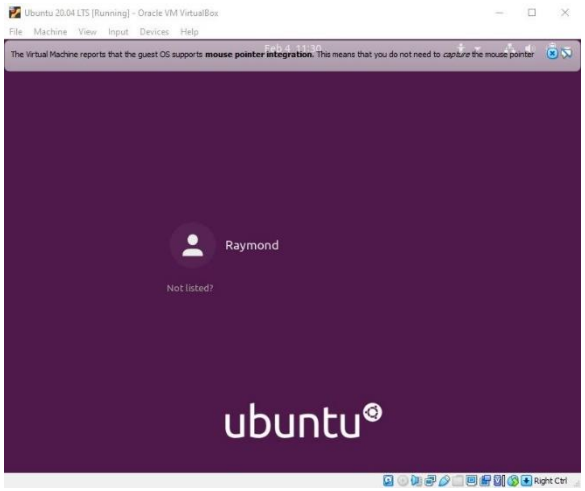
There was a window prior to this one where Ubuntu wanted to know where I was located. I left it alone with the default option selected, it automatically detected where I was located before I proceeded to this screen.

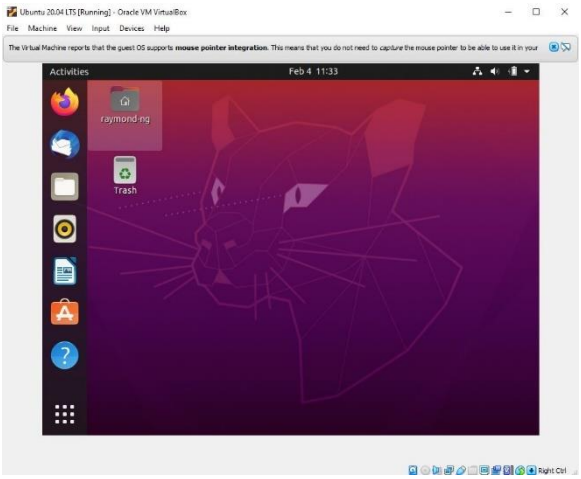
Here I created my log-in for Ubuntu, very straight forward, just as the instructions indicated via *fossbyte.com*. (Kumar, 2020)



After I clicked “Continue” on the previous screen it initiated the installation of Ubuntu on the VMM. There was a slide show playing while it was installing. The installation took approximately 4-5 minutes to complete. (Kumar, 2020)

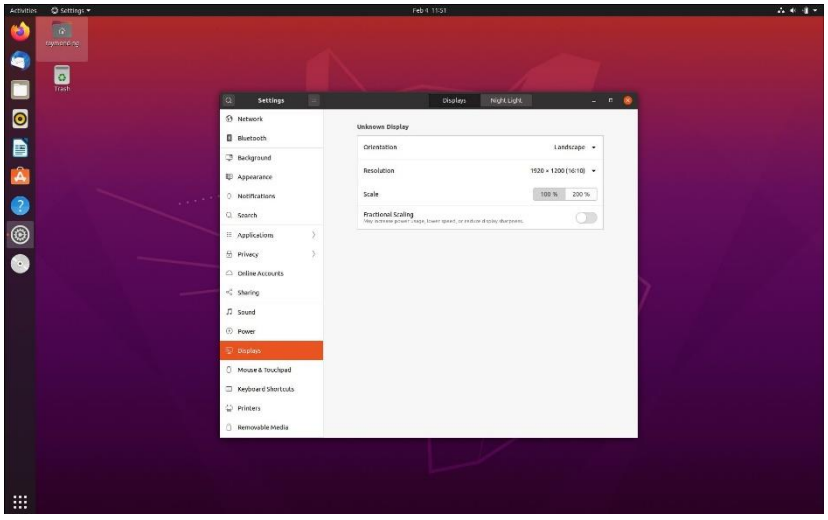
After the installation completed a pop-up window prompted and indicated a restart was required to complete the installation. I clicked “Restart Now” and Ubuntu restarted on the VMM. The restart completed and the Ubuntu log-in screen prompted, and I entered the log-in information I created prior to the installation. (Kumar, 2020)





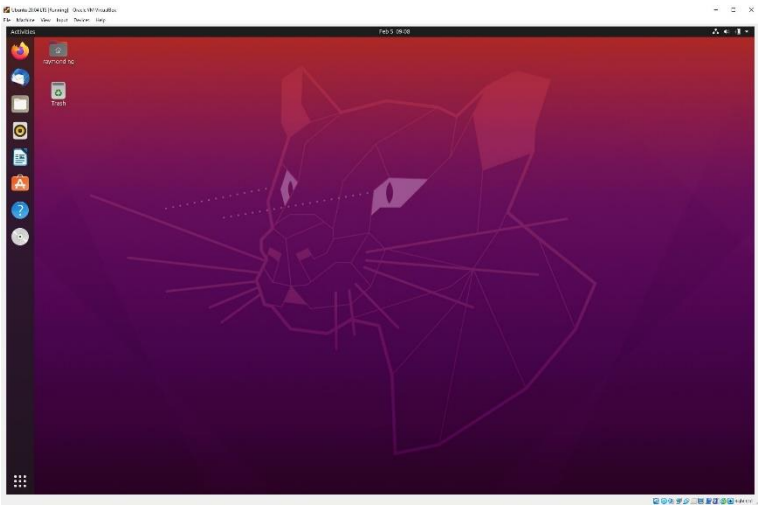
Login was successful, no issues. After I logged in, it brought me to the Desktop Home Screen. (Kumar, 2020)

Exploring Ubuntu:



There was a final step on *fossbyte.com* that allowed me to go full-screen versus using the smaller screen via VMM. I experimented with it by installing the Guest Addition software per the instructions on *fossbytes.com*. After the Guest Addition Software was installed, I selected the full screen option by following the steps on *fossbyte.com*. (Kumar, 2020) Initially, the screen did change so I thought I had did something wrong and so I went on Slack to see if anyone else had the same issue and it would appear that other users encountered

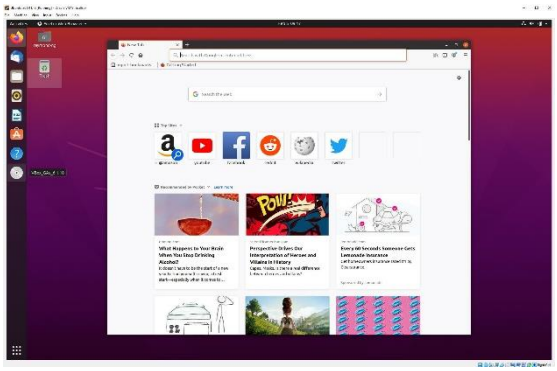
similar issues. From what I read on Slack a few users experimented with the Resolution settings on Ubuntu so I tried out a few options until I go to the 1920x1200 (16:10) and the screen that you see to the left is full screen on a separate monitor (Curved, 34”, OLED monitor) hooked up to my laptop.



The first thing I noticed that was unique about this OS is the overall layout beginning with the task bar on the left. Traditionally, whether it be Windows or a Mac, the taskbar is normally located on the bottom of the desktop.

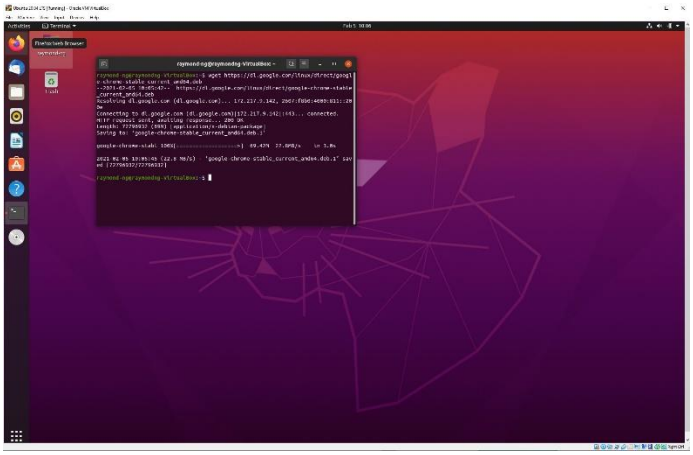
Additionally, the date, time, internet connectivity, sound and battery life status indicators are located at the top, top-right corner of the screen versus on the lower- right like on a Windows OS.

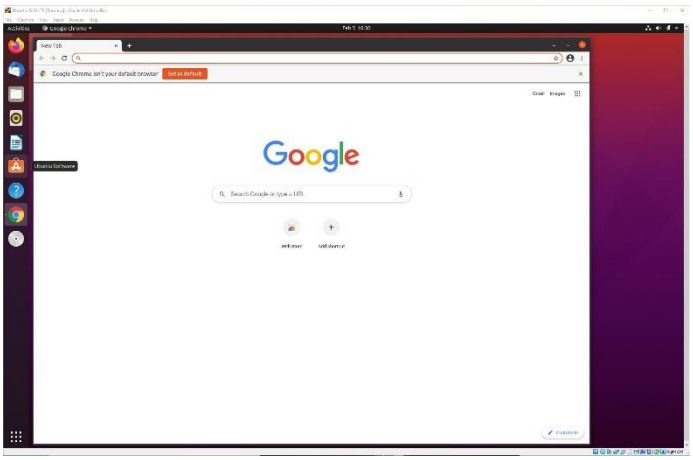
The layout appears quite simple and aesthetically pleasing. The applications feel very intuitive. Almost felt like I was using a tablet or smart phone because of the way the applications are laid out.



Firefox appeared to be the primary internet browser on this OS. I opened it up just to see if there were any notable differences than the appearance on a Windows OS. I went to browse a couple websites including *google.com* and *bing.com*. I did not observe any notable differences.

I wanted to try another browser, specifically Google Chrome on Ubuntu to see if it appeared and functioned the same so I looked up how to download it. It appeared that there was a way to do it via Linux, specifically on Ubuntu, in the command terminal. I have little experience using the command line interface (or terminal) so I thought I would try something different. Following the guidance on linuxize.com I first opened the terminal. The first step was to download the latest Google Chrome .deb package using wget. So I typed the following in the terminal: *wget https://dl.google.com/linux/direct/google-chrome-stable_current_amd64.deb*. This only downloaded Google Chrome and now I had install it. Per the guidance on the linuxize.com the next and last step was to run another command as a user on sudo privileges to install Google Chrome so I entered *sudo apt install ./google-chrome-stable_current_amd64.deb* into the terminal. When prompted I had entered my user password that I had setup when I installed Ubuntu via VMM (requested administrative privileges). (Linuxize, 2020) Lastly, I opened up Google Chrome, no notable differences observed compared to Windows OS.





Separately, I learned a couple new command-line utilities when I installed Google Chrome via the terminal, *Wget* and *sudo*. *Wget* is for downloading files from the internet, specifically files using HTTP, HTTPS, and FTP protocols. (Linuxize, 2020) *sudo* command is designed to allow users to run programs with the security privileges of another user. (Linuxize, 2019)

CONCLUSION

In conclusion, the lab was successful. I encountered minimal issues by following the prescribed instructions given by the instructor and the block of instructions on how to download and install VitualBox and Ubuntu found on *fossbytes.com*. The one issue that I had regarding the full-screen capability for Ubuntu via VMM was easily remedied by changing the resolution settings. Coming from a background of minimal experience working with VMMs this lab not only helped me understand the benefits of using them experimentally, but also promoted confidence. If I had one

recommendation for the lab is to demonstrate a little more clearly to a beginner like myself how VMMs are used in a Cybersecurity analysts' tradecraft (i.e. providing example scenarios etc.)

REFERENCES

Internet Resources

Kumar, S. (2020, March 30). *How To Install Ubuntu 20.04 LTS On VirtualBox [Windows, Linux And macOS]*. Retrieved from Fossbytes: https://fossbytes.com/how-to-install-ubuntu-20-04-lts-virtualbox-windows-mac-linux/

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YouTube. (2020, April 24). *How to Install Ubuntu 20.04 LTS on VirtualBox in Windows 10*. Retrieved from YouTube: https://www.youtube.com/watch?v=x5MhydijWmc

COLLABORATION

No coordination or collaboration was made on my end; however, I did frequently tune into the conversations on Slack to see what I should lookout for before, during, and after I completed the lab. The user that addressed the issue regarding the full-screen mode in the #lab-01 room was remedied by another user suggesting experimenting with the Resolution settings on Ubuntu via VMM. Additionally, I plan to run through the motions of installing a VMM and Ubuntu on my MacBook and from observing the message traffic on Slack I may encounter some issues with it so I will tune into lessons learned by other users to navigate the process.