

STUDY GUIDE FOR MODULE NO. LAB M01**Virtual Machines****MODULE OVERVIEW**

A virtual machine (VM) is a software-based emulation of a physical computer. It allows you to run multiple operating systems on a single physical machine, providing a way to efficiently utilize hardware resources and isolate different computing environments. Virtualization technology enables the creation, management, and operation of these virtual machines.

**MODULE LEARNING OUTCOMES**

By the end of this module, participants should be able to:

1. Understanding of Virtualization Concepts:
 - a. Outcome: Develop a clear understanding of virtualization concepts, including the role of hypervisors, virtual machines, and the benefits of virtualization.
2. Ability to Install and Configure Hypervisors:
 - a. Outcome: Gain proficiency in installing and configuring hypervisors, whether they are Type 1 (bare-metal) or Type 2 (hosted) hypervisors.
3. Creation and Management of Virtual Machines:
 - a. Outcome: Acquire the skills to create, configure, and manage virtual machines, including allocation of resources such as virtual CPUs, memory, and storage.
4. Operating System Installation and Management:
 - a. Outcome: Learn how to install and manage operating systems within virtual machines, including the installation of guest operating system tools or drivers.
5. Resource Optimization:
 - a. Outcome: Understand techniques for optimizing resource usage within virtualized environments, such as allocating resources based on workload requirements and implementing resource pooling.
6. Networking in Virtual Environments:
 - a. Outcome: Gain knowledge of virtual networking concepts, including configuring network interfaces, creating virtual networks, and understanding how VMs communicate with each other and the external network.
7. Security Considerations:
 - a. Outcome: Develop an awareness of security considerations in virtualized environments, including best practices for securing hypervisors, isolating VMs, and implementing network security measures.
8. Backup and Recovery:
 - a. Outcome: Learn strategies for creating backups and snapshots of virtual machines and understand the processes for recovering from failures or restoring virtual machine states.
9. Performance Monitoring and Troubleshooting:
 - a. Outcome: Acquire skills in monitoring the performance of virtual machines, identifying performance bottlenecks, and troubleshooting common issues.
10. Integration with Cloud Services:
 - a. Outcome: Understand how virtualization concepts are extended to cloud computing, including the use of virtual machines in cloud environments and the benefits of cloud-based virtualization.
11. Automation and Orchestration:
 - a. Outcome: Explore tools and technologies for automating the deployment, management, and scaling of virtual machines, enhancing efficiency and reducing manual intervention.
12. Application in IT Infrastructure and Operations:
 - a. Outcome: Gain insights into how virtualization is applied in real-world scenarios, particularly in IT infrastructure and operations, such as data centers and cloud environments.

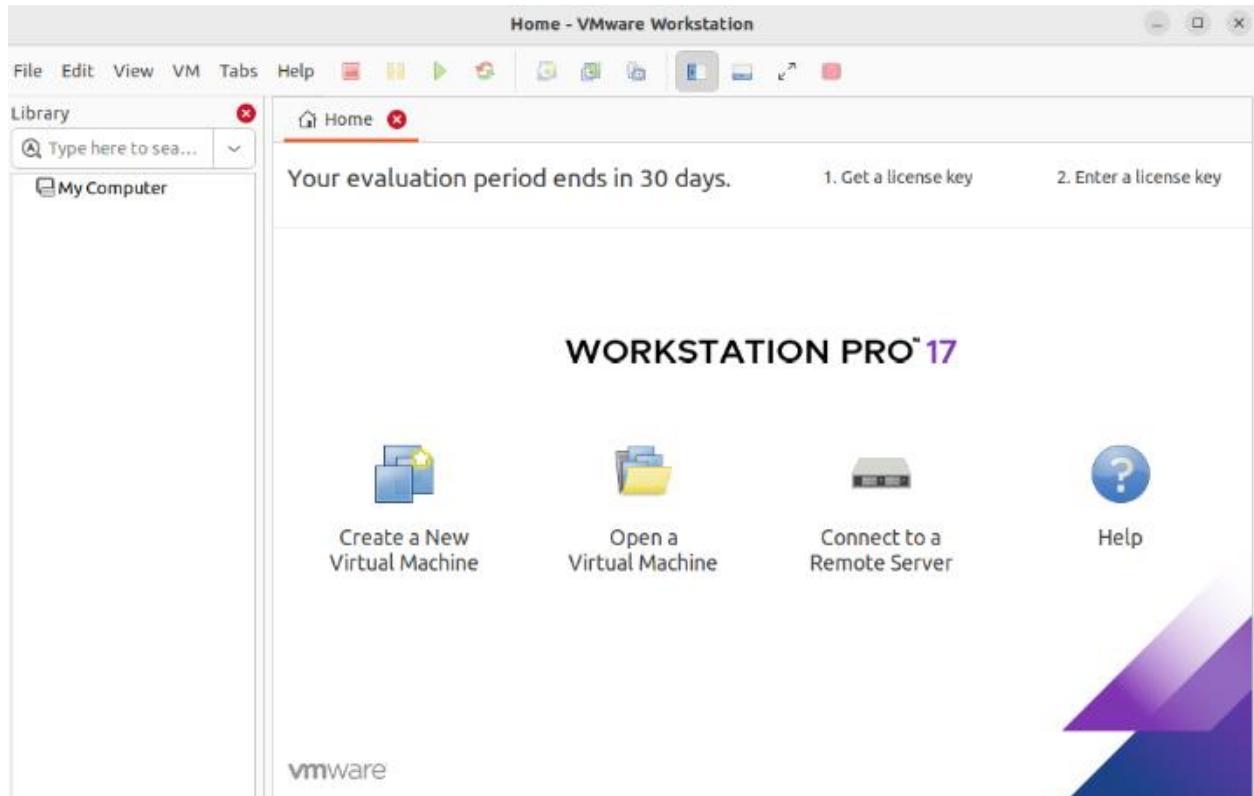




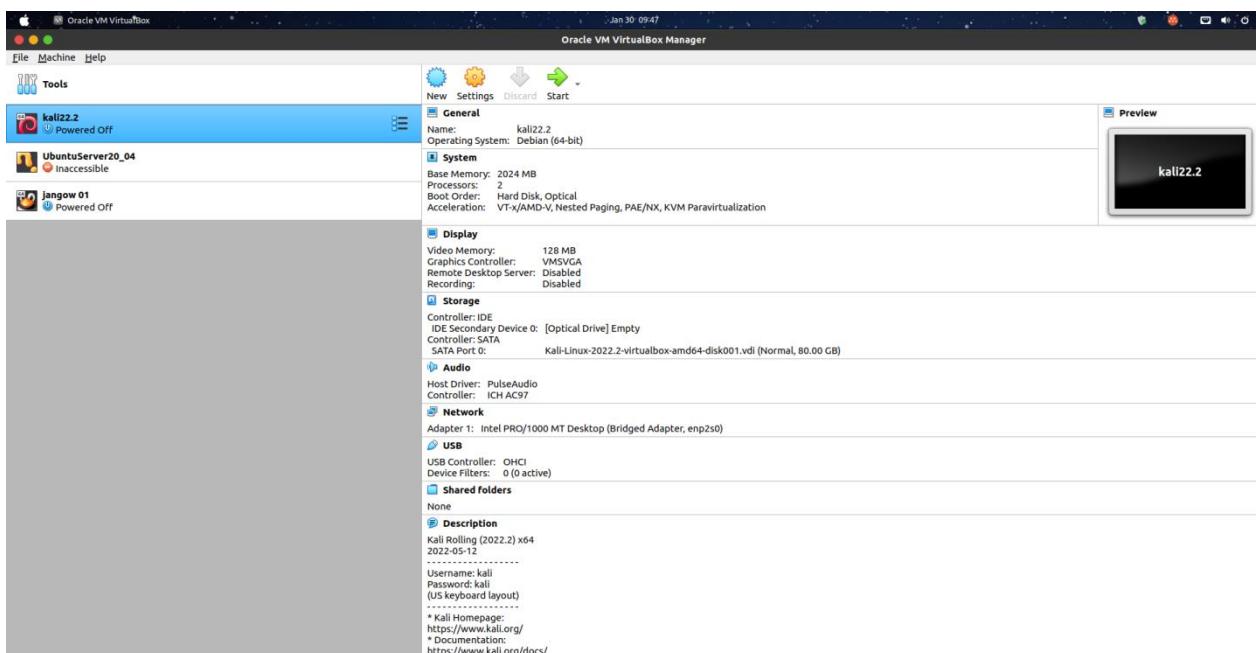
LEARNING CONTENT (Virtualization)

VMware Workstation is a virtualization software application that allows users to run multiple operating systems on a single physical machine. It provides a virtualized environment where you can install and run different operating systems concurrently, often referred to as virtual machines (VMs).

VMware Workstation comes in two editions: VMware Workstation Player (free for personal, non-commercial use) and VMware Workstation Pro (a paid version with additional features and commercial use license). The software is widely used by developers, IT professionals, and organizations for various purposes, including software development, testing, training, and system administration.



VirtualBox, officially known as Oracle VM VirtualBox, is a free and open-source virtualization software that allows users to run multiple operating systems on a single physical machine. It is developed by Oracle Corporation and is widely used for testing, development, and other virtualization purposes. VirtualBox is suitable for a range of use cases, from testing software in different environments to running legacy applications and creating isolated development environments. It is a popular choice for developers, IT professionals, and hobbyists due to its ease of use and broad compatibility.



Uninstalling VMware Workstation in Ubuntu

```
Jan 30 10:11
ken@ken-H410M-H-V3: ~
ken@ken-H410M-H-V3: ~ 80x24
ken@ken-H410M-H-V3:~$ ken@ken-H410M-H-V3:~$ sudo vmware-installer -u vmware-workstation
[sudo] password for ken:
vmware-workstation is not an installed product.
Available products are:

vmware-workstation

ken@ken-H410M-H-V3:~$ sudo vmware-installer -u vmware-workstation
All configuration information is about to be removed. Do you wish to
keep your configuration files? You can also input 'quit' or 'q' to
cancel uninstallation. [yes]:
```

Uninstalling VMware Installer 3.1.0

Deconfiguring...

```
[#####] 100%
Uninstallation was successful.
ken@ken-H410M-H-V3:~$ ken@ken-H410M-H-V3:~$ ken@ken-H410M-H-V3:~$ ken@ken-H410M-H-V3:~$ ken@ken-H410M-H-V3:~$ ken@ken-H410M-H-V3:~$
```

Uninstalling VirtualBox

```

Jan 30 10:36
ken@ken-H410M-H-V3: ~
ken@ken-H410M-H-V3: ~ 86x55
ken@ken-H410M-H-V3:~$ sudo apt-get remove --purge virtualbox
[sudo] password for ken:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  dctrl-tools dkms libgsoap-2.8.117 virtualbox-dkms
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  virtualbox*
0 upgraded, 0 newly installed, 1 to remove and 2 not upgraded.
After this operation, 0 B of additional disk space will be used.
Do you want to continue? [Y/n] y
(Reading database ... 459921 files and directories currently installed.)
Purging configuration files for virtualbox (6.1.48-dfsg-1~ubuntu1.22.04.1) ...
ken@ken-H410M-H-V3:~$ sudo apt autoremove
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be REMOVED:
  dctrl-tools dkms libgsoap-2.8.117 virtualbox-dkms
0 upgraded, 0 newly installed, 4 to remove and 2 not upgraded.
After this operation, 7,941 kB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 459919 files and directories currently installed.)
Removing virtualbox-dkms (6.1.48-dfsg-1~ubuntu1.22.04.1) ...
Module virtualbox-6.1.48 for kernel 6.5.0-15-generic (x86_64).

```



LEARNING ACTIVITY 1

Name: Cerujano, Erman Ace M. Due date: February 05, 2024

Create a detailed step-by-step method with pictures and detailed description on how you performed activities in A, B, C, and D. Use the space provided below.

- A. Installing VMware (workstation) and Virtual Box software
- B. Install the following operating systems in your VMWare
 - a. Linux-based OS (e.g. Ubuntu) Server
 - b. Linux-based OS (e.g. Ubuntu) Desktop
 - c. Windows Desktop OS
 - d. Windows Server OS
- C. Virtual Box
 - a. Linux-based OS (e.g. Ubuntu) Server
 - b. Linux-based OS (e.g. Ubuntu) Desktop
 - c. Windows Desktop OS
 - d. Windows Server OS
- D. Virtual Interconnection
 - a. Physical to Virtual



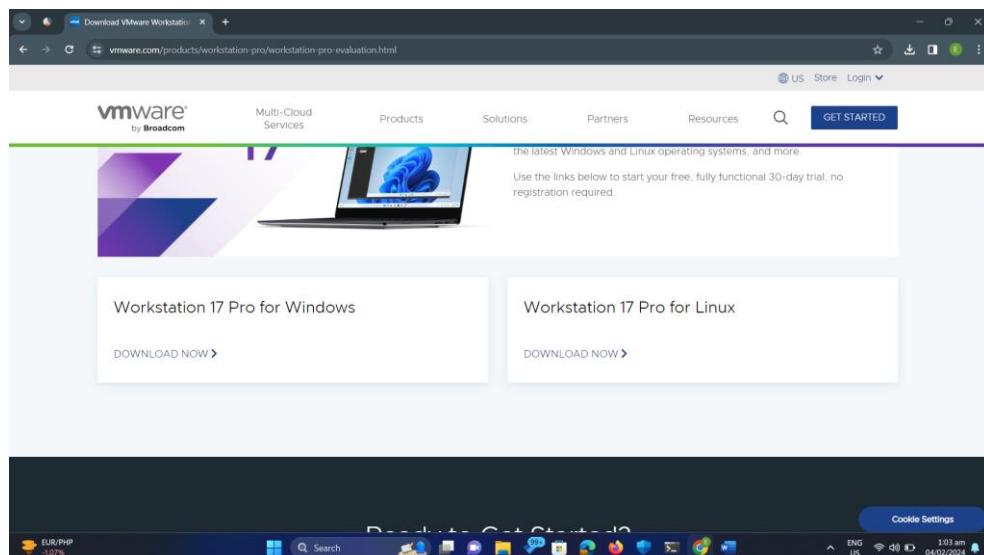
- i. Connect your physical OS with one of your virtual OS and make sure that they can communicate with each other through “ping” command.
- b. Virtual to Virtual
 - i. Make sure that both virtual machines inside your physical OS can communicate with each other through “ping” command



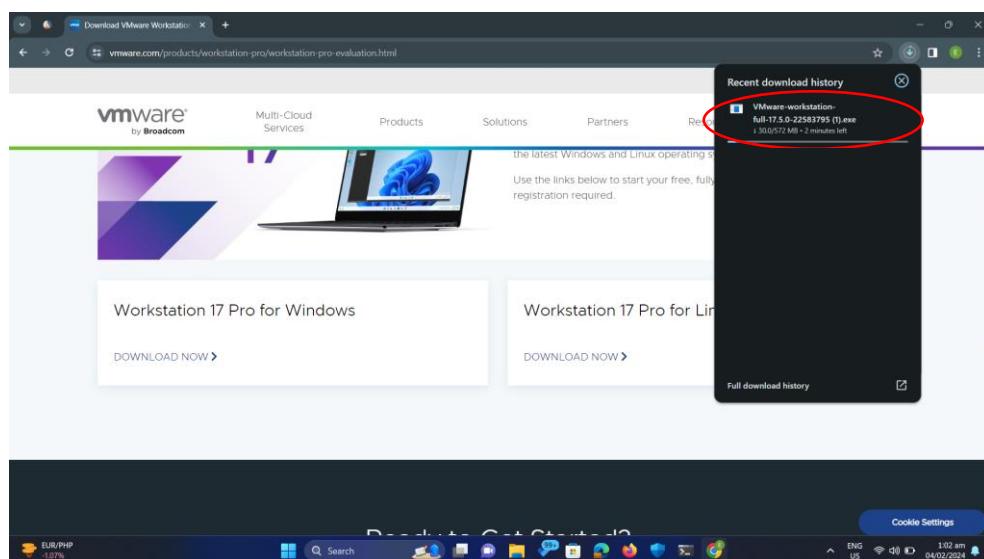
INSTALLING VMWARE (WORKSTATION) AND VIRTUAL BOX SOFTWARE

Installing VMware (Workstation)

STEP 1: To install VMware, Go to this link <https://www.vmware.com/products/workstation-pro/workstation-pro-evaluation.html> scroll down and select your Operating System used.

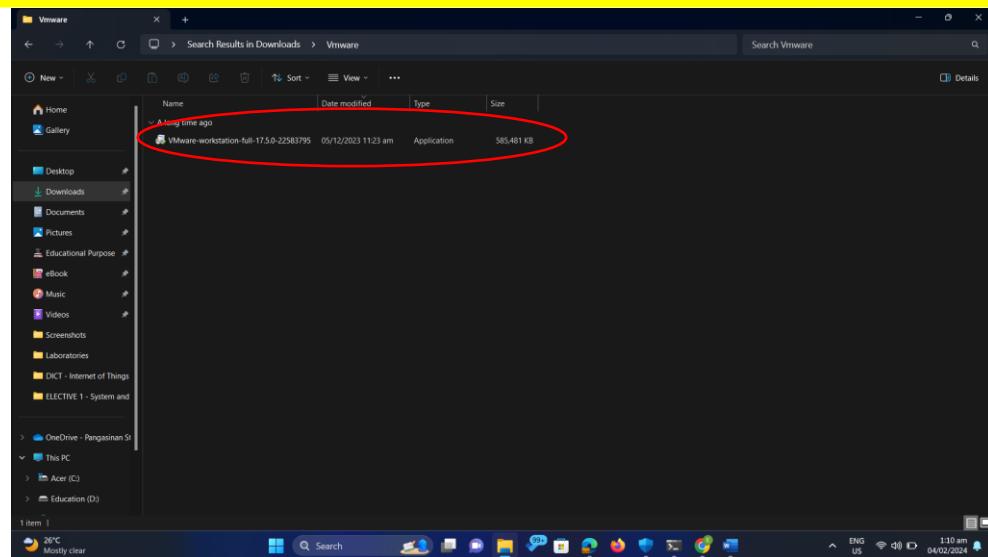


STEP 2: After clicking your chosen installer, it will start downloading the VMware installer. Wait for it to install.

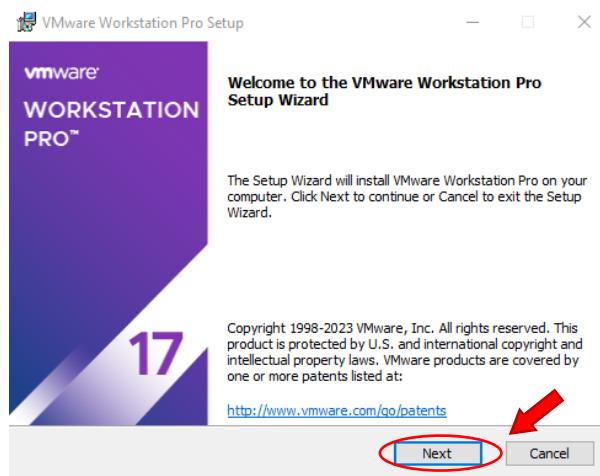


STEP 3: After you have finished downloading the installer, open it.

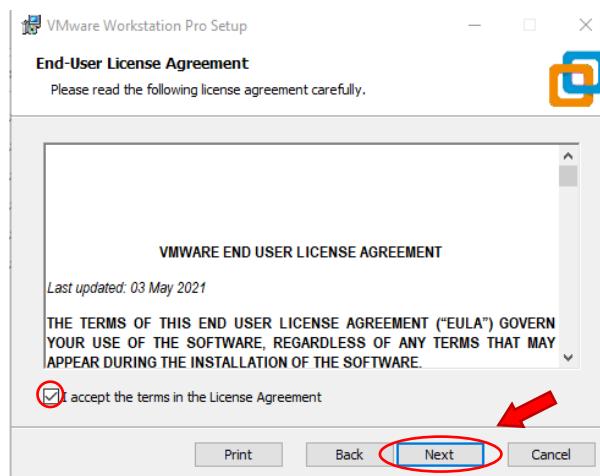




STEP 4: Then click "Next".

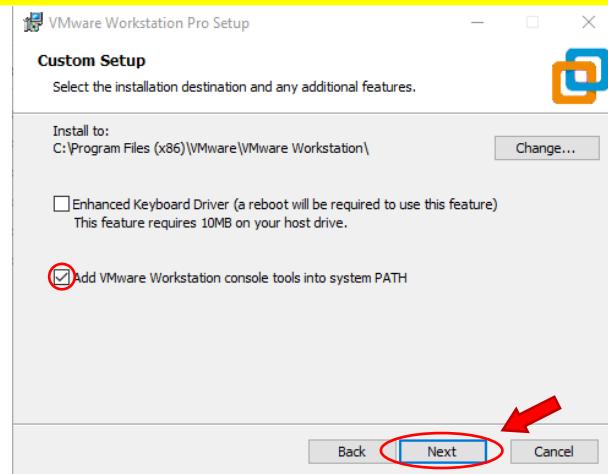


STEP 5: Read the License Agreement. If you agree in the Terms in the License Agreement. Click the checkbox of "I accept the terms in the license Agreement." Then click "Next".

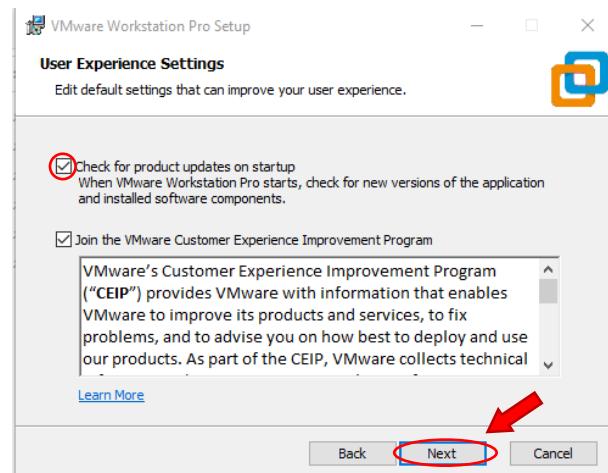


STEP 6: Select the installation destination and any additional feature. For this example, I choose the "Add VMware Workstation console tools into system PATH." Then click "Next."

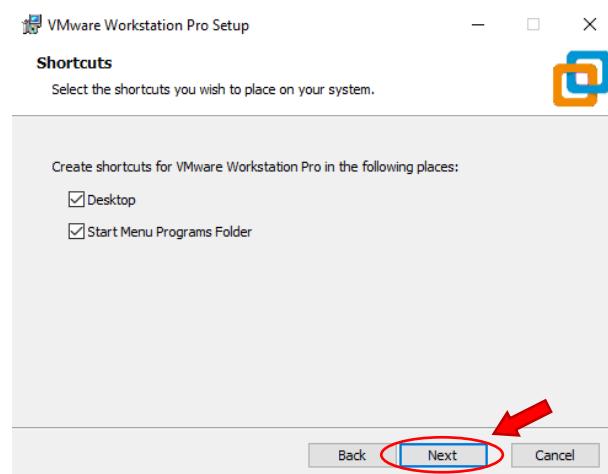




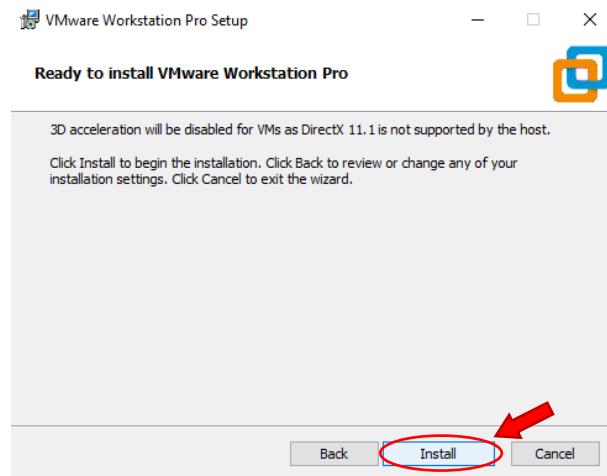
STEP 7: User Experience Setting. Select the “Check for product updates on startup” and if you want to Join the VMware Customer Experience Improvement Program just click it. After that click “Next”



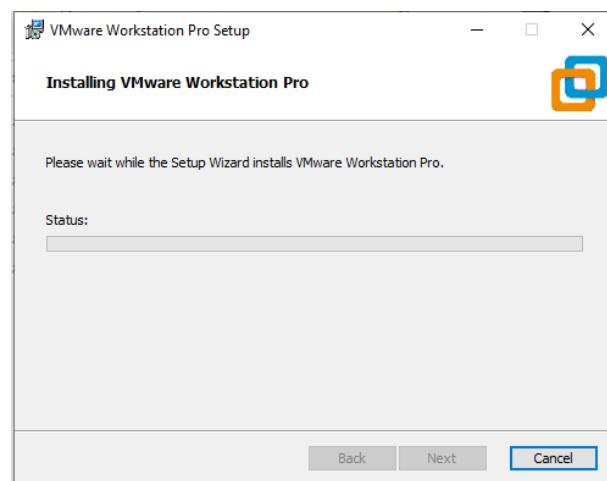
STEP 8: Select the shortcuts you wish to place on your system. It is recommended to select the “Desktop” so that it is easy for you to see and open this VMware File. Also select “Start Menu Programs Folder.” Then Click “Next.”



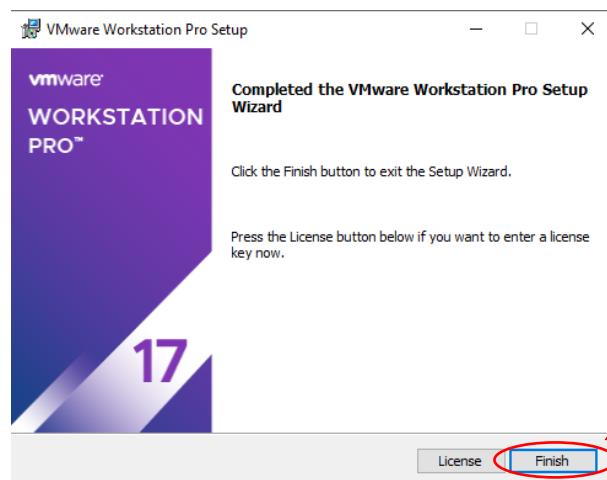
STEP 9: Click Install to start installing the VMware Workshop Pro.



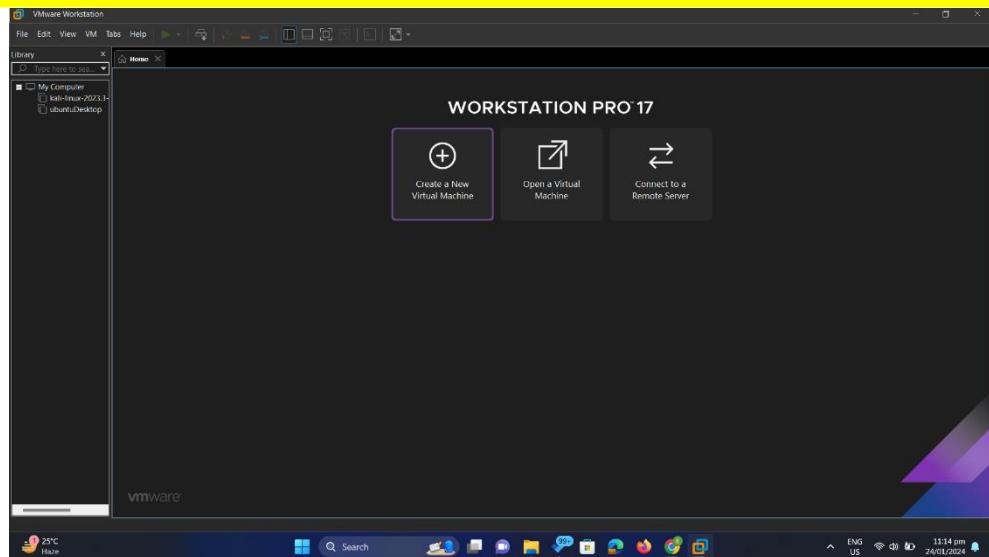
STEP 10: Wait for a couple of minutes to install the VMware Software.



STEP 11: After installing the VMware software. Click “Finish” Button.

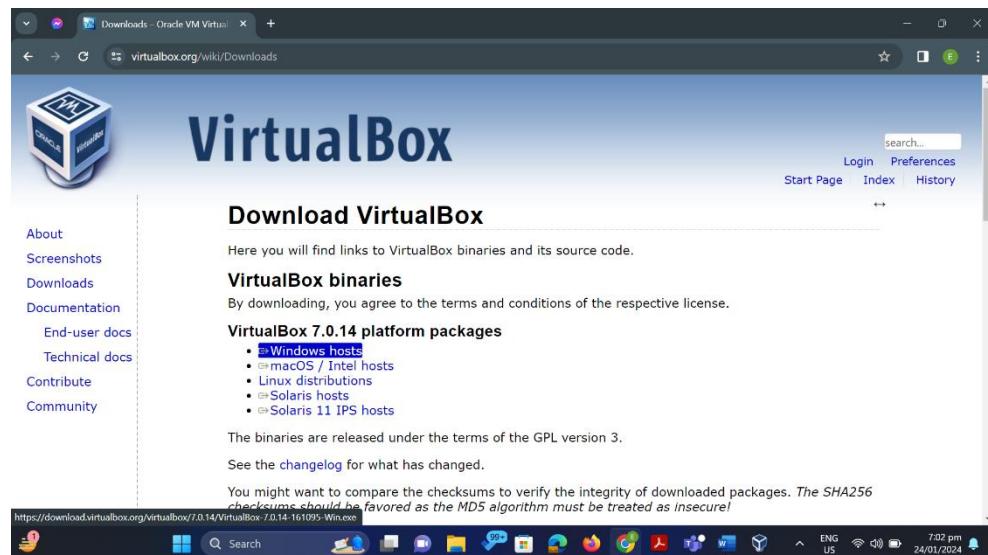


You now successfully installing the VMware Software into your Device.

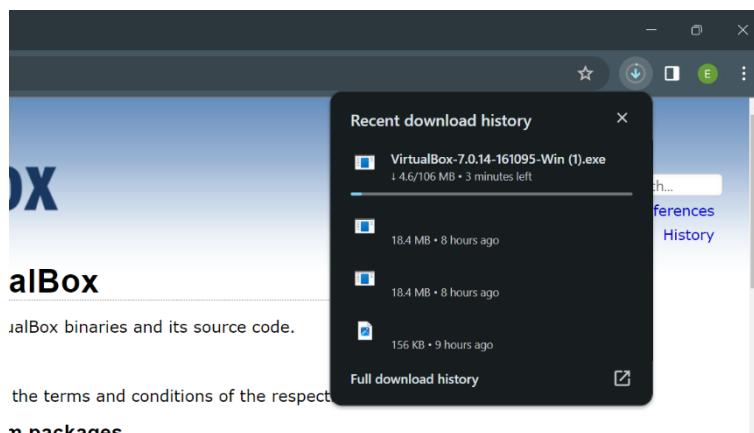


Installing Virtual Box Software.

STEP 1: Go to the official website of Virtual Box and download the virtual box installer (<https://www.virtualbox.org/wiki/Downloads>). Pick the VirtualBox version that works with your operating system.

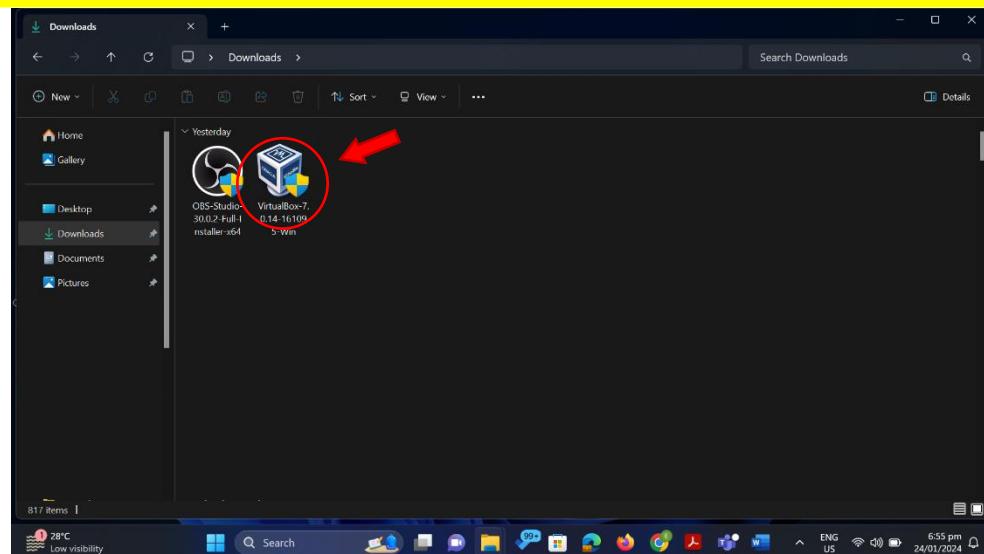


STEP 2: After clicking the download button, wait for it to download.



STEP 3: After you have finished downloading the installer, open it.



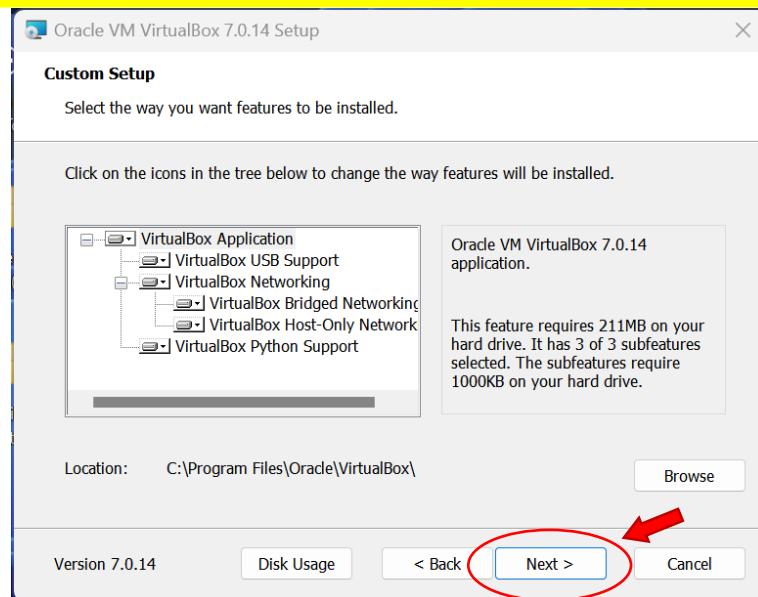


STEP 4: Click next.

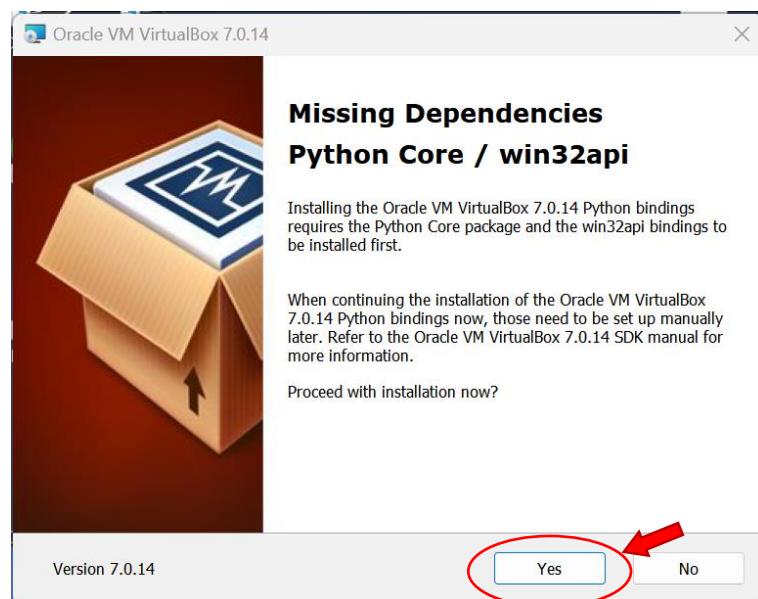


STEP 5: Click next again,

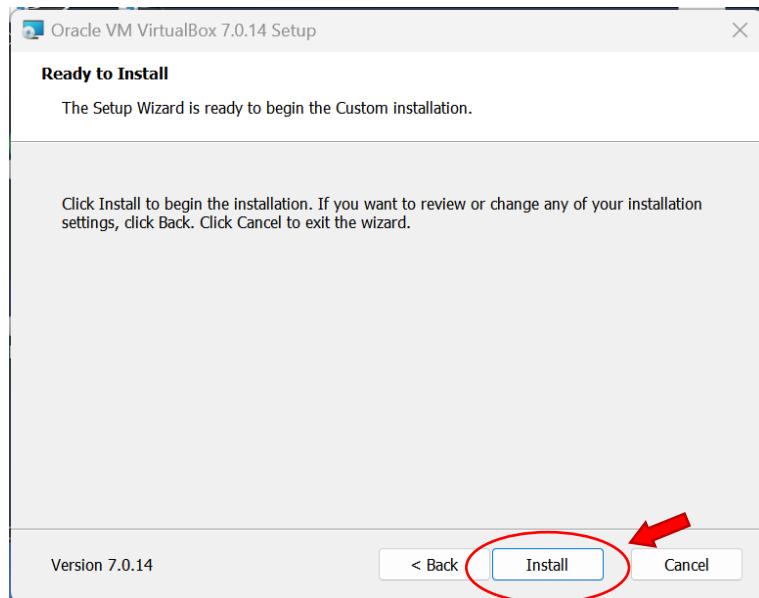




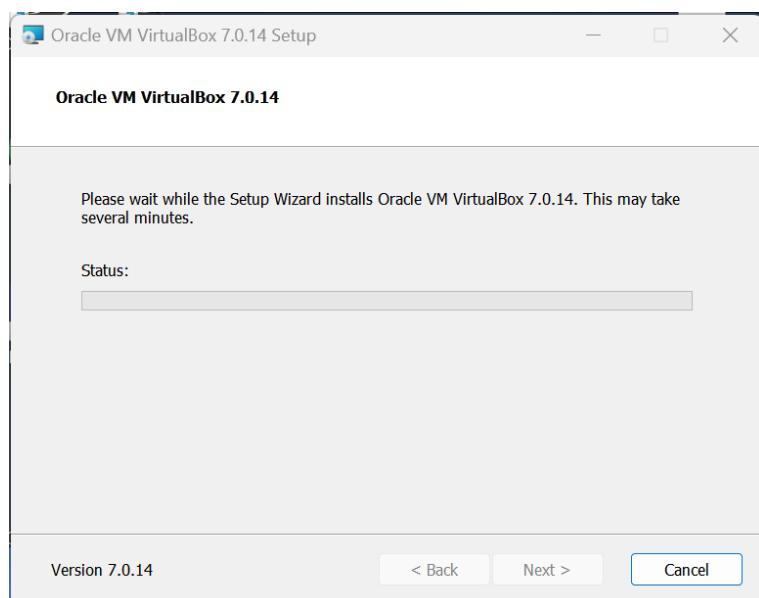
STEP 6: Click “Yes”



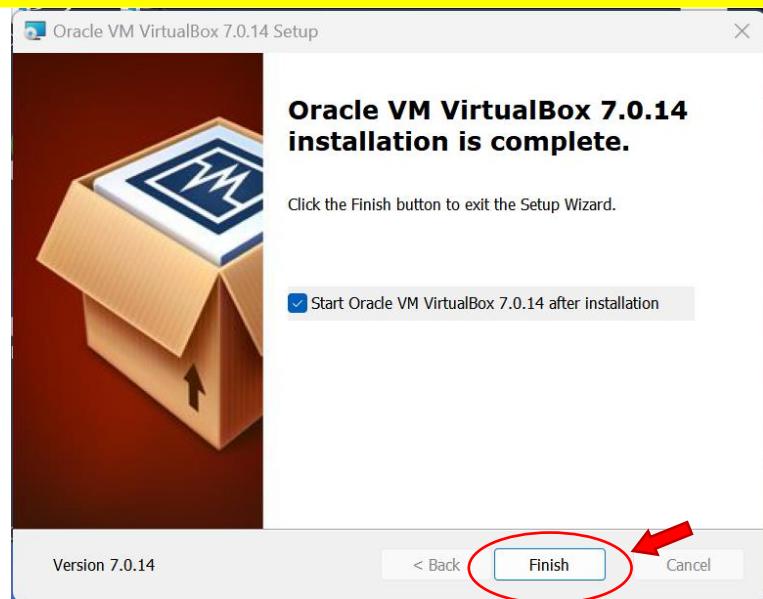
STEP 7: In ready to install, click “Install” to begin the installation of the program.



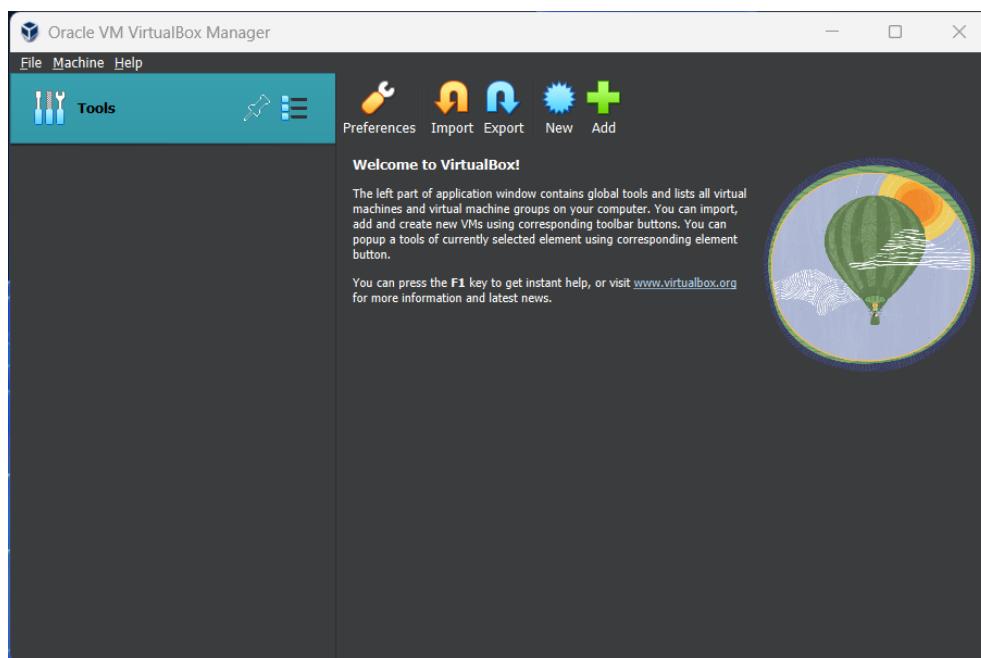
STEP 8: After clicking the "Install" button, the VirtualBox program will begin installing on your computer. Please wait for a few minutes while it is installing.



STEP 9: After the program has finished installing, click the "Finish" button.



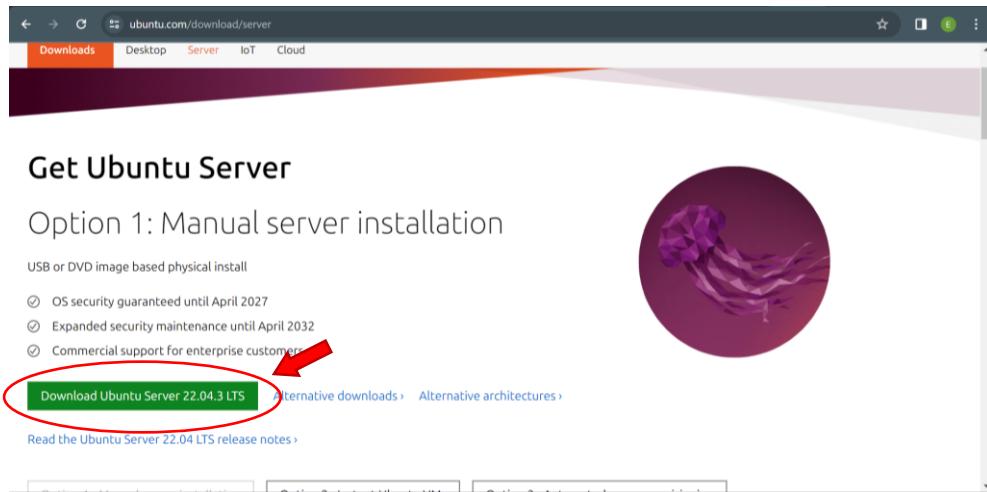
STEP 10: After you open the Virtual Box Software. You will now see the console of Virtual Box Software.



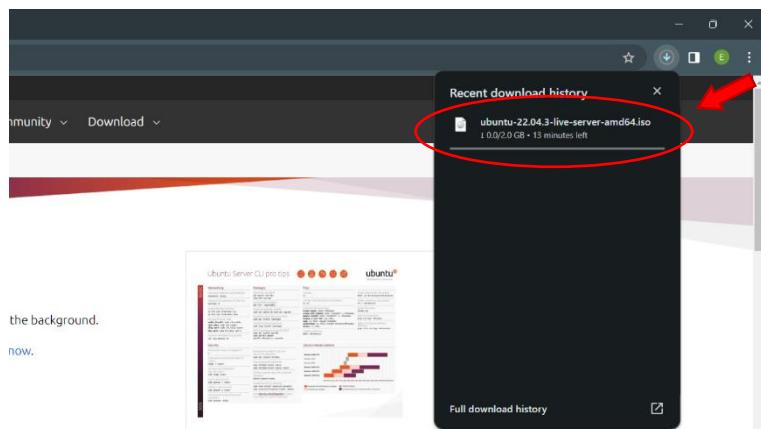
INSTALL THE FOLLOWING OPERATING SYSTEMS IN YOUR VMWARE

Linux-based OS (e.g. Ubuntu) Server

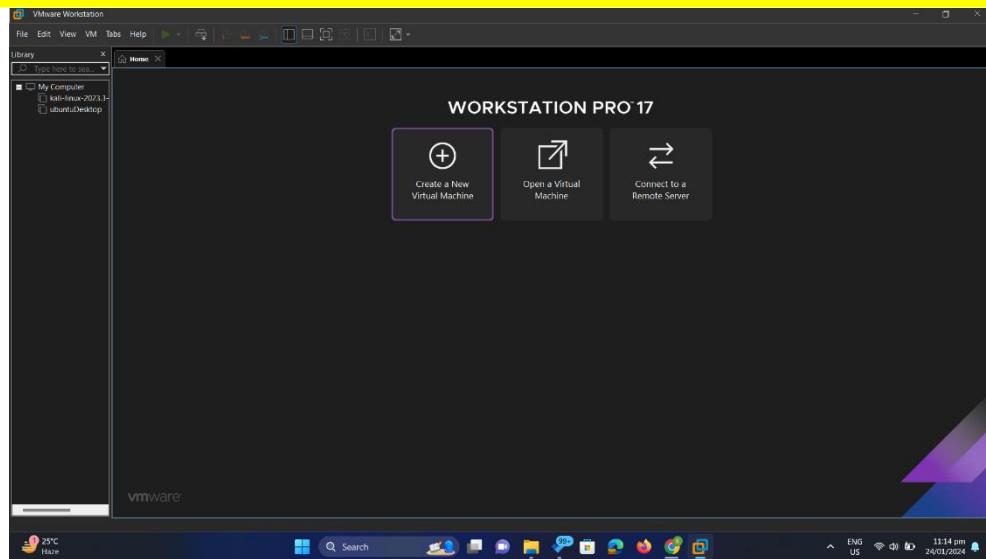
STEP 1: Download the ISO of Linux Ubuntu Server. To download the ISO of Linux Ubuntu Server, go to this link <https://ubuntu.com/download/server> and click “Download Ubuntu Server 22.04.3 LTS.”



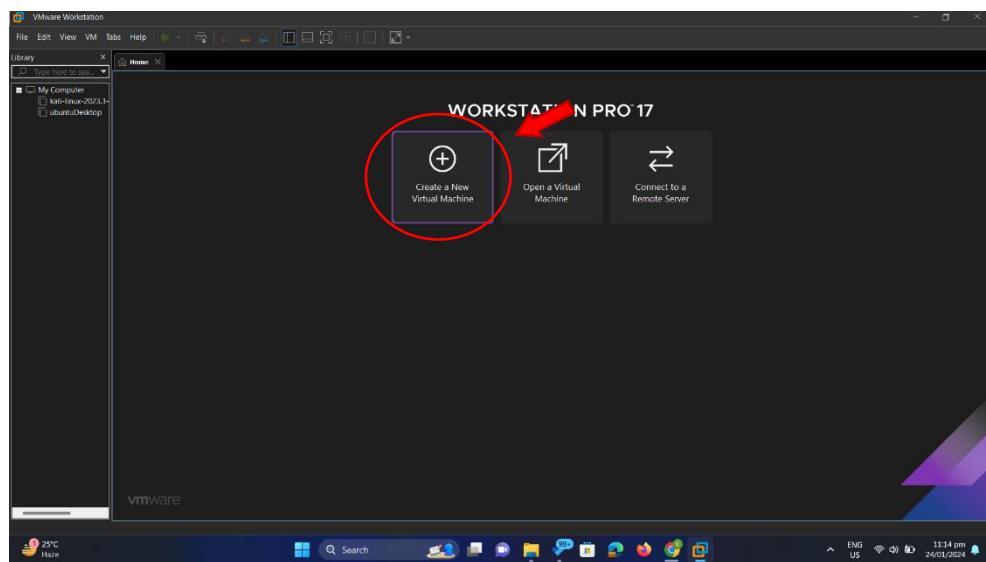
STEP 2: You will be redirected to another webpage. Kindly wait for the installer to start downloading in your browser.



STEP 3: After you have finished downloading the Linux Ubuntu Server ISO. Open your VMware.

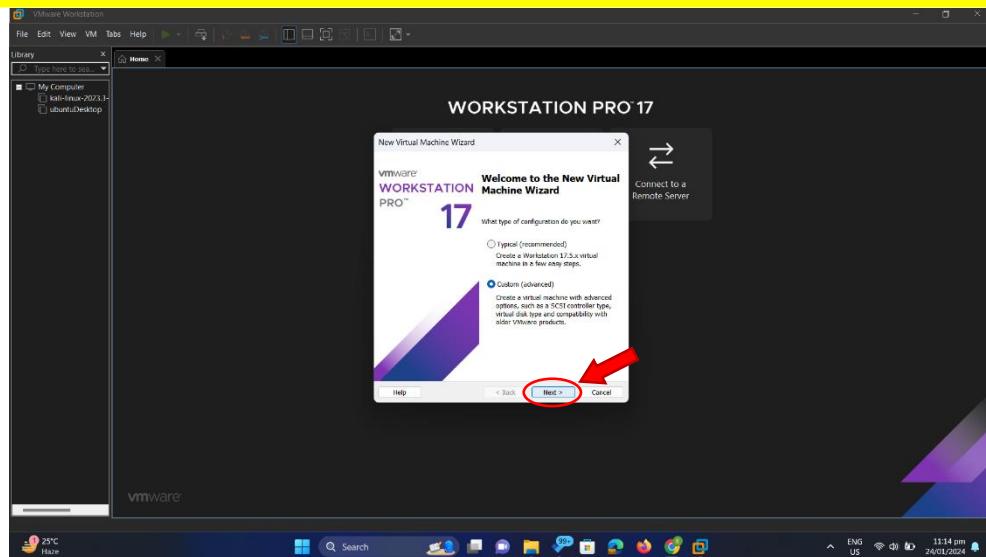


STEP 4: To add your Linux Ubuntu Server into your VMware. Click the “Create a New Virtual Machine”

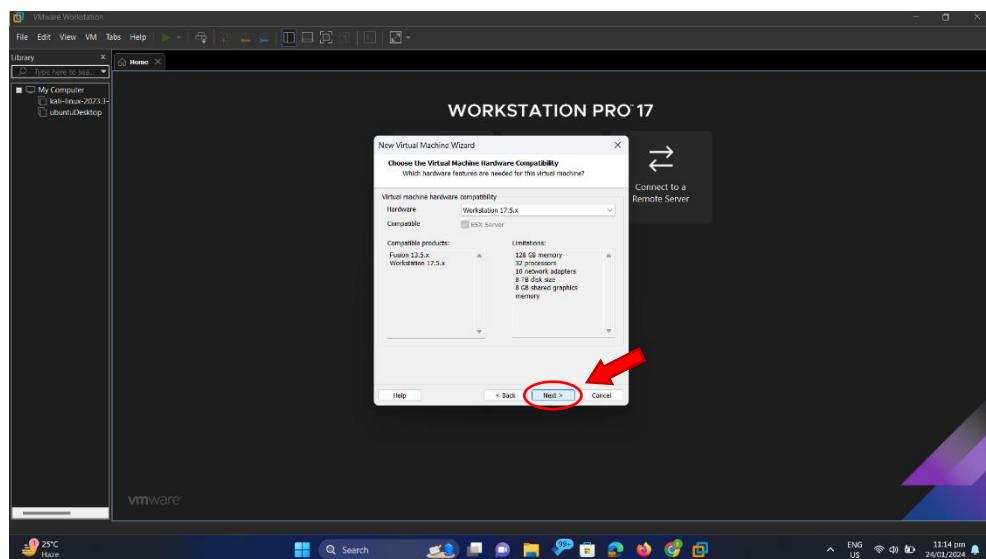


STEP 5: In type of configuration choose “custom,” then click “Next”



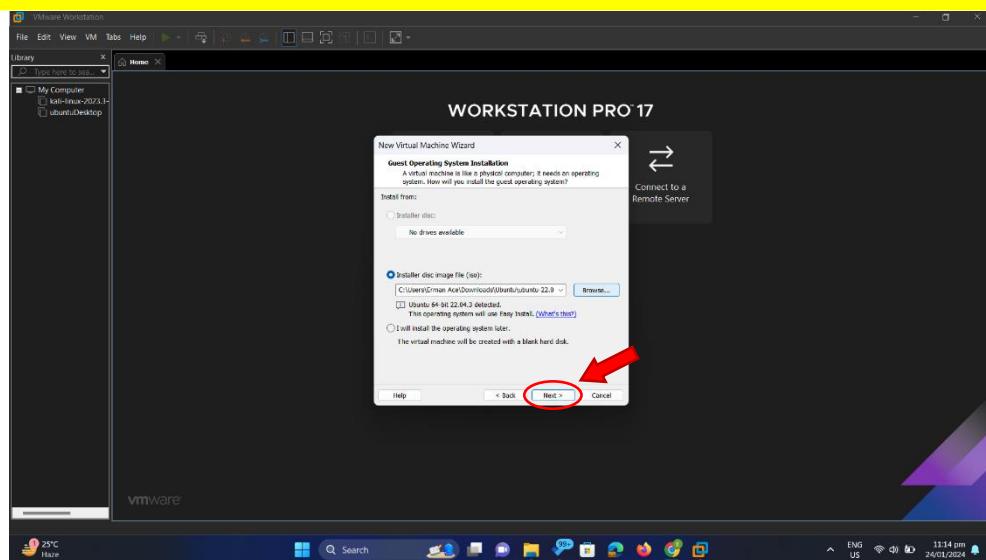


STEP 6: Then click “next.”

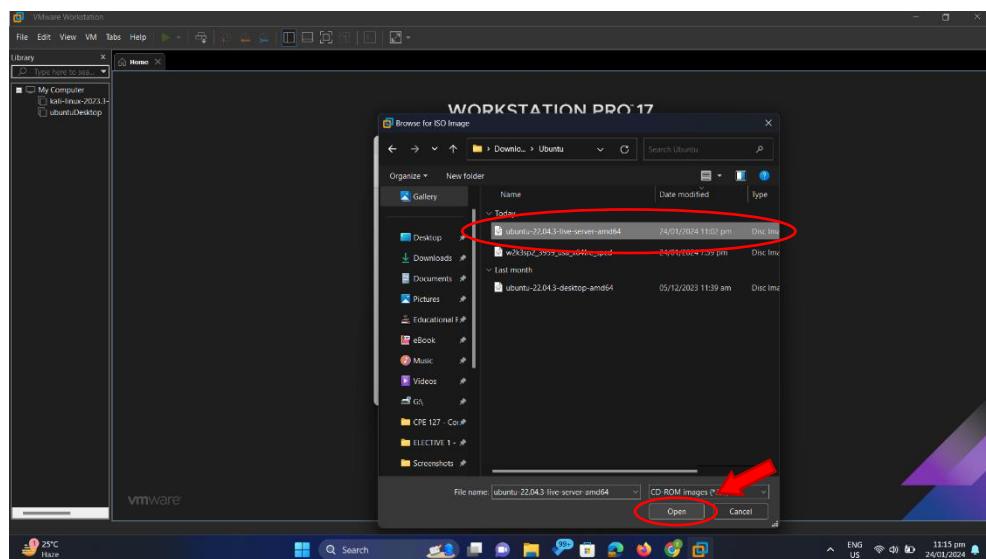


STEP 7: Select your Linux Ubuntu Server ISO by clicking the browse button.

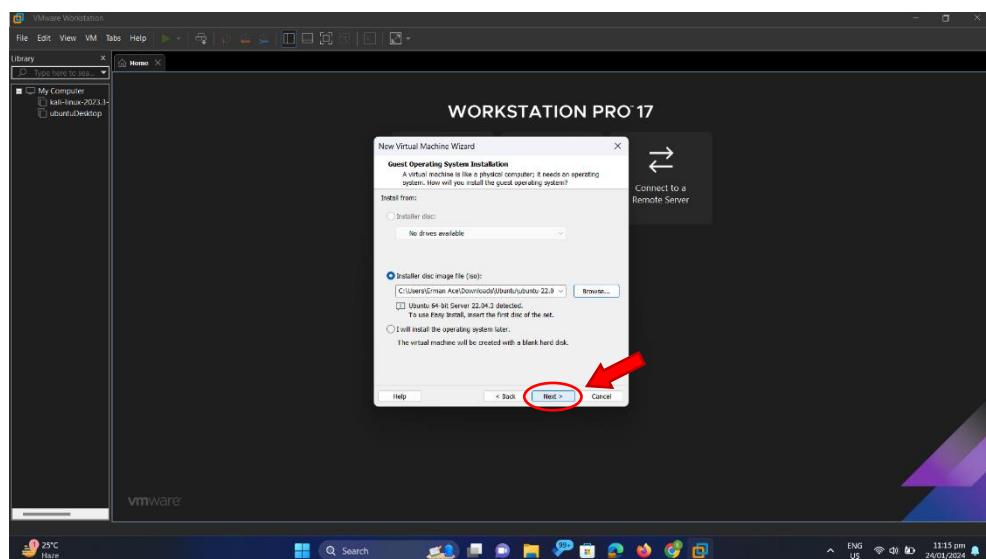




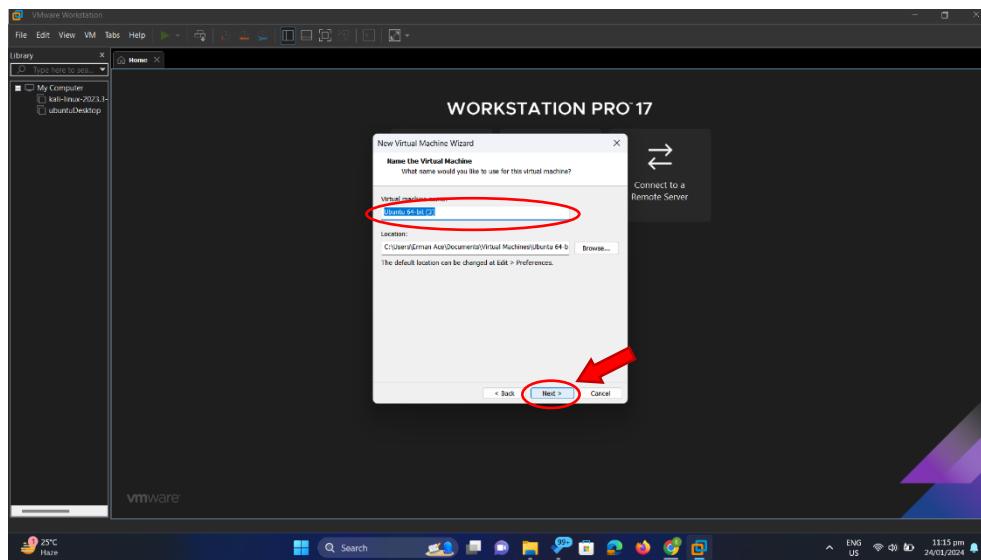
Select your Linux Ubuntu Server ISO, then click “open.”



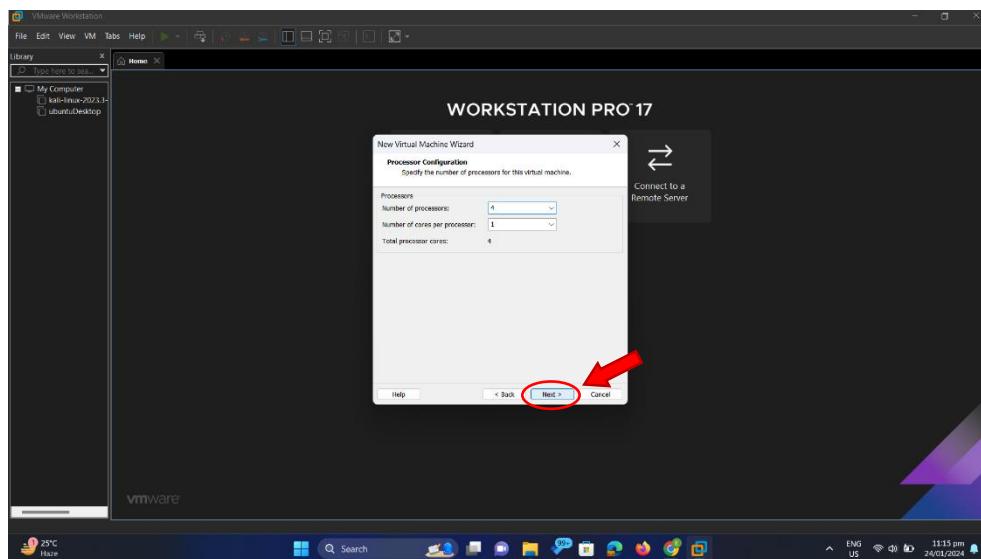
Make sure that the “ISO image” contains the Ubuntu Linux Server ISO. Then click “Next”



STEP 8: Enter the name of your Linux Ubuntu Server, for this example we will use “Ubuntu 64-bit (3)” then click “Next.”

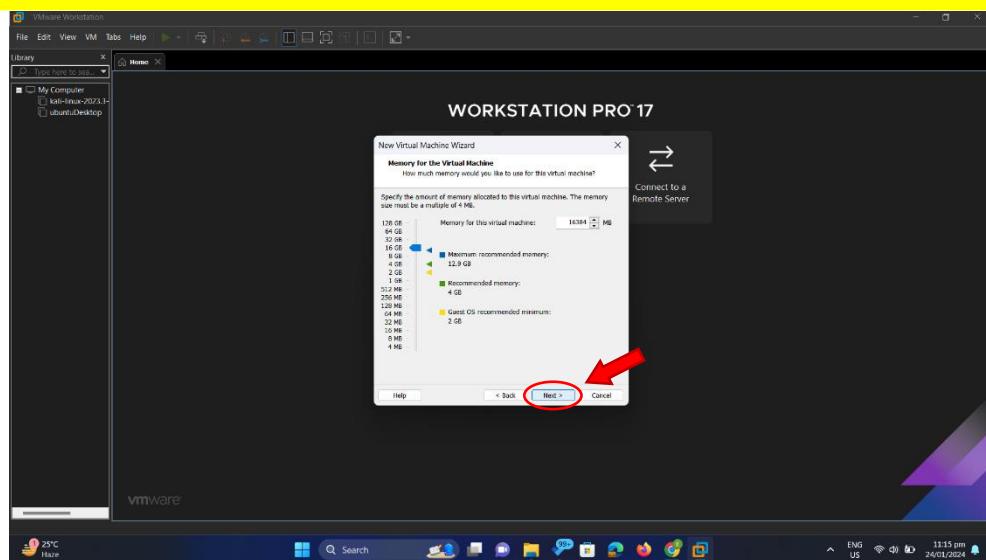


STEP 9: Processor Configuration. You are going to specify the number of processor for this virtual machine. For this example, I select for “Number of Processors.” as value of “4” and “Number of cores per processor.” value of “1.” Then click “Next.”

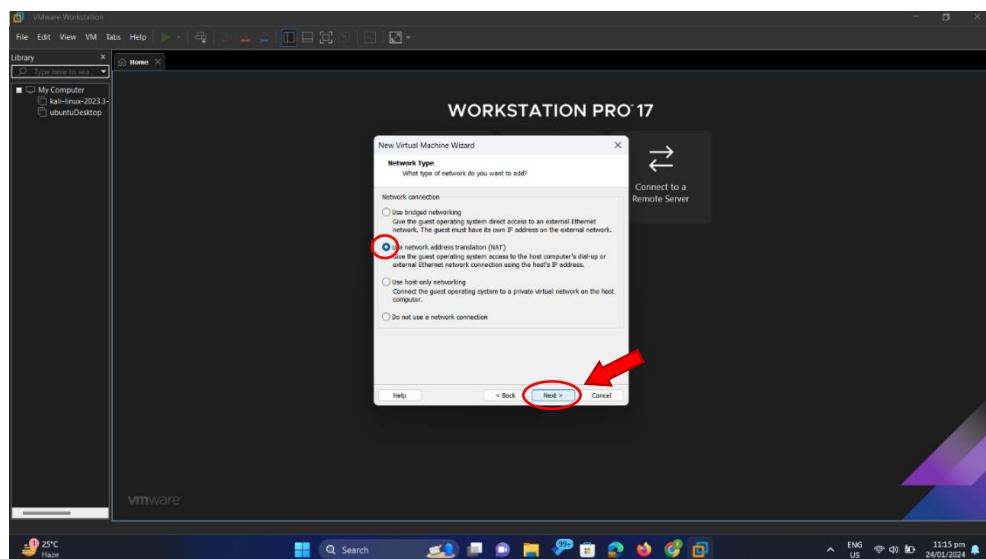


STEP 10: For Allocated memory for your virtual machine. For this example, the disk size of Ubuntu Linux Server is “16384 MB.” Then click Next.”

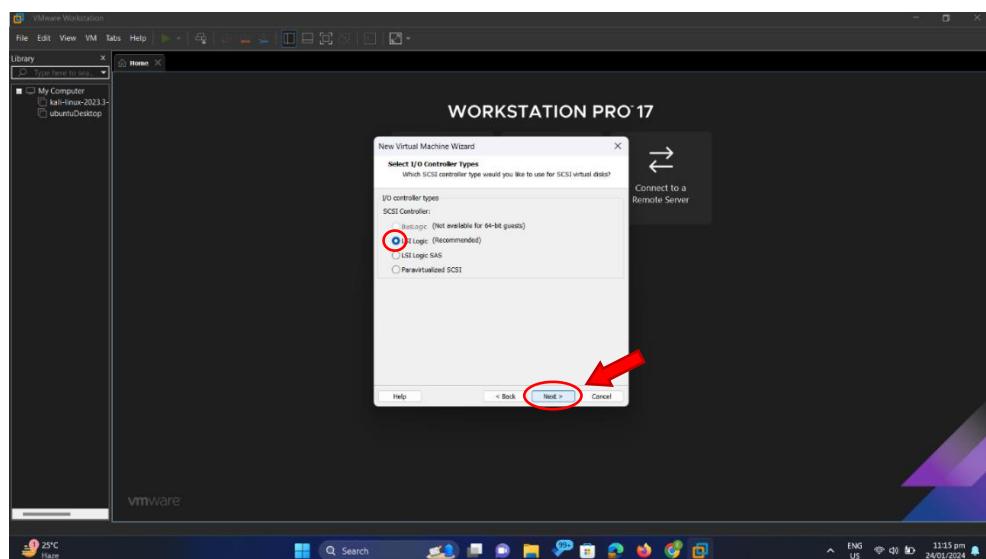




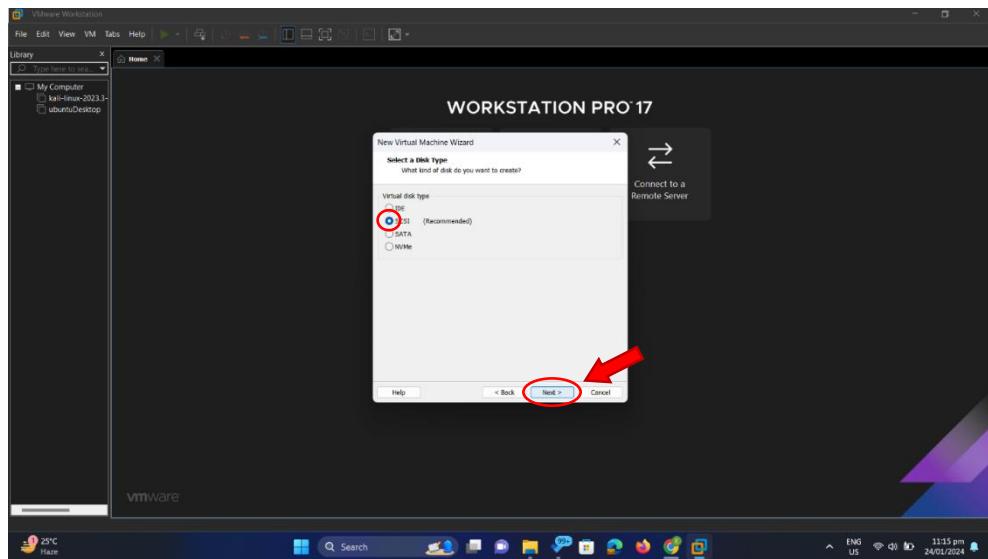
STEP 11: For the network type choose the “Use Network Address Translation (NAT).”



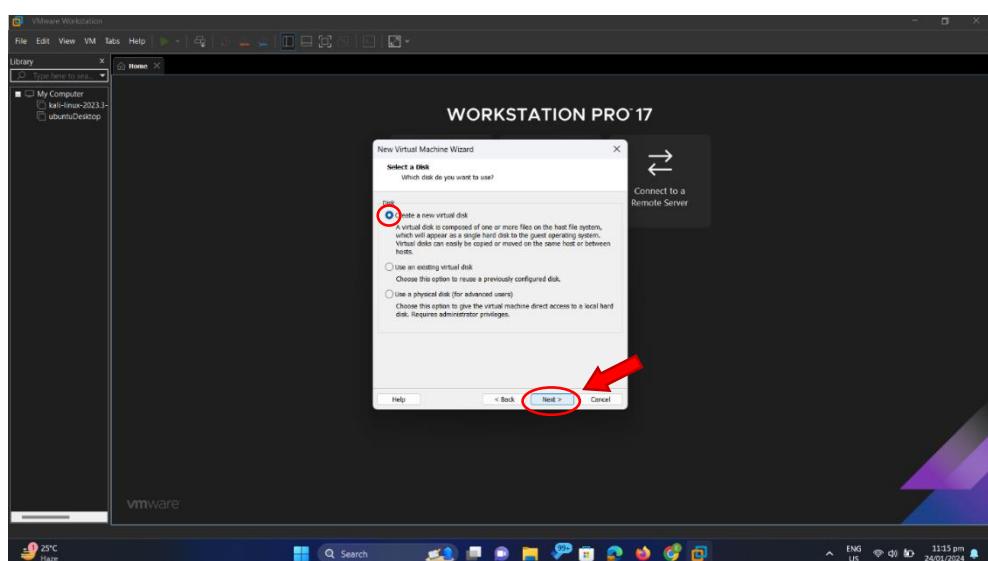
STEP 12: For I/O Controller Types choose the “LSI Logic (Recommended).”



STEP 13: For the type of disk, select the SCSI (Recommended)

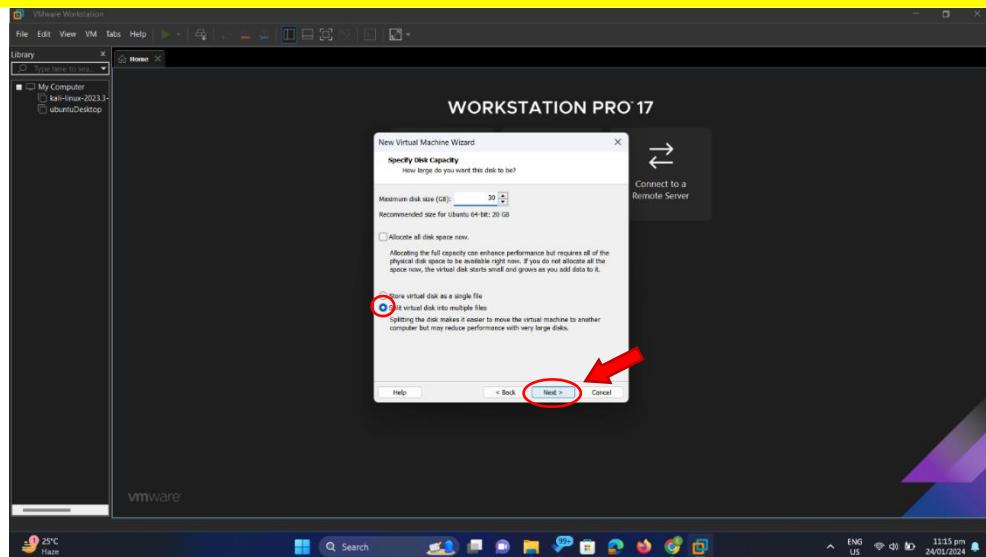


STEP 14: For the disk to use. Select the “Create a new virtual disk.”

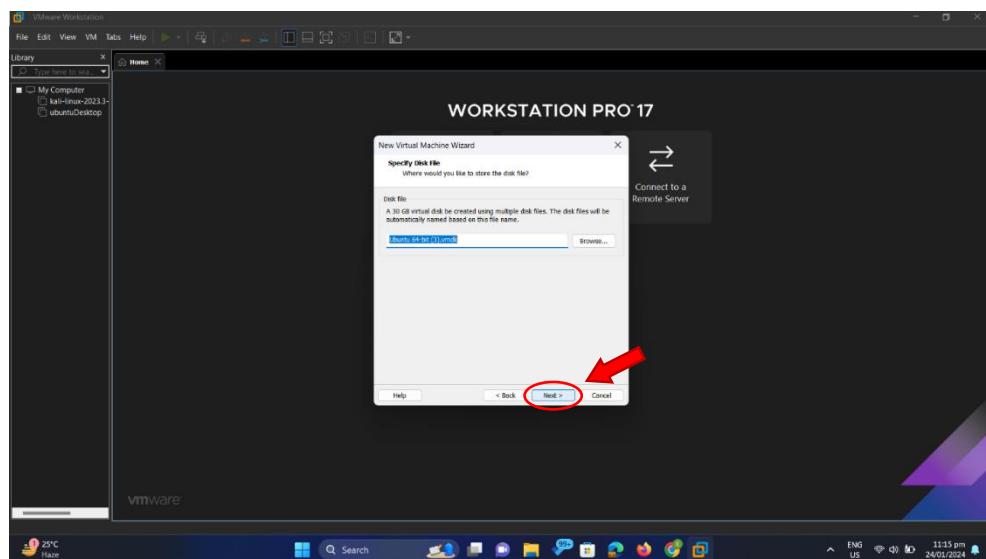


STEP 15: Specifying Disk Capacity. For maximum disk size select “30 GB” then choose the “Split virtual disk into multiple files”



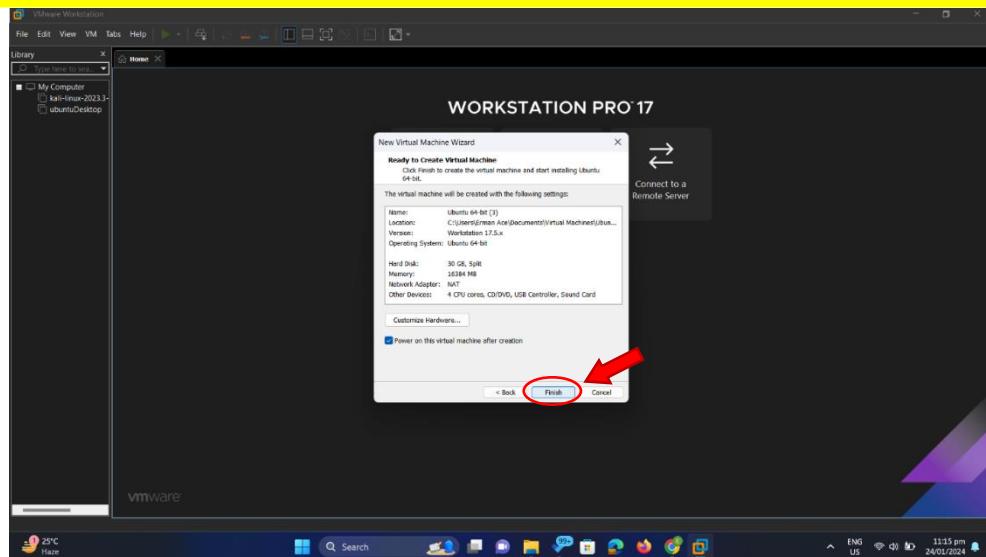


STEP 16: Specify Disk File, choose the Ubuntu 64-bit.vmdk

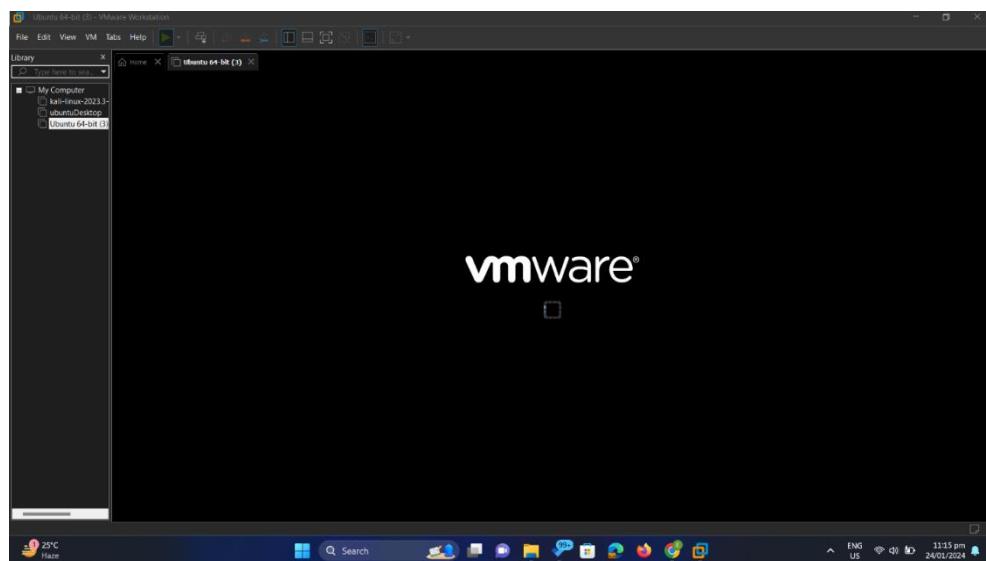


STEP 17: After setting up the necessary information for your Ubuntu Linux Server, the VMware will now display a summary of the information you configured for your Ubuntu Linux Server. Double-check the details below, and if everything is correct, click the "Finish" button.



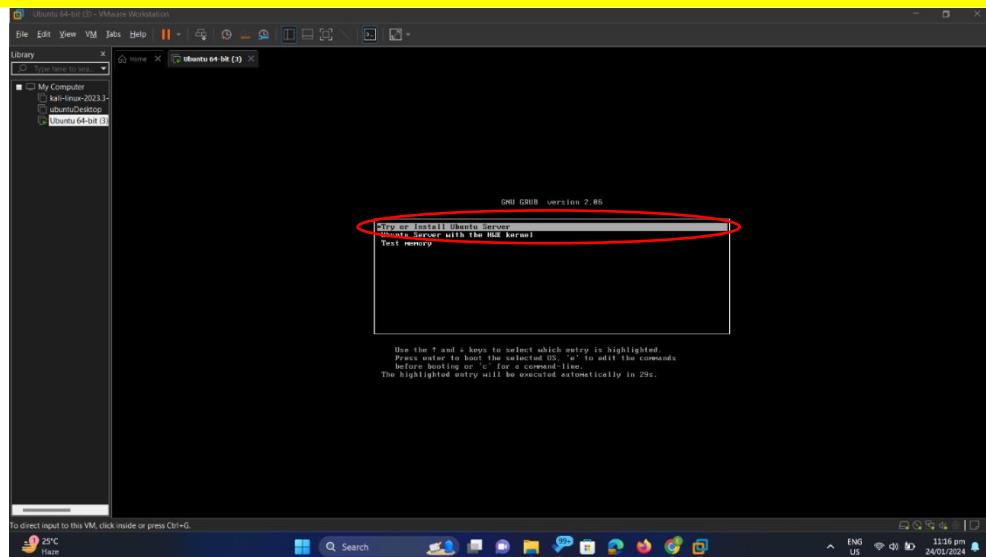


STEP 18: After clicking the “Finish” button, it will start loading your Ubuntu Server into your VMware. Then wait for it to load.

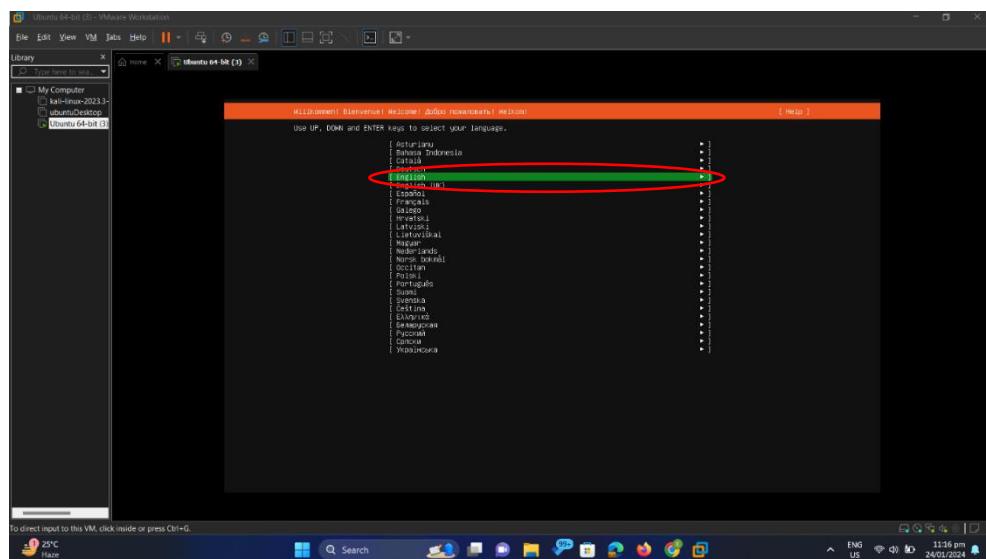


STEP 19: Select the “Try or Install Ubuntu Server.”

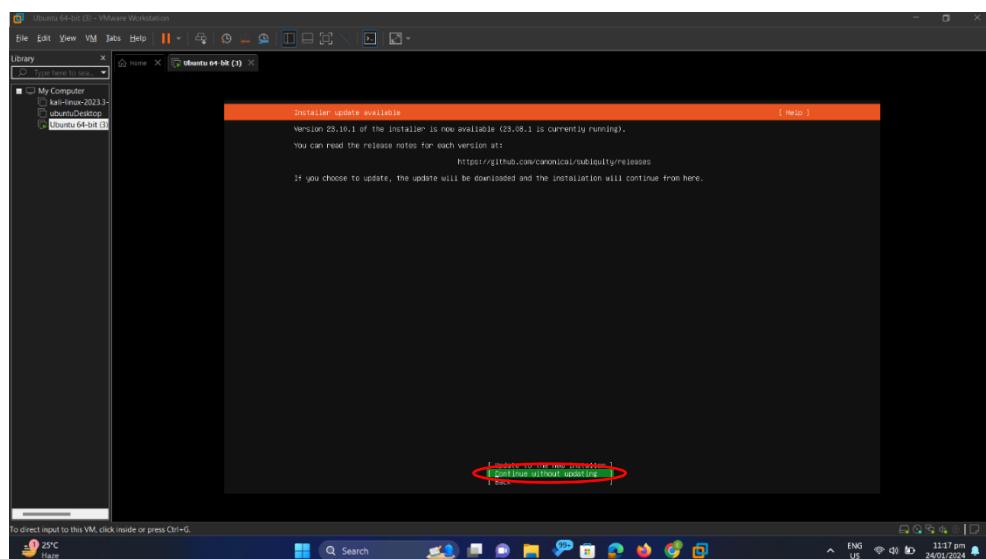




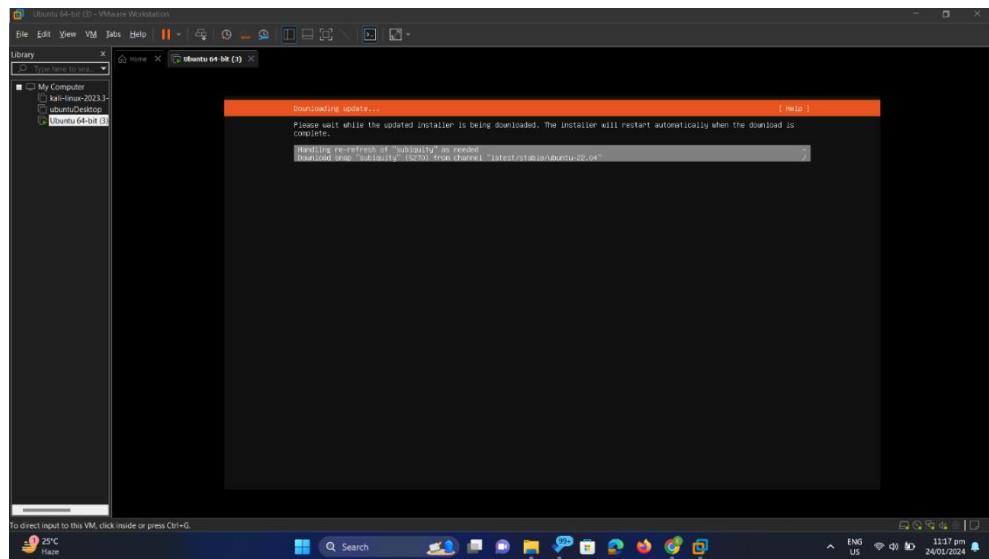
STEP 20: Select the Language of your Ubuntu Linux Server then click “Enter.”



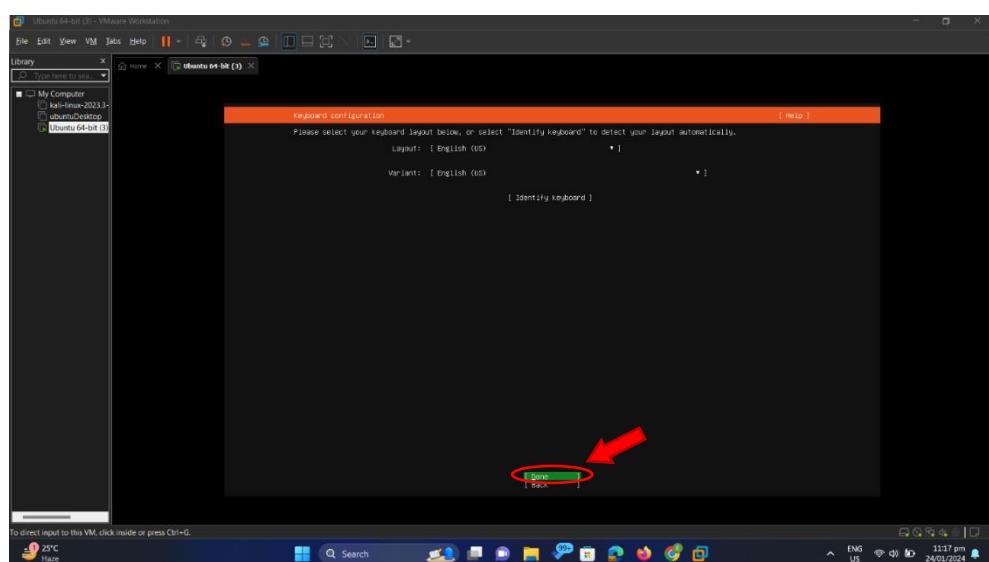
STEP 21: Choose “Continue Without Updating” then click “Enter”



STEP 22: Wait for your machine to download update.

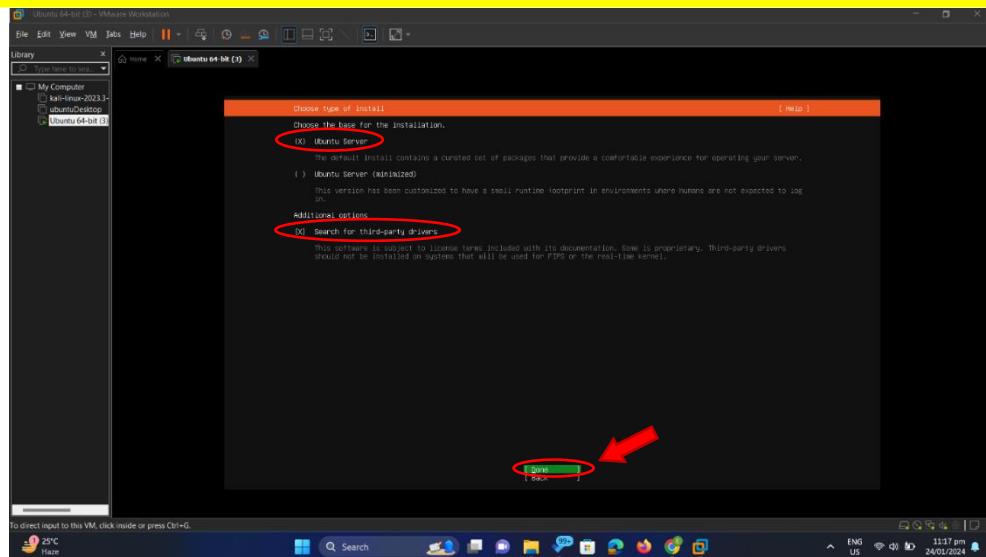


STEP 23: Select your Keyboard Configuration. For this example, I choose the “English (US)” for both Layout and Variant. Then click “Done.”

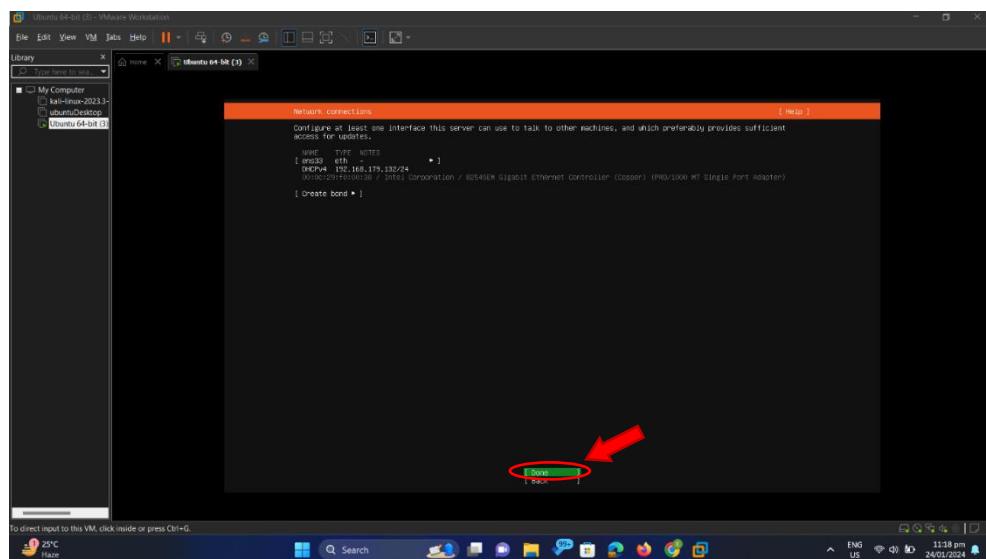


STEP 24: Choose the type of install. For the base installation, select Ubuntu Server. In the additional options, choose "Search for Third-Party Drivers." Then click "Done"

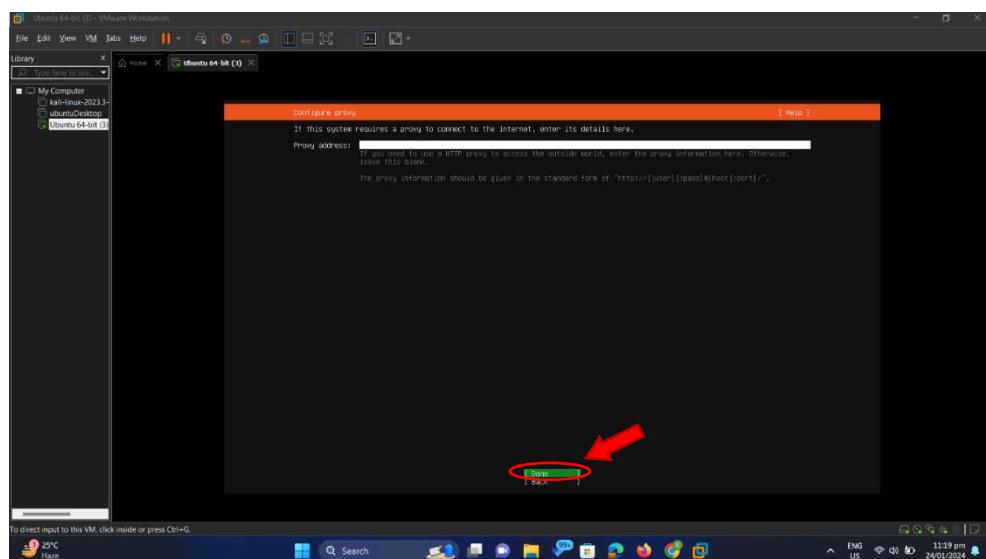




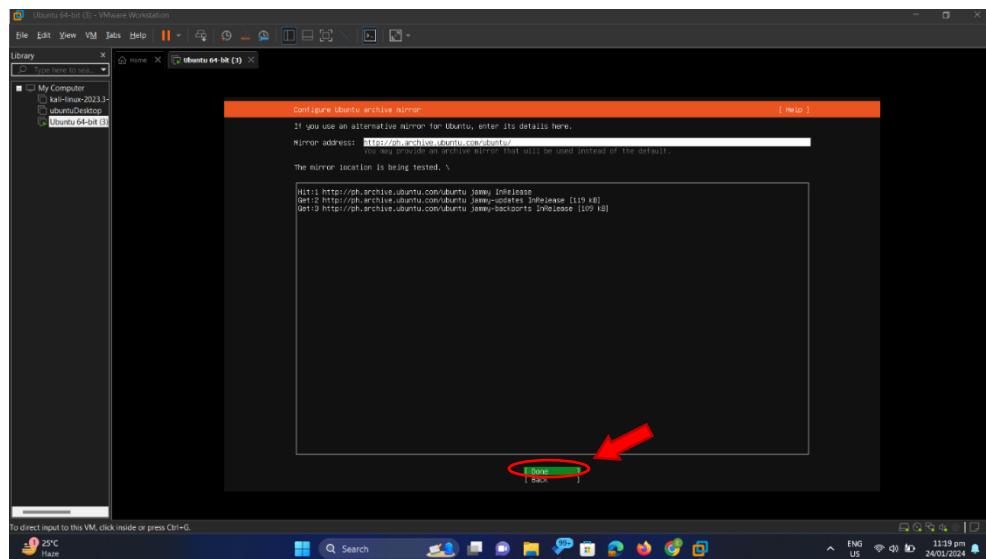
STEP 25: For Network Connections, there is no need to modify, just like “Done.”



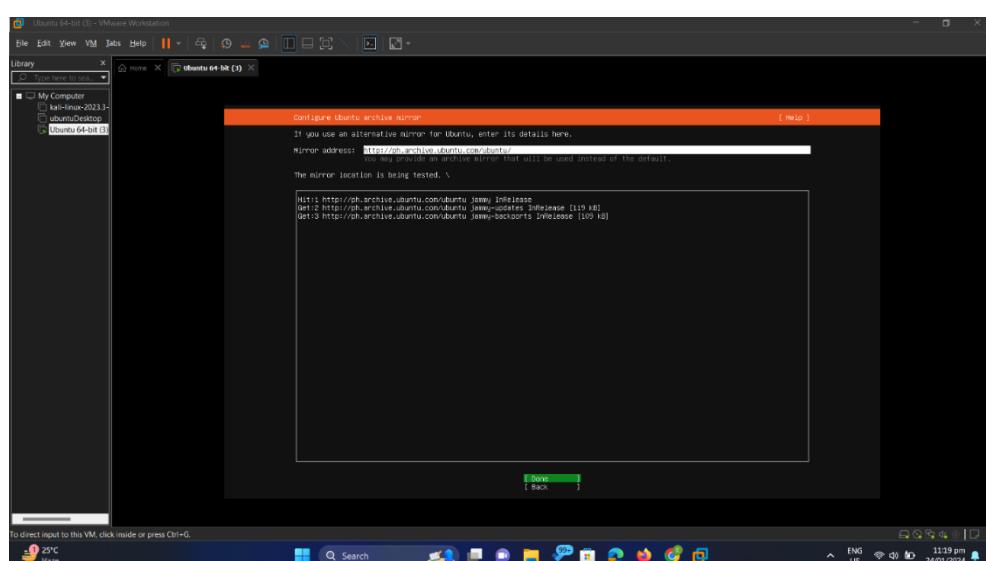
STEP 26: Just click “done”



STEP 27: Configure Ubuntu Archive Mirror. For the Mirror Address use <http://ph.archive.ubuntu.com/ubuntu/>. Then click “Done”



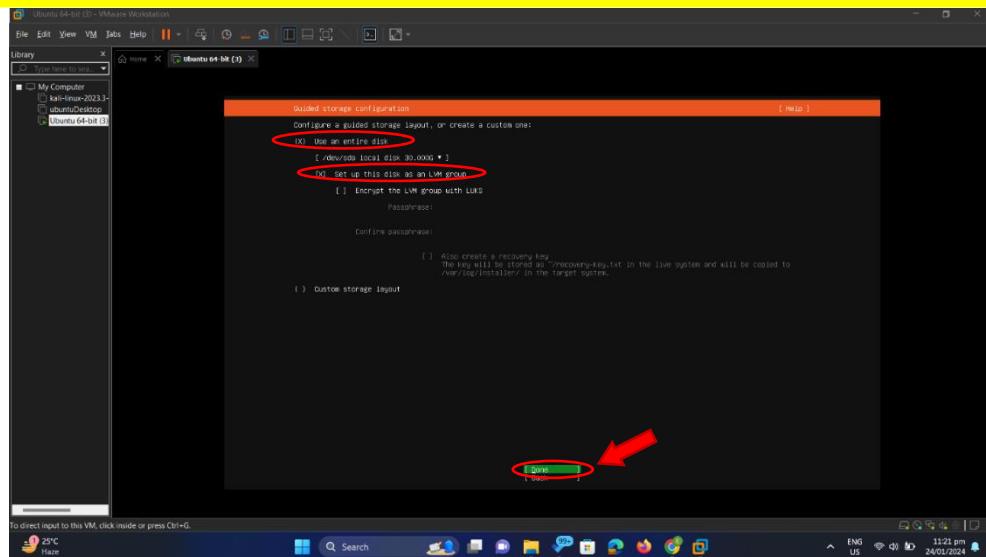
STEP 28: Wait for it to load.



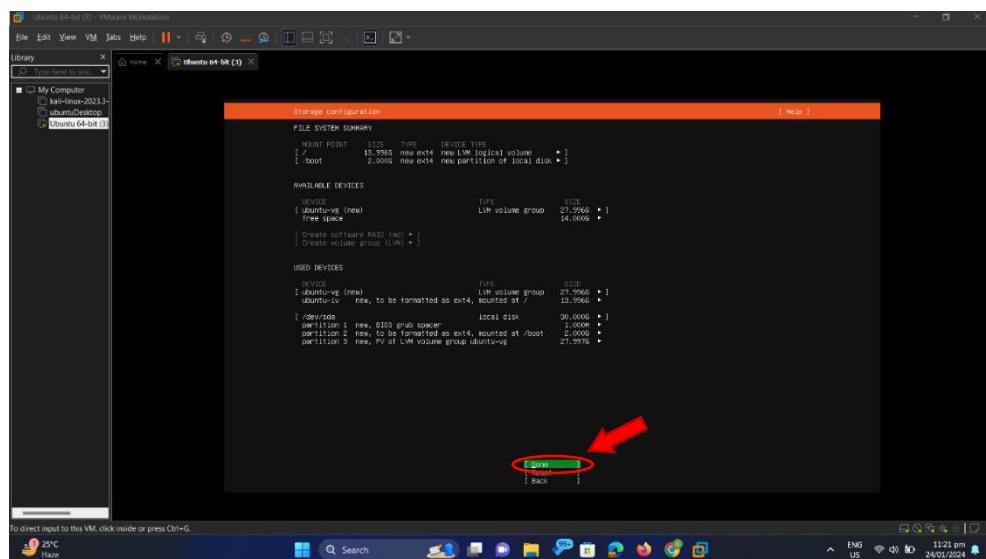
STEP 29: Guided Storage Configuration. Check the “Use an entire Disk” then “set up this disk as an LVM Group.” Then click “Done.”



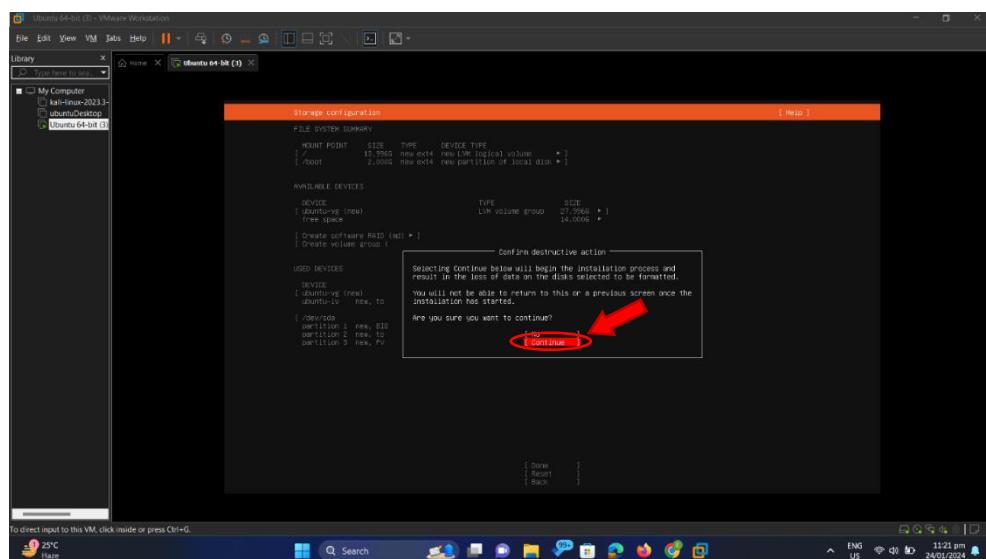
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

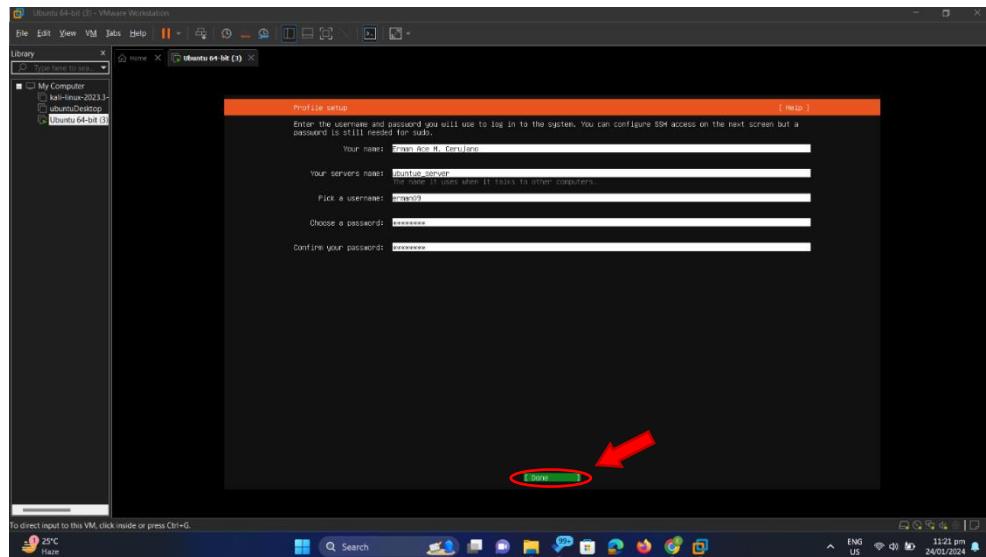
STEP 30: Click “Done”



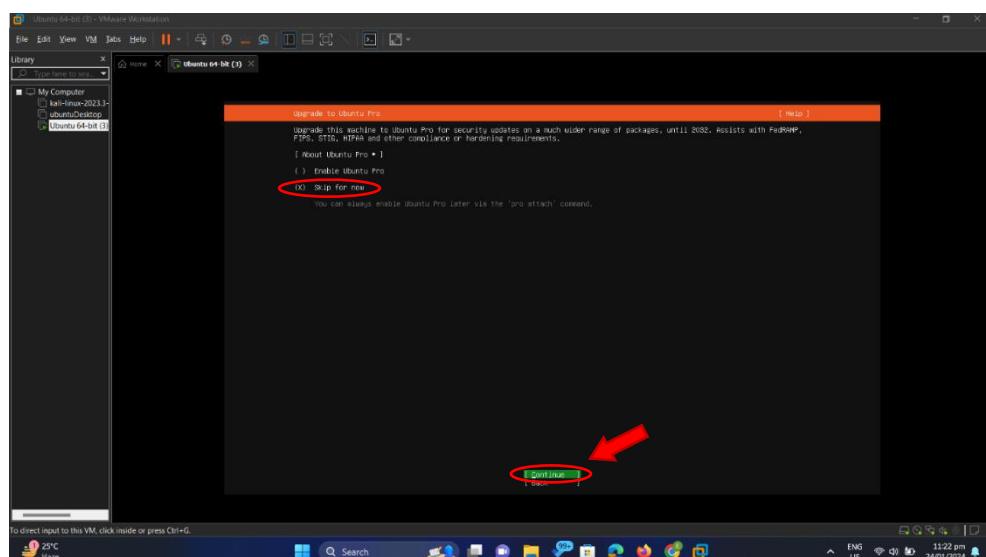
STEP 31: Then click “Continue.”



STEP 32: Profile Setup. Set your “Name,” “Server Name,” “Username,” and “Password.” After you set the needed information below, click the “Done” button.



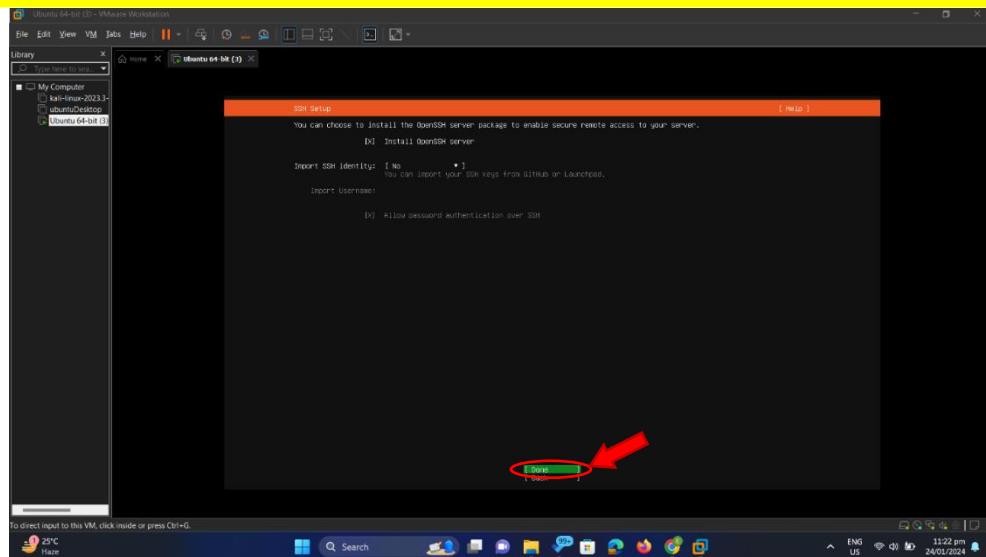
STEP 33: Choose the Skip for Now in upgrade to Ubuntu Pro, then click “Continue.”



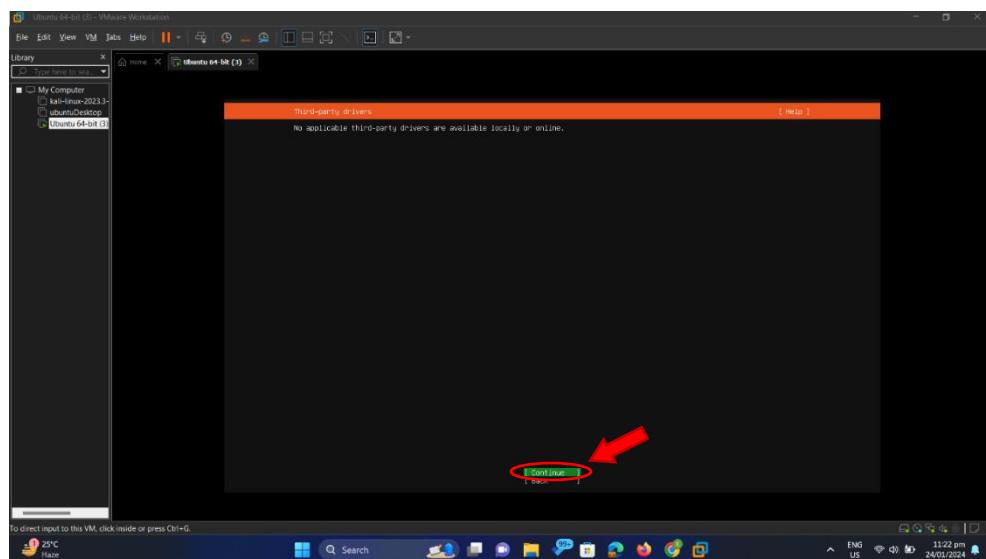
STEP 34: Click “Done”



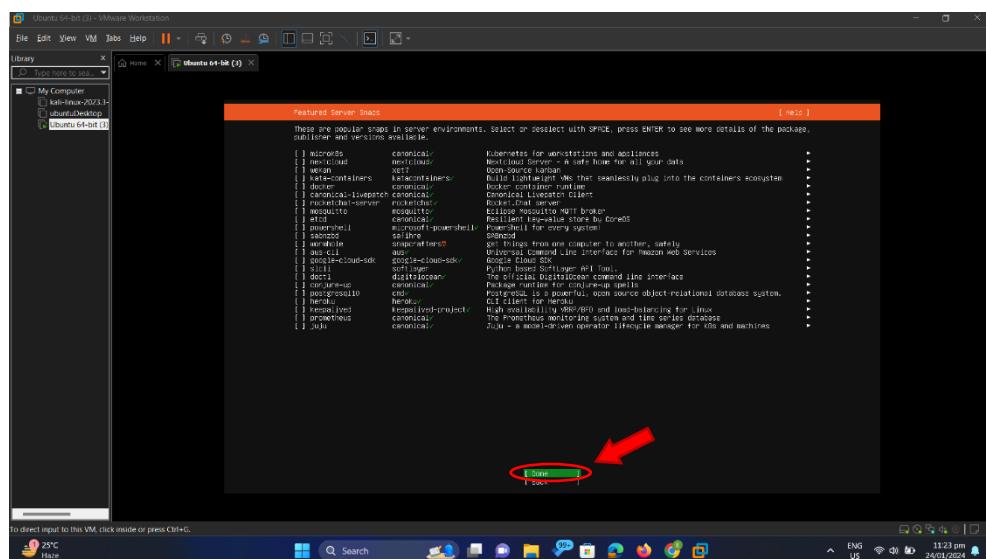
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

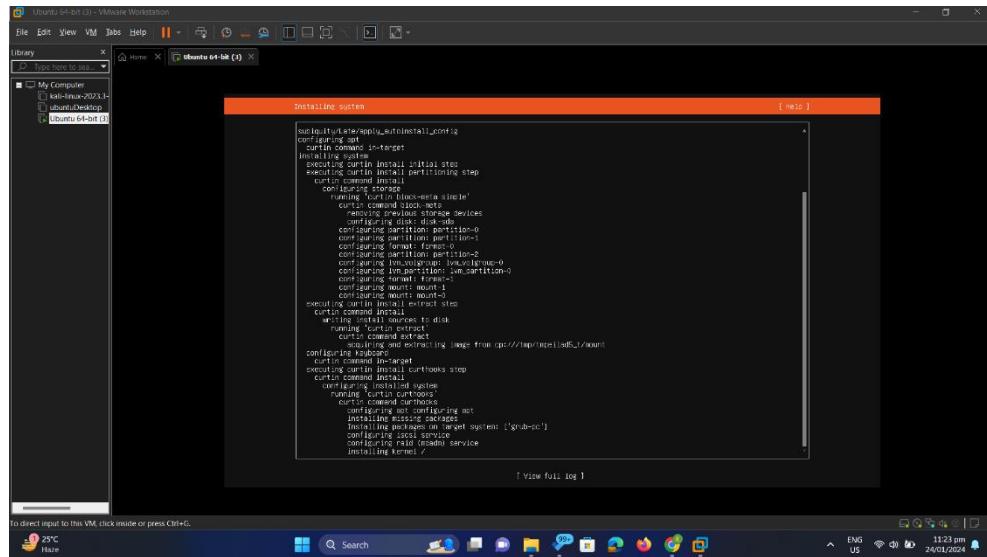
STEP 35: Then click “Continue.”



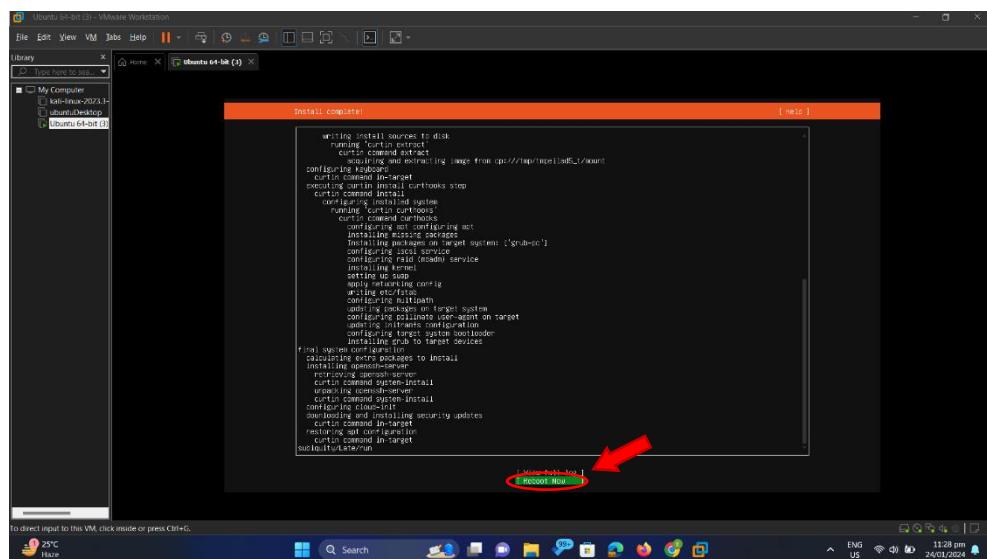
STEP 36: Click “Done”



STEP 37: Wait for it to Install the System.



STEP 38: After installation is completed, click the “Reboot Now.”



STEP 39: Wait for your Ubuntu Linux Server to reboot.



Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

```

lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda      8:0    0  465G  1 disk 
└─sda1   8:1    0  465G  1 part /
sda5   253:0    0   10G  1 part [SWAP] [Swap]
sda6   253:1    0   10G  1 part /home
sda2   8:2    0  465G  1 part /mnt
sda3   8:3    0  465G  1 part /media/Ubuntu-2023-1
sda4   8:4    0  465G  1 part /media/Ubuntu-2023-1

```

STEP 40: After rebooting your Ubuntu Linux Server, enter your username and password.

```

ubuntu 22.04.3 LTS ubuntu:~$ 
ubuntu: ~$ 

```

You now successfully added the “Ubuntu Linux Server.”

```

ubuntu: ~$ apt update
[...]
ubuntu: ~$ apt upgrade
[...]
ubuntu: ~$ apt full-upgrade
[...]

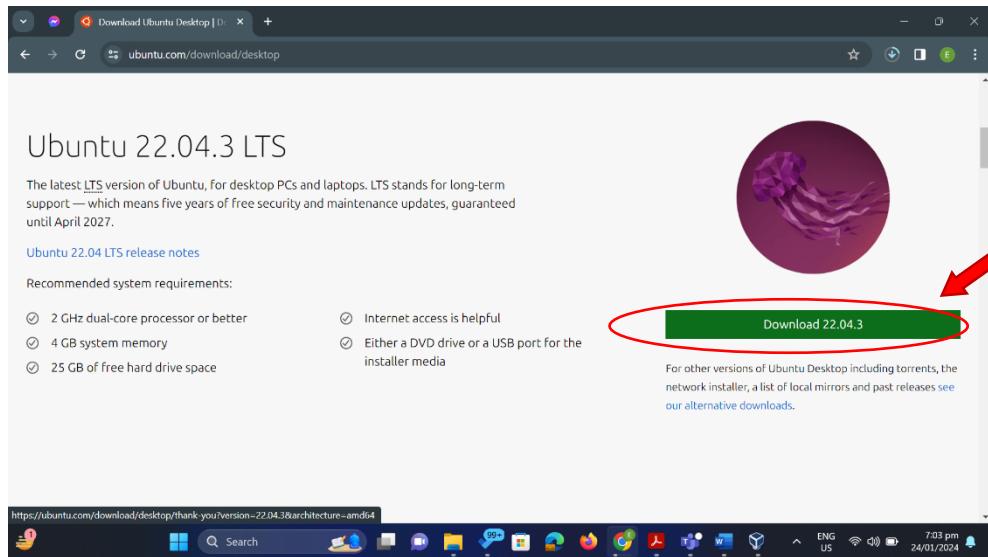
```



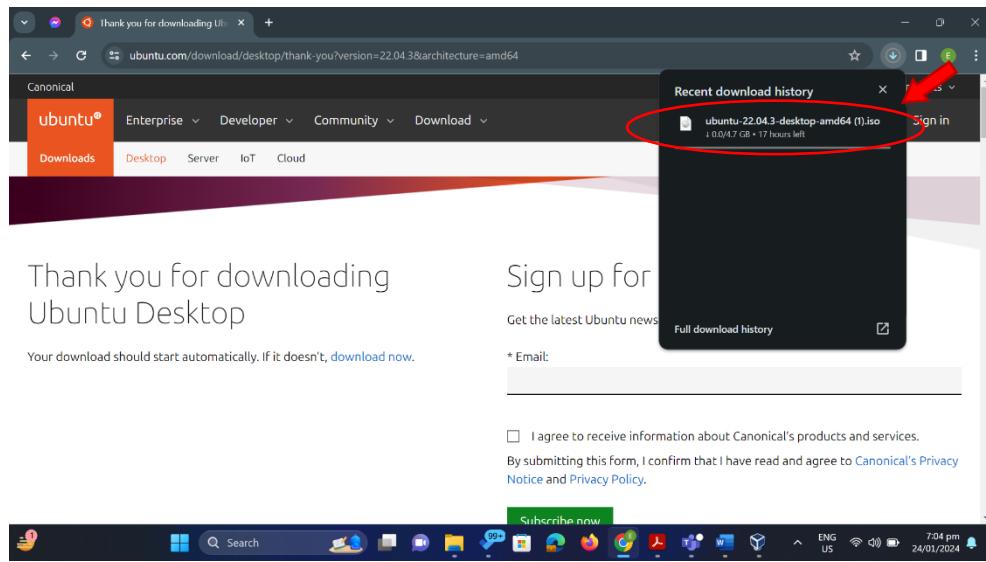


Linux-based OS (e.g. Ubuntu) Desktop

STEP 1: Download the ISO of Linux Ubuntu Desktop. To download the ISO of Linux Ubuntu Desktop, go to this link <https://ubuntu.com/download/desktop>, scroll down and click “Download 22.04.3 LTS.”

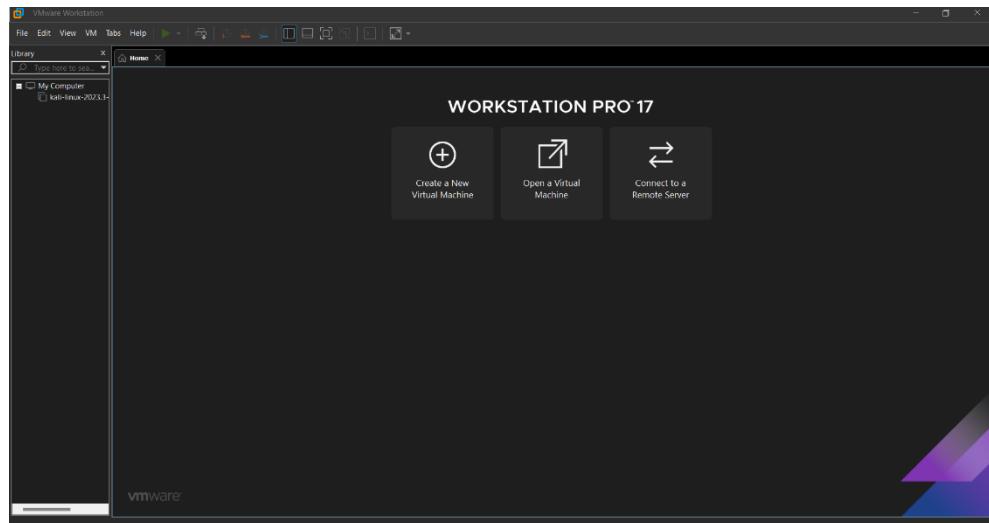


STEP 2: You will be redirected to another webpage. Kindly wait for the installer to start downloading in your browser.

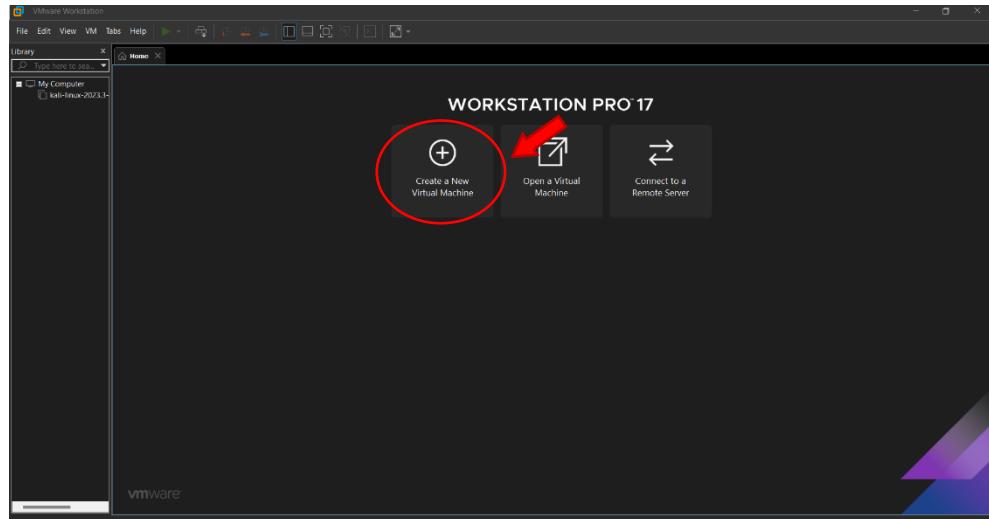


STEP 3: After you have finished downloading the Ubuntu Desktop ISO. Open your VMware.

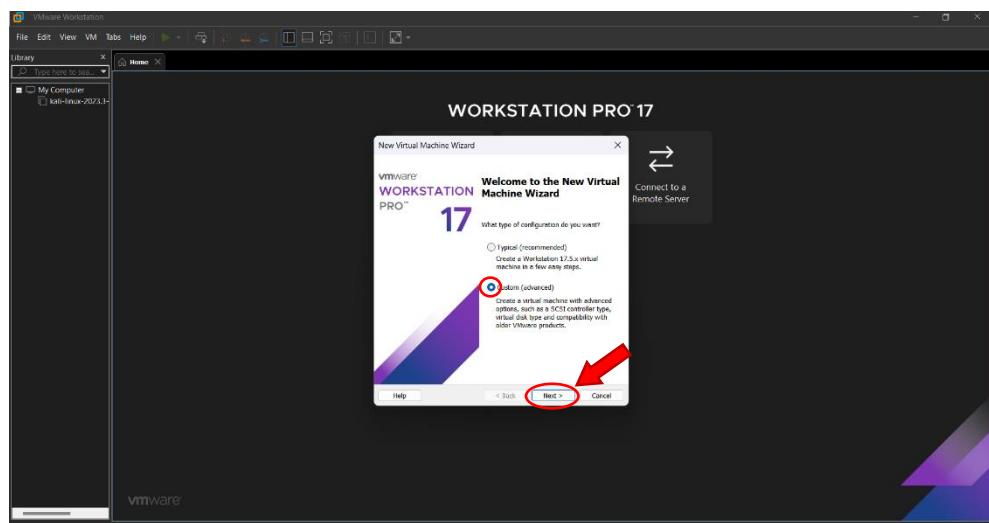




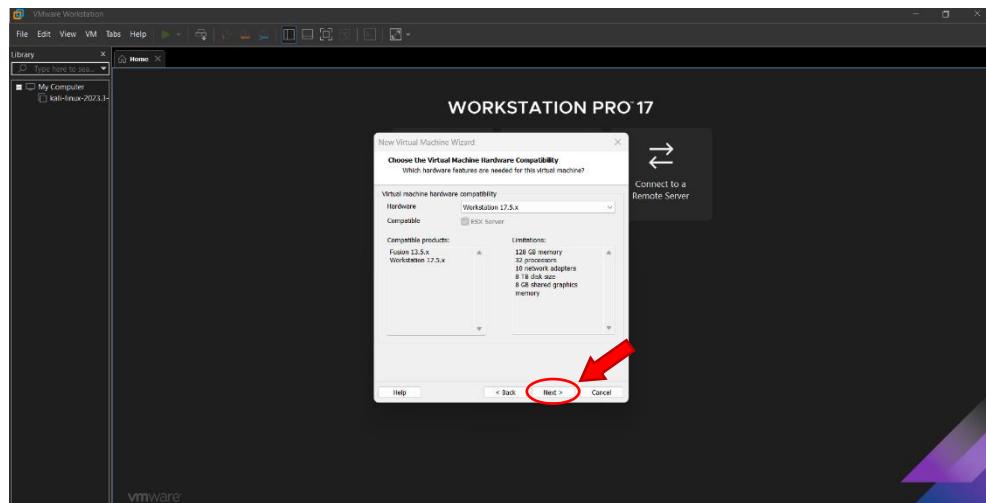
STEP 4: To add your Linux Ubuntu Desktop into your VMware. Click the “Create a New Virtual Machine”



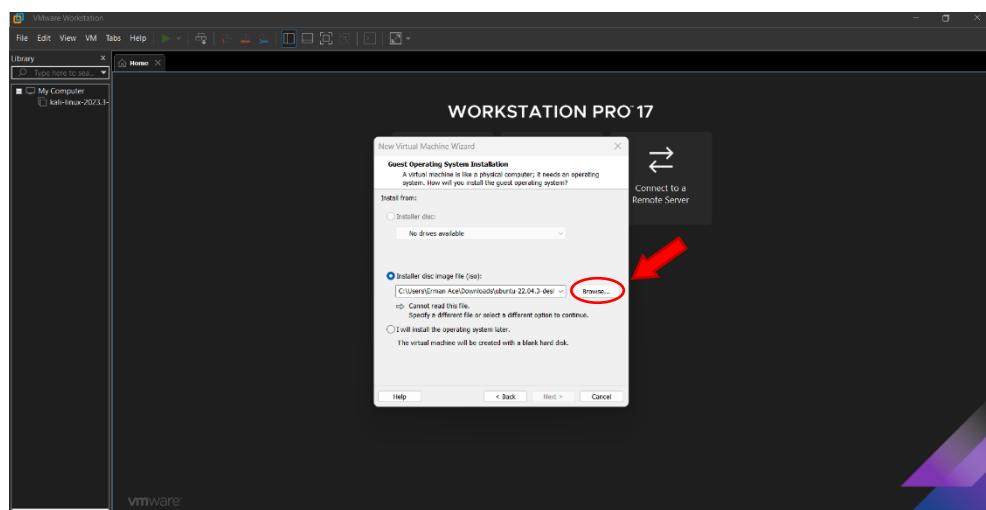
STEP 5: In type of configuration choose “custom,” then click “Next.”



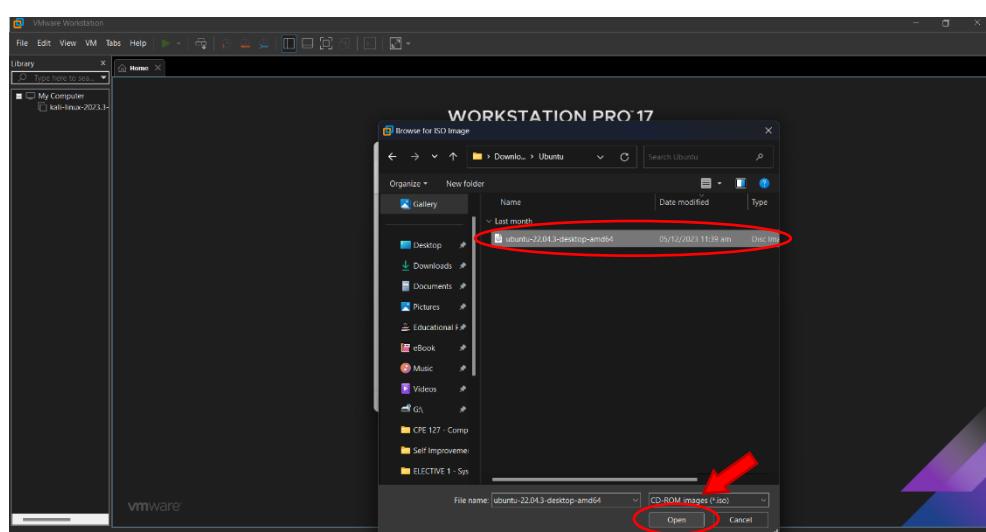
STEP 6: Then click “next.”



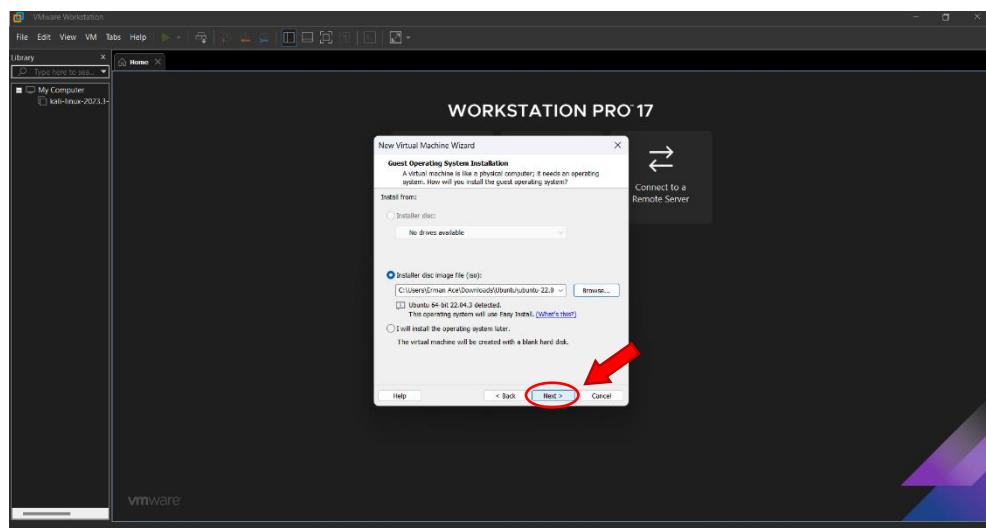
STEP 7: Select your Linux Ubuntu Server ISO by clicking the browse button.



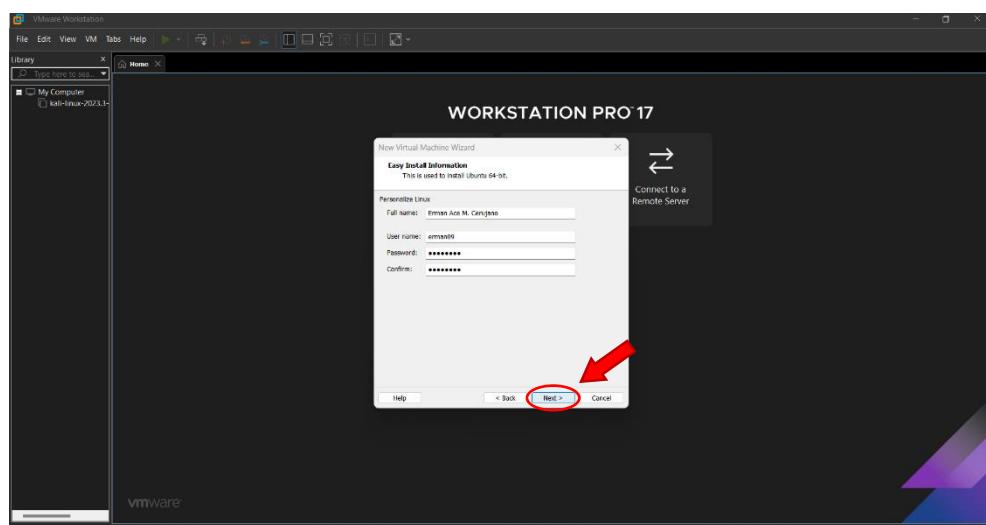
Select your Linux Ubuntu Server ISO, then click “open.”



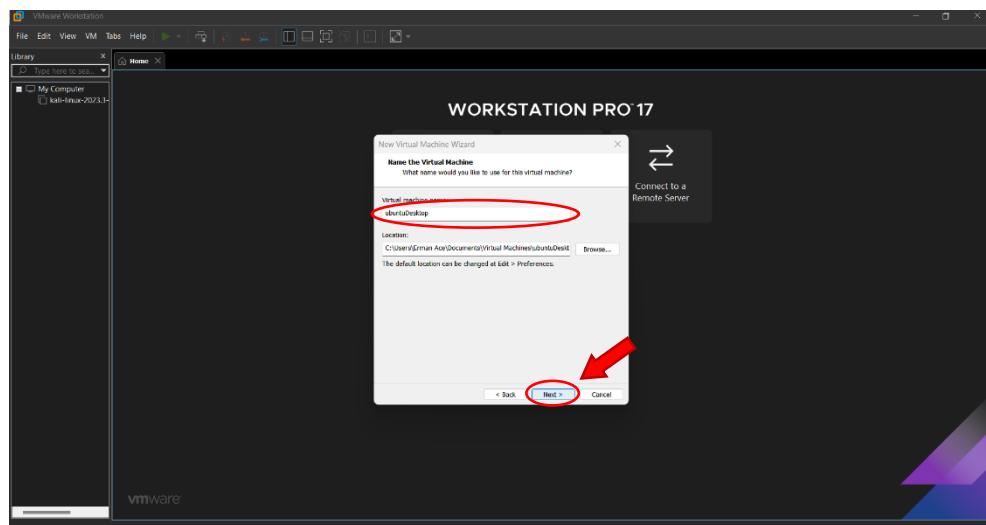
Make sure that the “ISO image” contains the Ubuntu Linux Server ISO. Then click “Next”



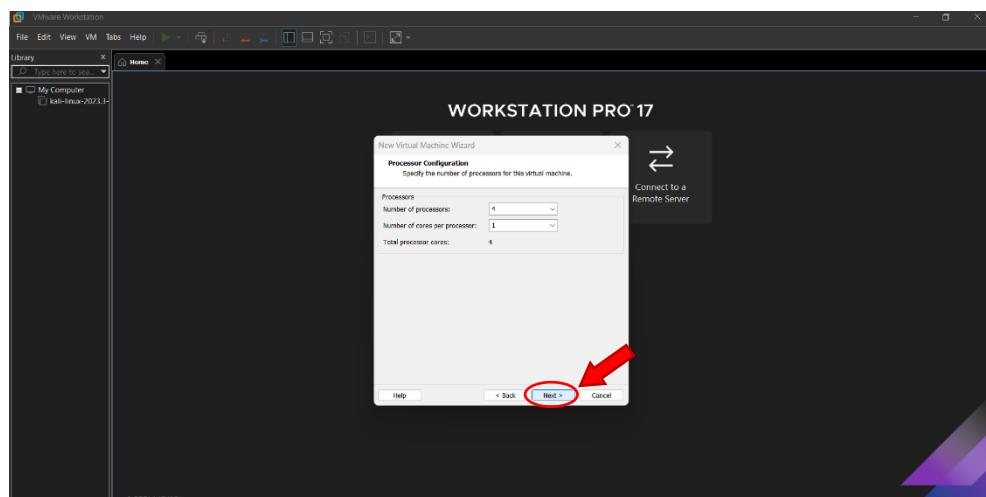
STEP 8: Enter your “Full Name,” “username” and “Password. After inputting all the needed information below, click “Next.”



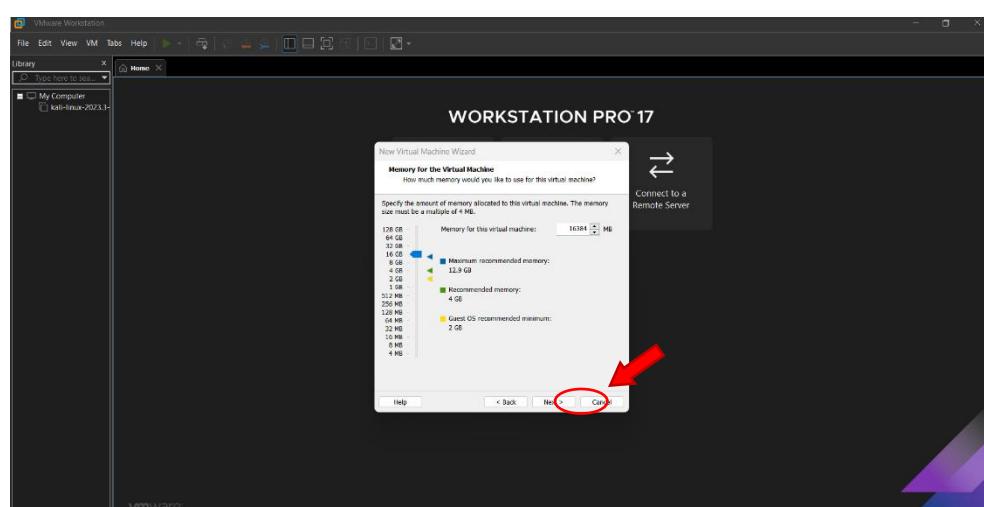
STEP 9: Enter the name of your Virtual Machine. Then click “Next.”



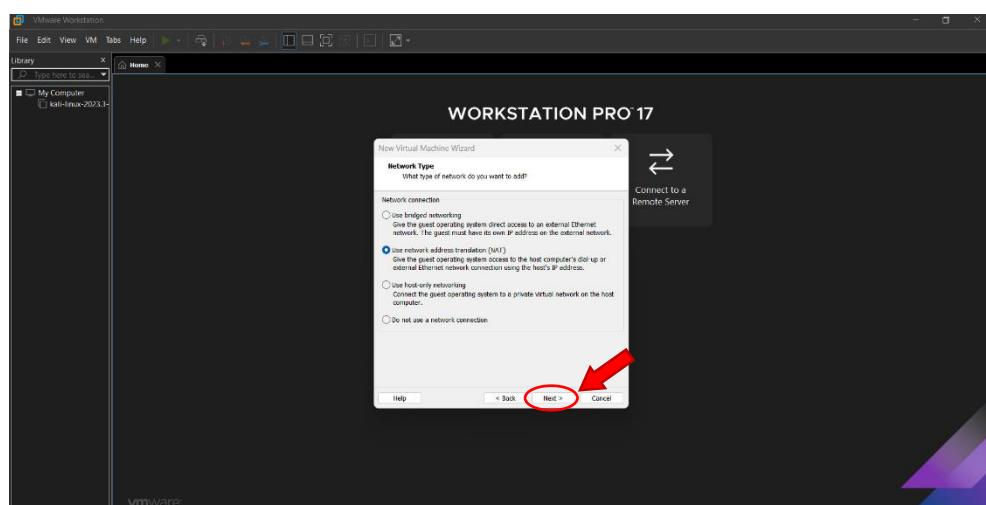
STEP 10: Processor Configuration. You are going to specify the number of processors for this virtual machine. For this example, I select for “Number of Processors:” as value of “4” and “Number of cores per processor:” value of “1.” Then click “Next.”



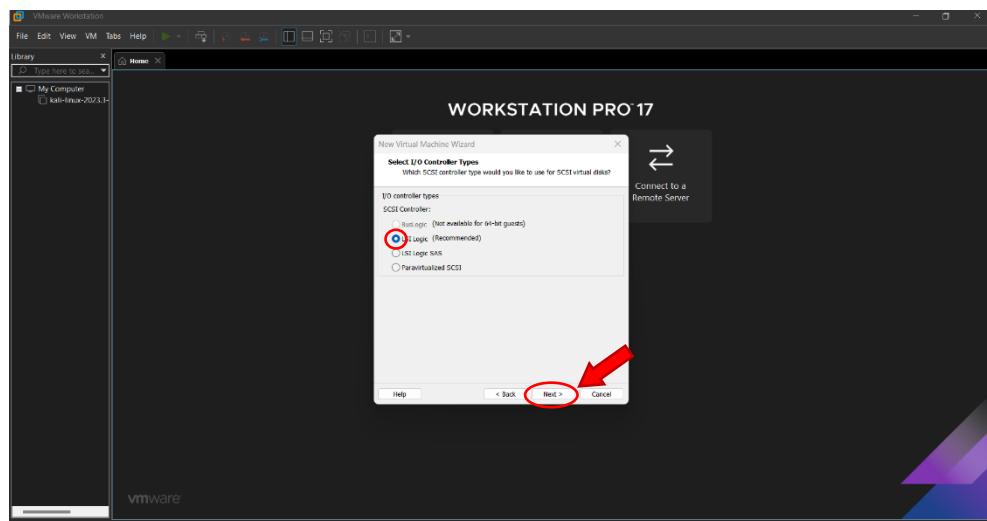
STEP 11: For Allocated memory for your virtual machine. For this example, the disk size of Ubuntu Linux Server is “16384 MB.” Then click Next.”



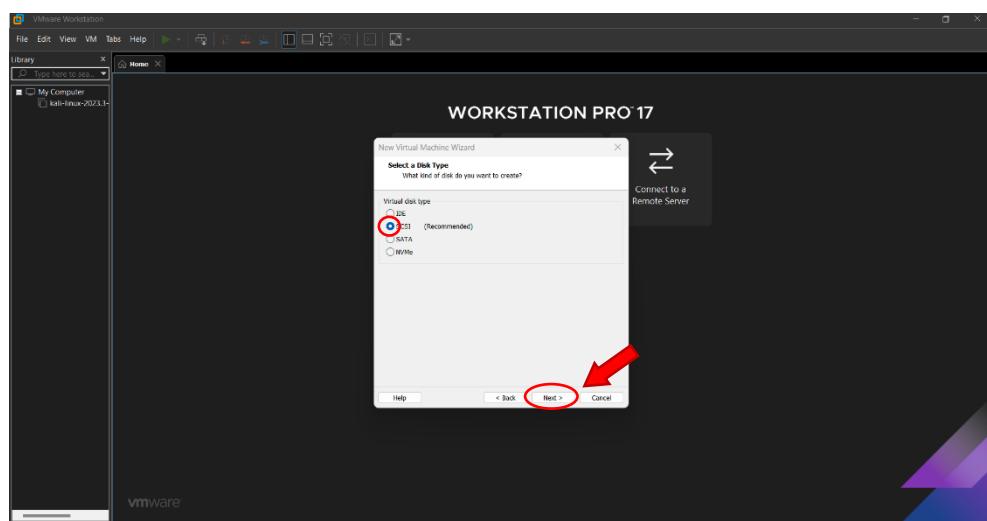
STEP 12: For the network type choose the “Use Network Address Translation (NAT).”



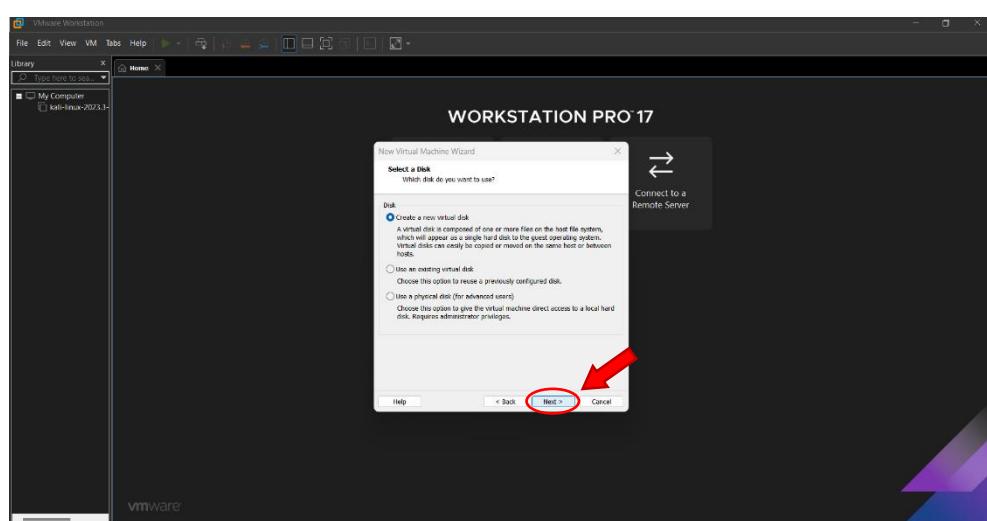
STEP 13: For I/O Controller Types choose the “LSI Logic (Recommended).”



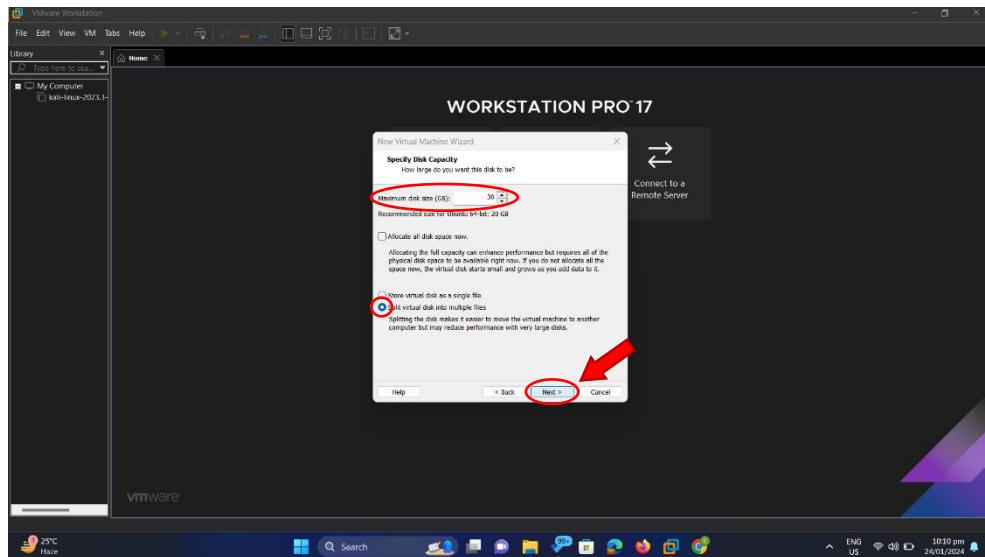
STEP 14: For the type of disk, select the SCSI (Recommended)



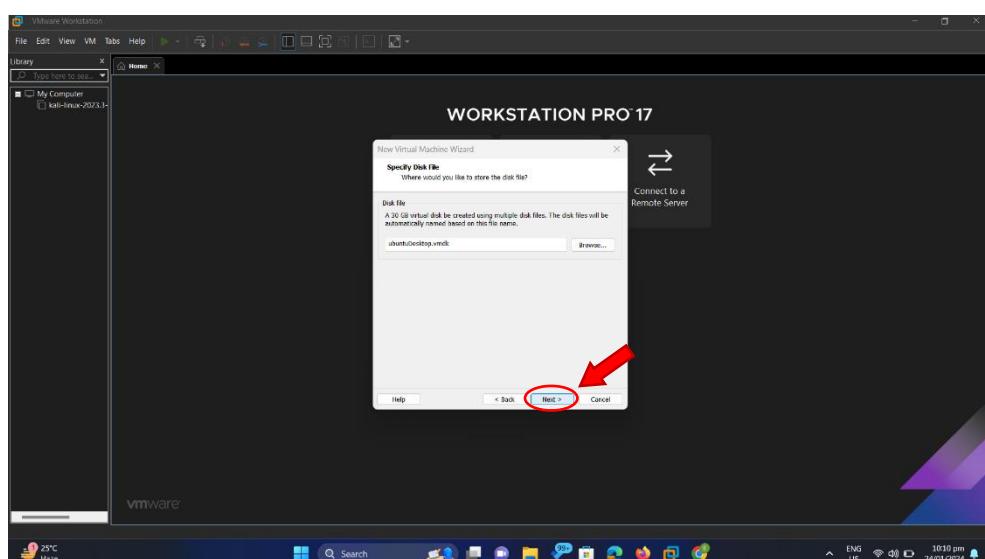
STEP 15: For the disk to use. Select the “Create a new virtual disk.”



STEP 16: Specifying Disk Capacity. For maximum disk size select “30 GB” then choose the “Split virtual disk into multiple files”

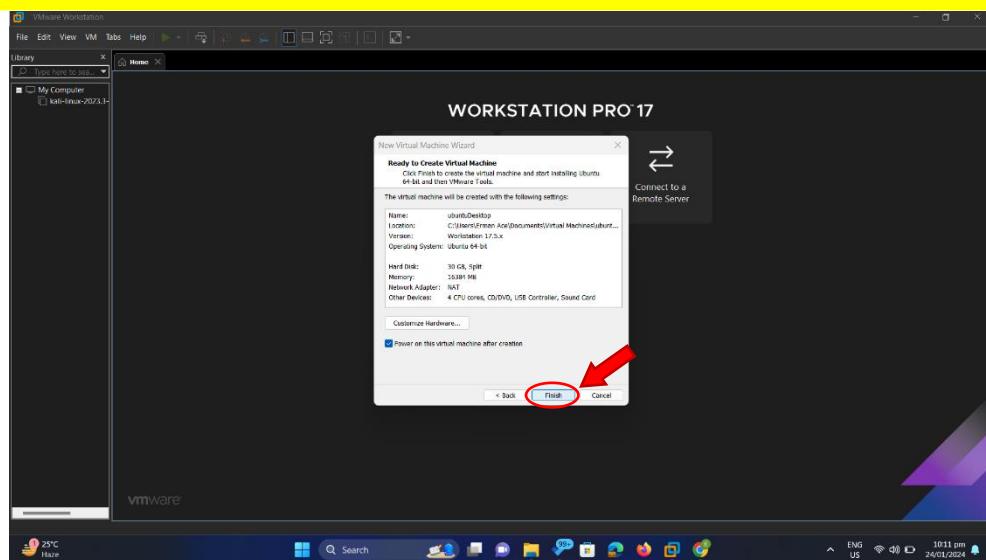


STEP 17: Specify Disk File. No need to configure just click “Next.”

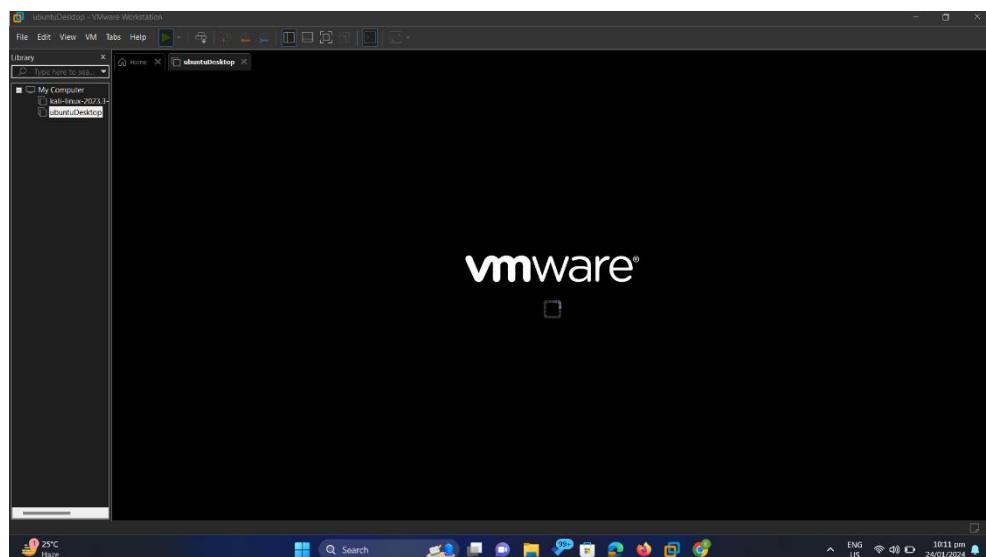


STEP 18: After setting up the necessary information for your Ubuntu Linux Server, the VMware will now display a summary of the information you configured for your Ubuntu Linux Server. Double-check the details below, and if everything is correct, click the "Finish" button.



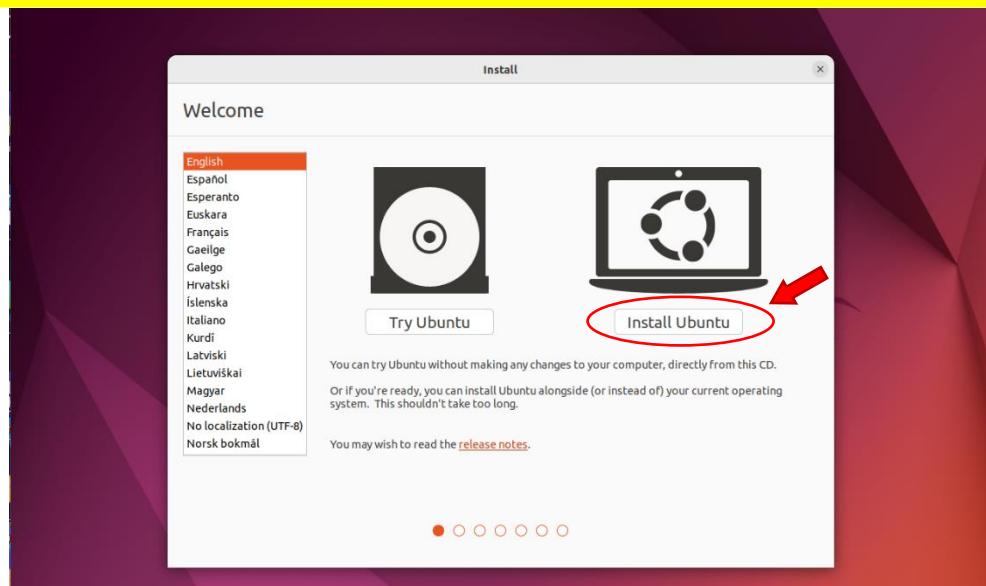


STEP 19: After clicking the “Finish” button, it will start loading your Ubuntu Server into your VMware. Then wait for it to load.

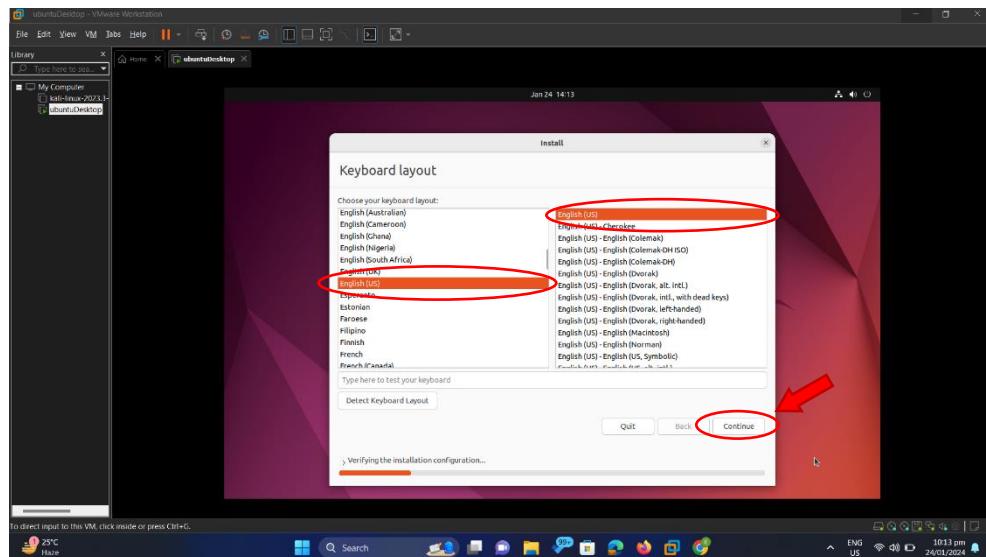


STEP 20: For installation process, click the language that you want to use in this Ubuntu Desktop. For this example, I choose the “English.” Then click “Install Ubuntu.”

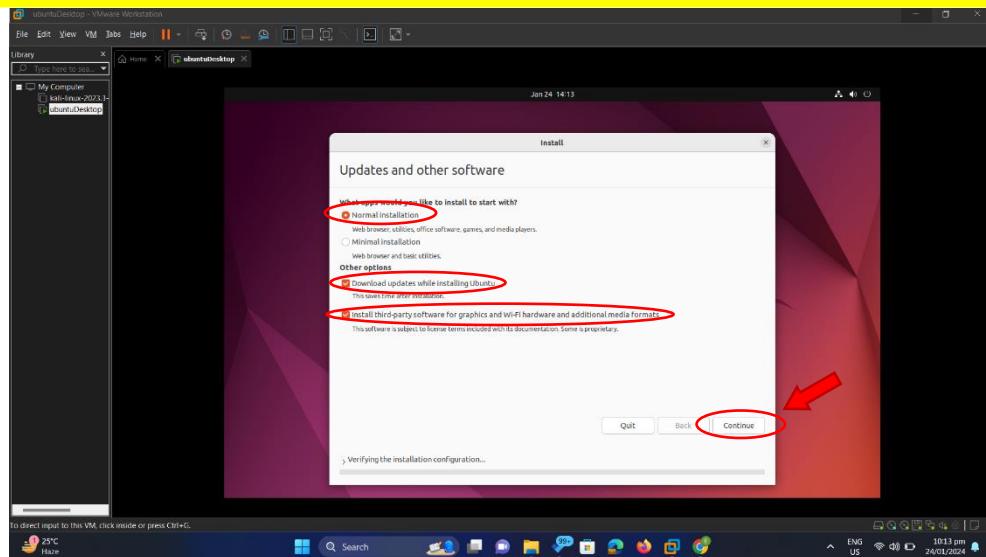




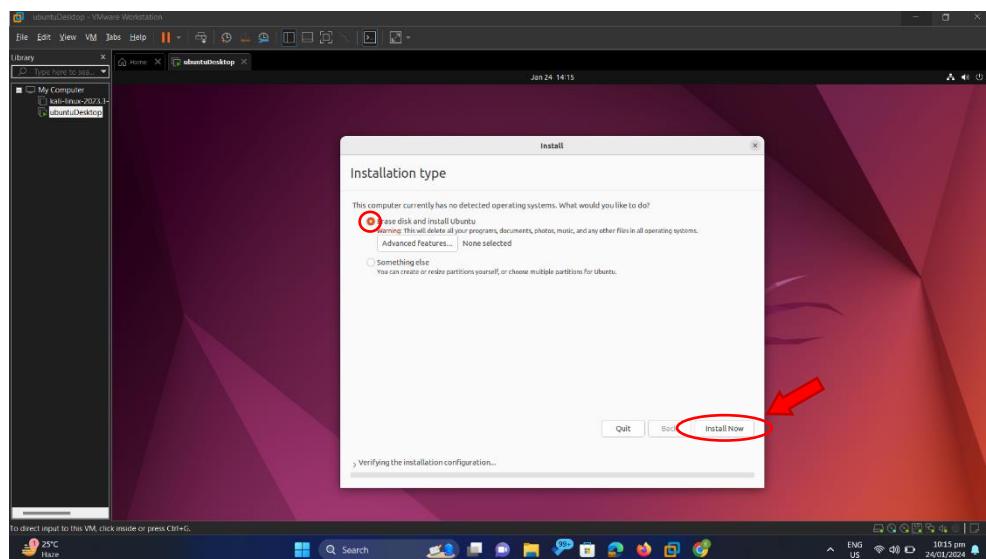
STEP 21: Choose your Keyboard Layout. Then click “Continue.”



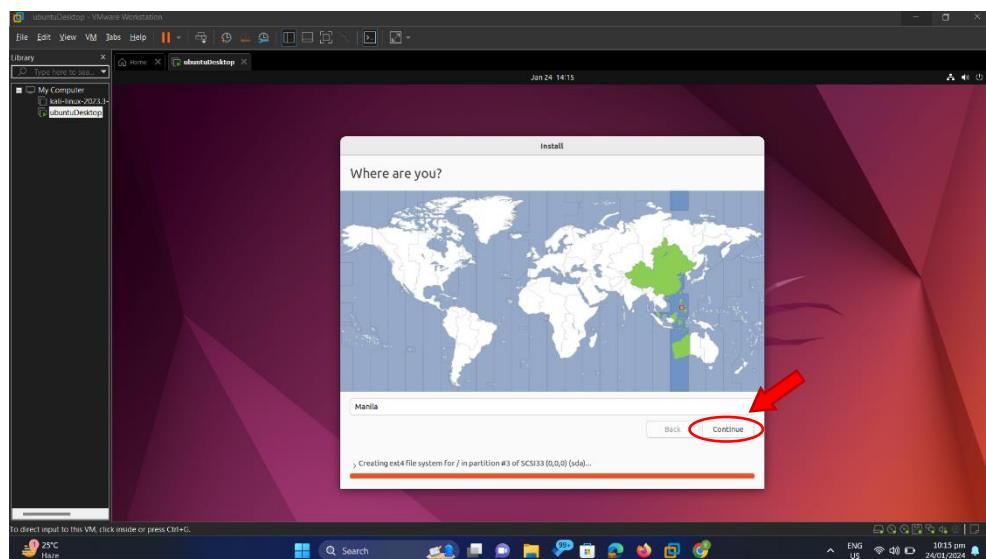
STEP 22: Updates and Other Software. Choose for the apps would you like to install to start with the “Normal Installation” Option. Then for the Other options choose the “Download Updates While Installing Ubuntu” and “Install Third-Party Software for Graphics and Wi-Fi Hardware and Additional Media Formats.” Then click “Continue.”



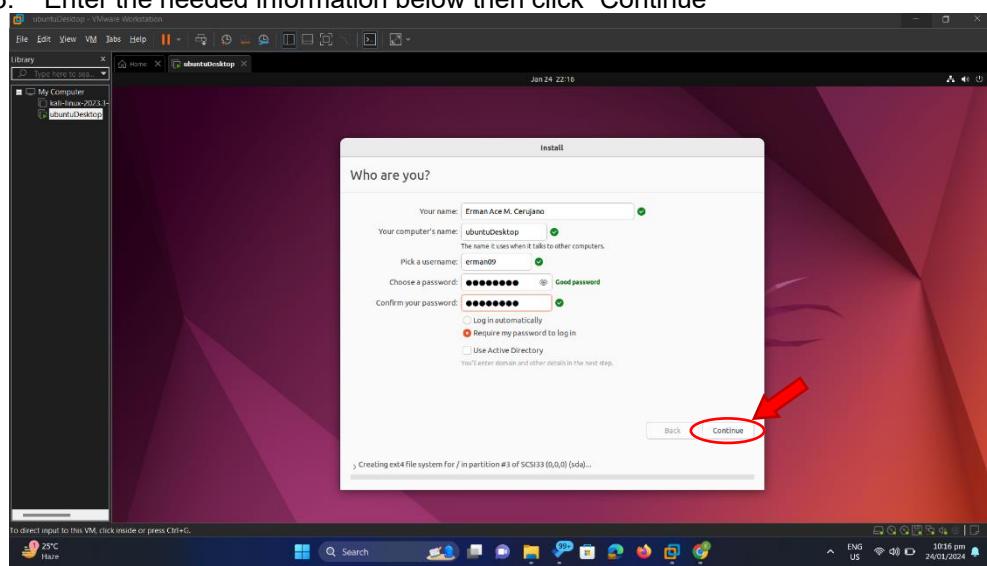
STEP 23: Installation Type. Choose the “Erase disk and Install Ubuntu.” Then click “Install Now.”



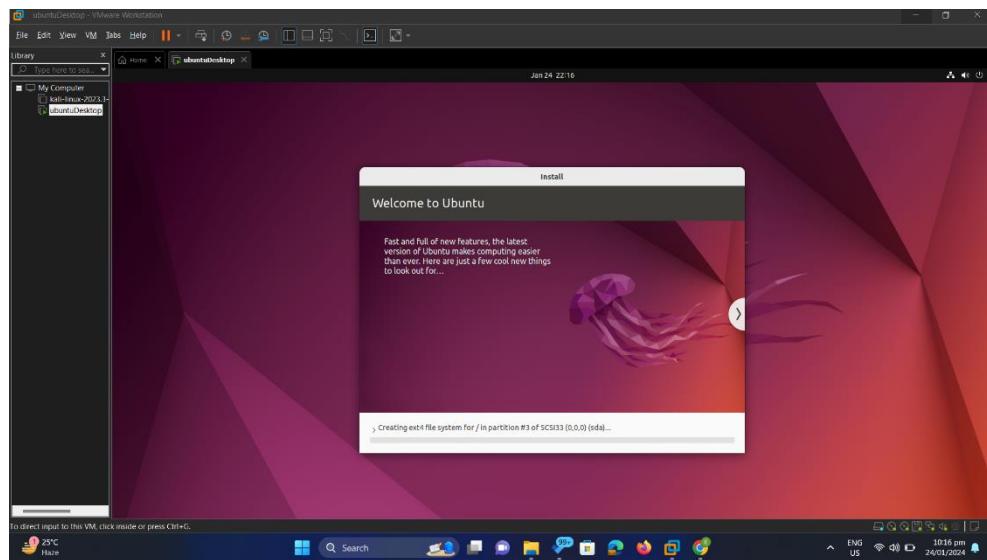
STEP 24: Select your current location, then click “Continue.”



STEP 25: Enter the needed information below then click “Continue”

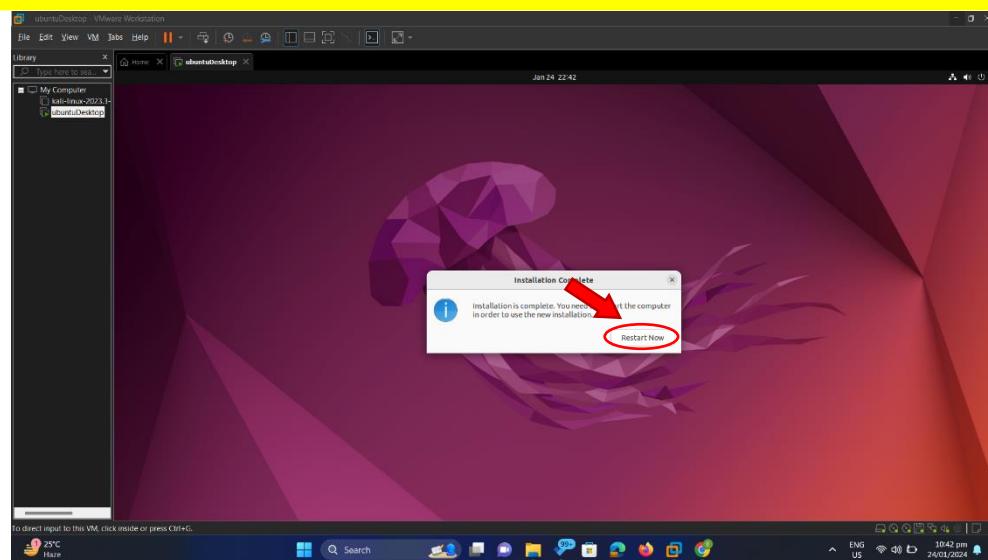


STEP 26: Your Ubuntu Desktop is now installing. Wait for a few minutes to finish the Installation of your Ubuntu Desktop.

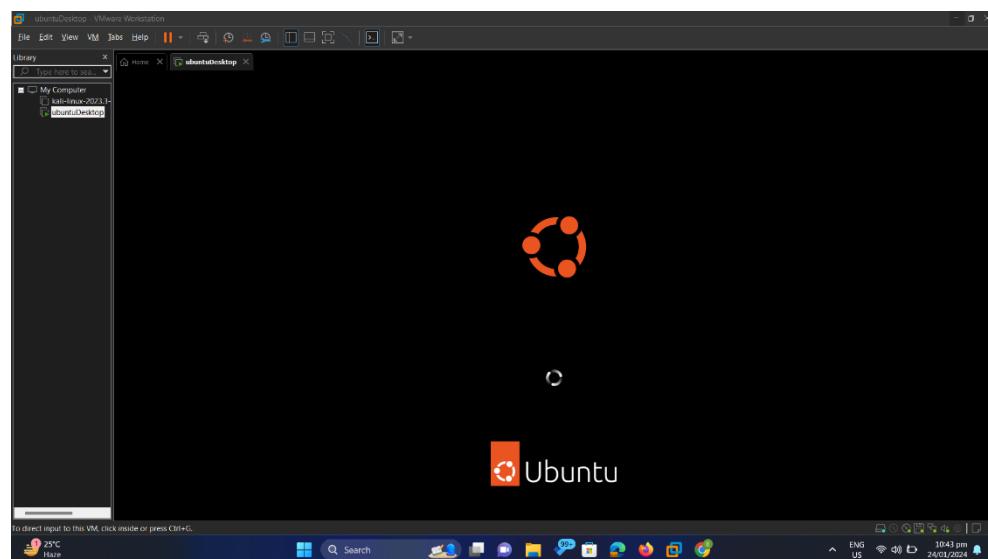


STEP 27: After the installation of your Ubuntu Desktop. Click the “Restart Now” button.



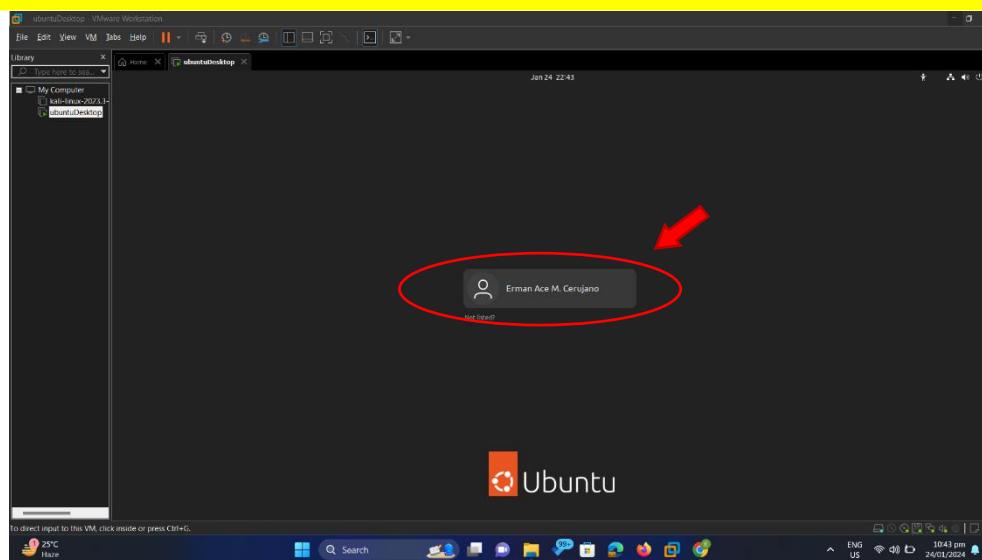


STEP 28: Wait for your Ubuntu Desktop to restart.

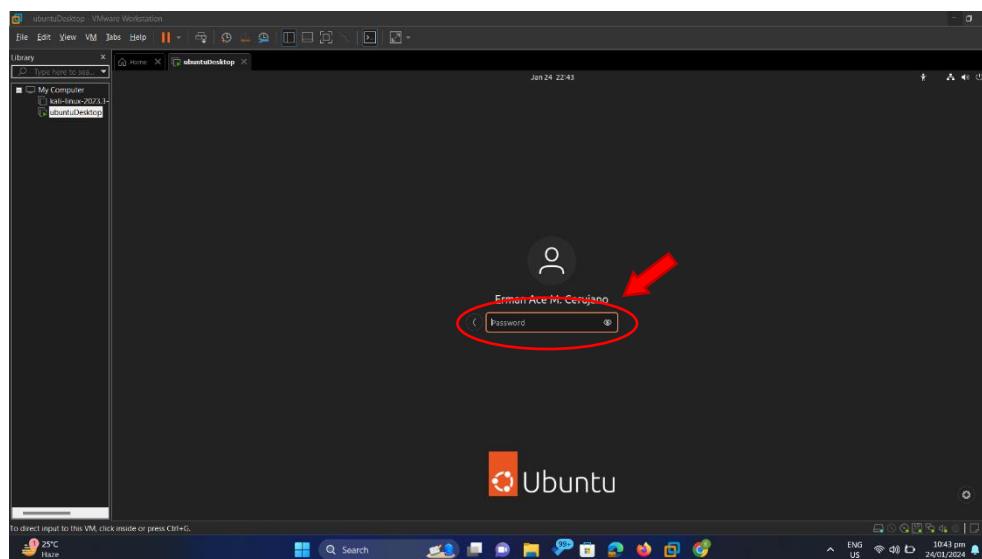


STEP 29: After restarting your Ubuntu Desktop. Now it will show the account that you register before. Click your account that you want to use.

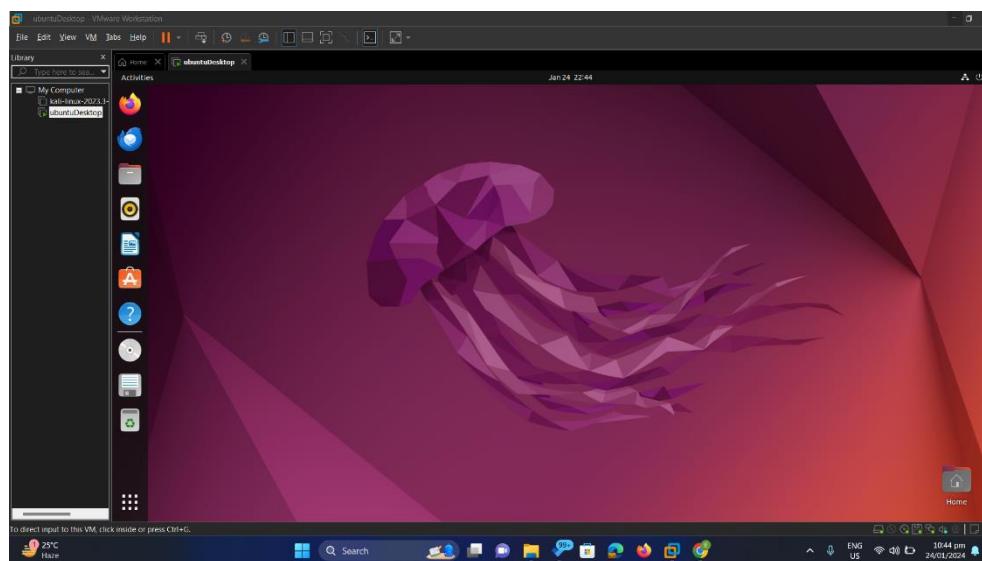




STEP 30: Enter your password.



STEP 31: After you entered your password. You can now access your Ubuntu Desktop.

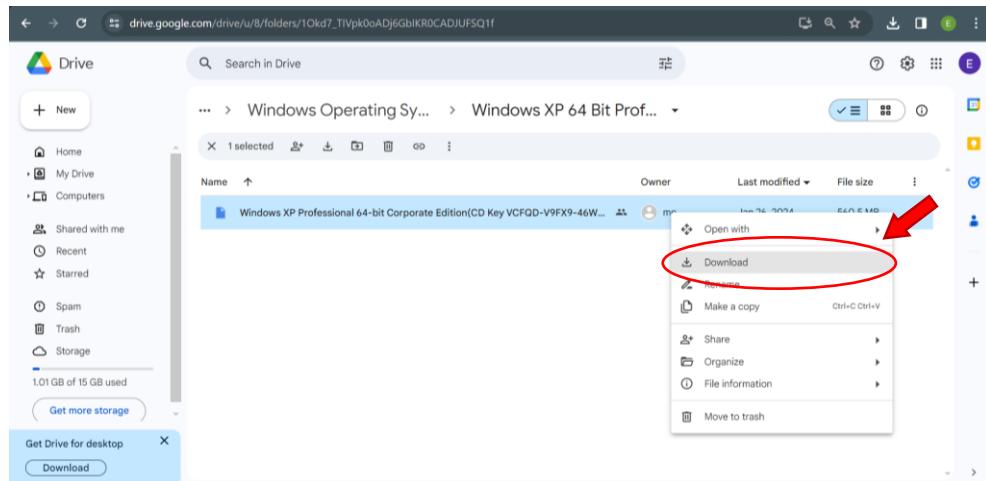


You are now successfully added Ubuntu Desktop to your Virtual Box.

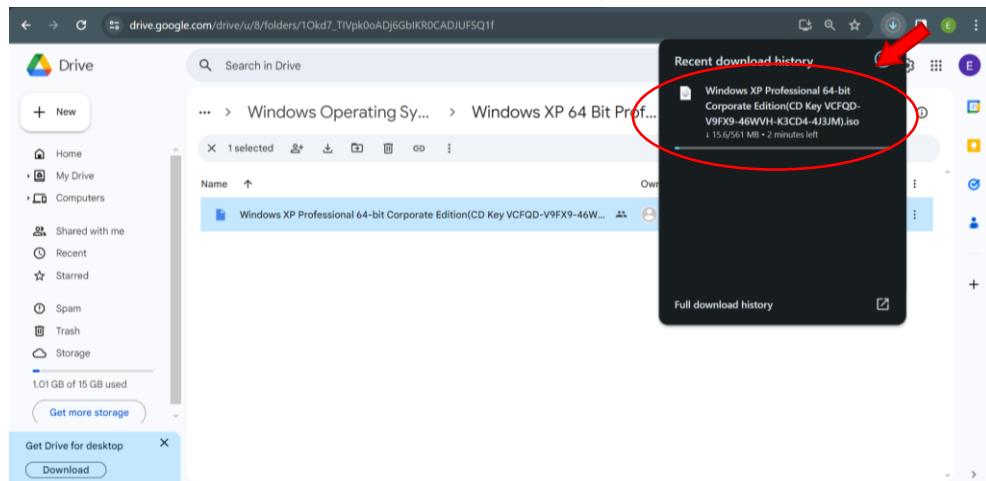


Windows Desktop OS

STEP 1: Download the ISO of Windows XP Professional. To download the ISO of Windows XP Professional, go to this link https://drive.google.com/drive/folders/1Okd7_TIVpk0oADj6GbIKR0CADJUFSQ1f?usp=drive and download the file.

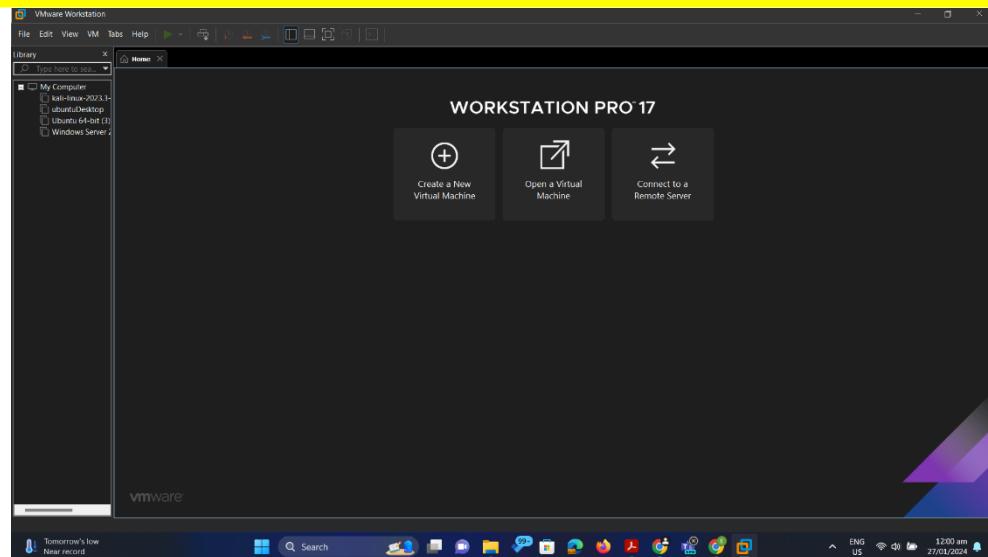


STEP 2: Wait for the installer to start downloading in your browser.

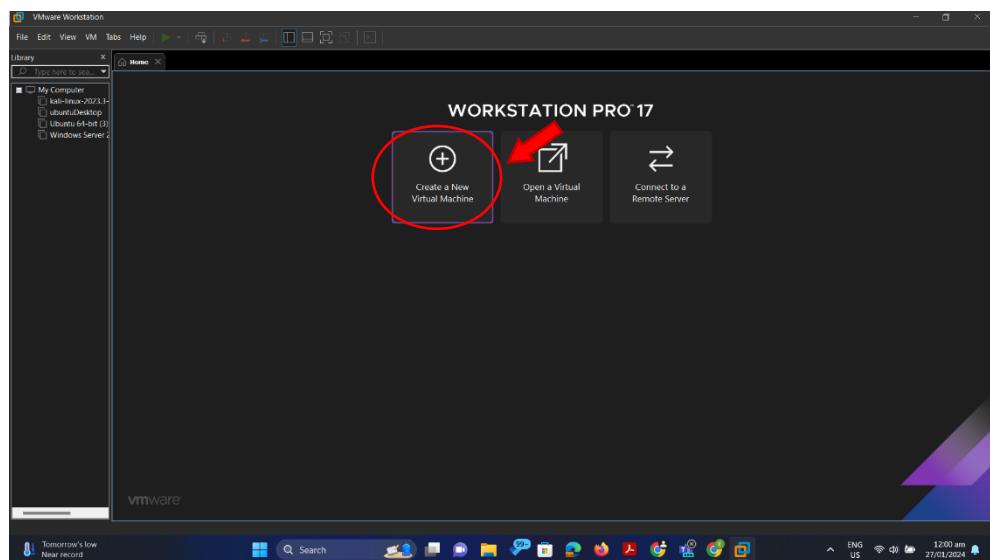


STEP 3: After you have finished downloading the Windows XP Professional ISO. Open your Virtual Box.



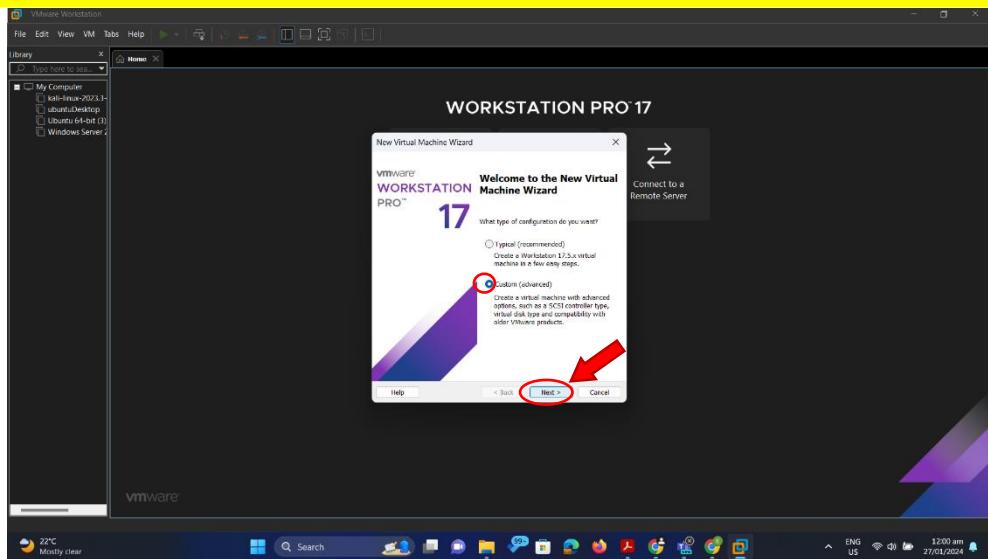


STEP 4: To add your Windows 2012 Server into your VMware. Click the “Create a New Virtual Machine”

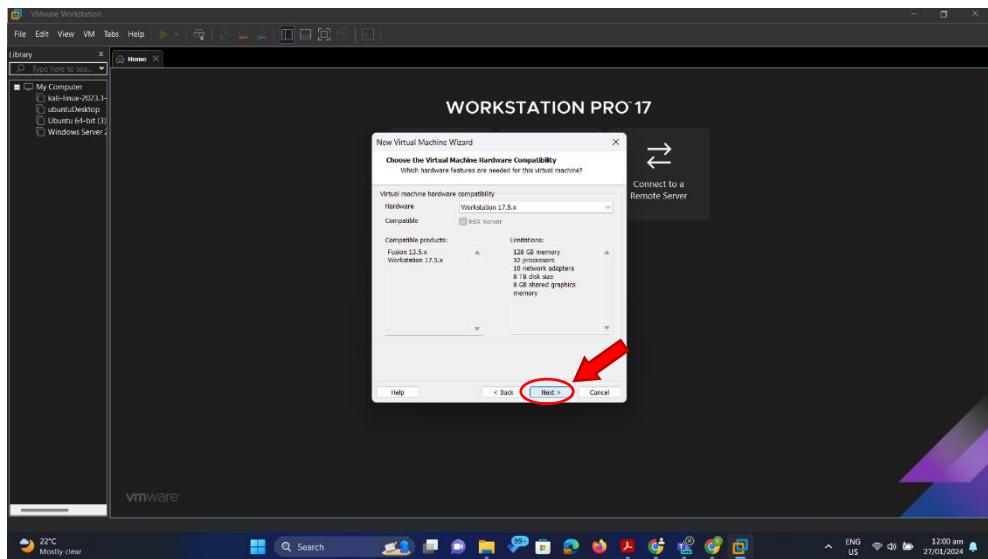


STEP 5: In type of configuration choose “custom,” then click “Next.”



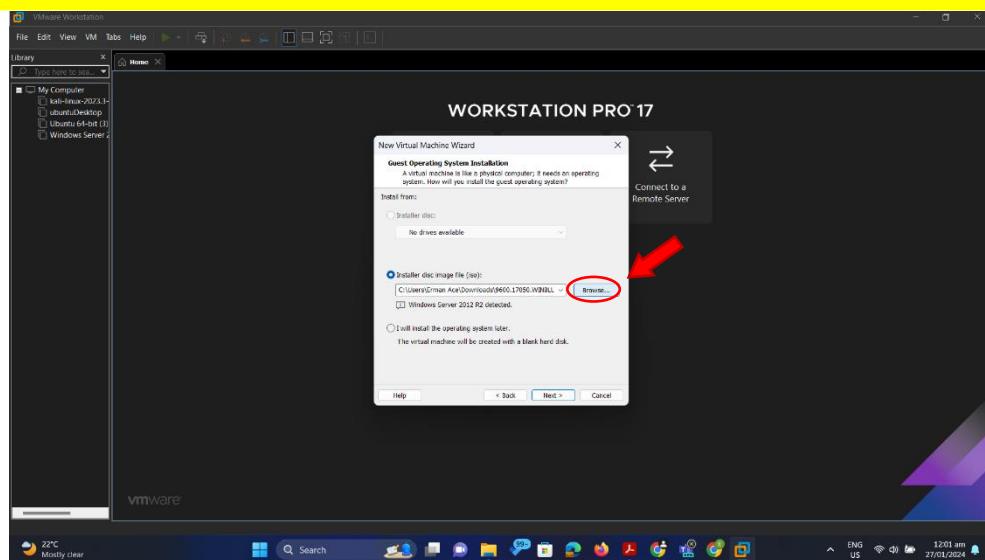


STEP 6: Then click “next.”

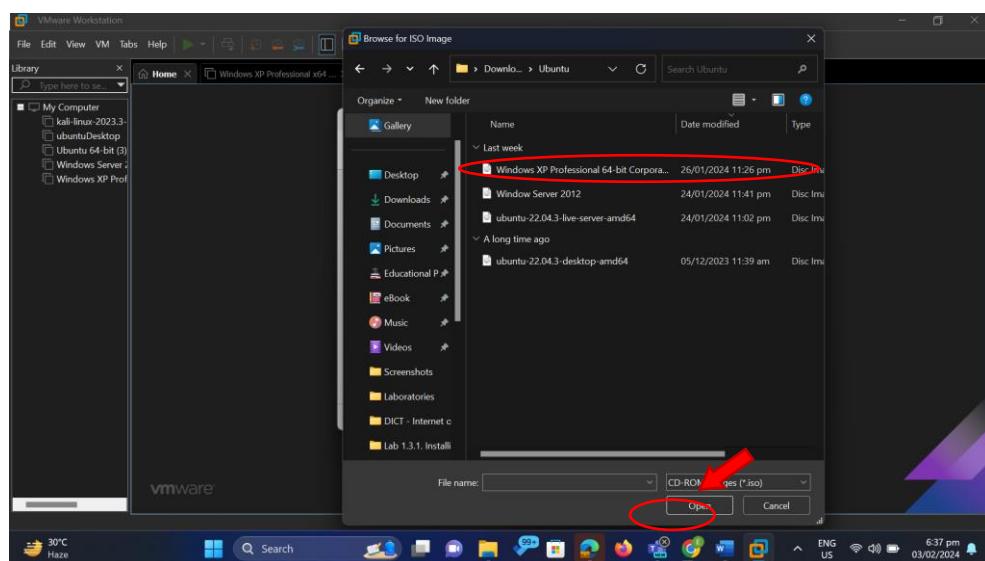


STEP 7: Select your Windows 2012 Server ISO by clicking the browse button.



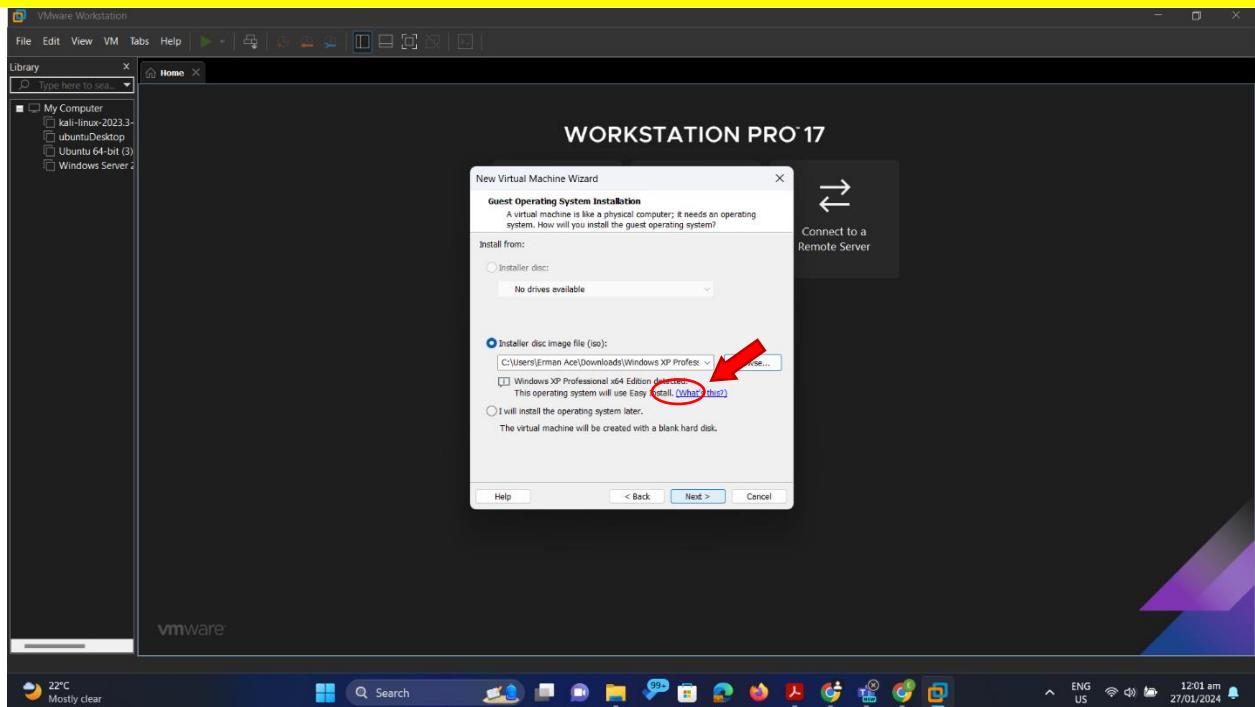


Select your Windows 2012 Server ISO, then click “open.”

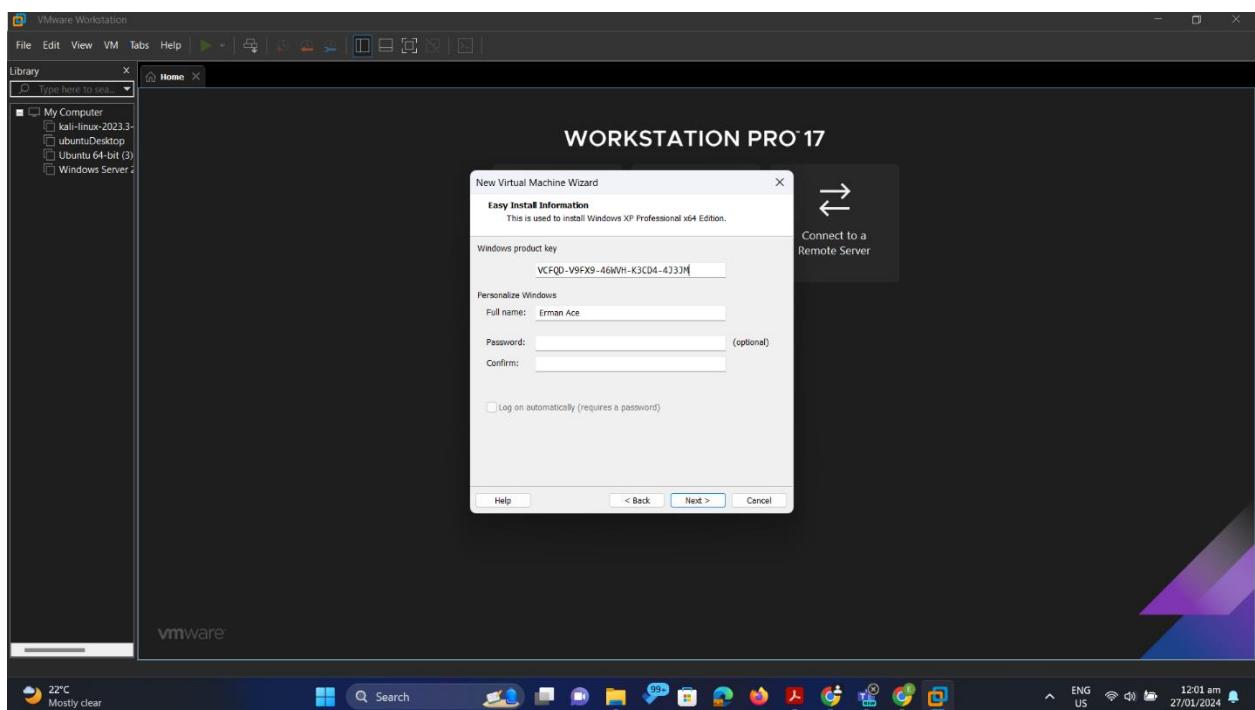


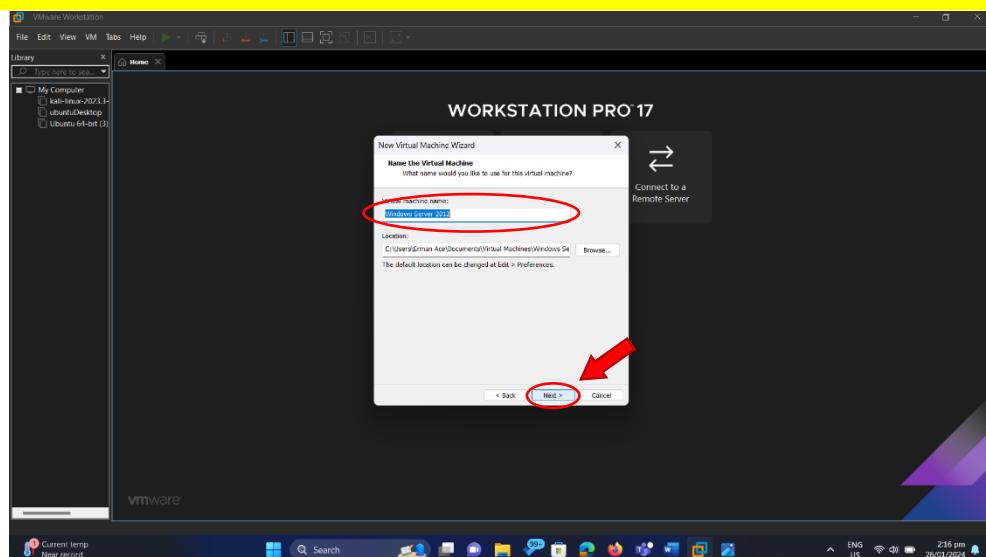
Make sure that the “ISO image” contains the Windows 2012 Server ISO. Then click “Next.”



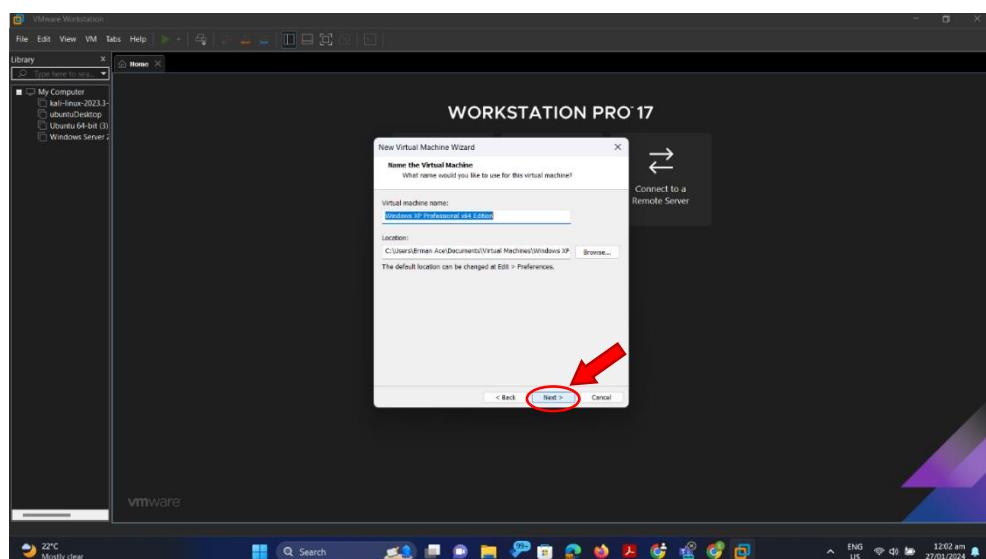


STEP 8: Enter the required information, including the Windows product key. You can use the product key provided below, or you can find the product key in the file name of the Windows XP Professional ISO. Also, enter the needed information in the “Personalize Windows”. Then click “Next.”



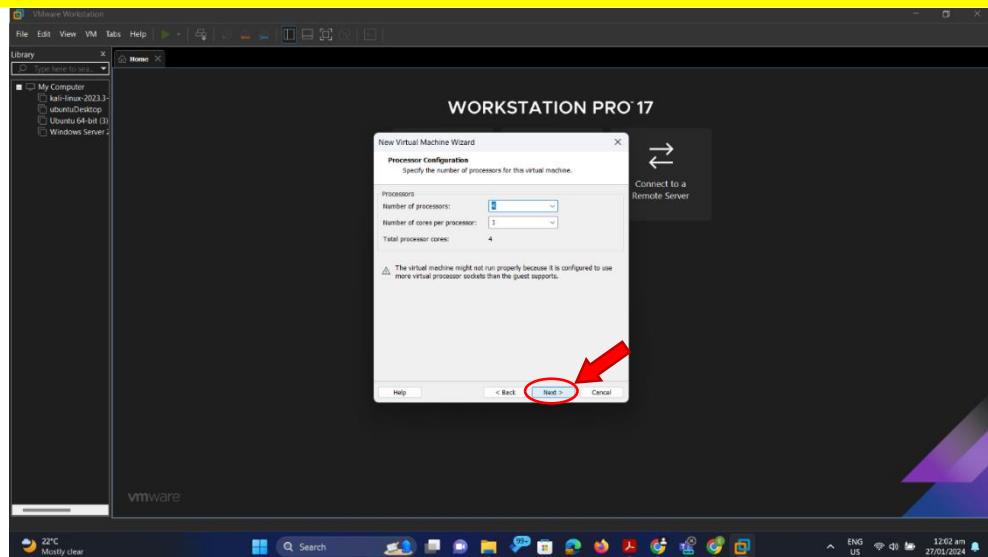


STEP 9: Enter the name of your Windows XP Professional Virtual Machine name. Then click “Next”

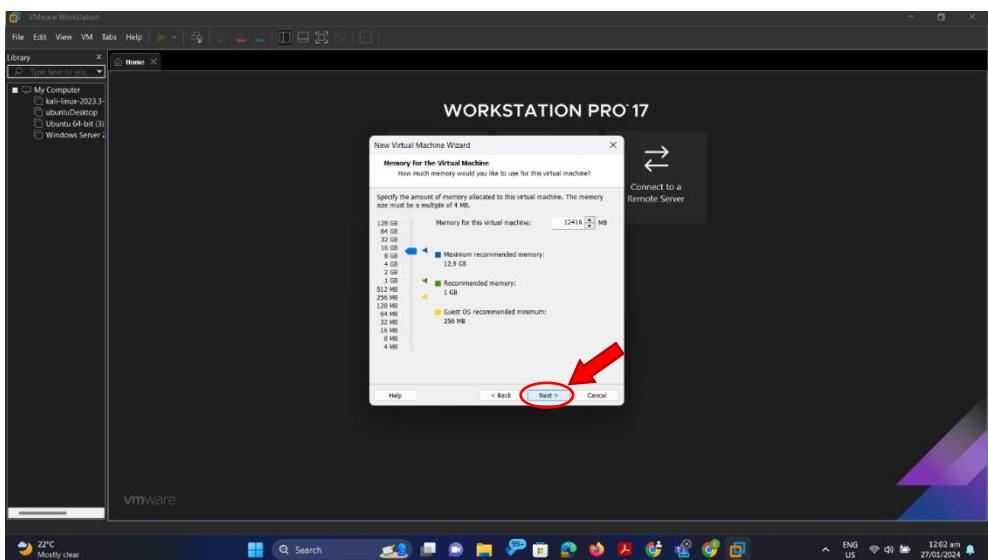


STEP 10: Processor Configuration. You are going to specify the number of processors for this virtual machine. For this example, I select for “Number of Processors.” as value of “4” and “Number of cores per processor:” value of “1.” Then click “Next.”



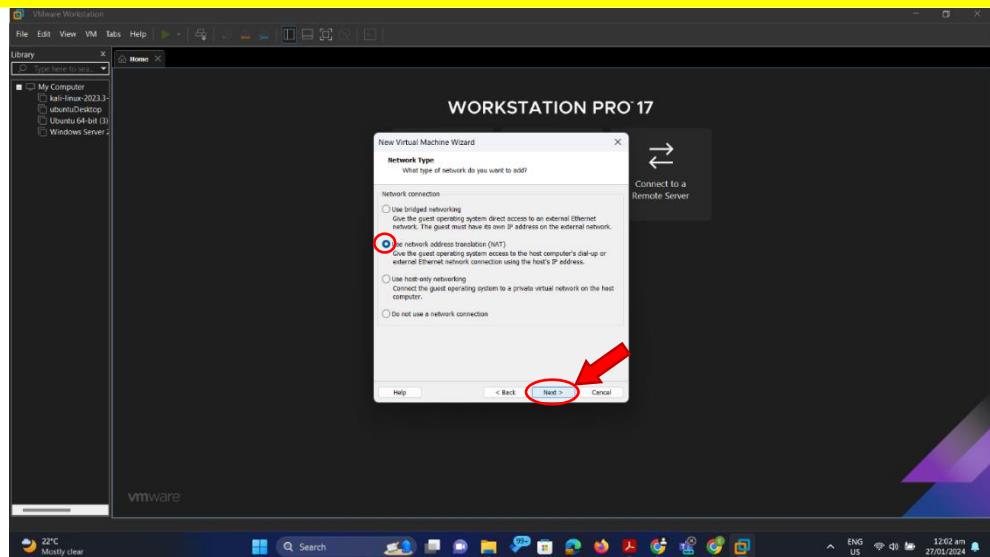


STEP 11: For Allocated memory for your virtual machine. For this example, the disk size of Windows 2012 Server is "14260 MB." Then click Next."

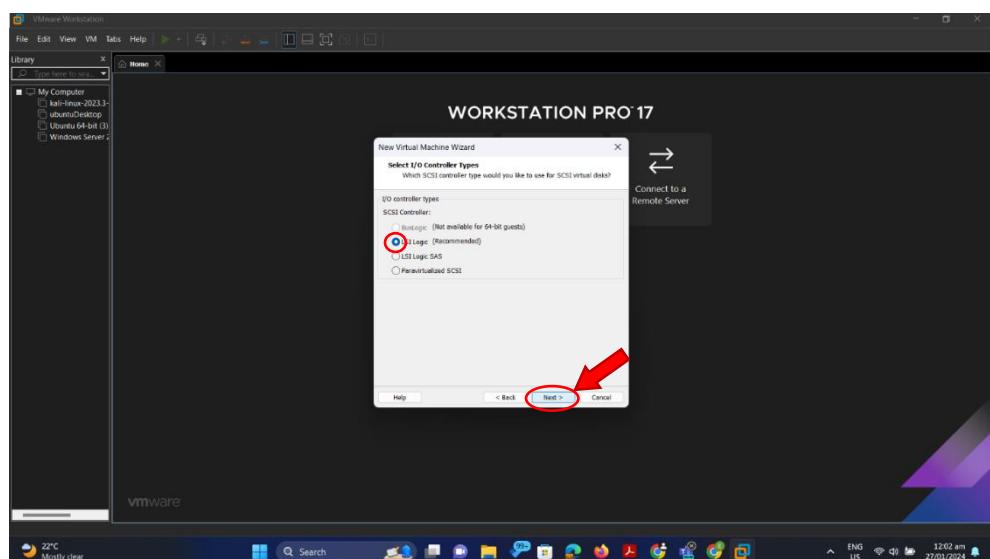


STEP 12: For the network type choose the "Use Network Address Translation (NAT)."

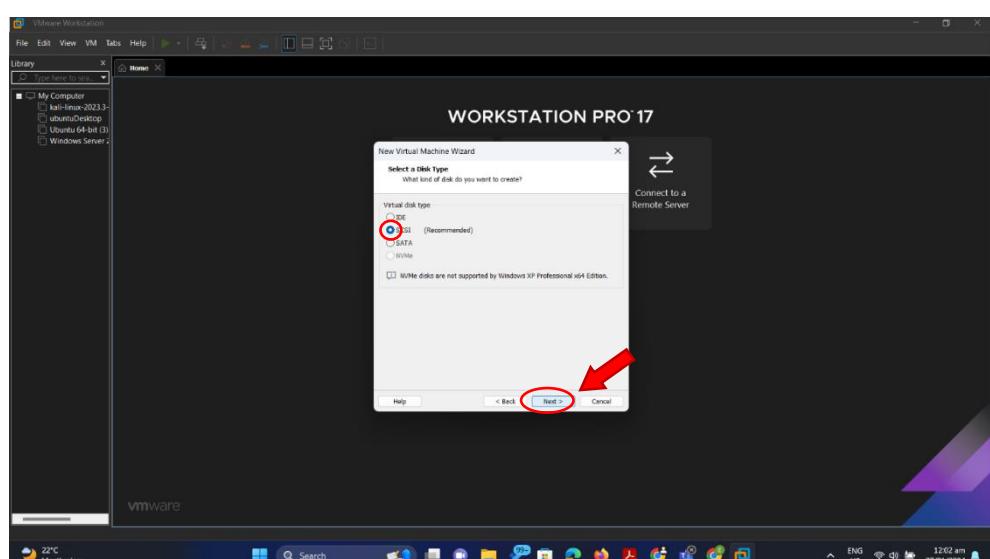




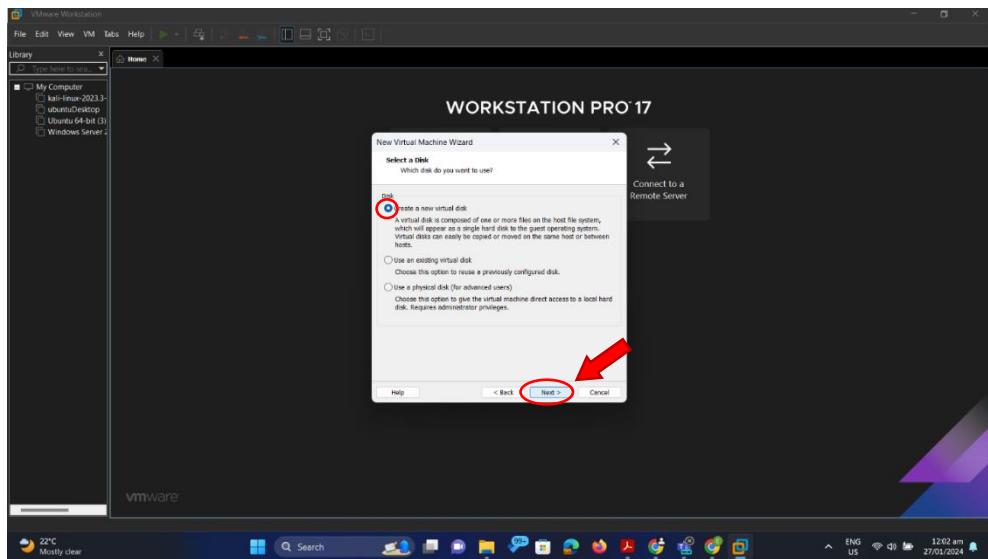
STEP 13: For I/O Controller Types choose the “LSI Logic (Recommended).”



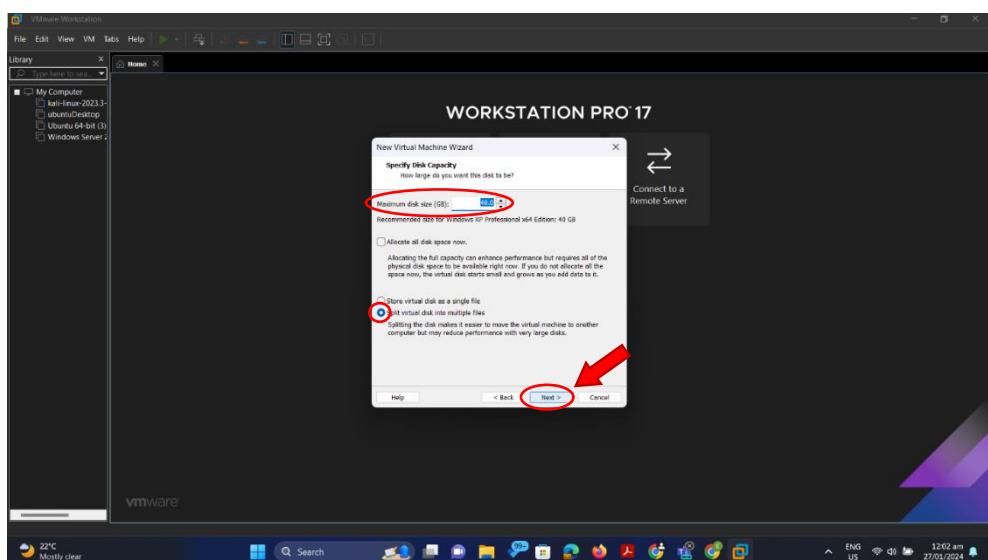
STEP 14: For the type of disk, select the SCSI (Recommended)



STEP 15: For the disk to use. Select the “Create a new virtual disk.”

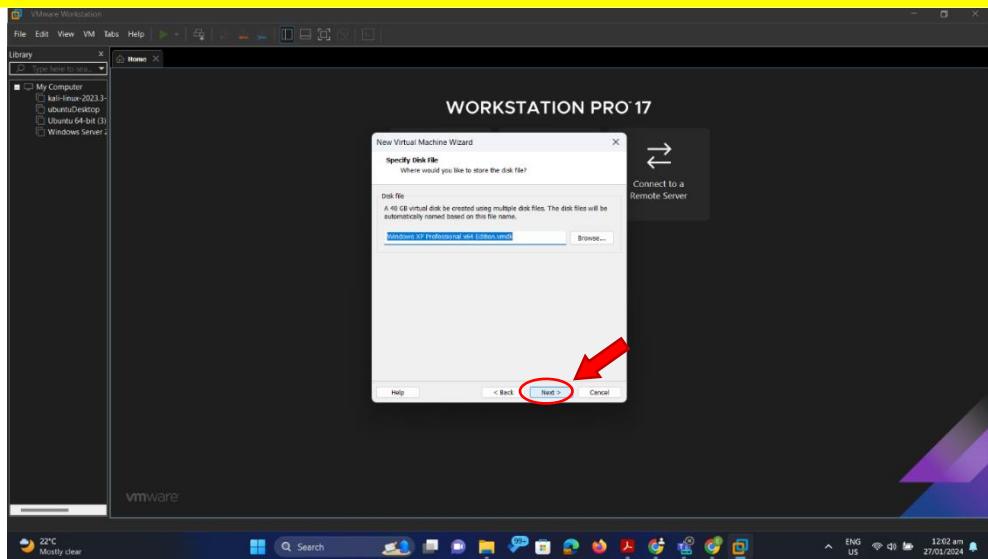


STEP 16: Specifying Disk Capacity. For maximum disk size select “60 GB” then choose the “Split virtual disk into multiple files”

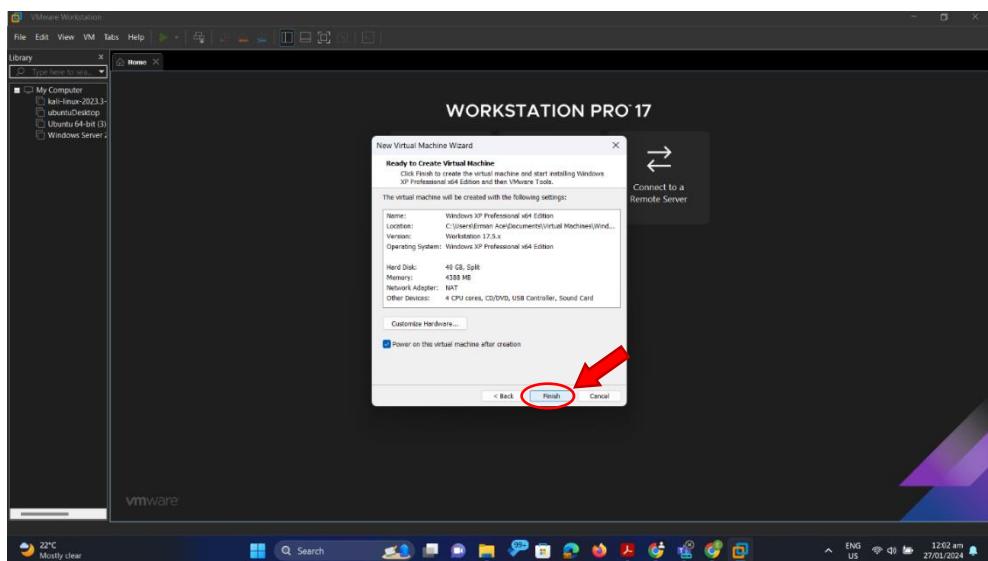


STEP 17: Specify Disk File. No need to configure just click “Next.”



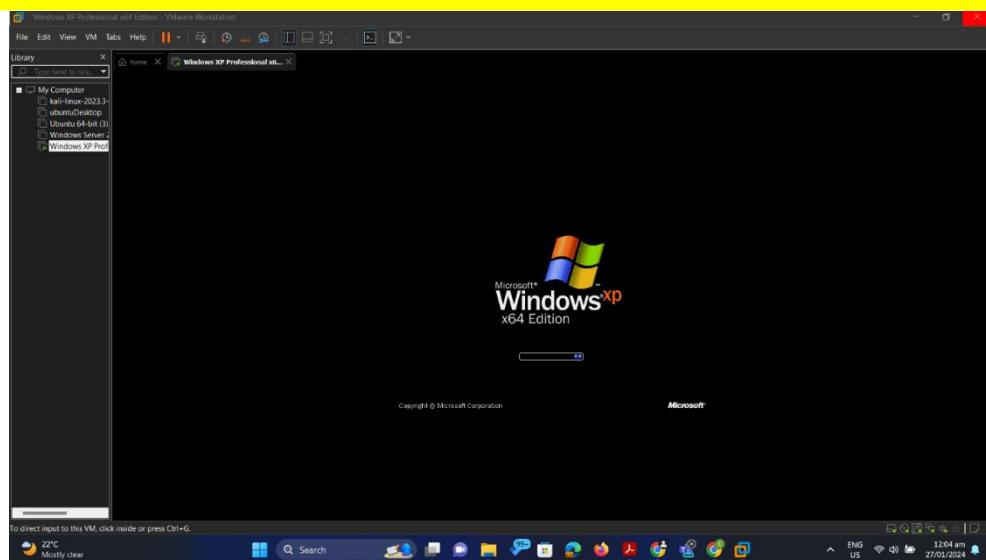


STEP 18: After setting up the necessary information for your Ubuntu Linux Server, the VMware will now display a summary of the information you configured for your Ubuntu Linux Server. Double-check the details below, and if everything is correct, click the "Finish" button.

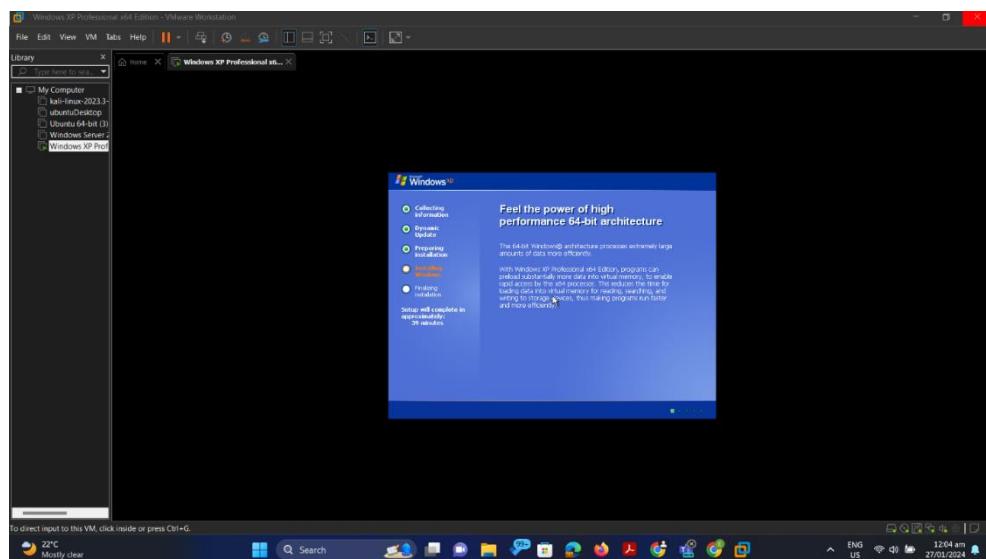


STEP 19: After clicking the "Finish" button, it will start loading your Ubuntu Server into your VMware. Then wait for it to load.





STEP 20: Wait again for another couple of minutes to set up your Windows XP Professional.



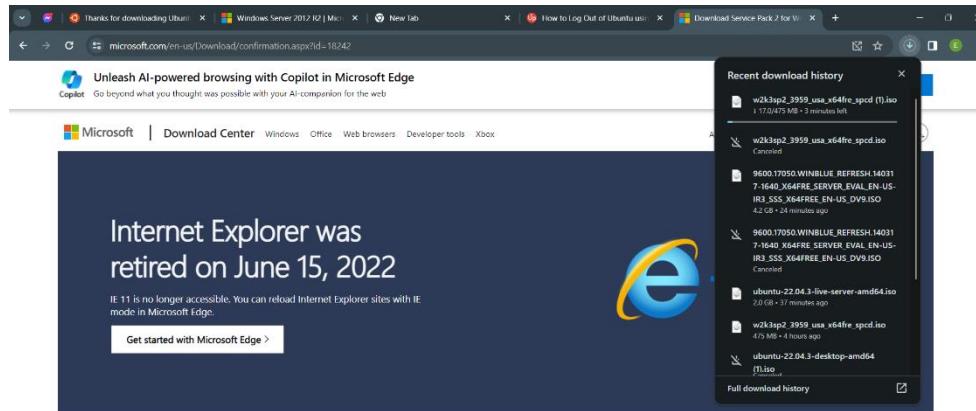
STEP 21: After setup. You are now successfully added the Windows XP Professional into your Virtual Box.



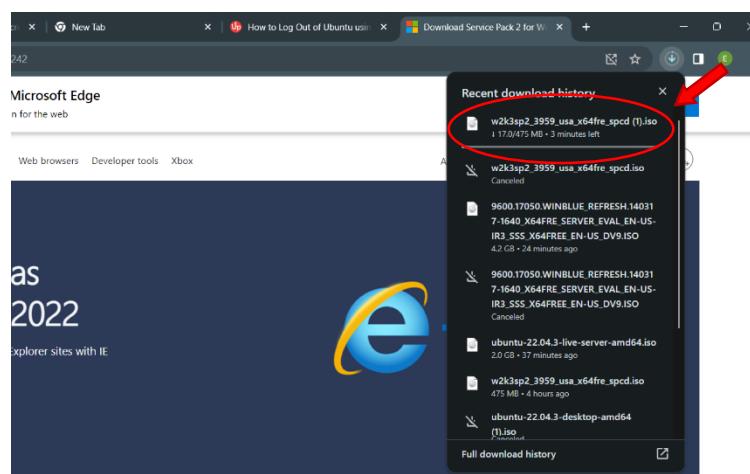


Windows Server OS

STEP 1: Download the ISO of Windows 2012 Server. To download the ISO of Windows 2012 Server, go to this link <https://microsoft.com/en-us/Download/confirmation.aspx?id=18242> and it will automatically download the ISO.

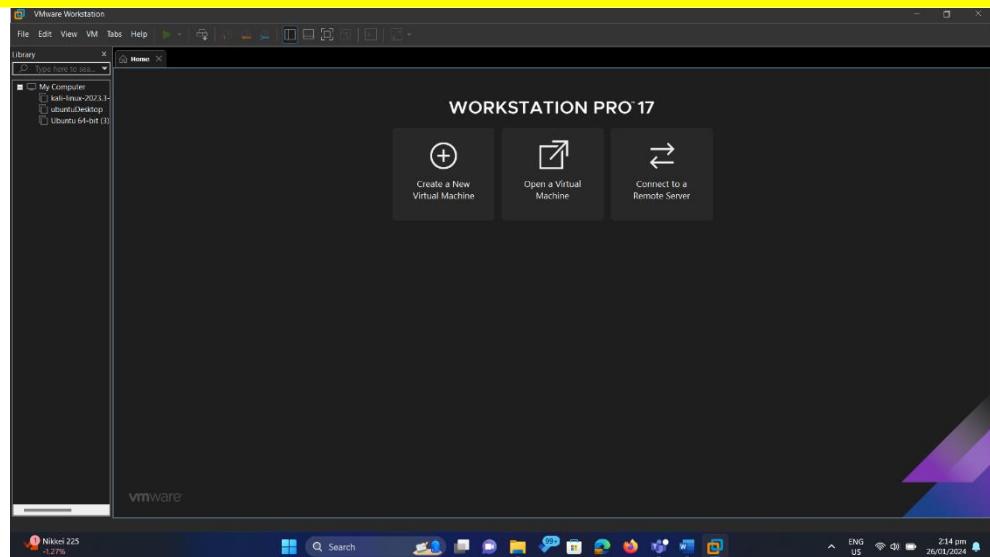


STEP 2: Wait for the installer to start downloading in your browser.

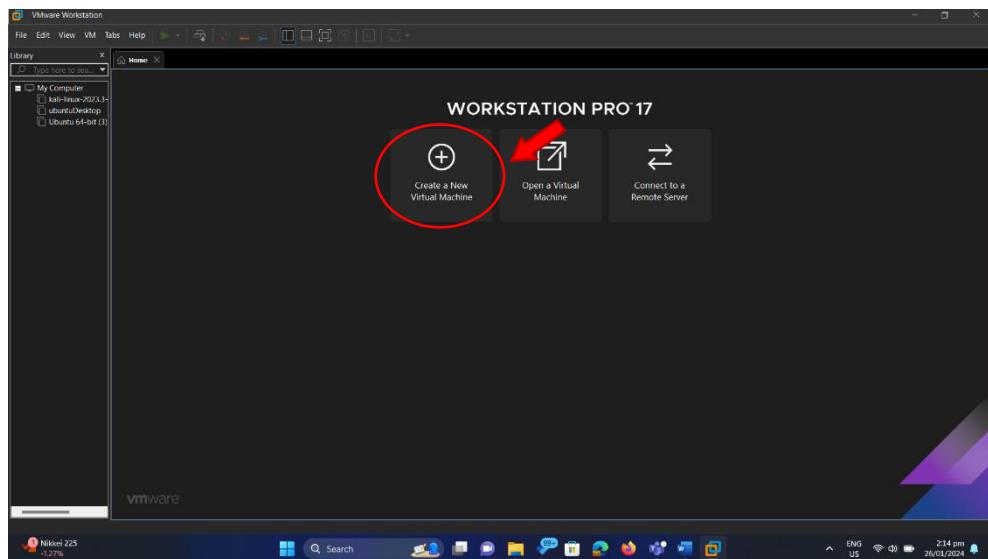


STEP 3: After you have finished downloading the Windows 2012 Server ISO. Open your VMware.



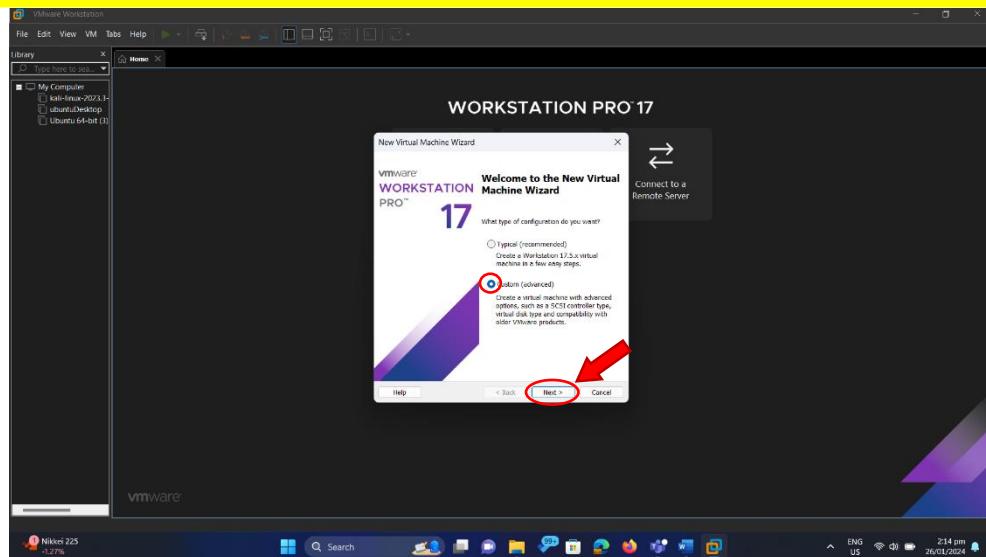


STEP 4: To add your Windows 2012 Server into your VMware. Click the “Create a New Virtual Machine”

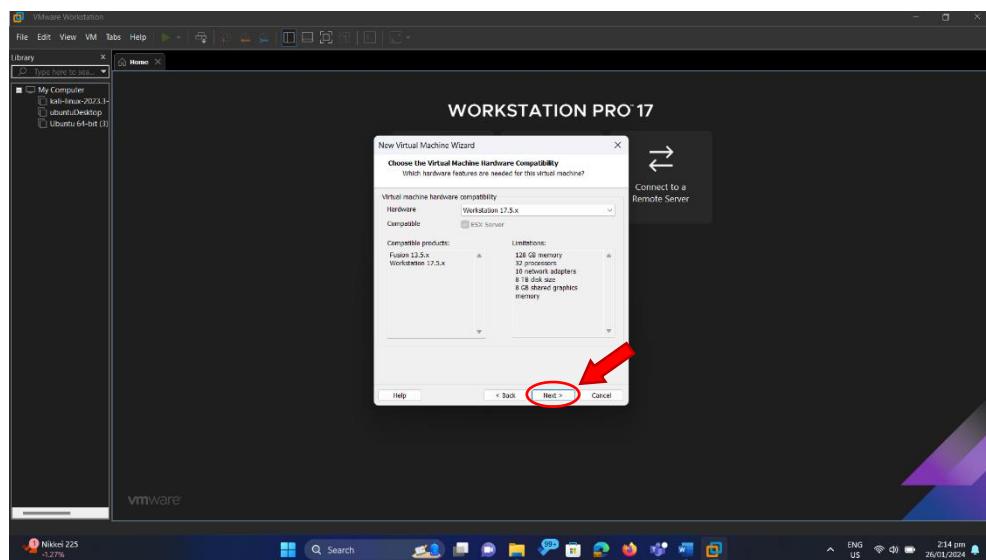


STEP 5: In type of configuration choose “custom,” then click “Next.”



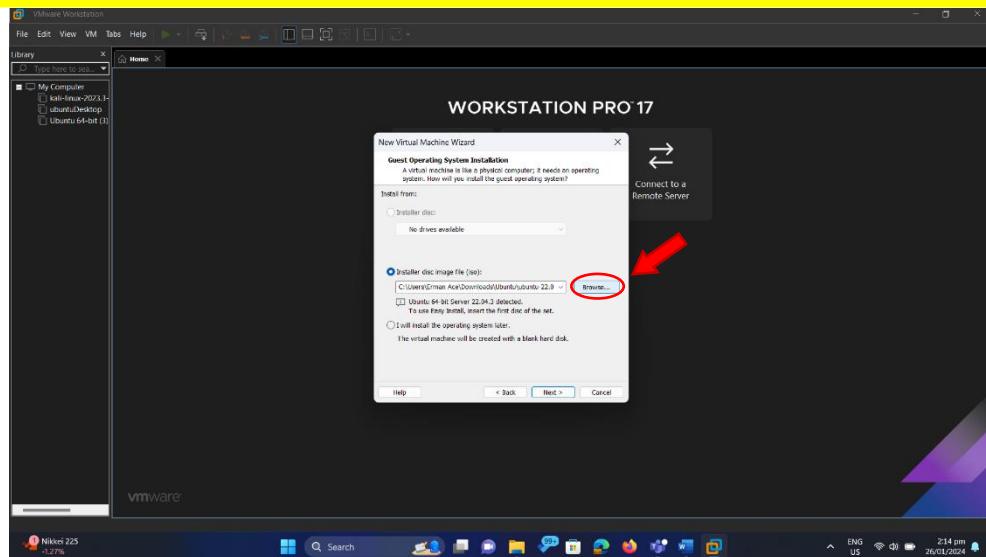


STEP 6: Then click “next.”

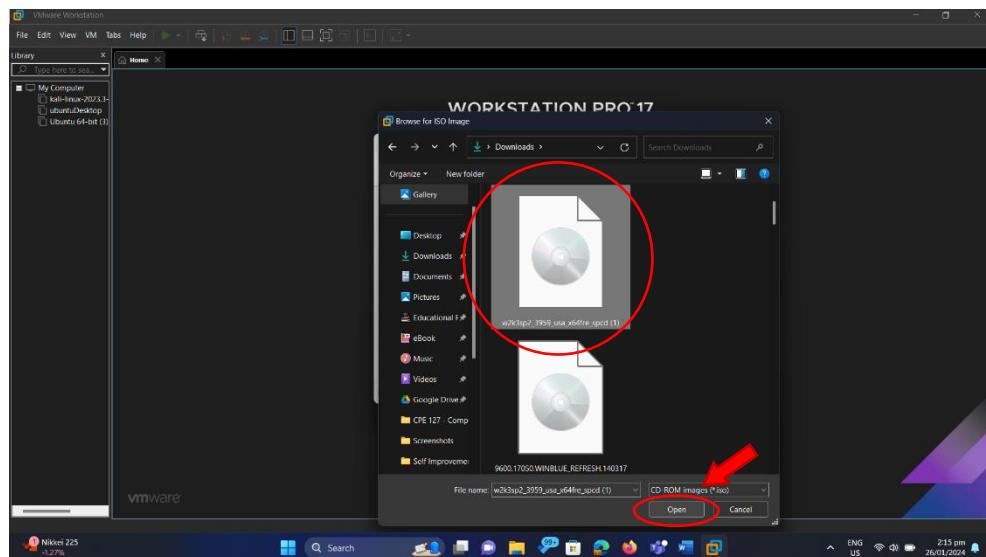


STEP 7: Select your Windows 2012 Server ISO by clicking the browse button.

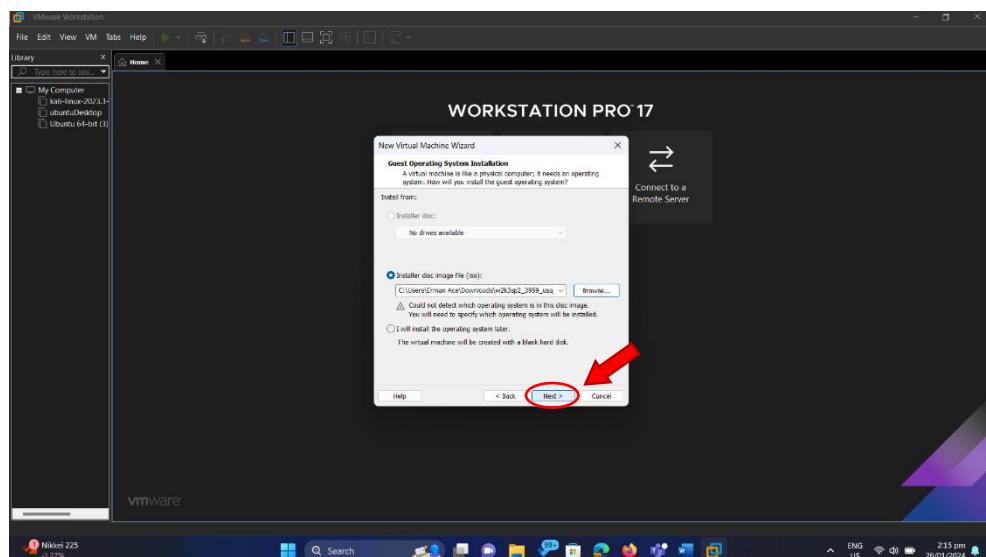




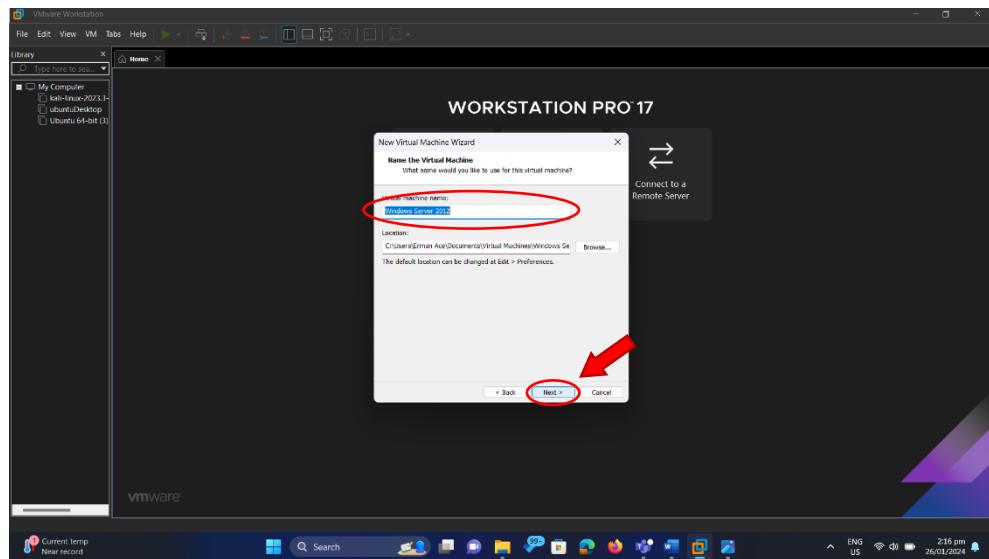
Select your Windows 2012 Server ISO, then click “open.”



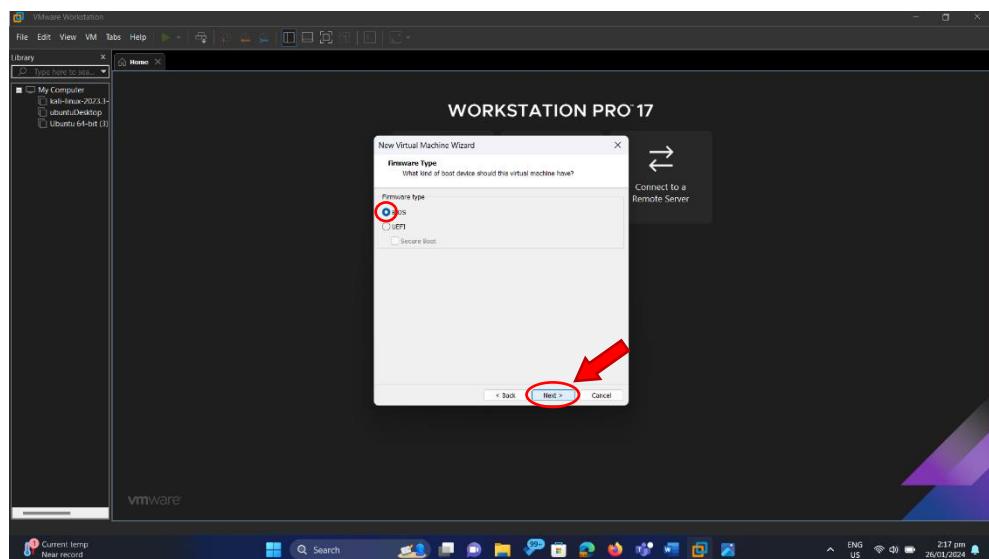
Make sure that the “ISO image” contains the Windows 2012 Server ISO. Then click “Next.”



STEP 8: Enter the name of your Virtual Machine. Then click “Next.”

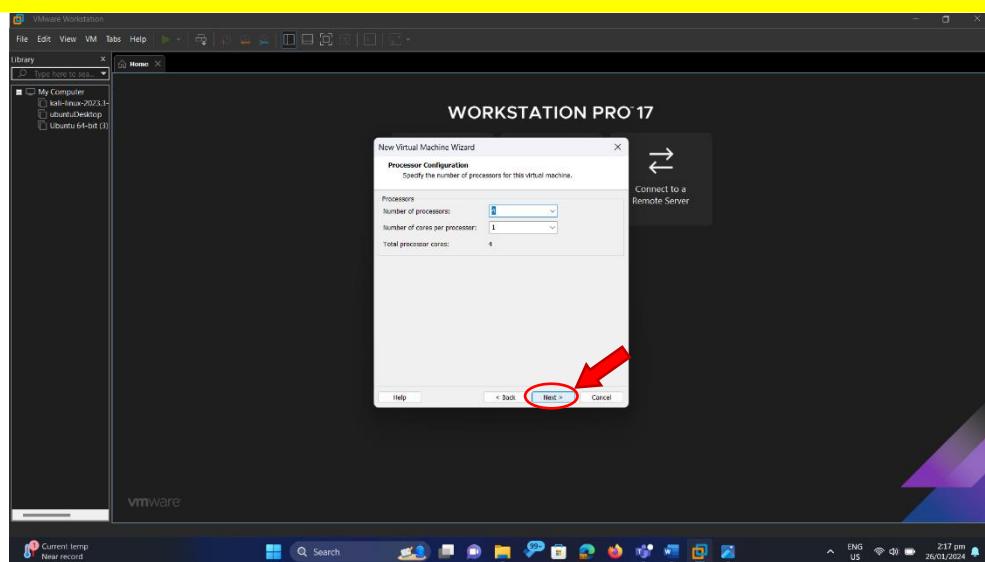


STEP 9: Select the Firmware Type. For this one choose the “BIOS”

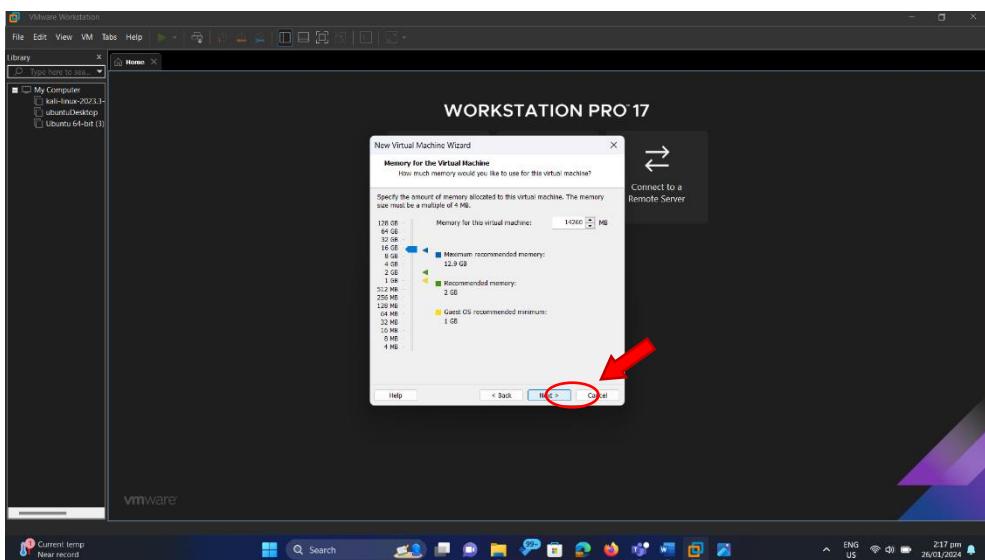


STEP 10: Processor Configuration. You are going to specify the number of processors for this virtual machine. For this example, I select for “Number of Processors:” as value of “4” and “Number of cores per processor:” value of “1.” Then click “Next.”



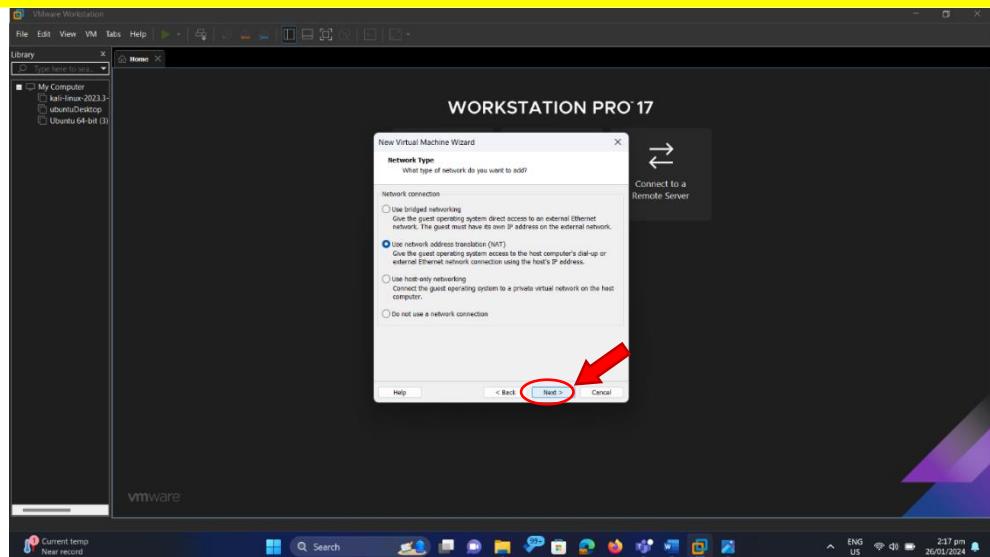


STEP 11: For Allocated memory for your virtual machine. For this example, the disk size of Windows 2012 Server is "14260 MB." Then click Next."

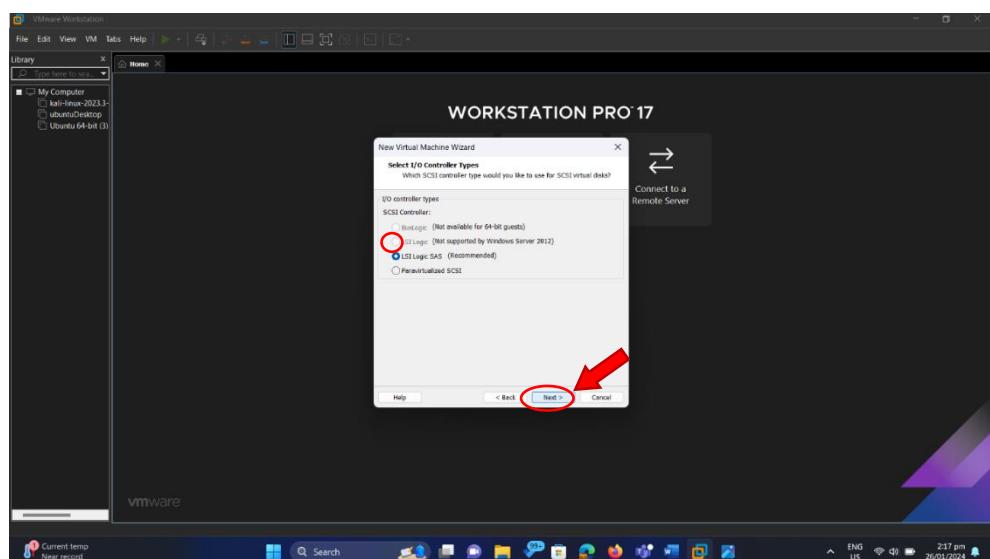


STEP 12: For the network type choose the "Use Network Address Translation (NAT)."

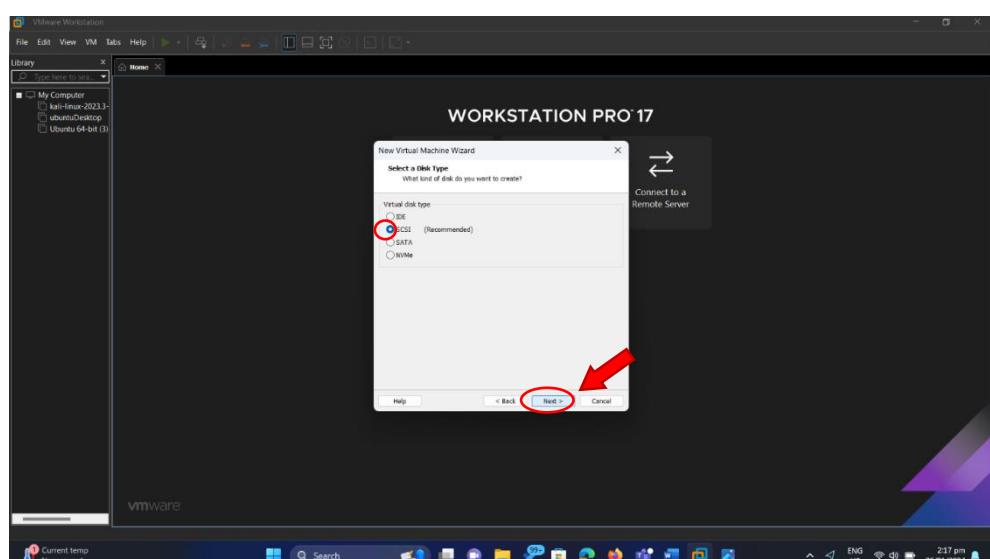




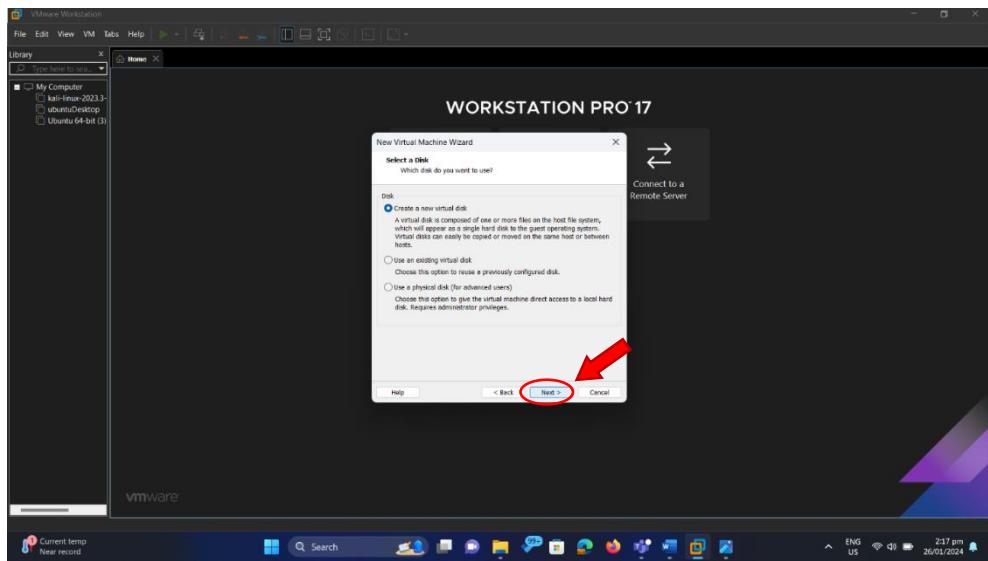
STEP 13: For I/O Controller Types choose the “LSI Logic (Recommended).”



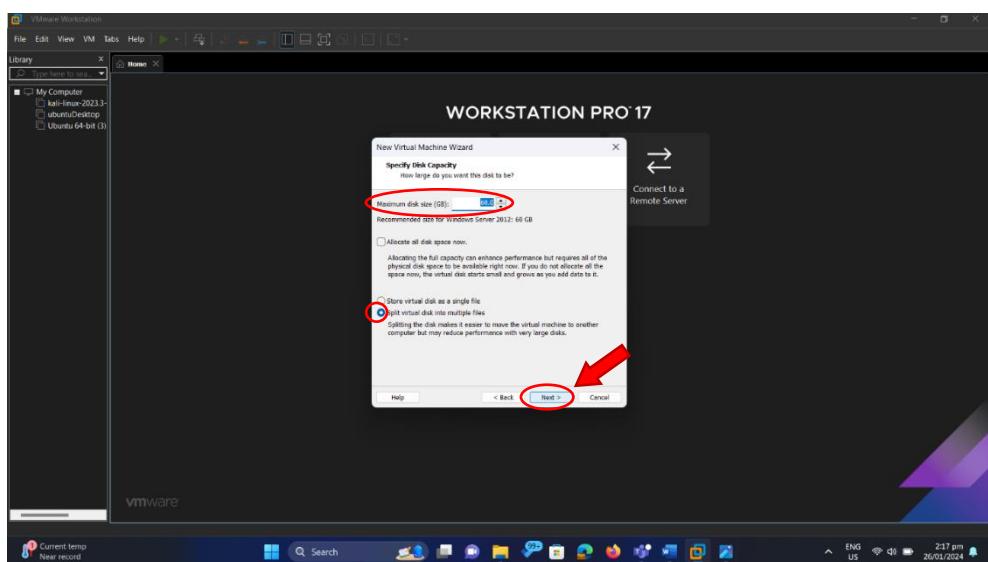
STEP 14: For the type of disk, select the SCSI (Recommended)



STEP 15: For the disk to use. Select the “Create a new virtual disk.”

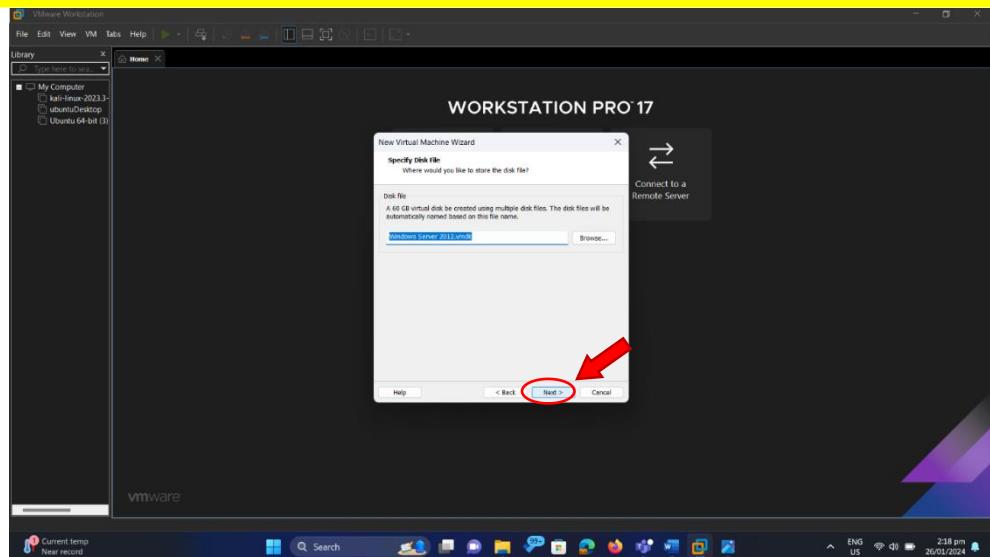


STEP 16: Specifying Disk Capacity. For maximum disk size select “60 GB” then choose the “Split virtual disk into multiple files”

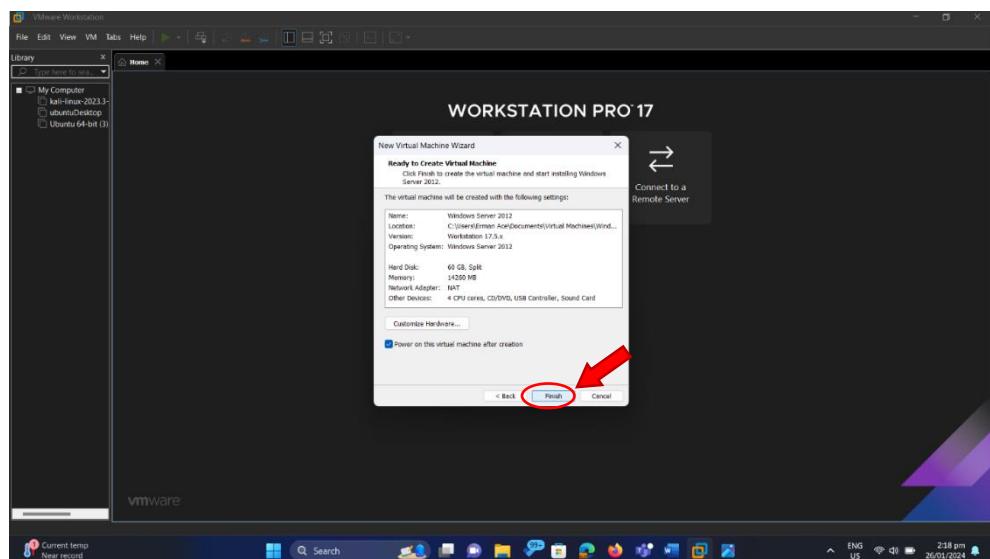


STEP 17: Specify Disk File. No need to configure just click “Next.”



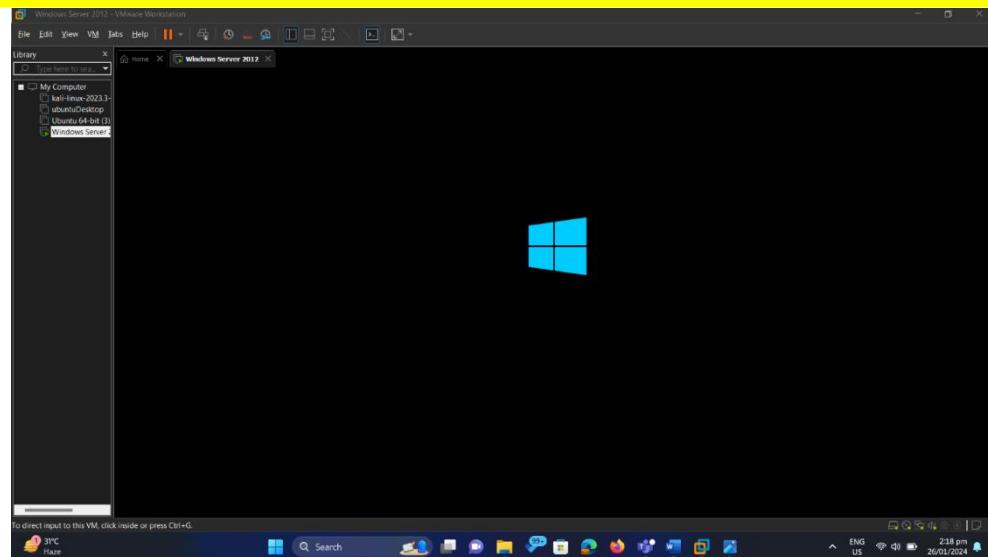


STEP 18: After setting up the necessary information for your Ubuntu Linux Server, the VMware will now display a summary of the information you configured for your Ubuntu Linux Server. Double-check the details below, and if everything is correct, click the "Finish" button.

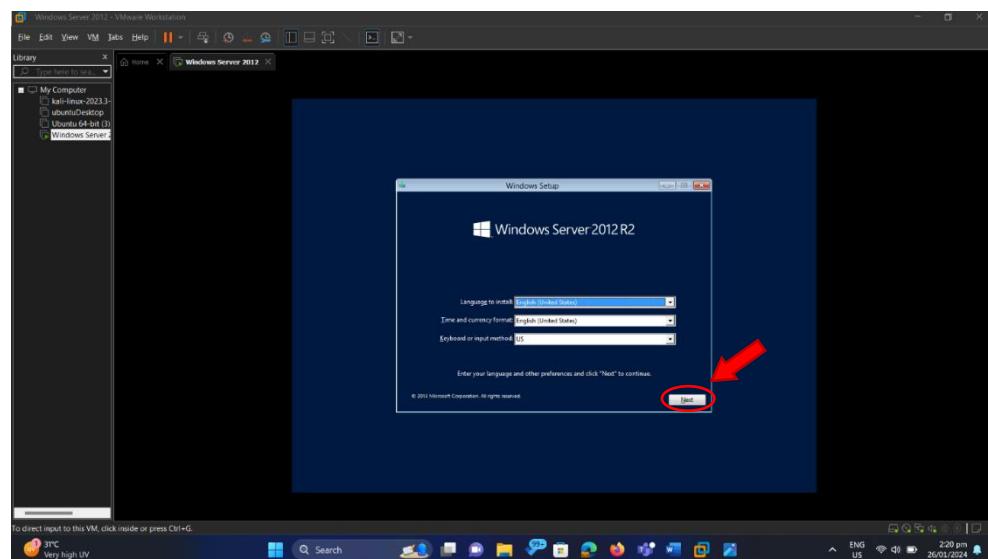


STEP 19: After clicking the “Finish” button, it will start loading your Ubuntu Server into your VMware. Then wait for it to load.



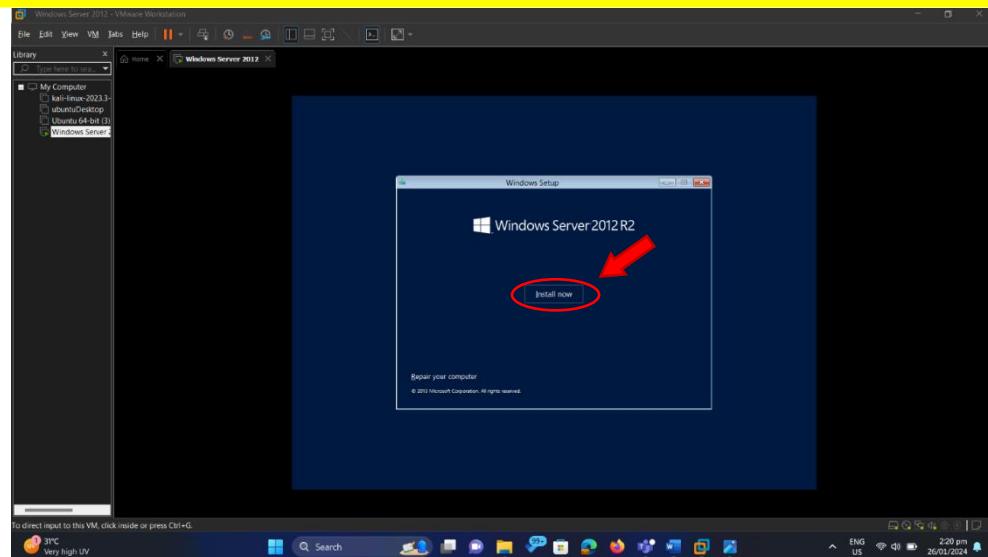


STEP 20: Enter your language and other preferences. Then click “Next.”

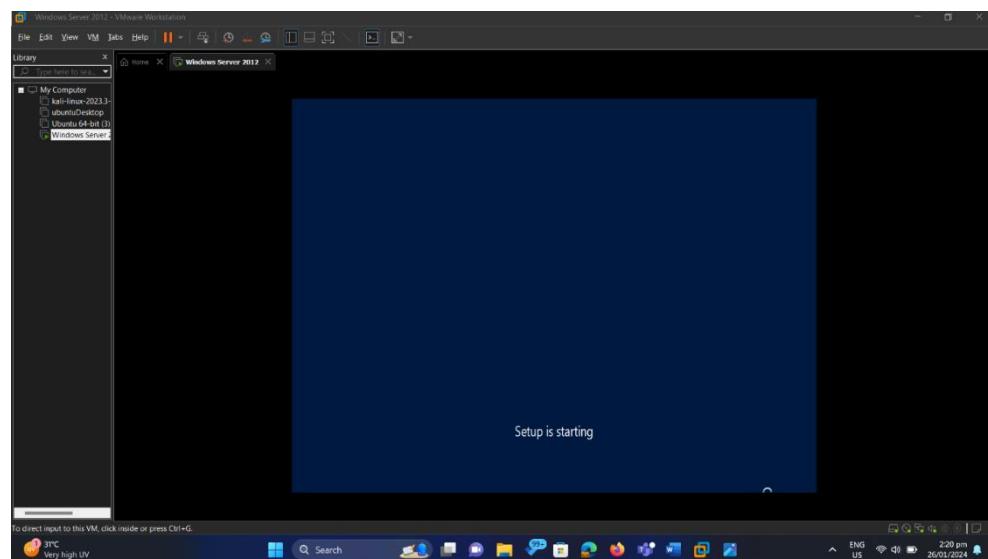


STEP 21: Click “Install Now” to start installing the Windows Server into your VMware.



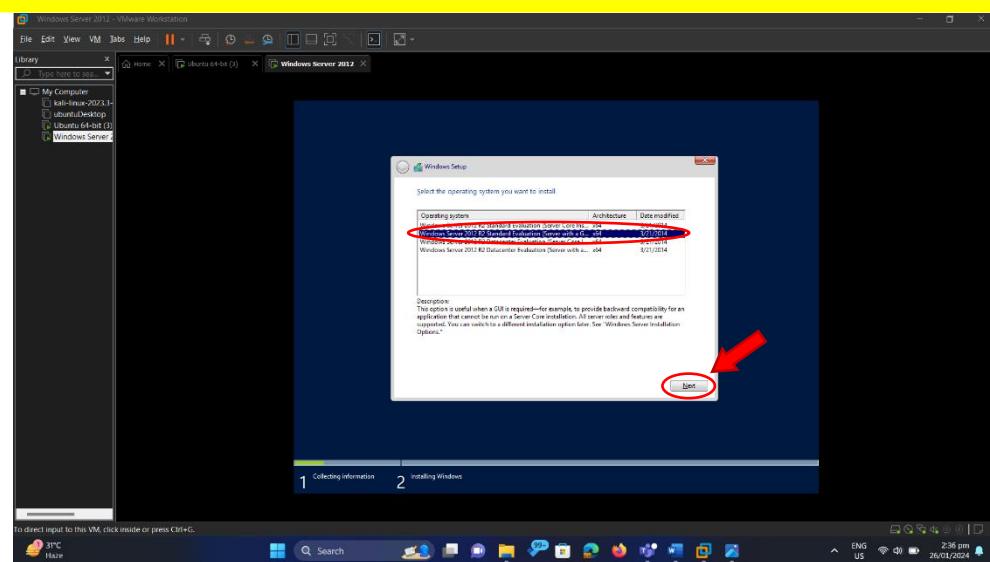


STEP 22: Wait for it to Setup.

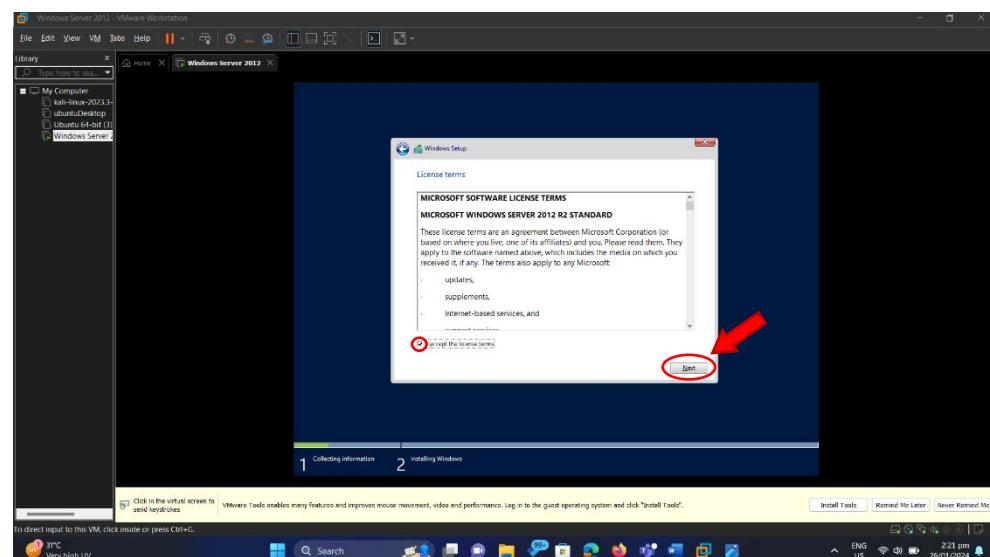


STEP 23: Select the operating system you want to install. Ensure that you carefully read the available operating systems, as some may be command-line only. To easily use this Windows Server, make sure to install the operating system that includes a graphical user interface (GUI).





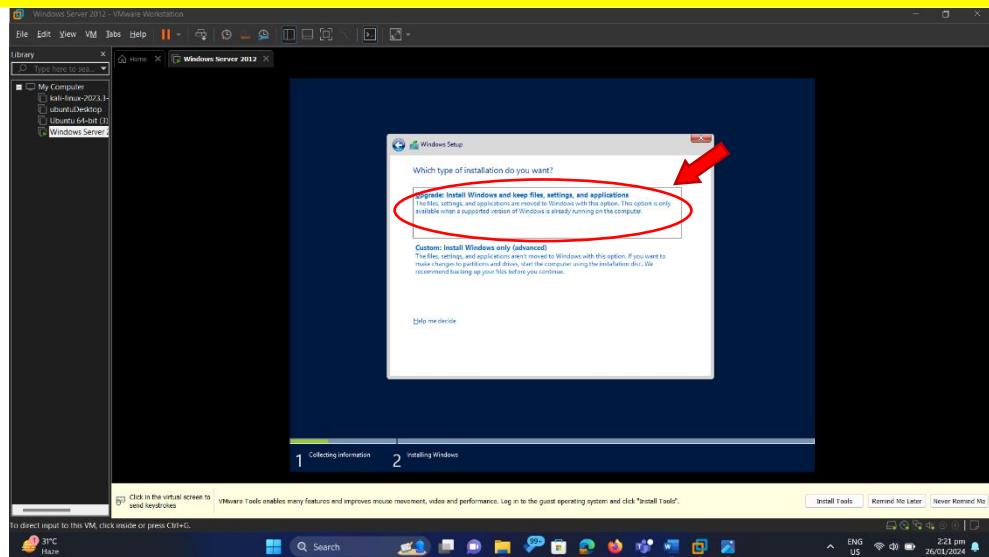
STEP 24: Read the “Microsoft Software License Terms.” If you agree to the terms and conditions of the Microsoft, click the “I accept the license terms” and click “Next.”



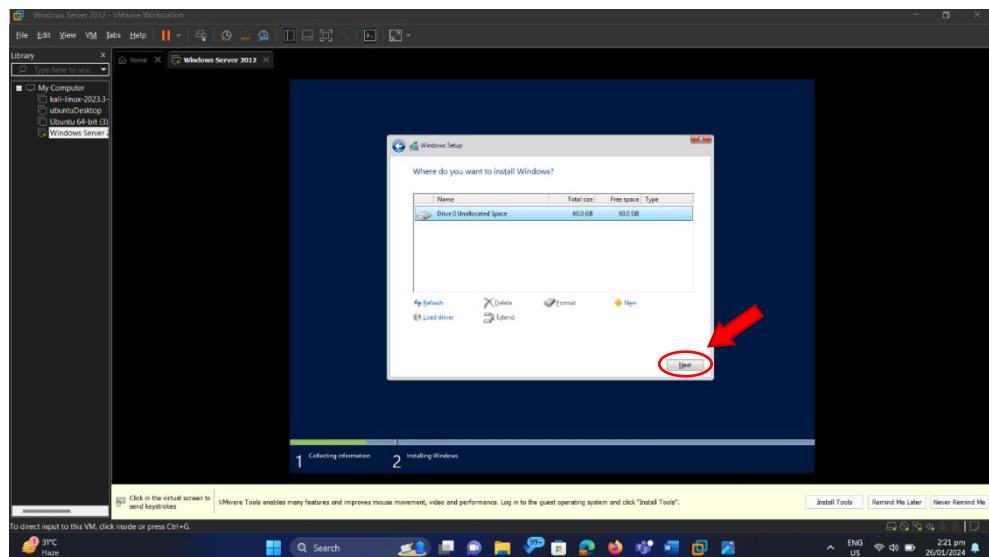
STEP 25: Select “Upgrade: Install Windows and Keep files, settings, and applications” for type of installation.



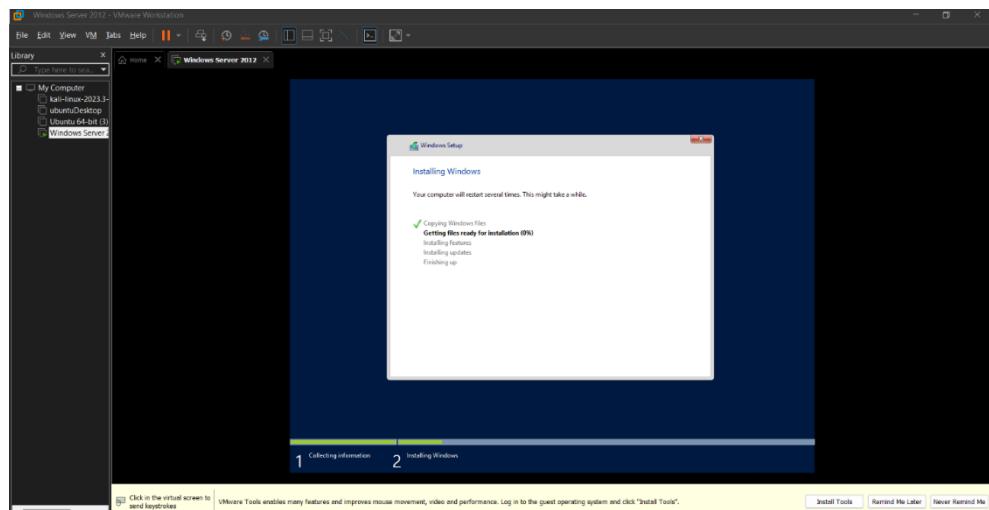
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

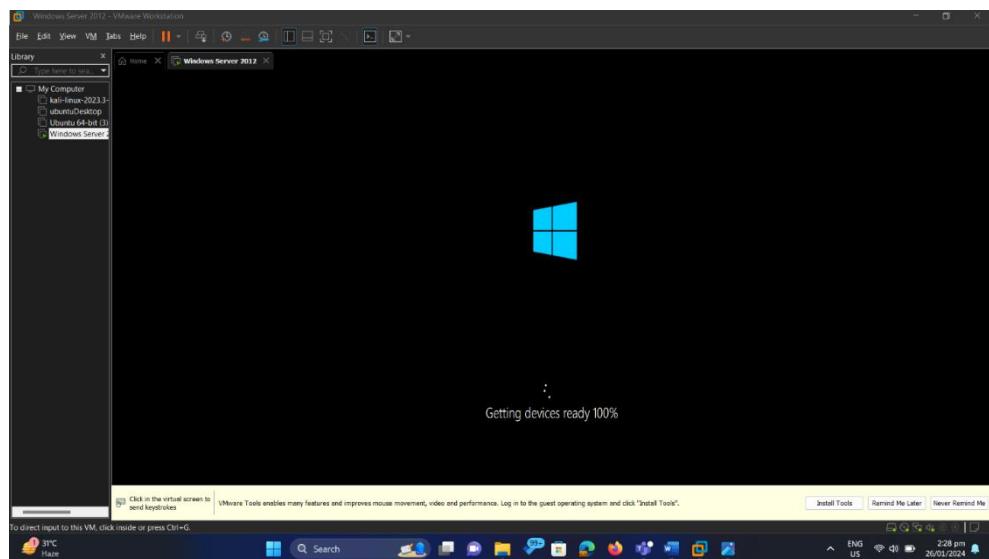
STEP 26: Select your desired drive then click “Next.”



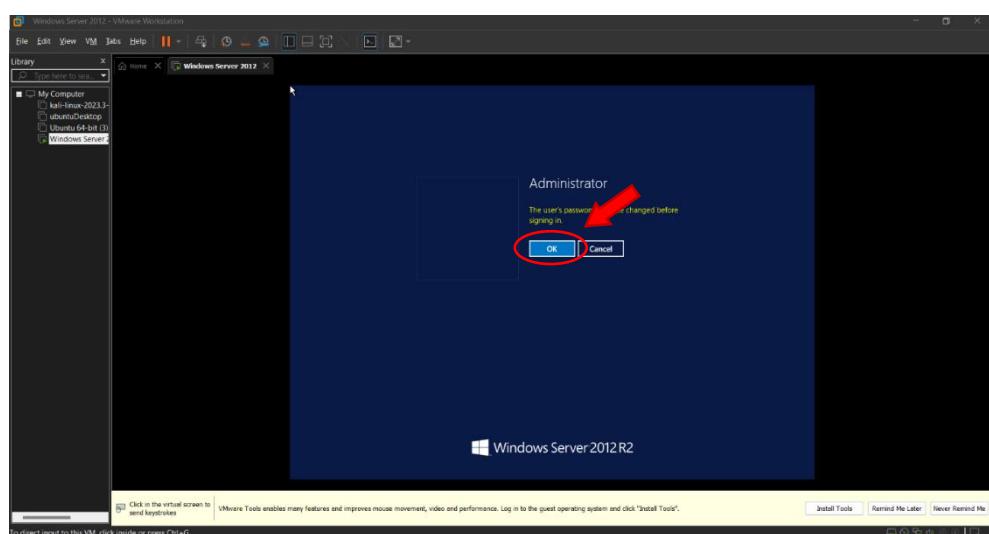
STEP 27: It will now start Installing the Windows Server. Wait for a couple of minutes until it is done installing.



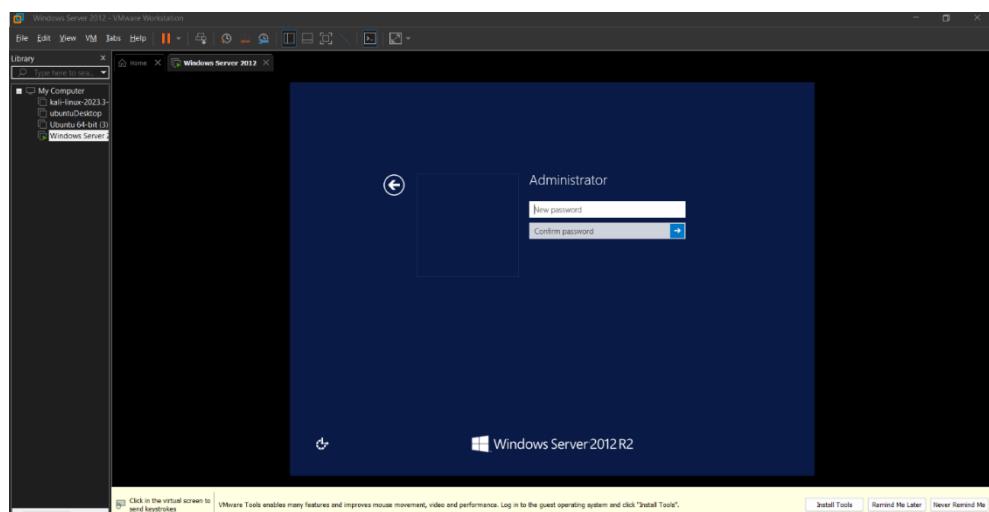
STEP 28: After installation, the Windows Server will automatically Reboot. Wait for a couple of minutes.



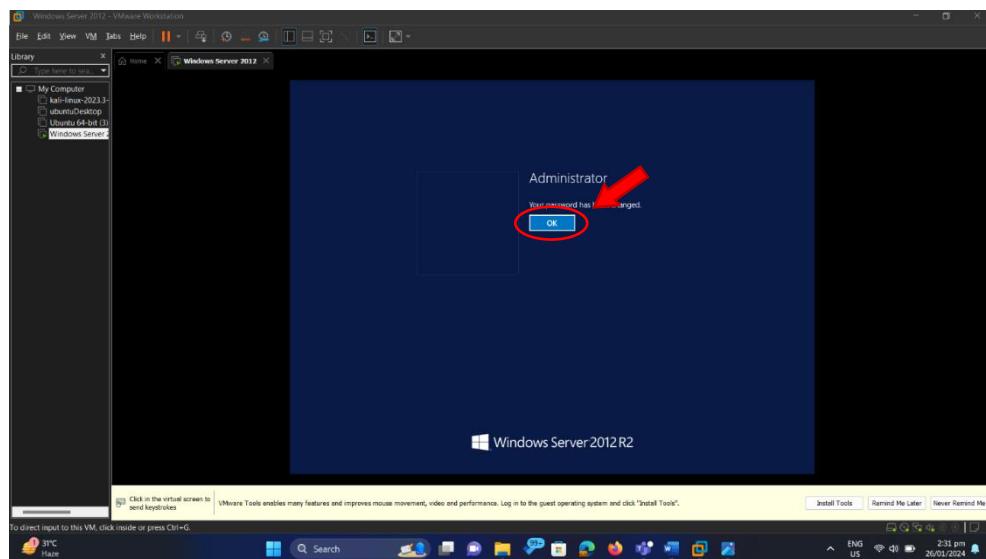
STEP 29: Click “OK”



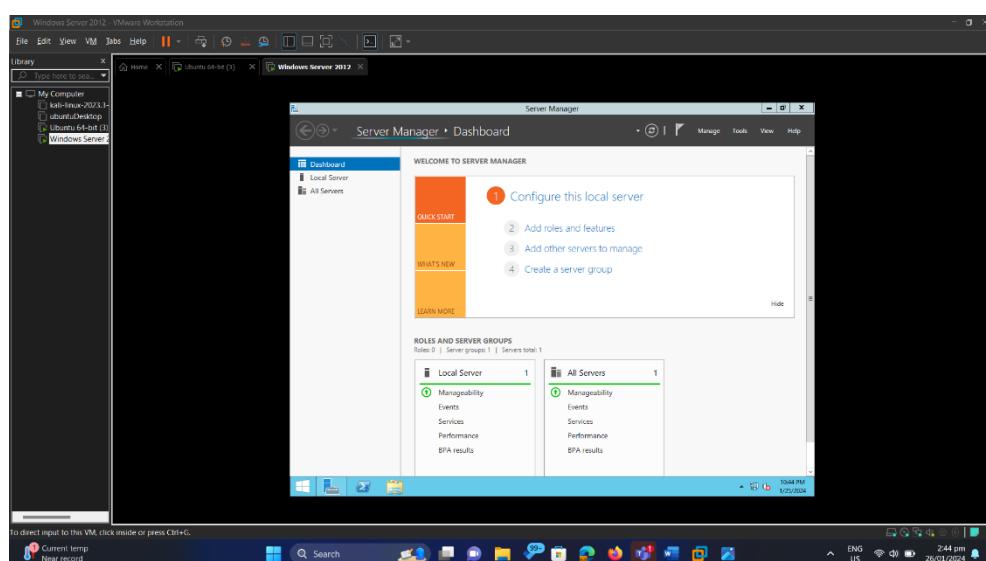
STEP 30: Input your desired password.



STEP 31: Click “OK”



STEP 32: You are now successfully added the windows server in your Virtual Box.

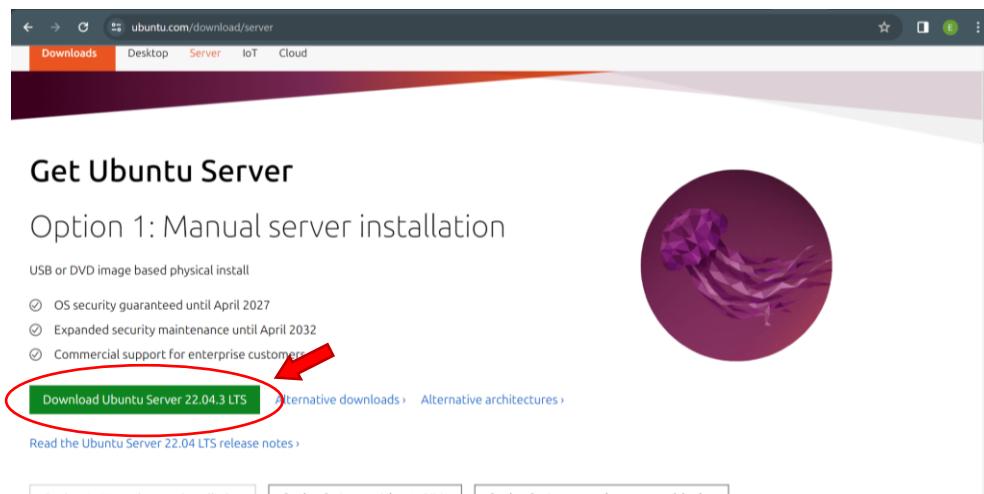




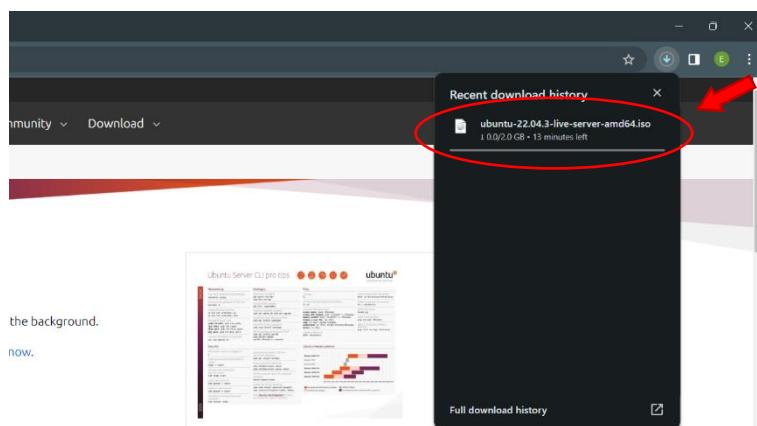
INSTALL THE FOLLOWING OPERATING SYSTEMS IN YOUR VIRTUAL BOX.

Linux-based OS (e.g. Ubuntu) Server

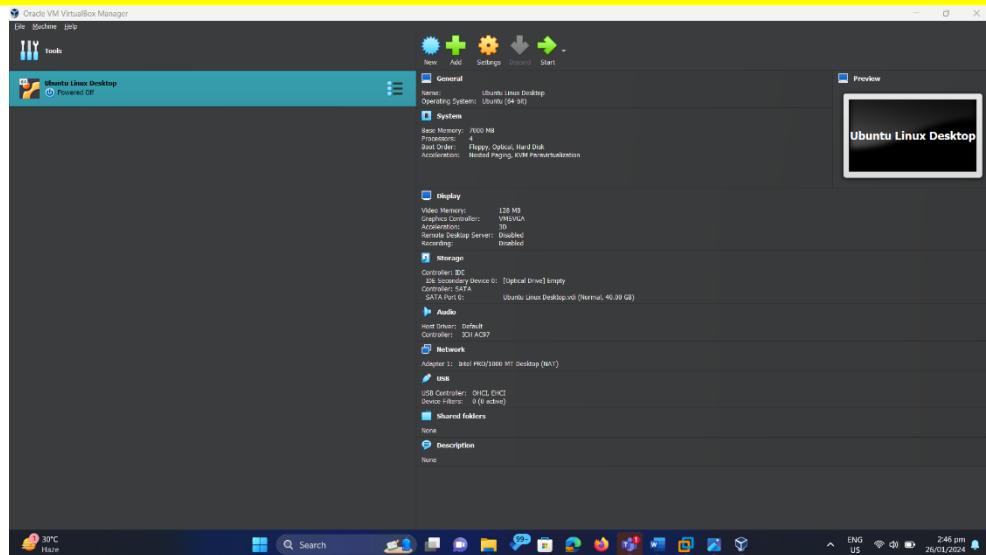
STEP 1: Download the ISO of Linux Ubuntu Server. To download the ISO of Linux Ubuntu Server, go to this link <https://ubuntu.com/download/server> and click “Download Ubuntu Server 22.04.3 LTS.”



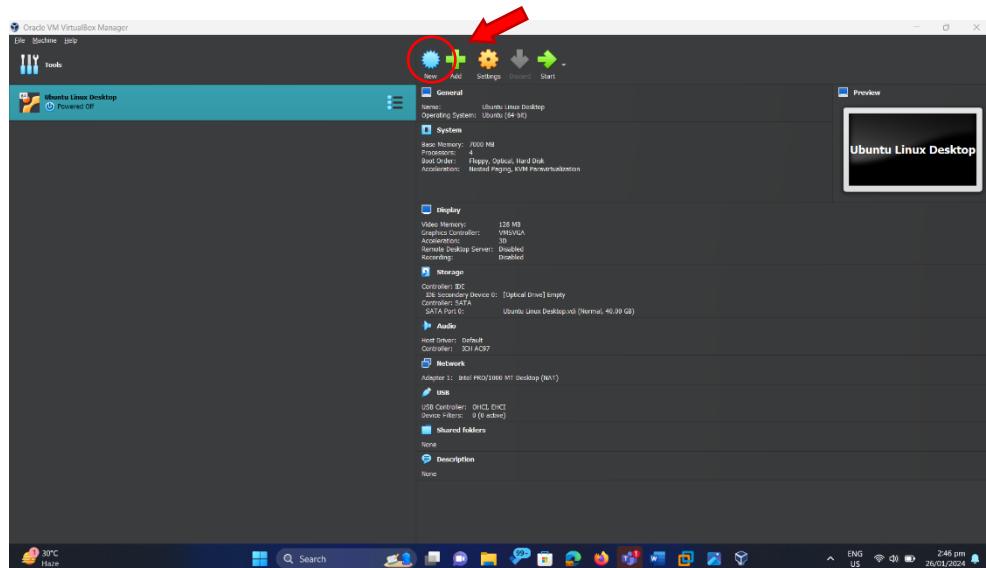
STEP 2: You will be redirected to another webpage. Kindly wait for the installer to start downloading in your browser.



STEP 3: After you have finished downloading the Linux Ubuntu Server ISO. Open your Virtual Box.



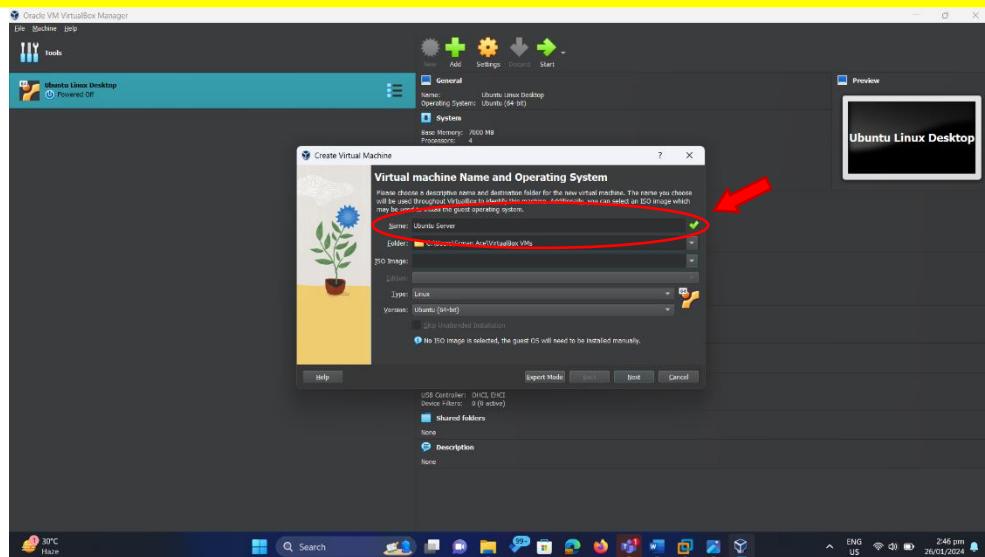
STEP 4: On the upper left corner of your Virtual Box, click the “New” button.



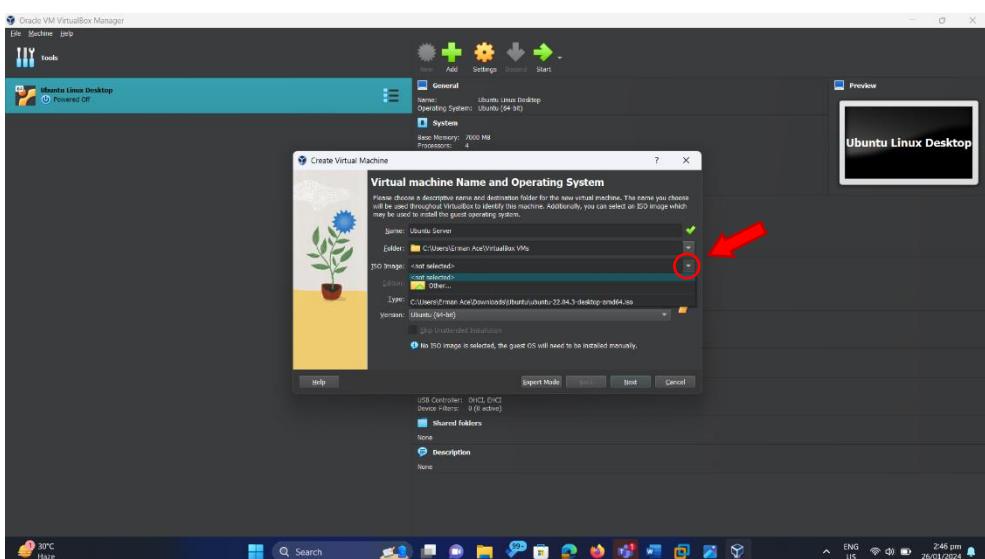
STEP 5: Enter the name of your Linux Ubuntu Server, for this example we will use “Ubuntu Server”



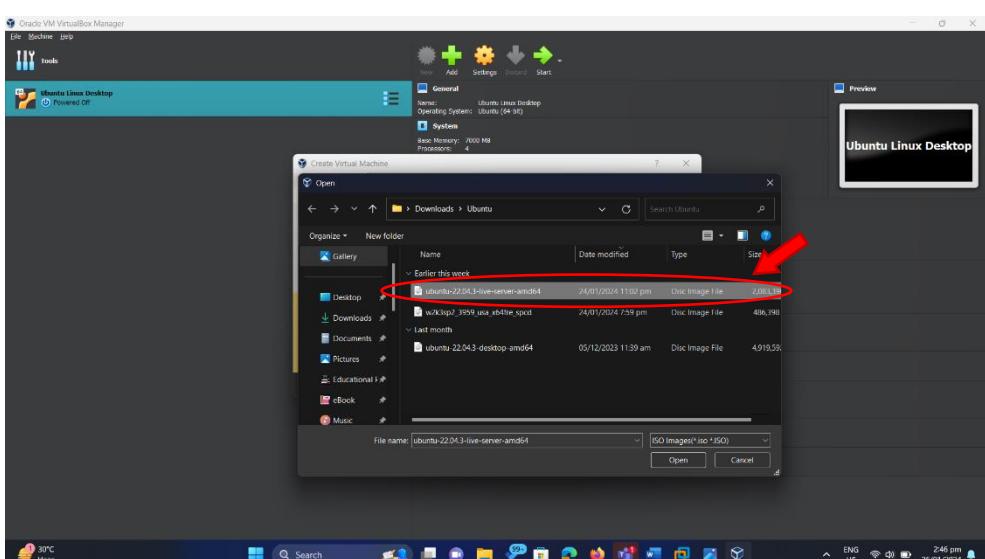
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

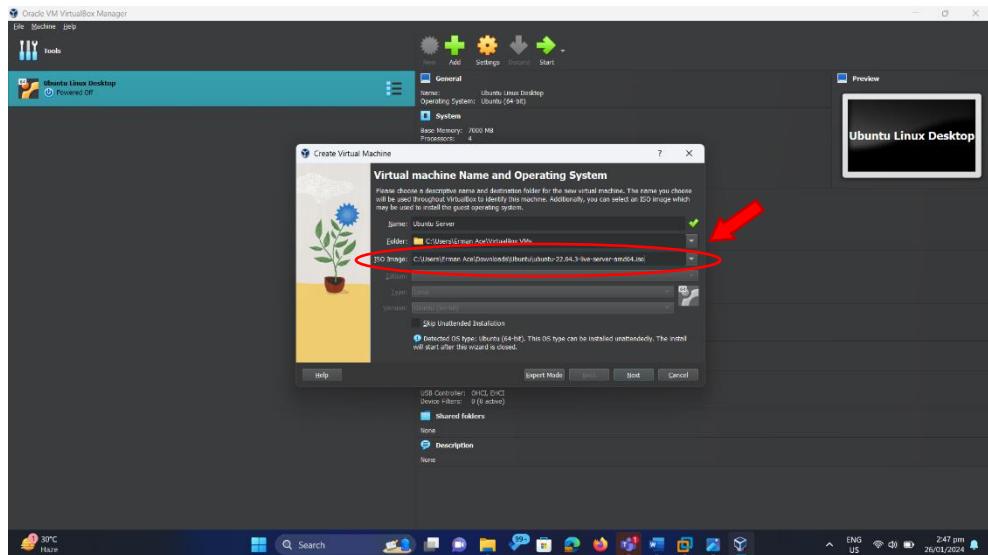
STEP 6: Select your Ubuntu Linux Server ISO. Go to the “ISO image” then click the dropdown menu.



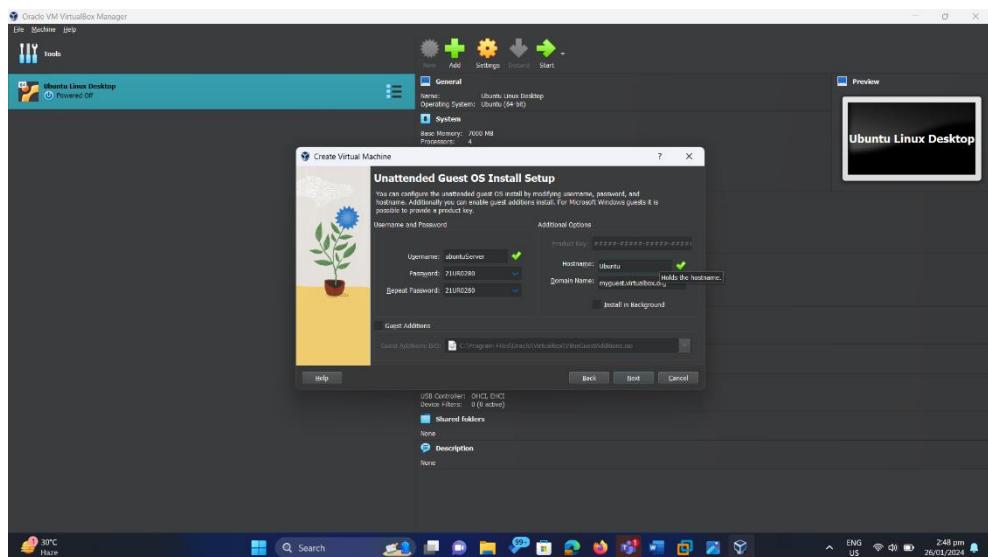
Then select the Ubuntu Linux Server ISO.



Make sure that the “ISO image” contains the Ubuntu Linux Server ISO. Then click “Next”

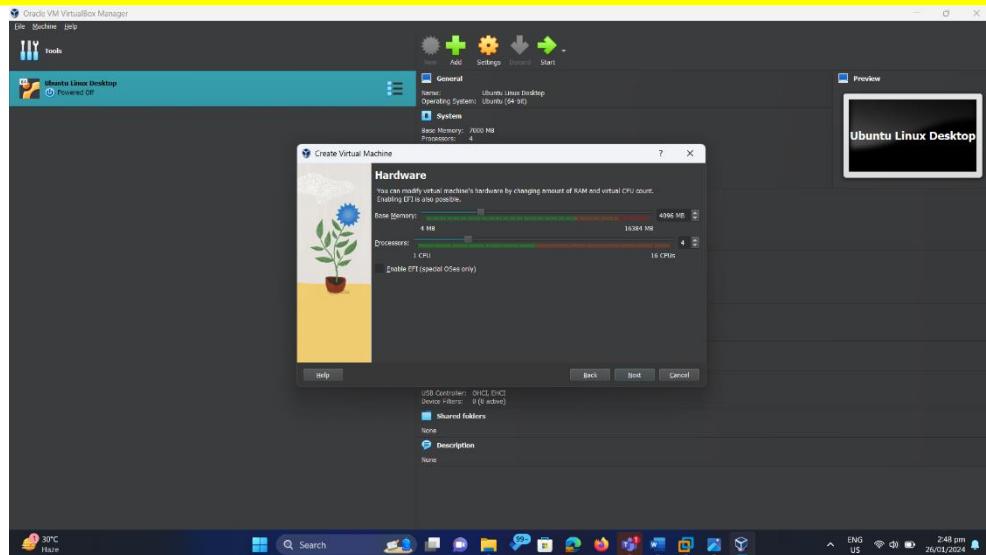


STEP 7: To secure your Ubuntu Linux Server you need to modify your username, password, and hostname. Change the Username, Password, and Hostname of your Ubuntu Linux Server. For this example, I set the username into “ubuntuServer”, Password to “21UR0280”, and hostname to “Ubuntu.” Then click next

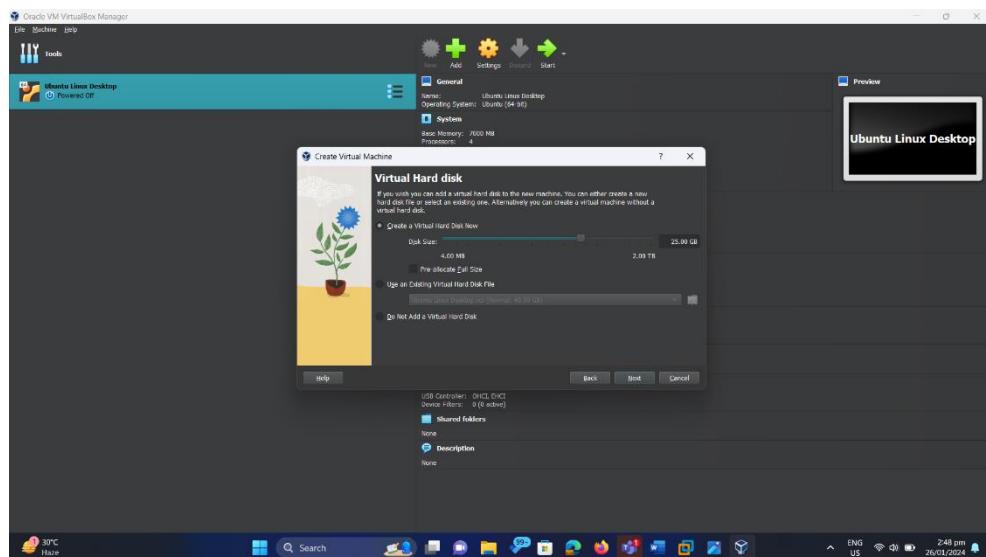


STEP 8: Set the amount of RAM and virtual CPU count of your Ubuntu Linux Server. For this example, I set the amount of RAM to “4096 MB” and CPU count to “4.” Then click “Next”





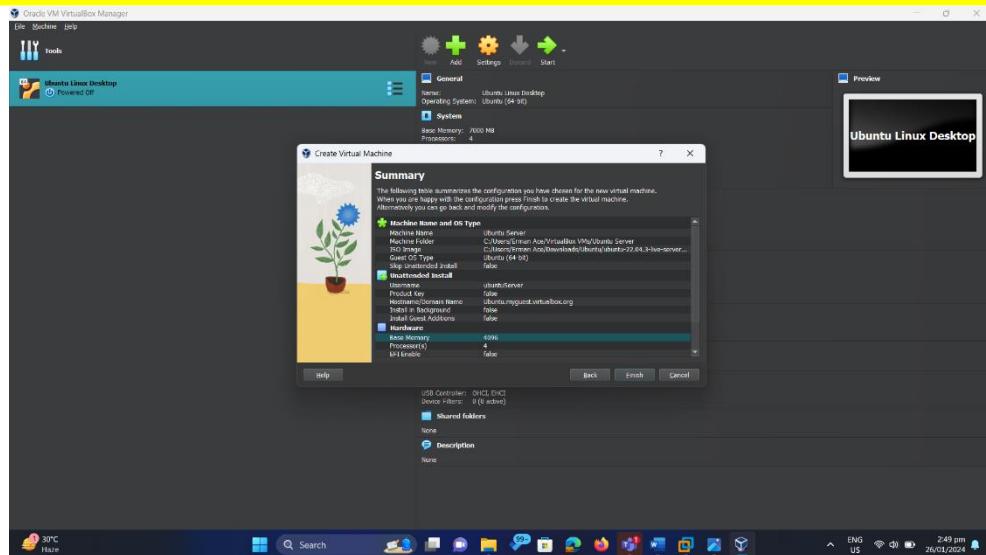
STEP 9: For Virtual Hard Disk. Choose the “Create a Virtual Hard Disk Now” then set your desire “Disk Size.” For this example, the disk size of Ubuntu Linux Server is “25.00GB.” Then click Next.”



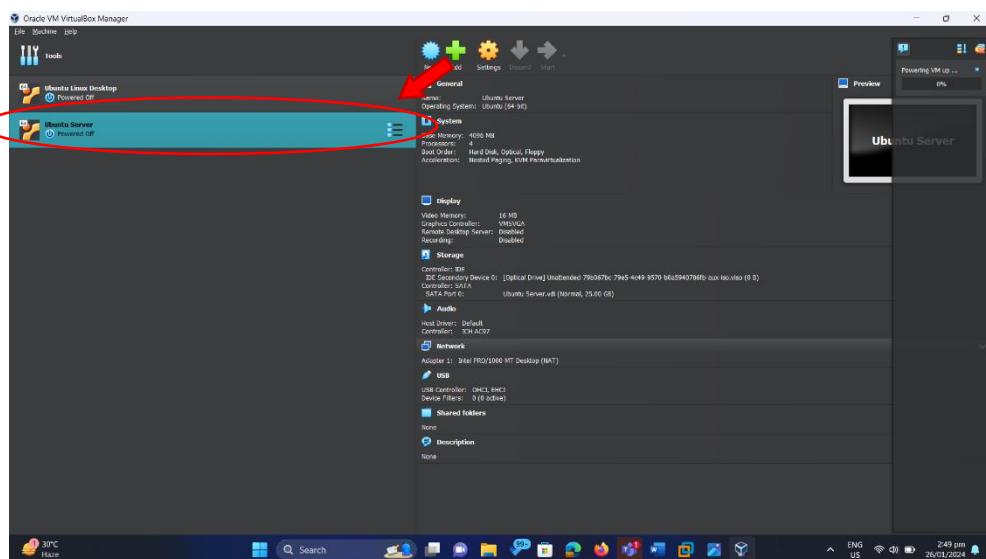
STEP 10: After setting up the necessary information for your Ubuntu Linux Server, the VirtualBox will now display a summary of the information you configured for your Ubuntu Linux Server. Double-check the details below, and if everything is correct, click the "Finish" button.



Study Guide in (Elective 1 – Systems and Network Administration 1)

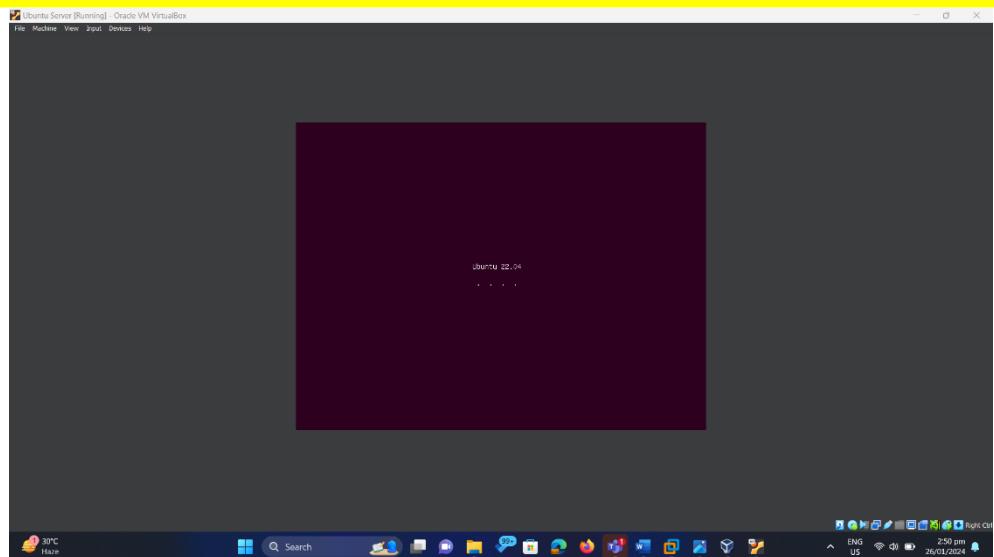
Module No. LabM01

STEP 11: You have successfully added the Ubuntu Linux Server to your VirtualBox. Please note that you have added the ISO of your Ubuntu Linux Server, and now you need to boot your Ubuntu Linux Server to start using it. To open your Ubuntu Linux Server, just double-click it and wait for it to start.

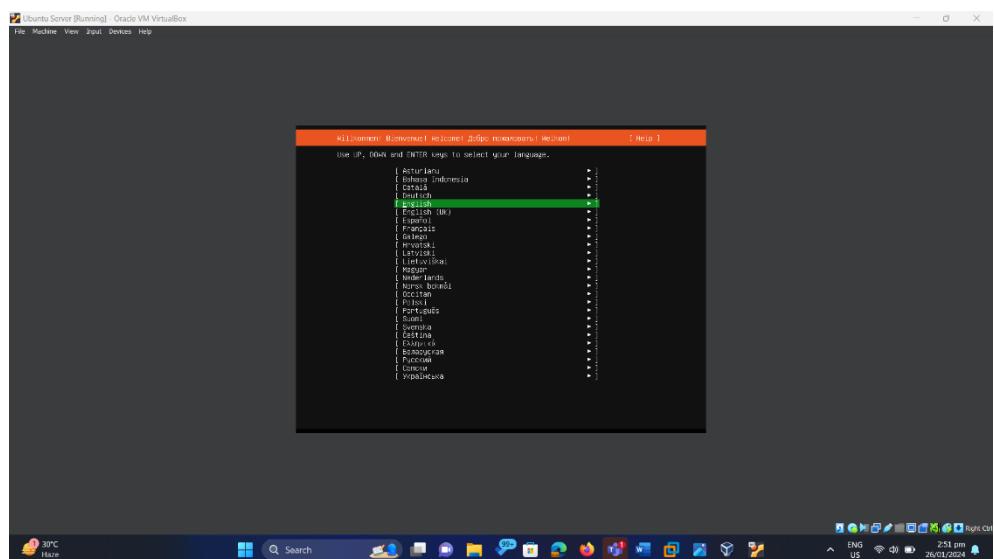


STEP 12: After Opening your Ubuntu Linux Server, wait for it to start up.

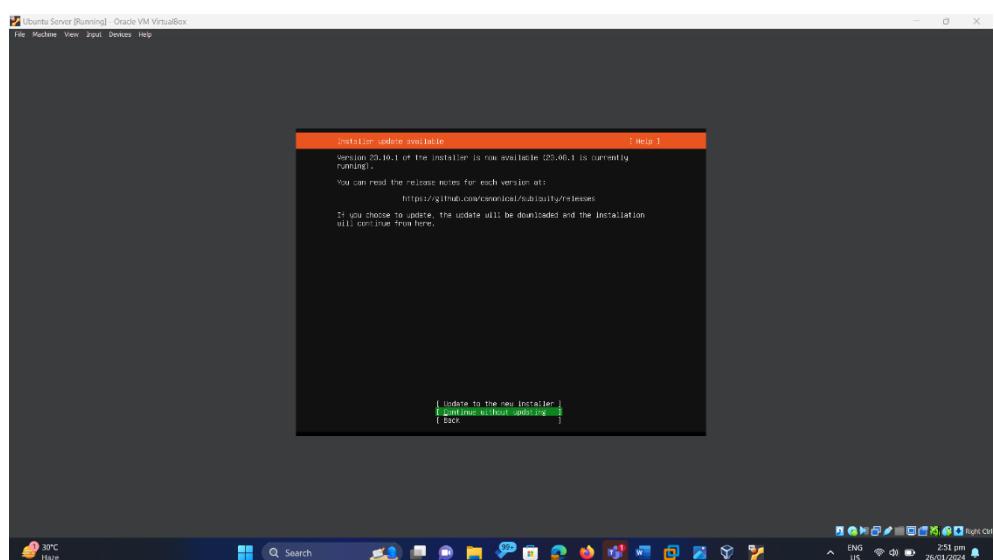




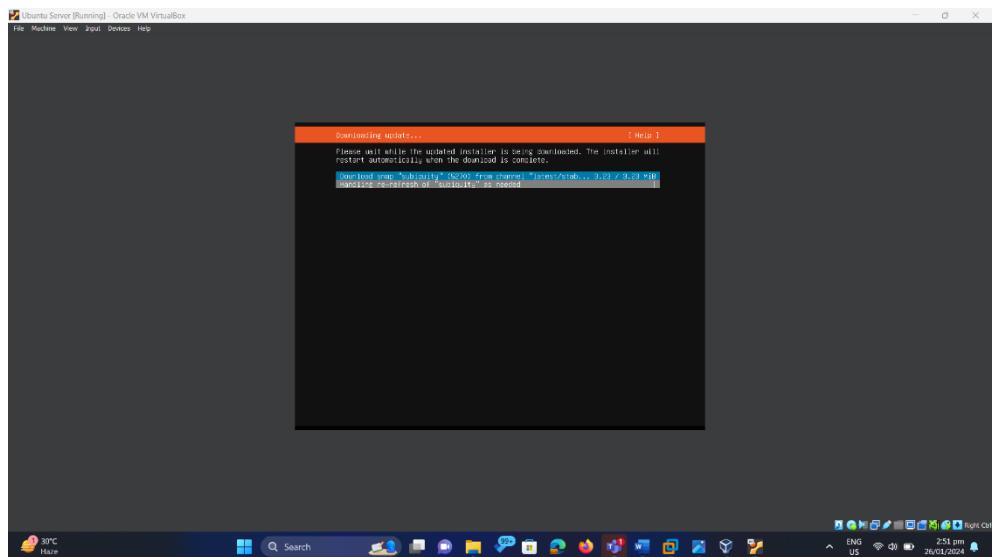
STEP 13: Select the Language of your Ubuntu Linux Server then click “Enter”



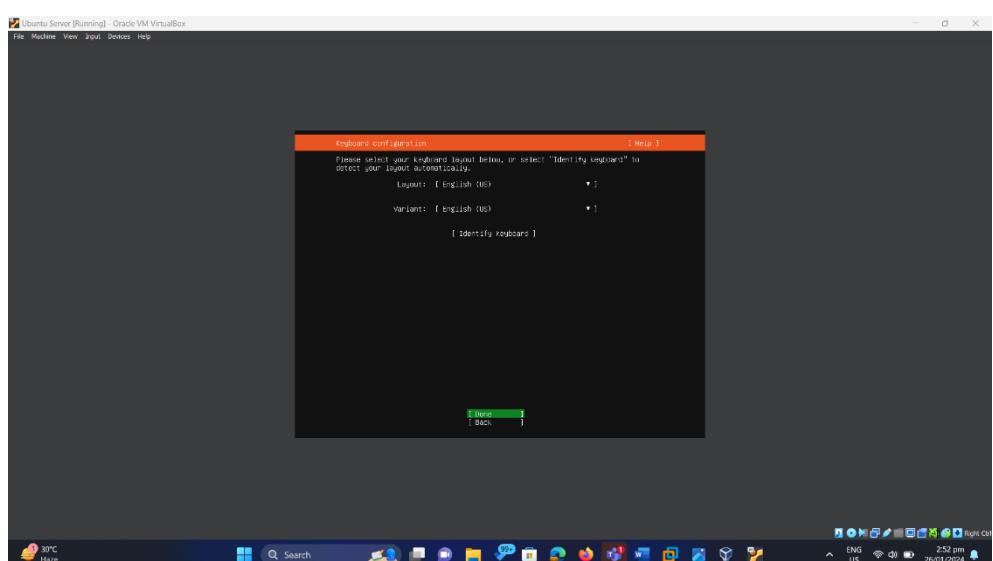
STEP 14: Choose “Continue Without Updating” then click “Enter”



STEP 15: Wait for your machine to download update.

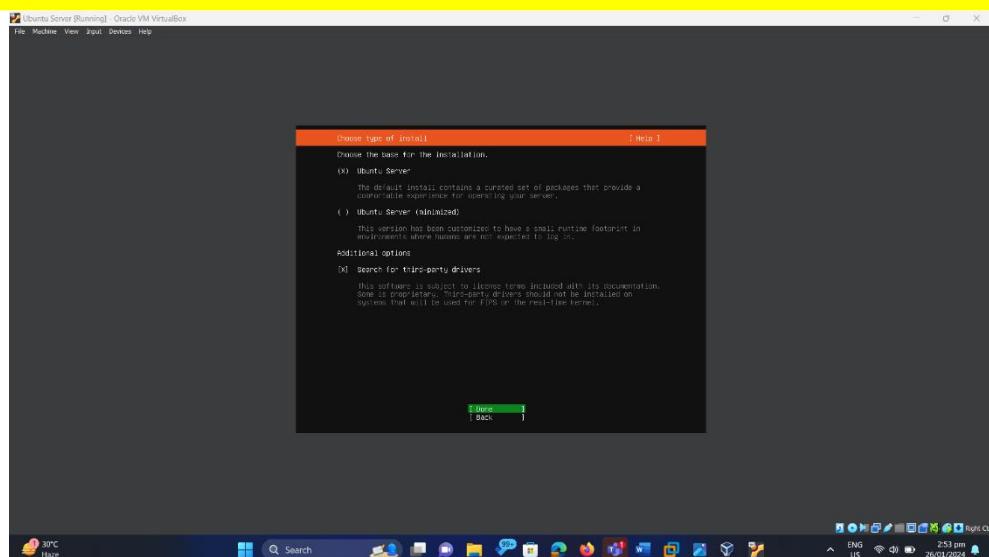


STEP 16: Select your Keyboard Configuration. For this example, I choose the “English (US)” for both Layout and Variant. Then click “Done.”

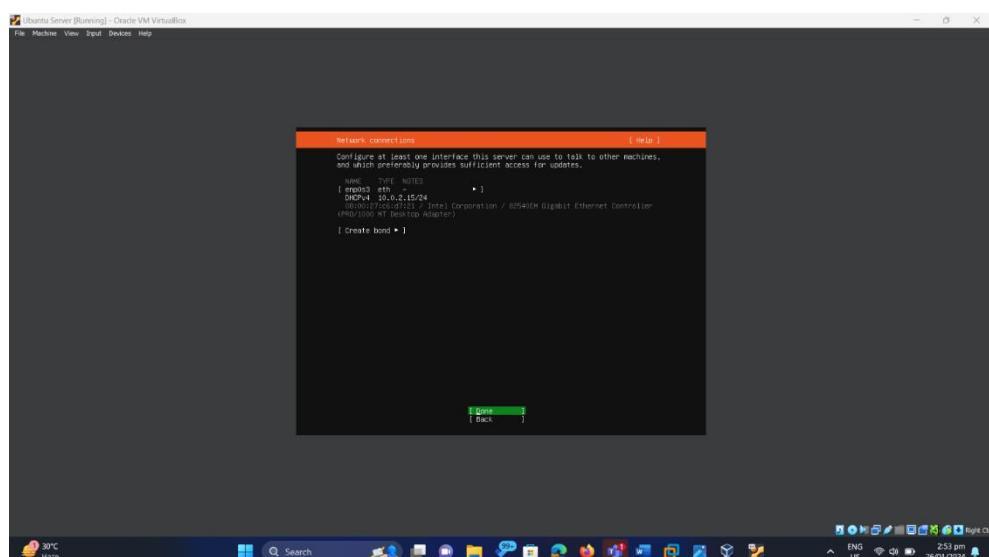


STEP 17: Choose the type of install. For the base installation, select Ubuntu Server. In the additional options, choose "Search for Third-Party Drivers." Then click "Done"

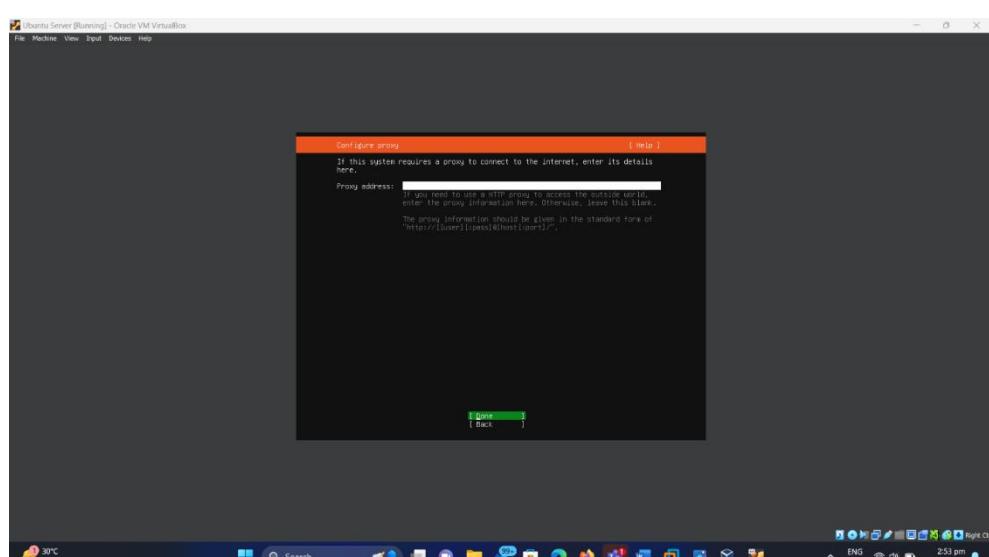




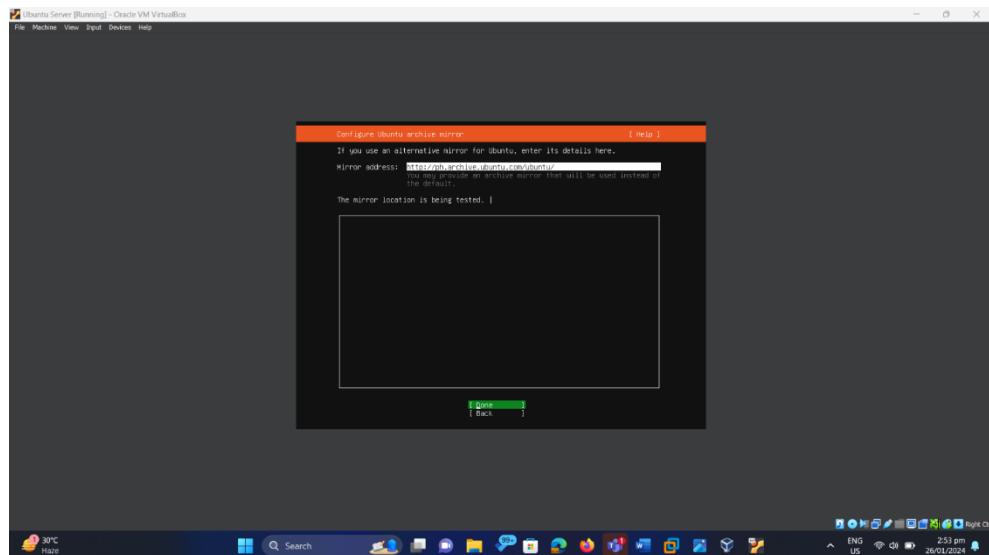
STEP 18: For Network Connections, there is no need to modify, just like “Done.”



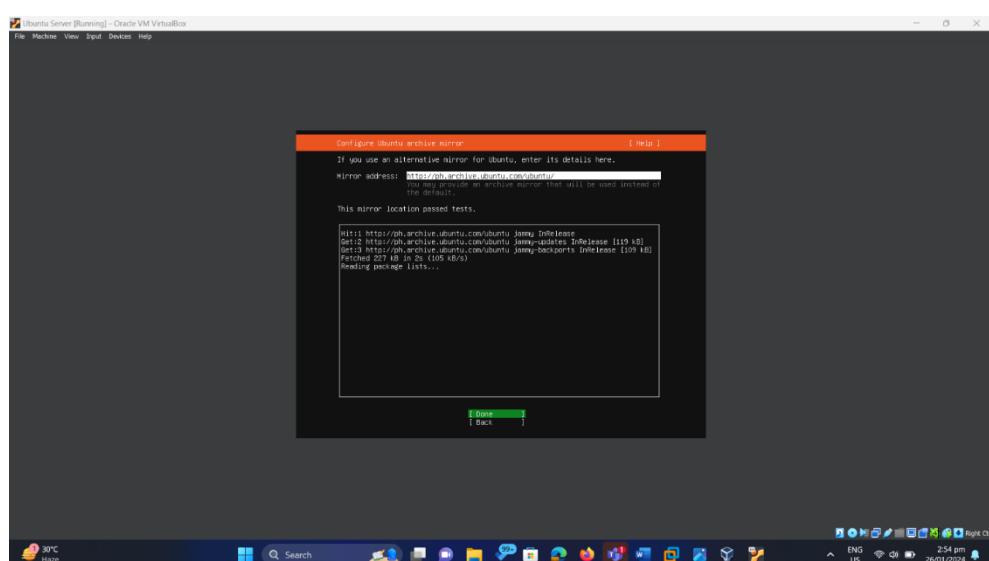
STEP 19: Just click “done”



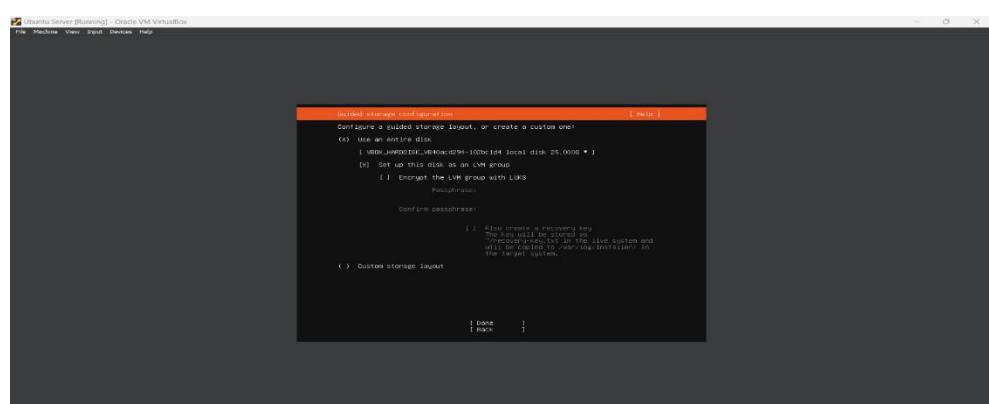
STEP 20: Configure Ubuntu Archive Mirror. For the Mirror Address use <http://ph.archive.ubuntu.com/ubuntu/>. Then click “Done”



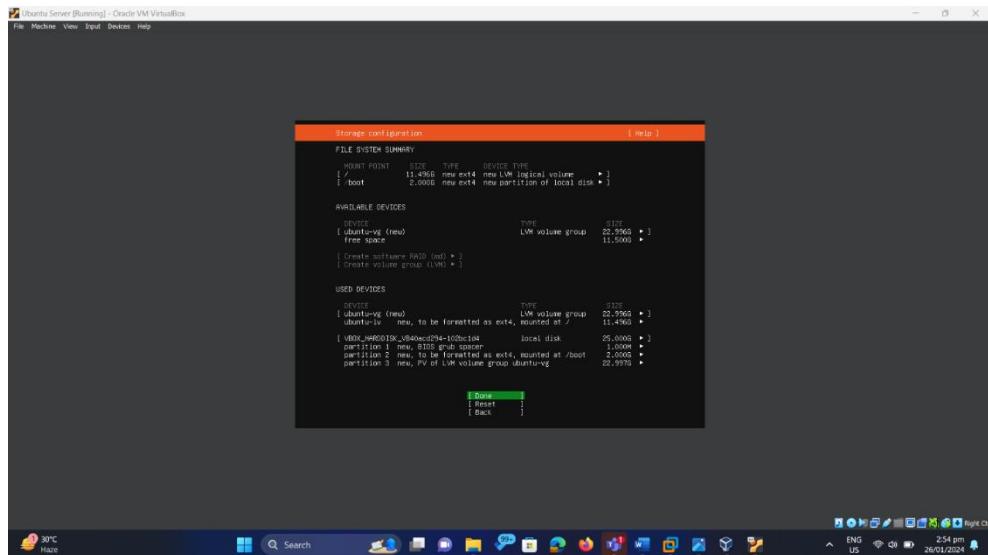
STEP 21: Wait for it to load.



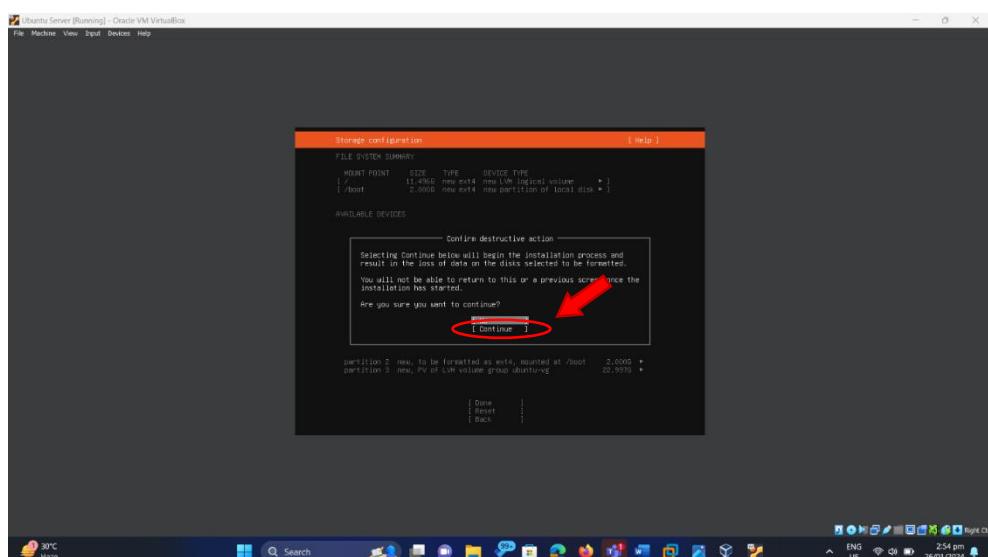
STEP 22: Guided Storage Configuration. Check the “Use an entire Disk” then “set up this disk as an LVM Group.” Then click “Done”



STEP 23: Click “Done”



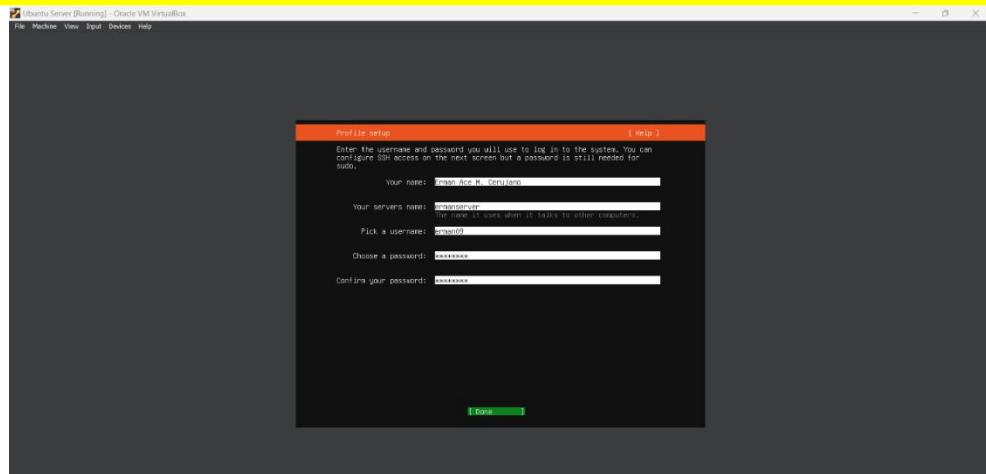
STEP 24: Then click “Continue.”



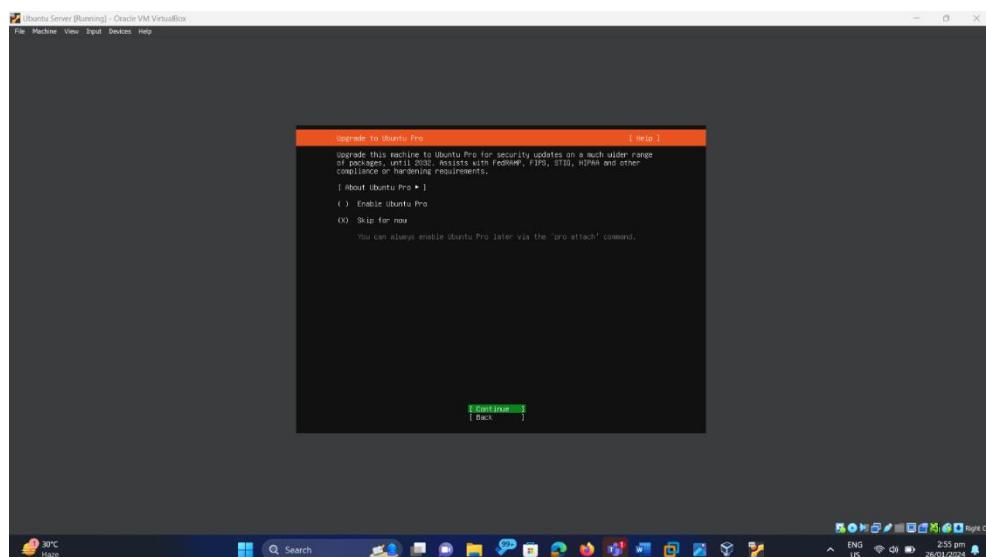
STEP 25: Profile Setup. Set your “Name,” “Server Name,” “Username,” and “Password.” Click “Done”



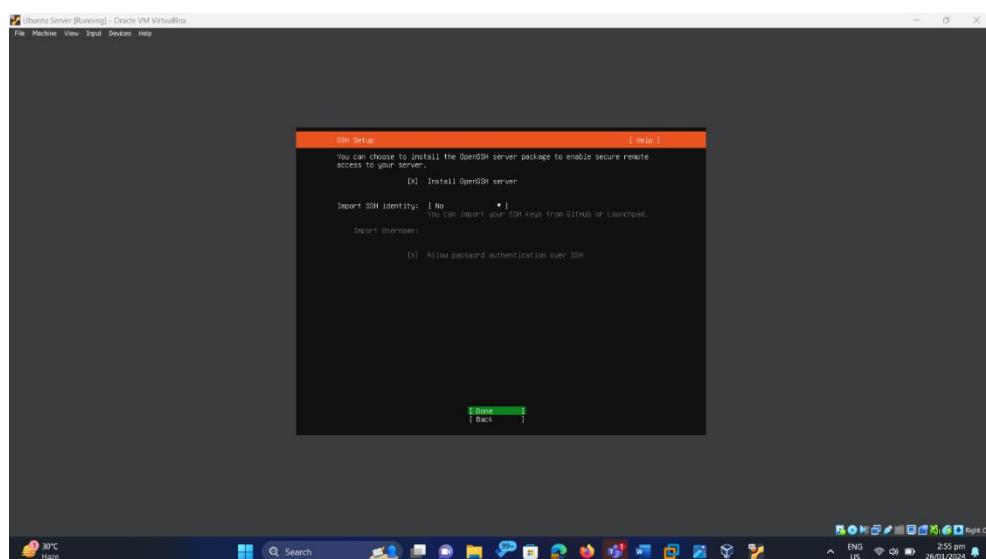
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

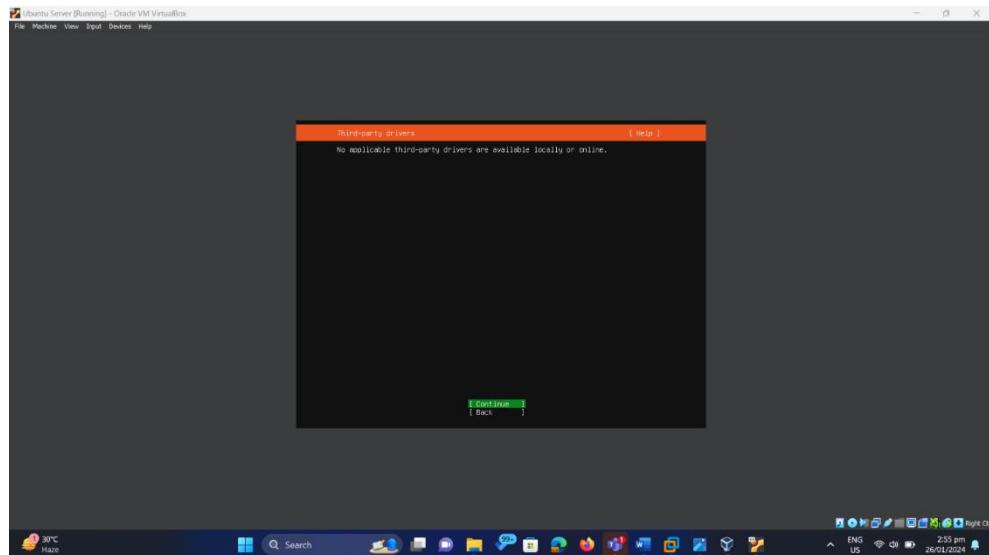
STEP 26: Choose the Skip for Now in upgrade to Ubuntu Pro, then click “Continue.”



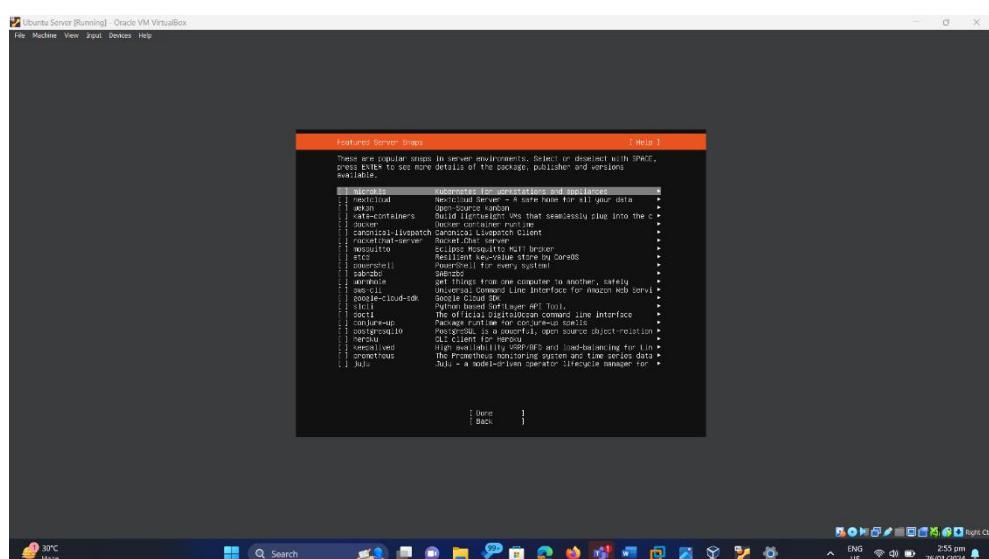
STEP 27: Click “Done”



STEP 28: Then click “Continue.”



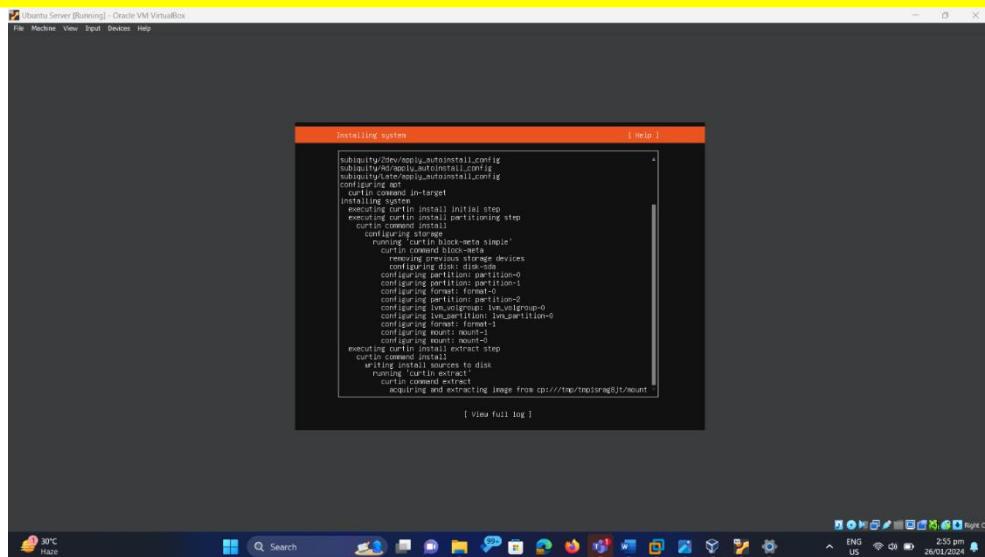
STEP 29: Click “Done”



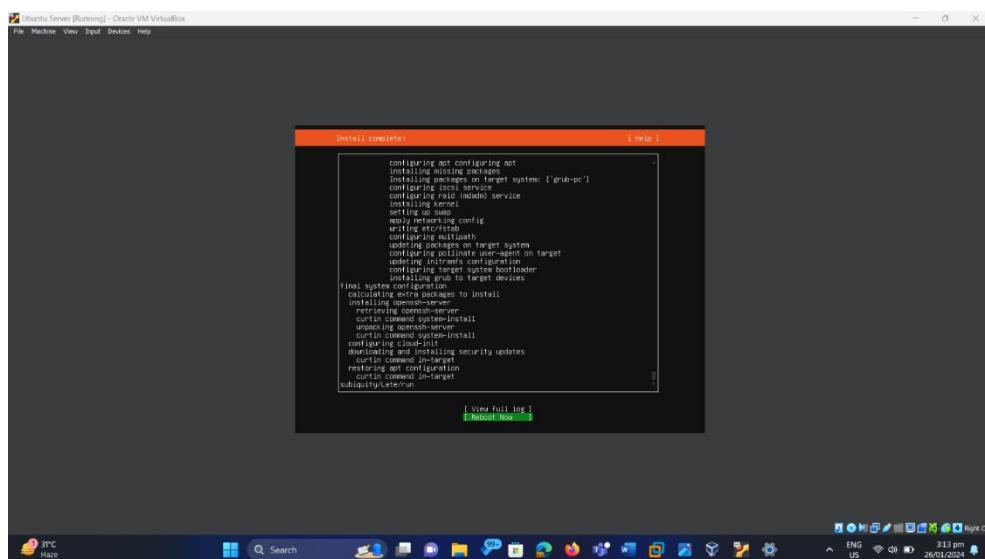
STEP 30: Wait for it to Install the System.



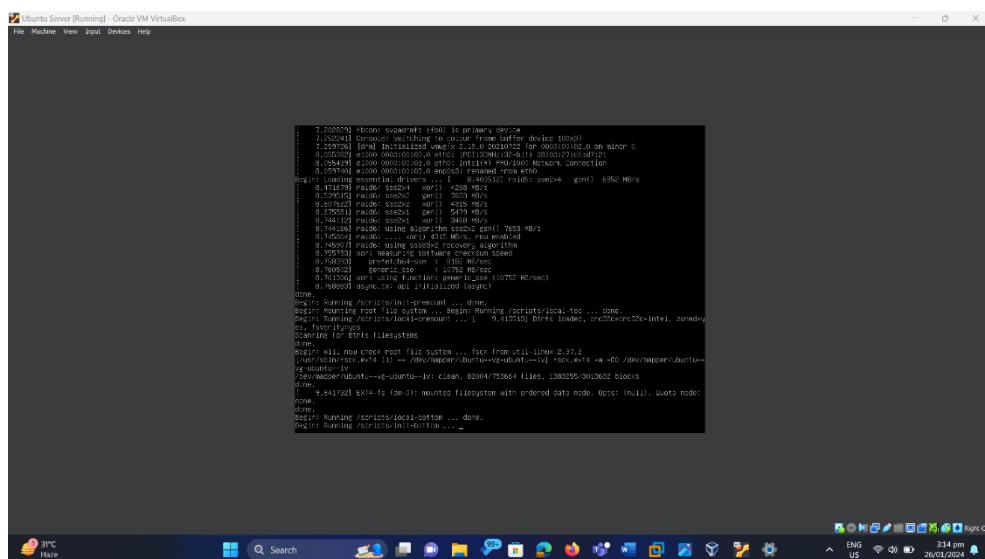
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

STEP 31: After installation is completed, click the “Reboot Now.”



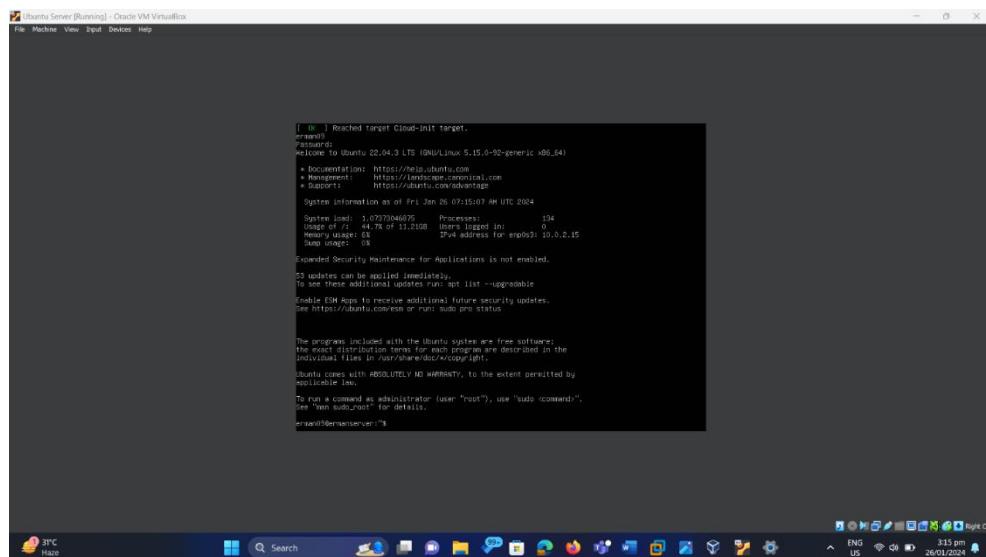
STEP 32: Wait for your Ubuntu Linux Server to reboot.



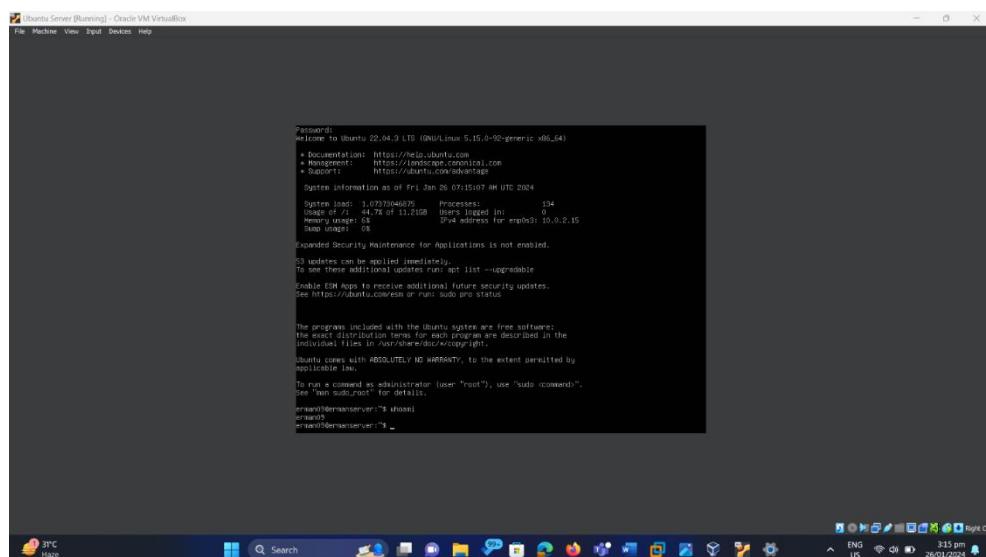
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

STEP 33: After rebooting your Ubuntu Linux Server, enter your username and password.

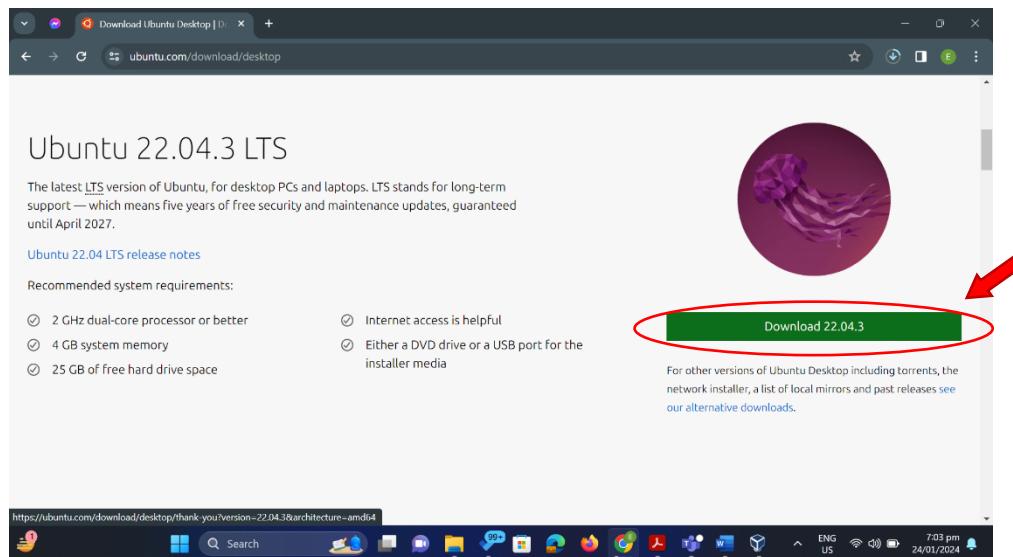


You now successfully added the “Ubuntu Linux Server.”

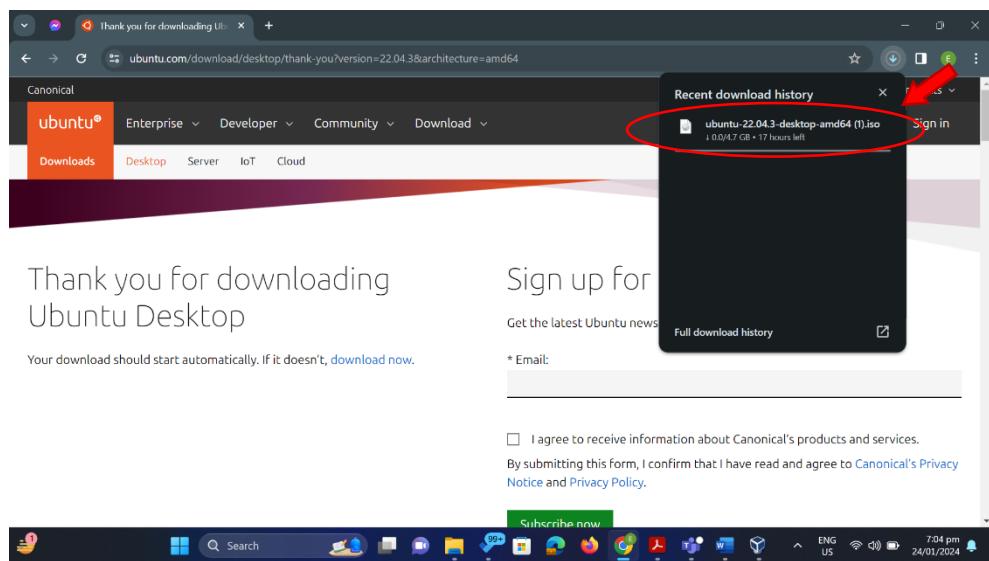


Linux-based OS (e.g. Ubuntu) Desktop

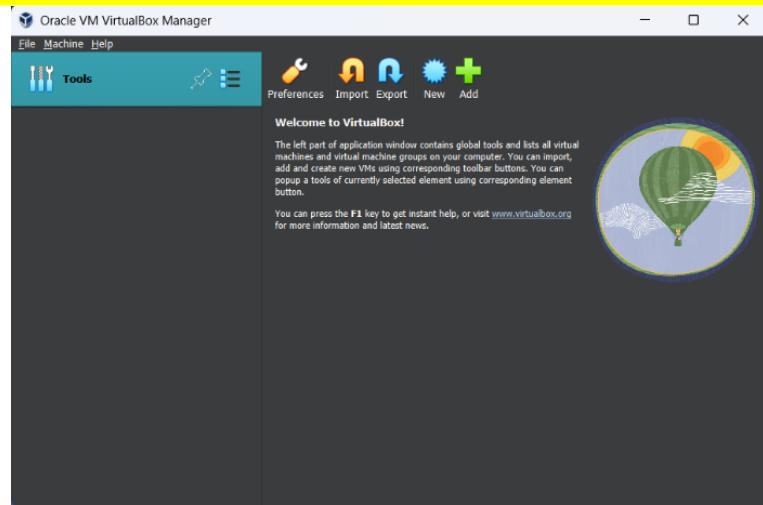
STEP 1: Download the ISO of Linux Ubuntu Desktop. To download the ISO of Linux Ubuntu Desktop, go to this link <https://ubuntu.com/download/desktop>, scroll down and click “Download 22.04.3 LTS.”



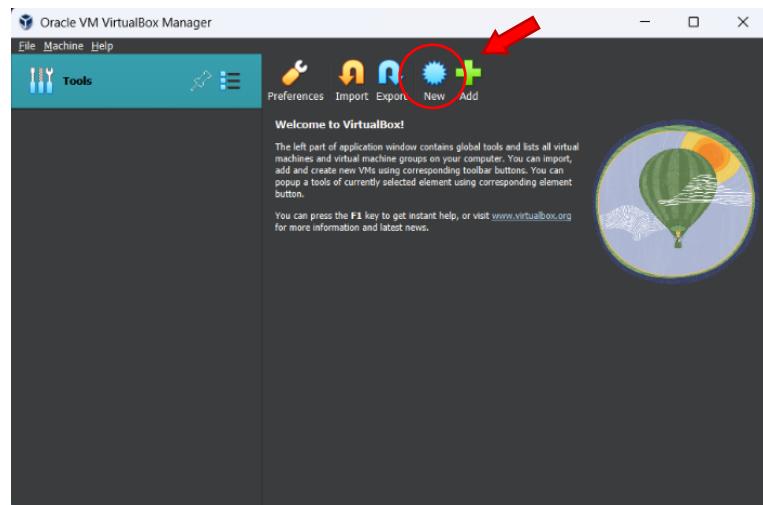
STEP 2: You will be redirected to another webpage. Kindly wait for the installer to start downloading in your browser.



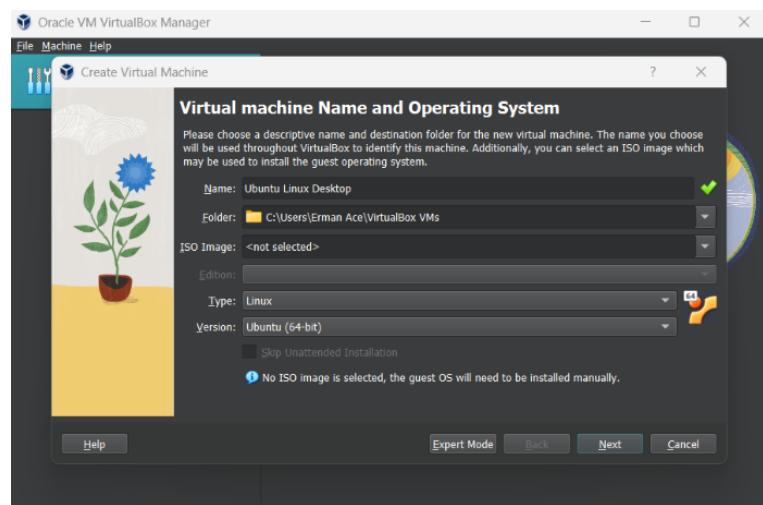
STEP 3: After you have finished downloading the Ubuntu Desktop ISO. Open your Virtual Box.



STEP 4: On the upper left corner of your Virtual Box, click the “New” button.

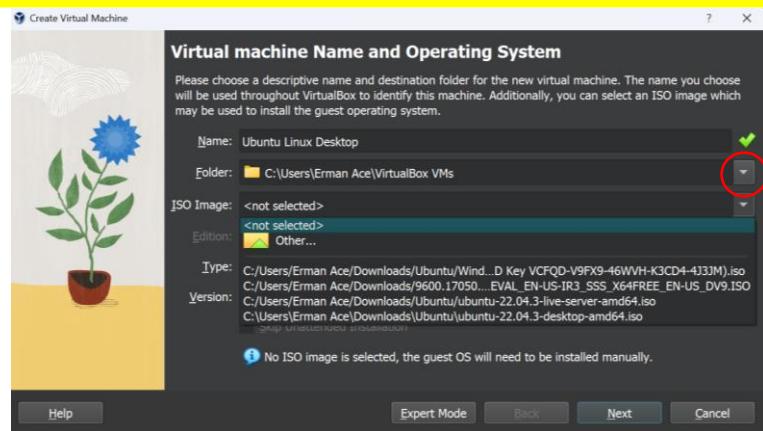


STEP 5: Enter the name of your Linux Ubuntu Desktop, for this example we will use “Ubuntu Linux Desktop.”

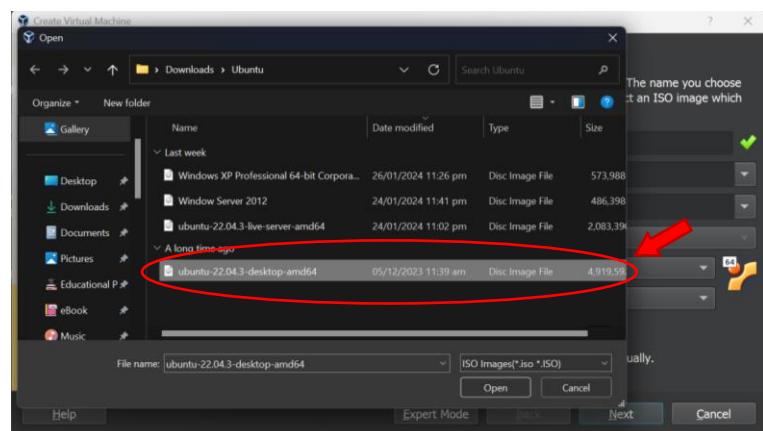


STEP 6: Select your Ubuntu Linux Desktop ISO. Go to the “ISO image” then click the dropdown menu.

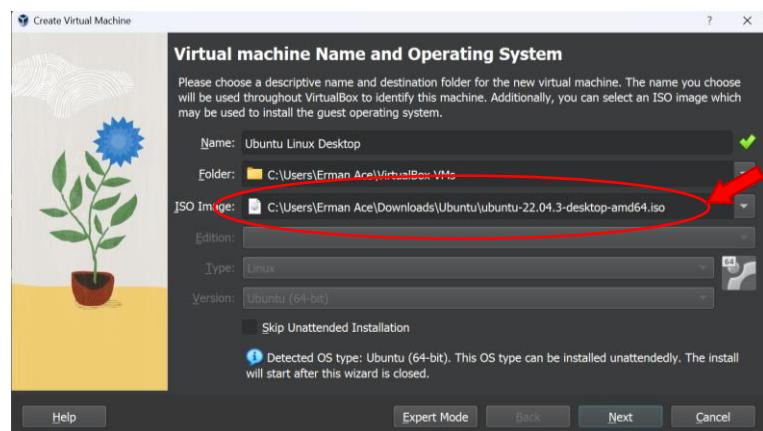




Then select the Ubuntu Linux Desktop ISO.



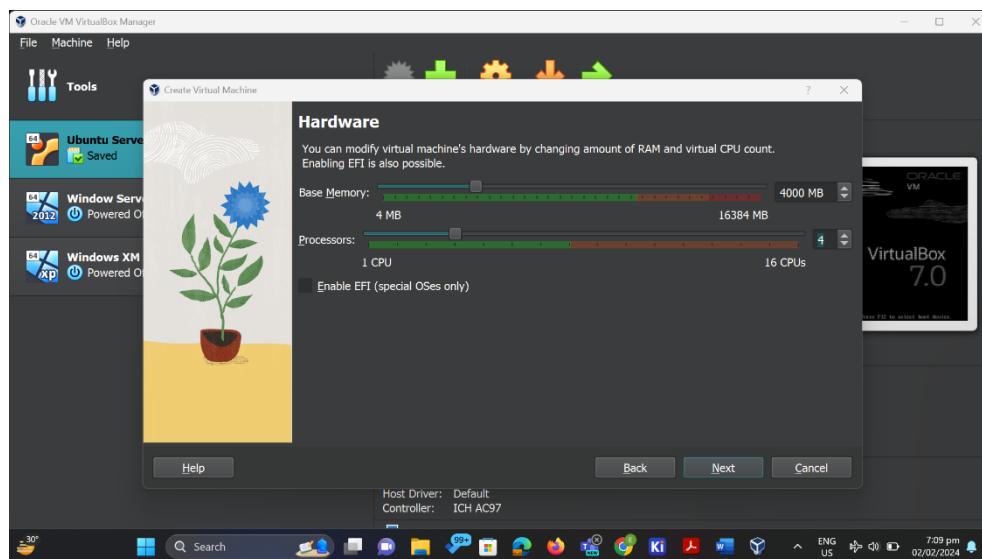
Make sure that the “ISO image” contains the Ubuntu Linux Desktop ISO. Then click “Next”



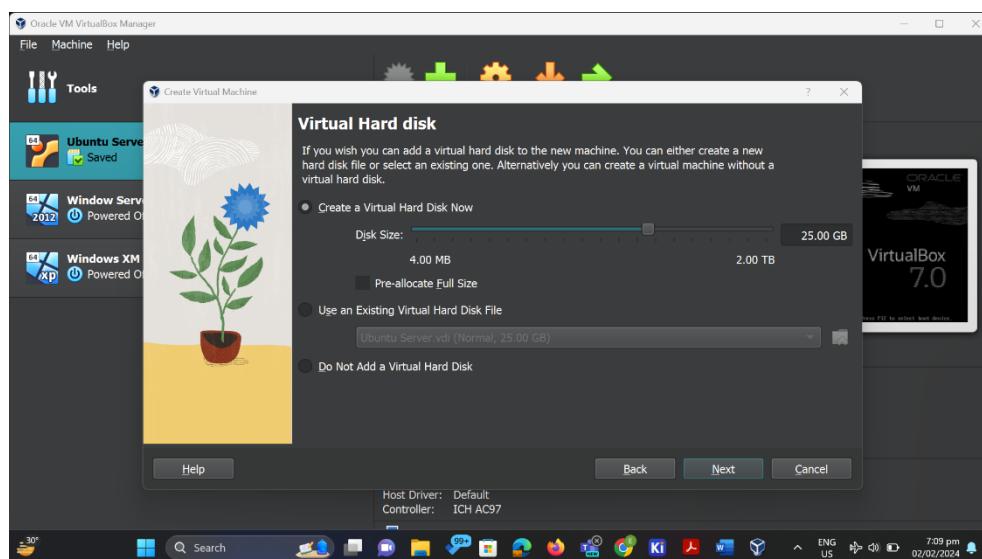
STEP 7: To secure your Ubuntu Linux Desktop you need to modify your username, password, and hostname. Change the Username, Password, and Hostname of your Ubuntu Linux Server. For this example, I set the username into “ubuntuDesktop”, Password to “21UR0280”, and hostname to “UbuntuLinuxDesktop.” Then click next.



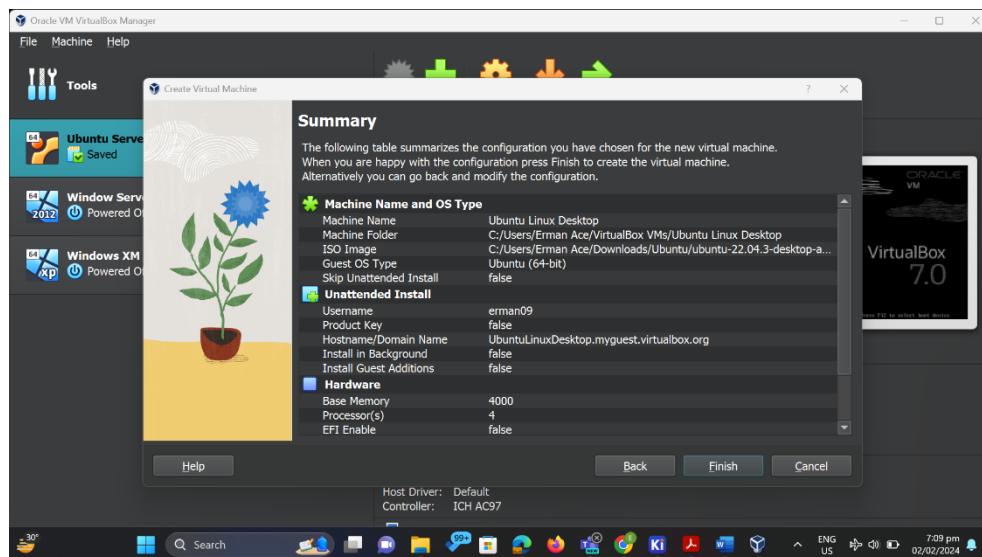
STEP 8: Set the amount of RAM and virtual CPU count of your Ubuntu Linux Server. For this example, I set the amount of RAM to “4000 MB” and CPU count to “4.” Then click “Next”



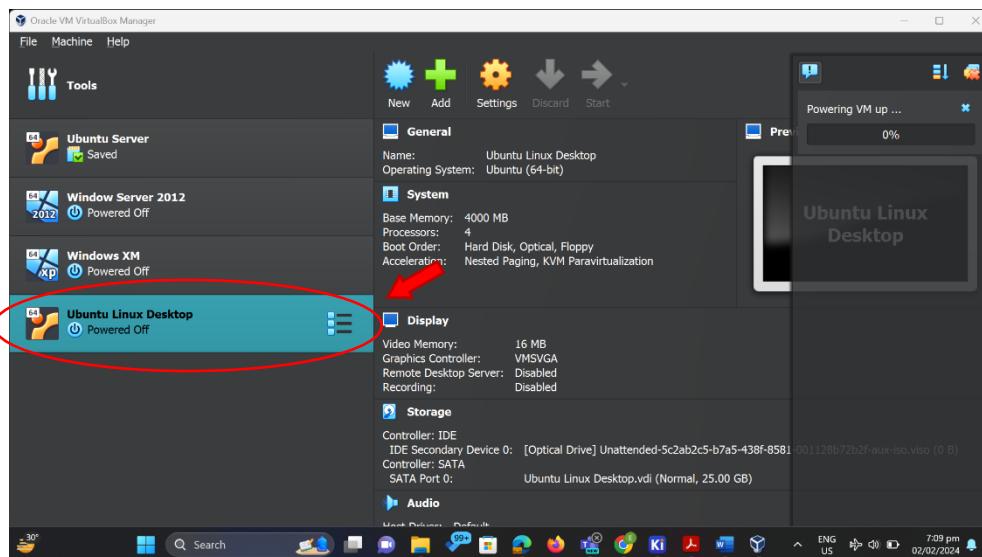
STEP 9: For Virtual Hard Disk. Choose the “Create a Virtual Hard Disk Now” then set your desire “Disk Size.” For this example, the disk size of Ubuntu Linux Desktop is “25.00GB.” Then click Next.”



STEP 10: After setting up the necessary information for your Ubuntu Linux Desktop, the VirtualBox will now display a summary of the information you configured for your Ubuntu Linux Desktop. Double-check the details below, and if everything is correct, click the "Finish" button.

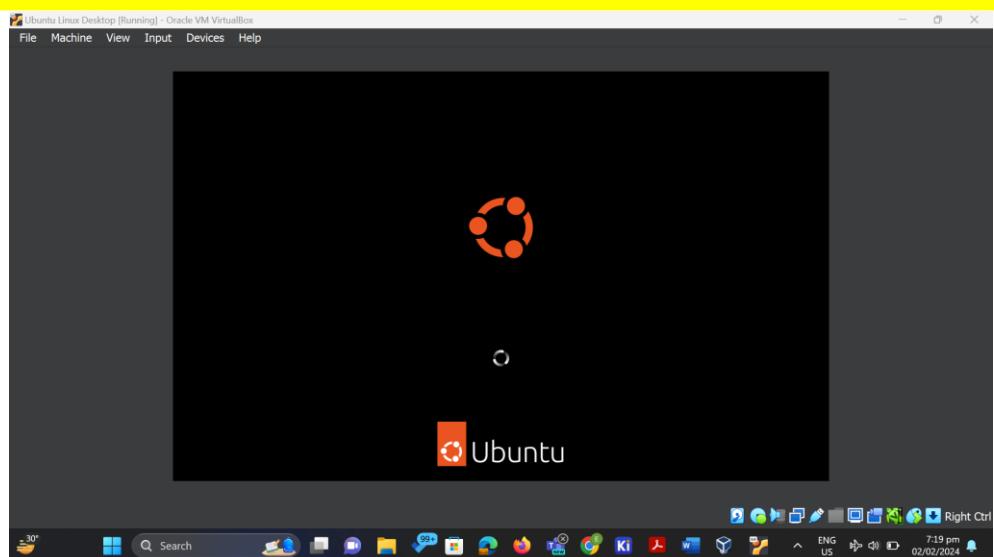


STEP 11: You have successfully added the Ubuntu Linux Server to your VirtualBox. Please note that you have added the ISO of your Ubuntu Linux Server, and now you need to boot your Ubuntu Linux Server to start using it. To open your Ubuntu Linux Server, just double-click it and wait for it to start.

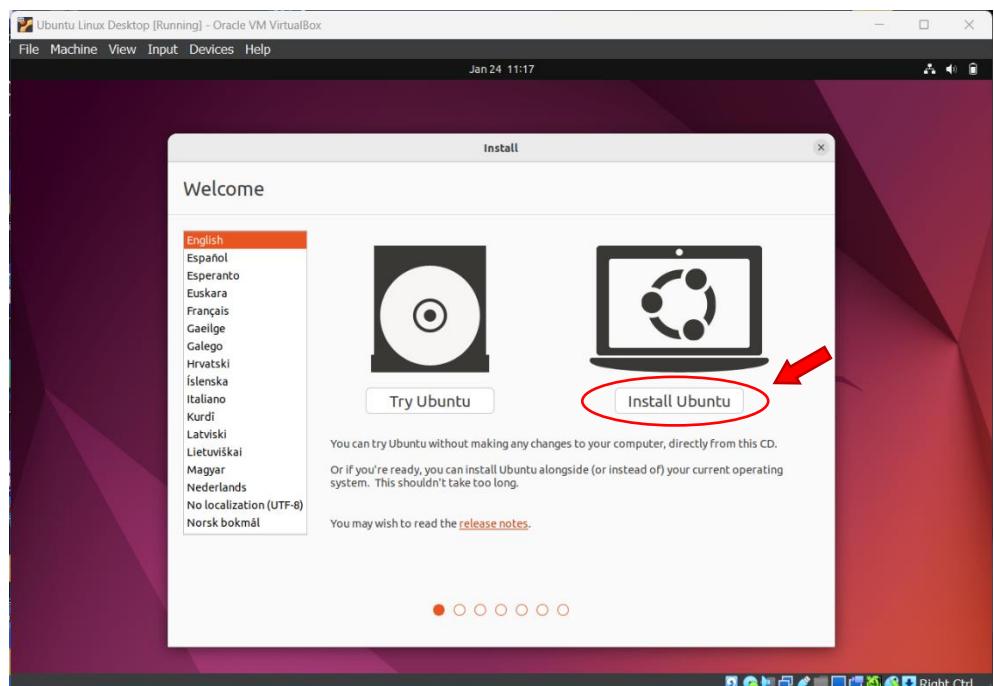


STEP 12: After Opening your Ubuntu Linux Server, wait for it to start up.



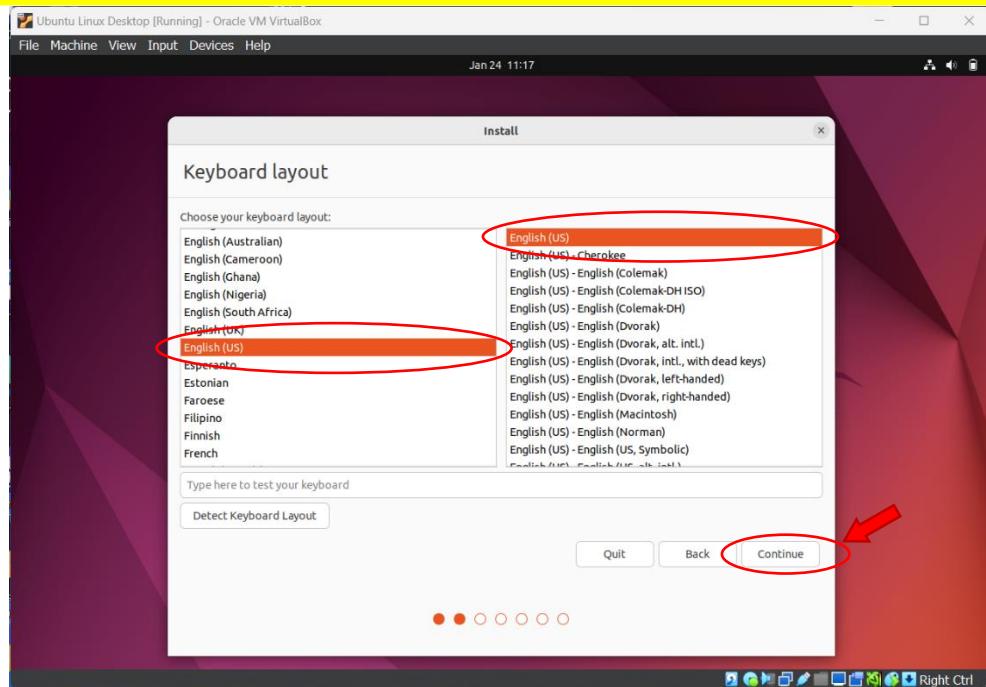


STEP 13: For installation process, click the language that you want to use in this Ubuntu Desktop. For this example, I choose the “English.” Then click “Install Ubuntu.”

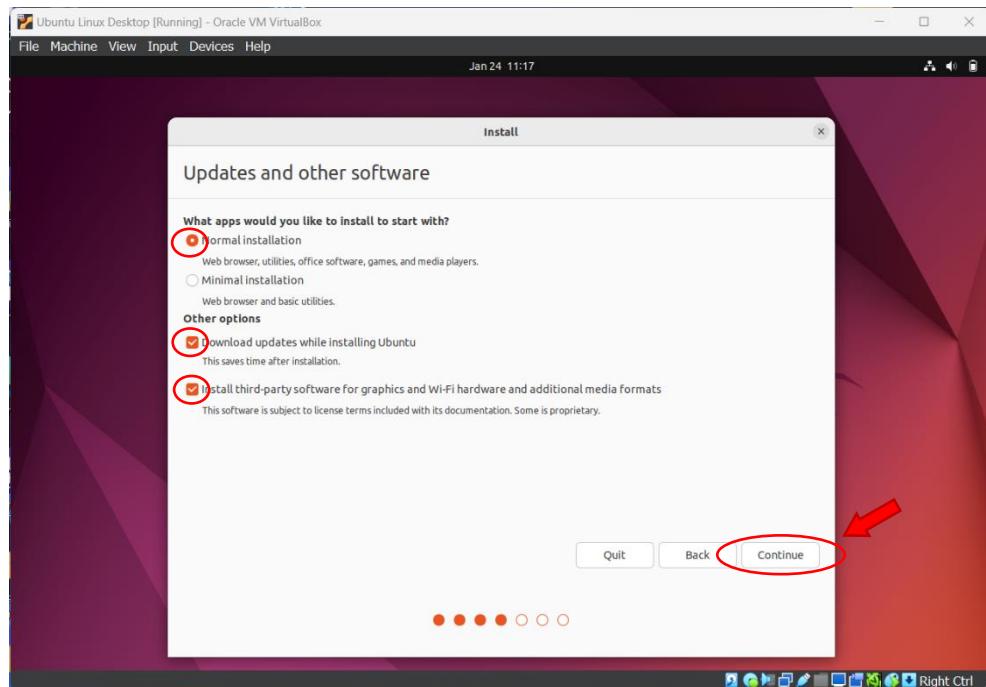


STEP 14: Choose your Keyboard Layout. Then click “Continue.”

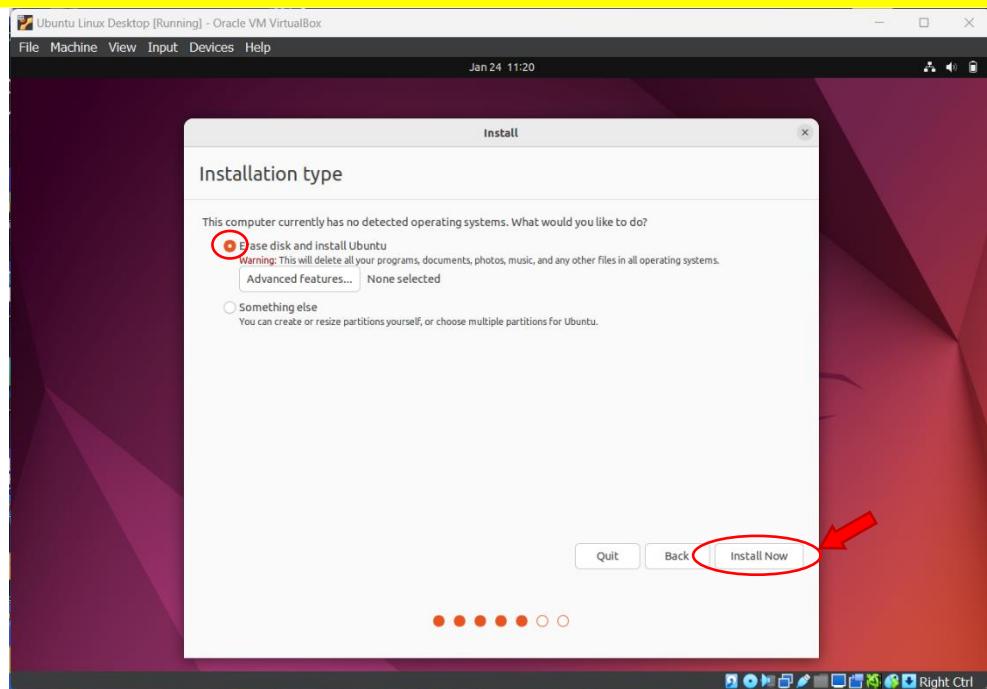




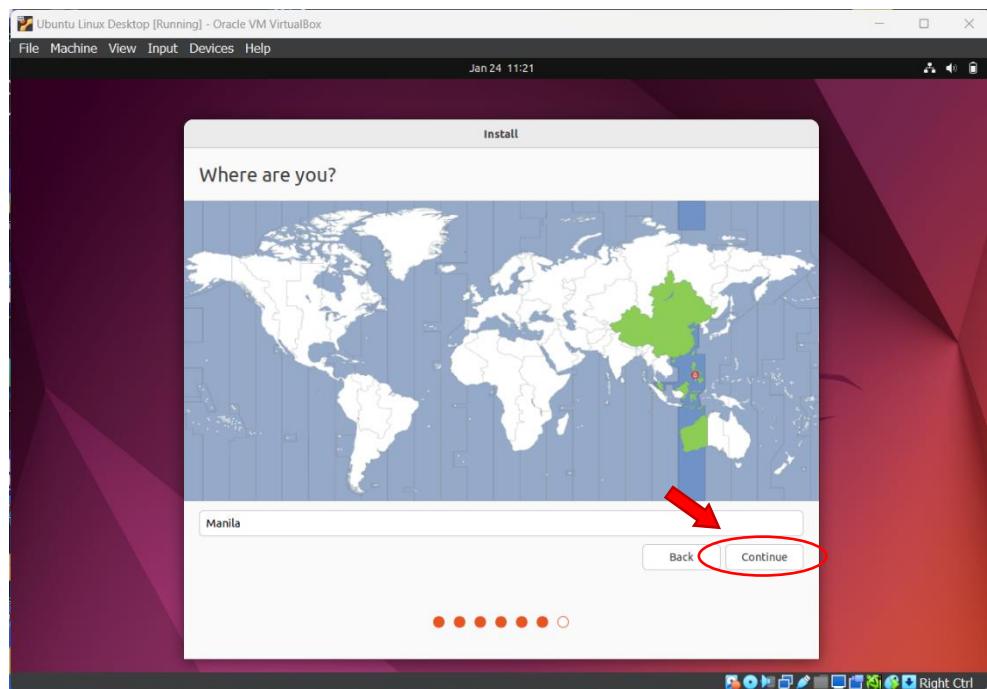
STEP 15: Updates and Other Software. Choose for the apps would you like to install to start with the “Normal Installation” Option. Then for the Other options choose the “Download Updates While Installing Ubuntu” and “Install Third-Party Software for Graphics and Wi-Fi Hardware and Additional Media Formats.” Then click “Continue.”



STEP 16: Installation Type. Choose the “Erase disk and Install Ubuntu.” Then click “Install Now.”

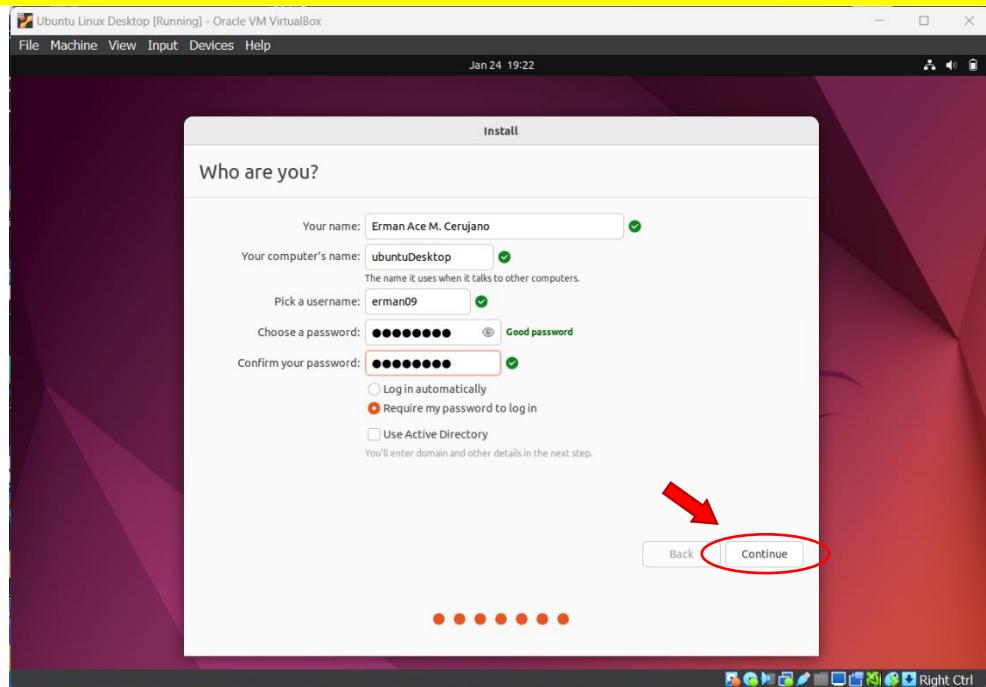


STEP 17: Select your current location, then click “Continue.”

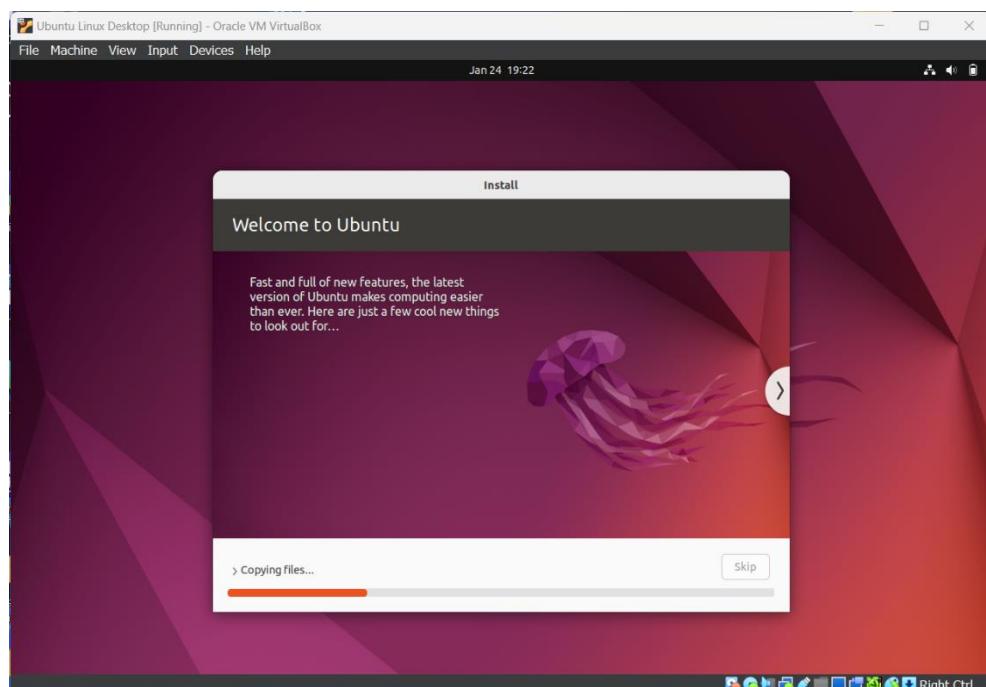


STEP 18: Enter the needed information below then click “Continue”



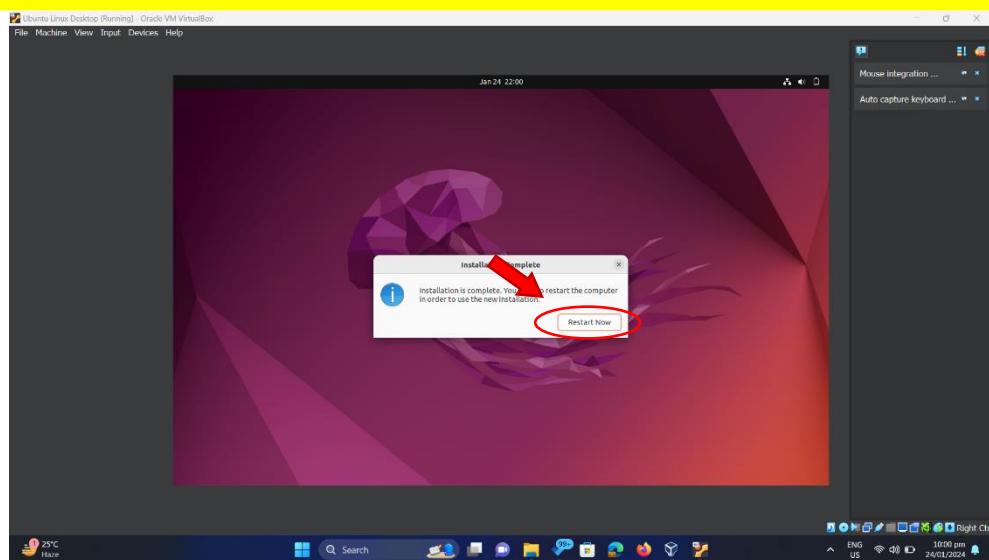


STEP 19: Your Ubuntu Desktop is now installing. Wait for a few minutes to finish the Installation of your Ubuntu Desktop.

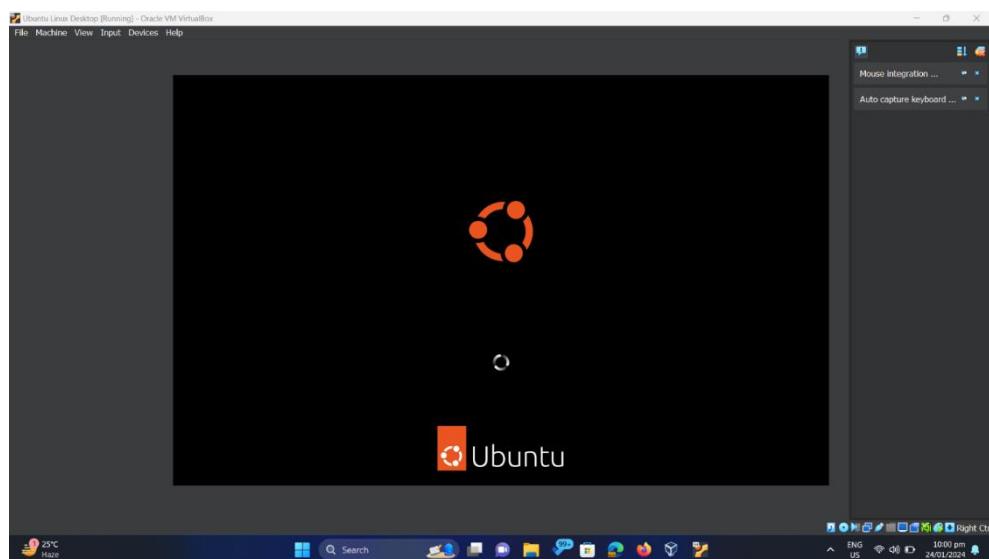


STEP 20: After the installation of your Ubuntu Desktop. Click the “Restart Now” button.

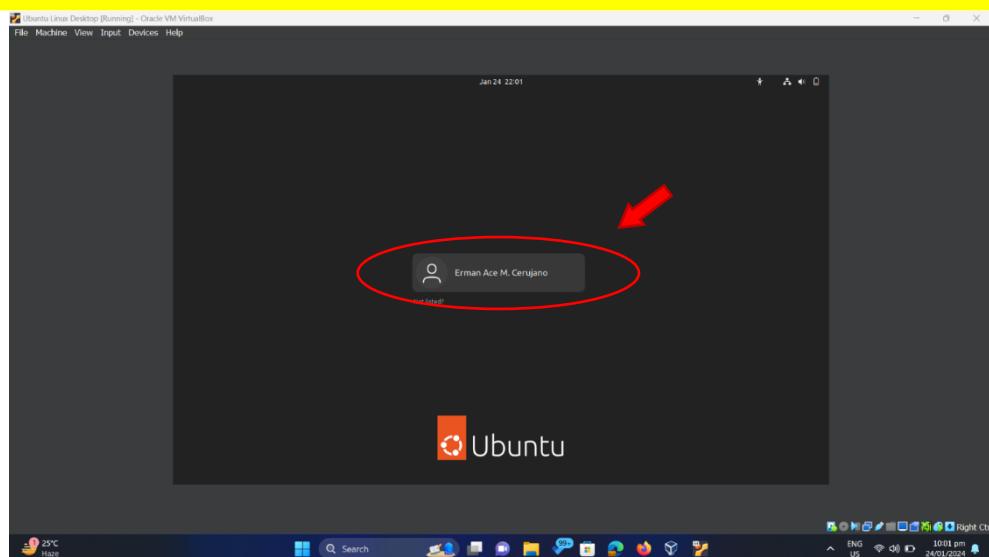




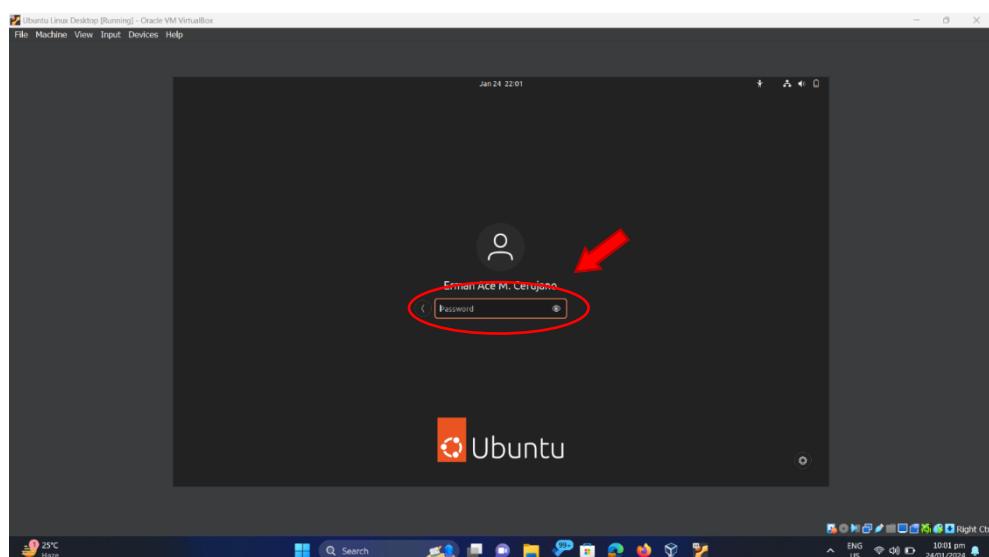
STEP 21: Wait for your Ubuntu Desktop to restart.



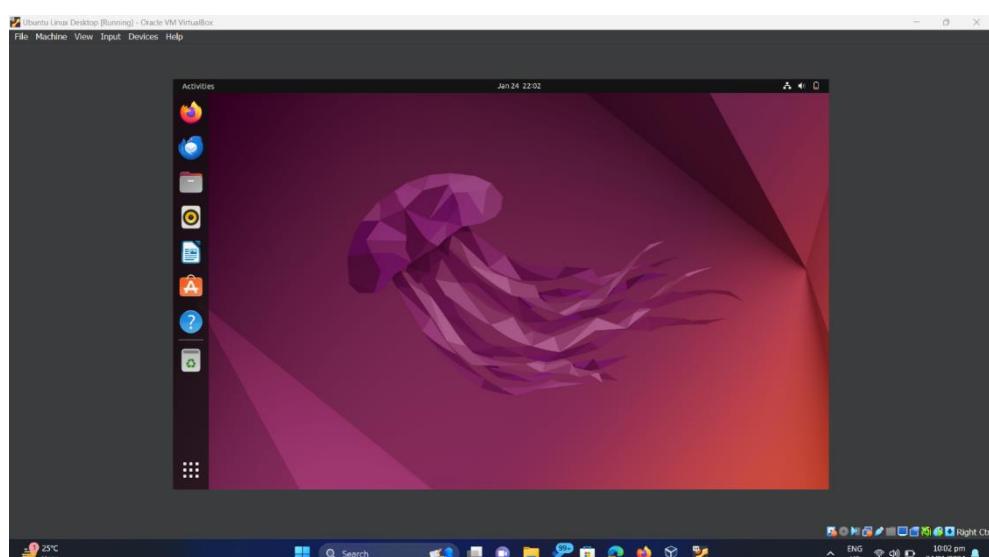
STEP 22: After restarting your Ubuntu Desktop. Now it will show the account that you register before. Click your account that you want to use.



STEP 23: Enter your password.



STEP 24: After you entered your password. You can now access your Ubuntu Desktop.

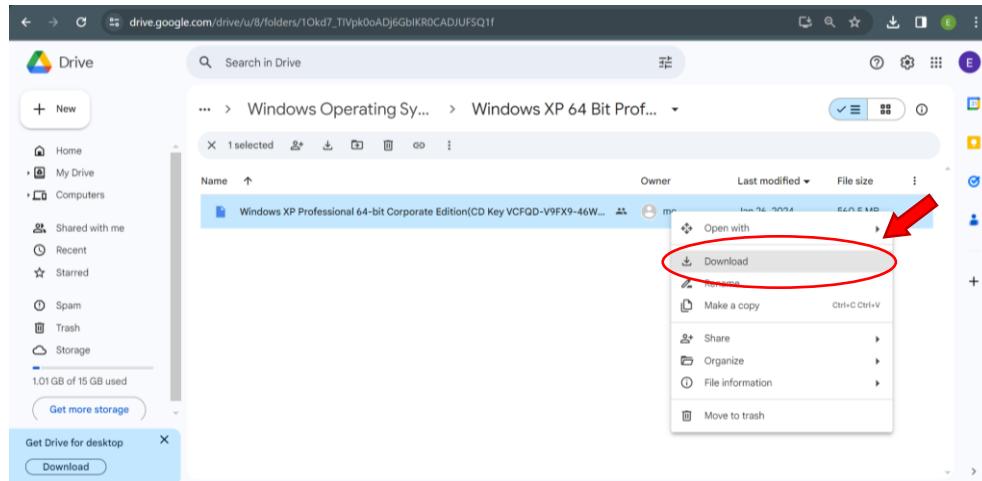


You are now successfully added Ubuntu Desktop to your Virtual Box.

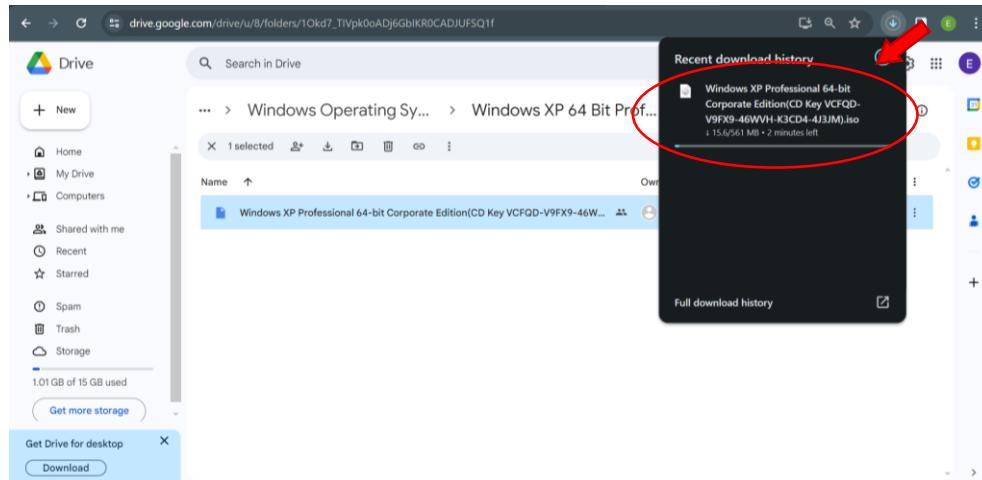


Windows Desktop OS

STEP 1: Download the ISO of Windows XP Professional. To download the ISO of Windows XP Professional, go to this link https://drive.google.com/drive/folders/1Okd7_TIVpk0oADj6GbIKR0CADJUFSQ1f?usp=drive and download the file.

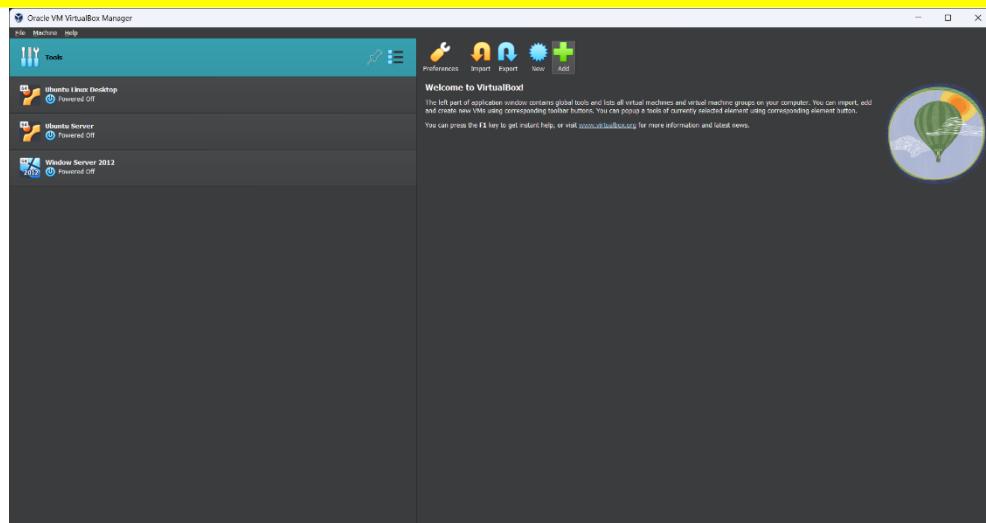


STEP 2: Wait for the installer to start downloading in your browser.

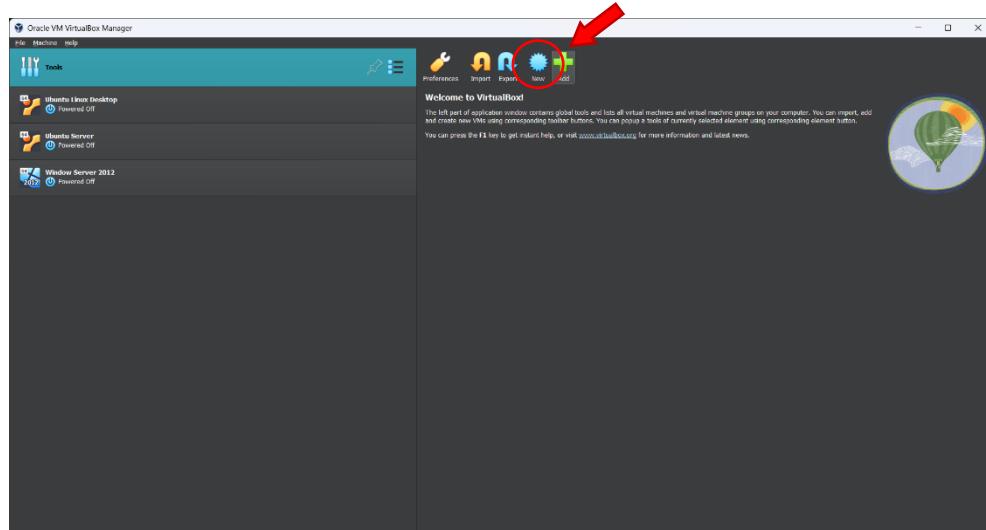


STEP 3: After you have finished downloading the Windows XP Professional ISO. Open your Virtual Box.

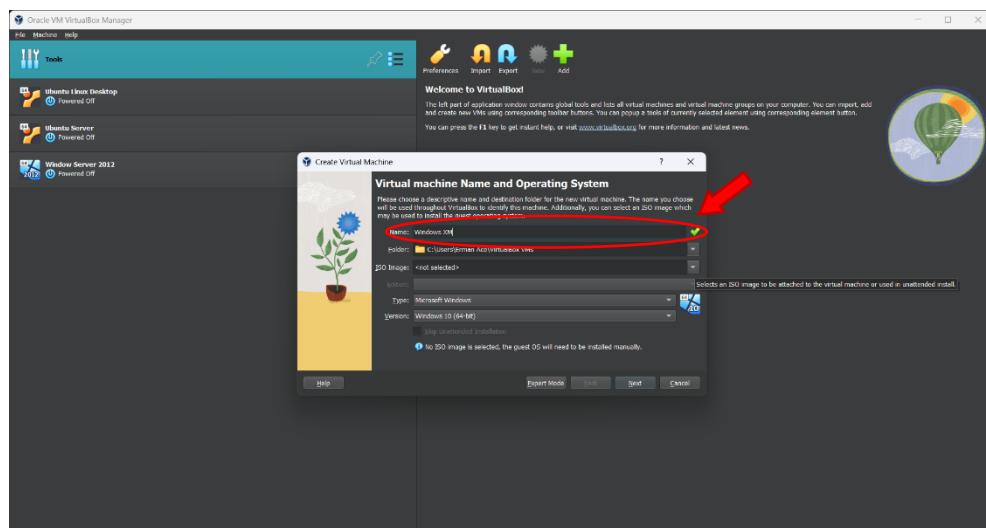




STEP 4: On the upper left corner of your Virtual Box, click the “New” button.



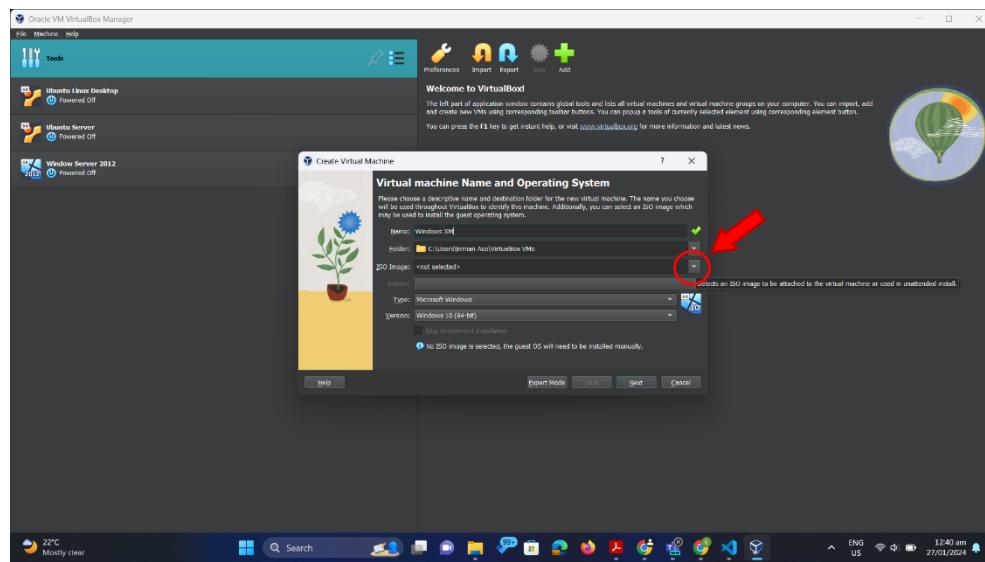
STEP 5: Enter the name of your Windows XP Professional, for this example we will use “Windows XM.”



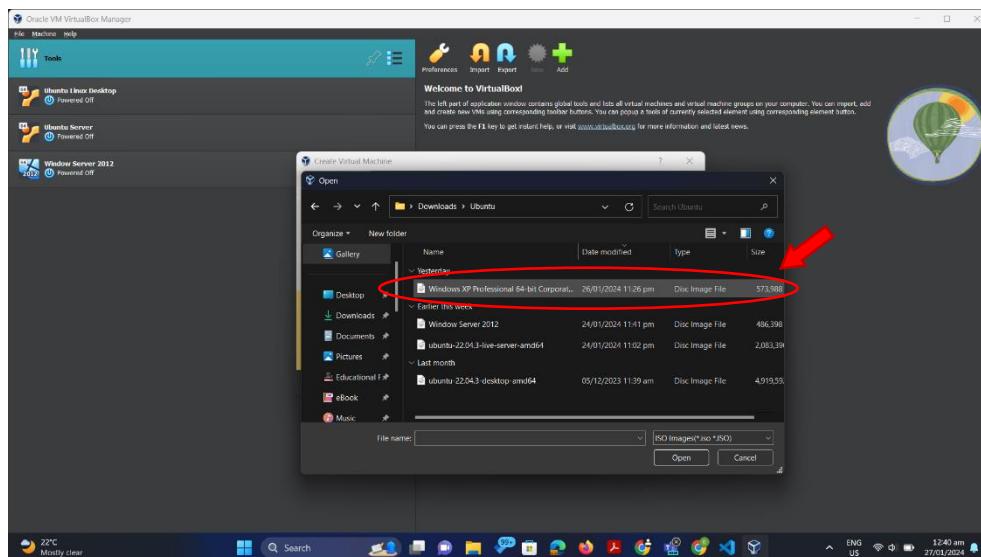
STEP 6: Select your Windows XP Professional ISO. Go to the “ISO image” then click the dropdown



menu.

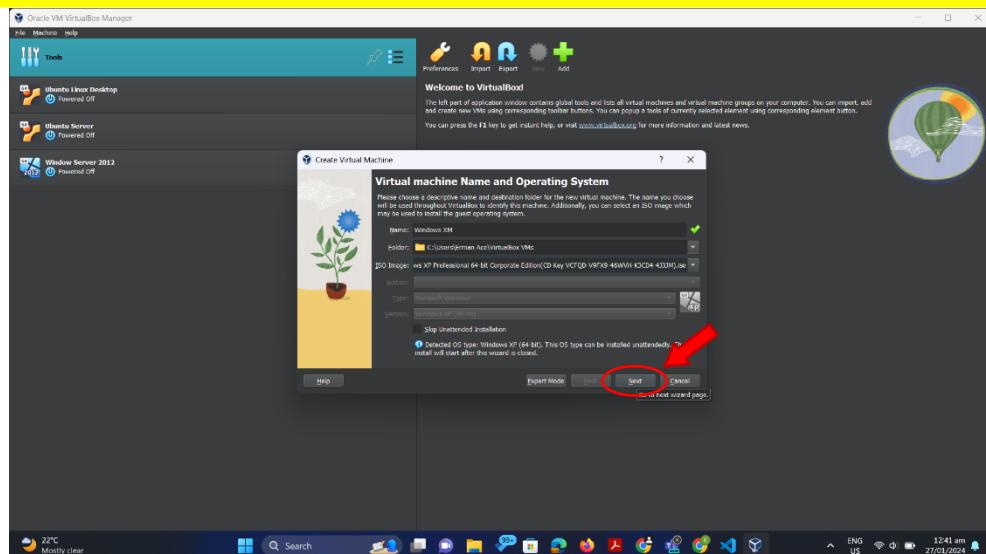


Then select the Windows XP Professional ISO.

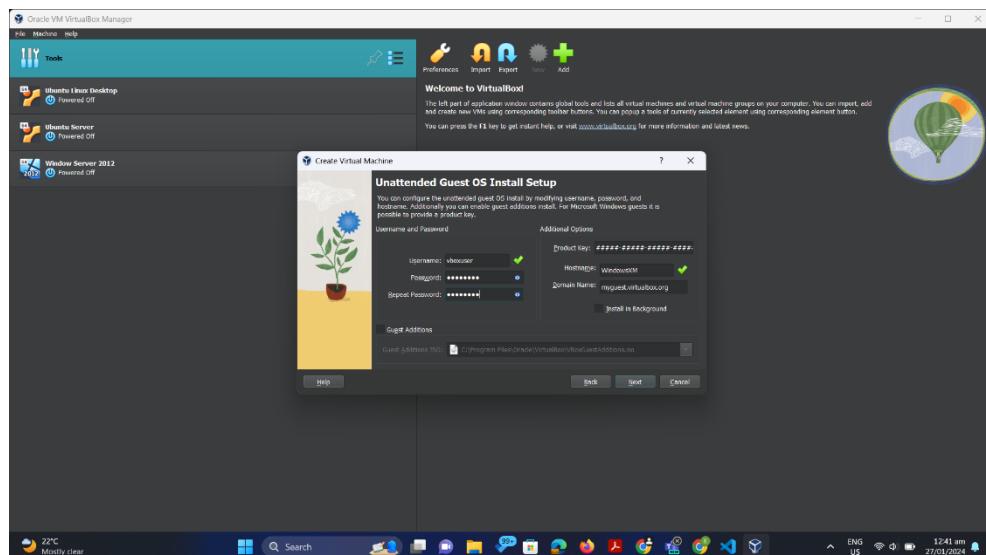


Make sure that the “ISO image” contains the Windows XP Professional ISO. Then click “Next.”



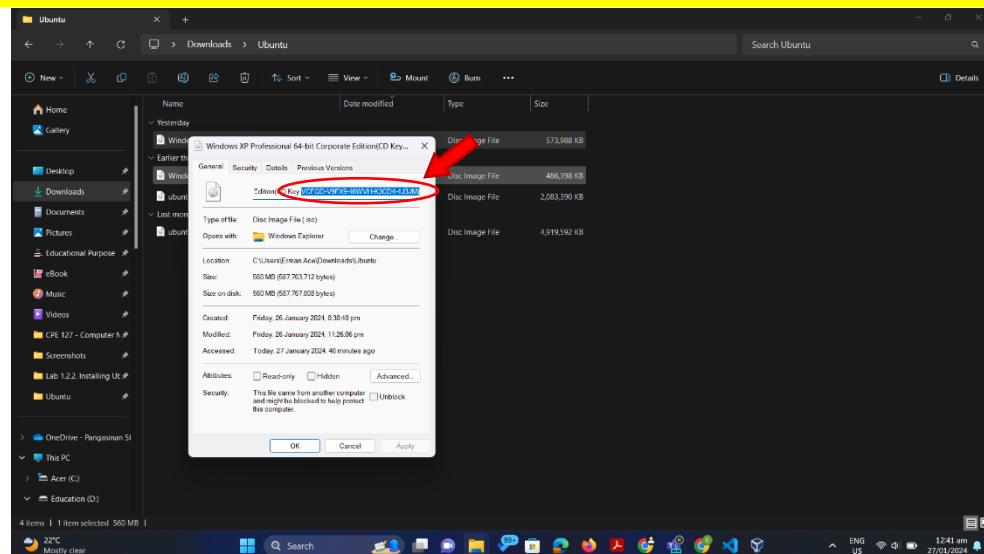


STEP 7: To secure your Windows XP Professional you need to modify your username, password, and hostname. Change the Username, Password, and Hostname of your Ubuntu Linux Server. For this example, I set the username into “xboxuser”, Password to “21UR0280”, and hostname to “WindowsXM.”

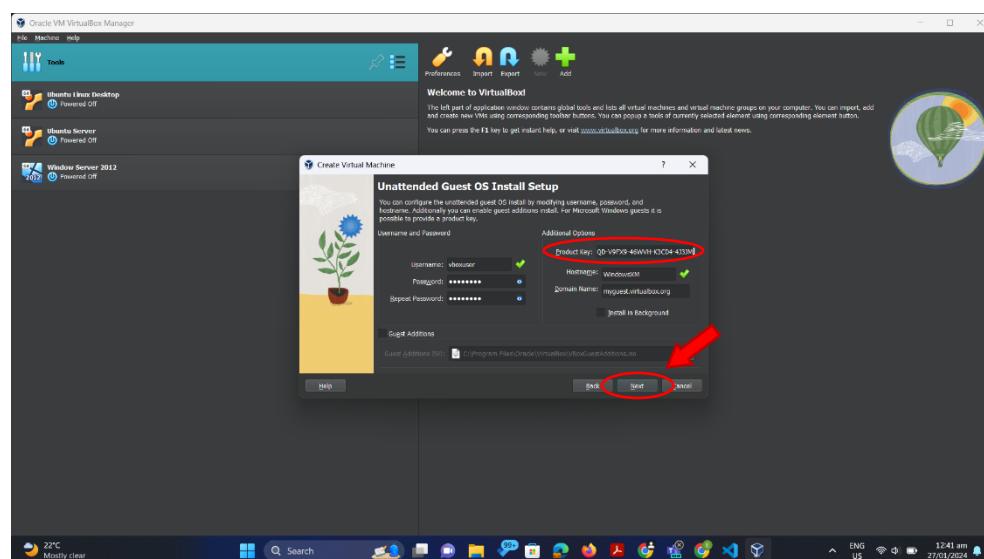


For the product key, navigate to your Windows XP Professional ISO file. Click on properties, and then check the file name of your Windows XP Professional; it contains the product key.



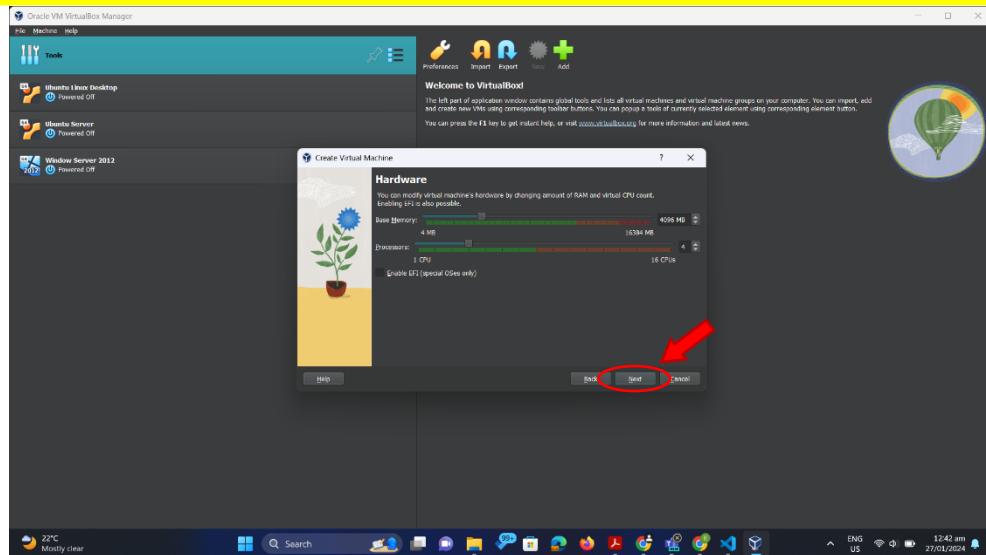


Copy it and paste it in the Virtual box. Then click next.

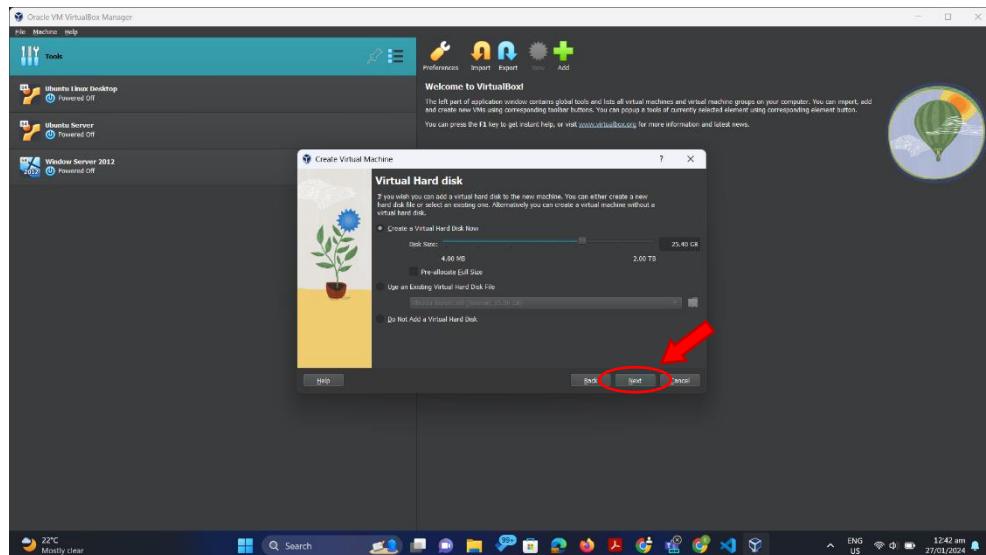


STEP 8: Set the amount of RAM and virtual CPU count of your Windows XP Professional. For this example, I set the amount of RAM to “4096 MB” and CPU count to “4.” Then click “Next.”



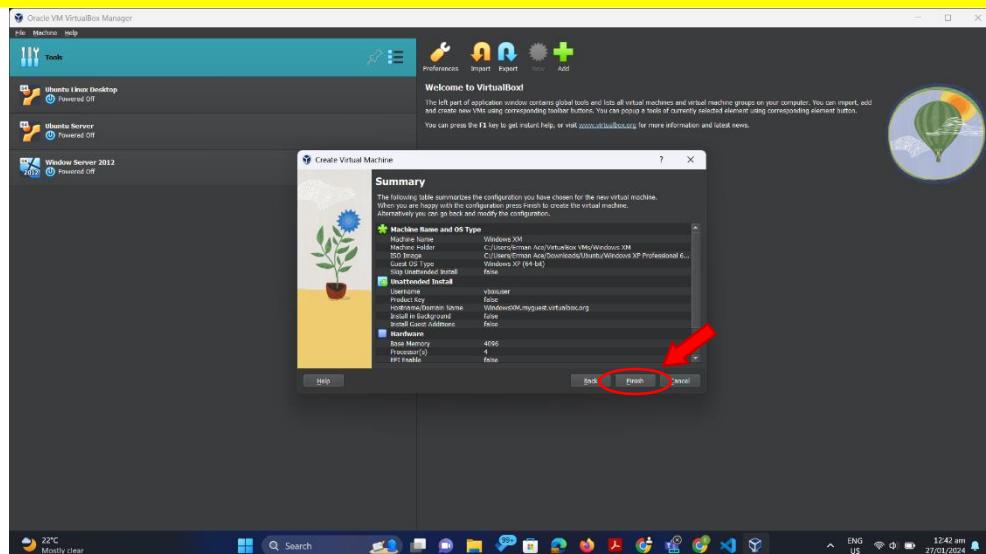


STEP 9: For Virtual Hard Disk. Choose the “Create a Virtual Hard Disk Now” then set your desire “Disk Size.” For this example, the disk size of Windows XP Professional is “25.40GB.” Then click Next.”

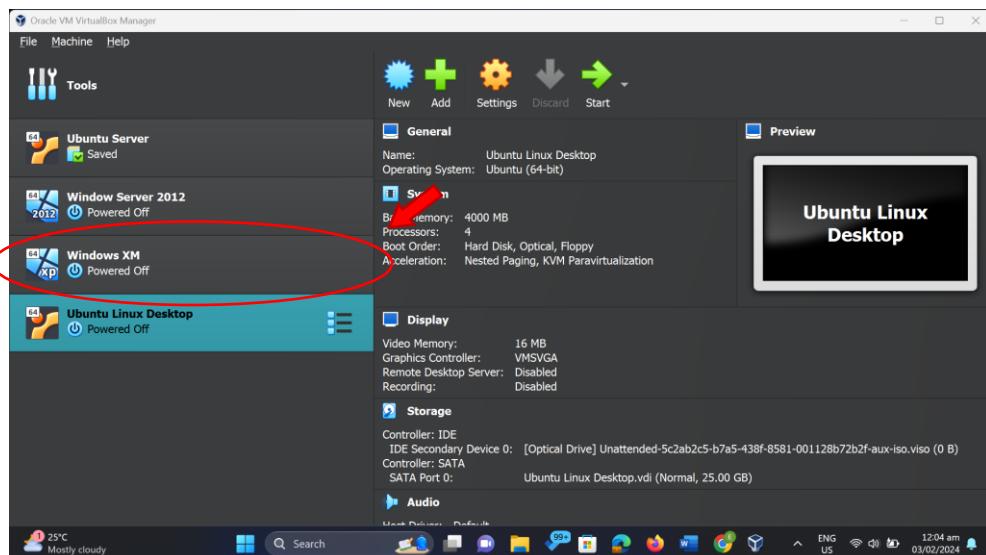


STEP 10: After setting up the necessary information for your Windows XP Professional, the VirtualBox will now display a summary of the information you configured for your Windows XP Professional. Double-check the details below, and if everything is correct, click the "Finish" button.



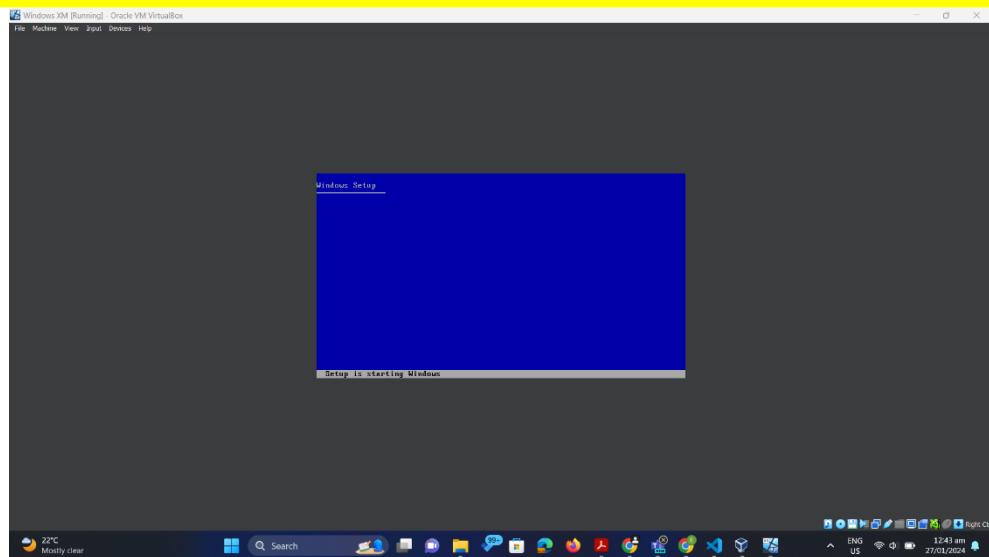


STEP 11: You have successfully added Windows XP Professional to your VirtualBox. Please note that you have added the ISO of your Windows XP Professional, and now you need to boot your Windows XP Professional to start using it. To open your Windows XP Professional, just double-click it and wait for it to start.

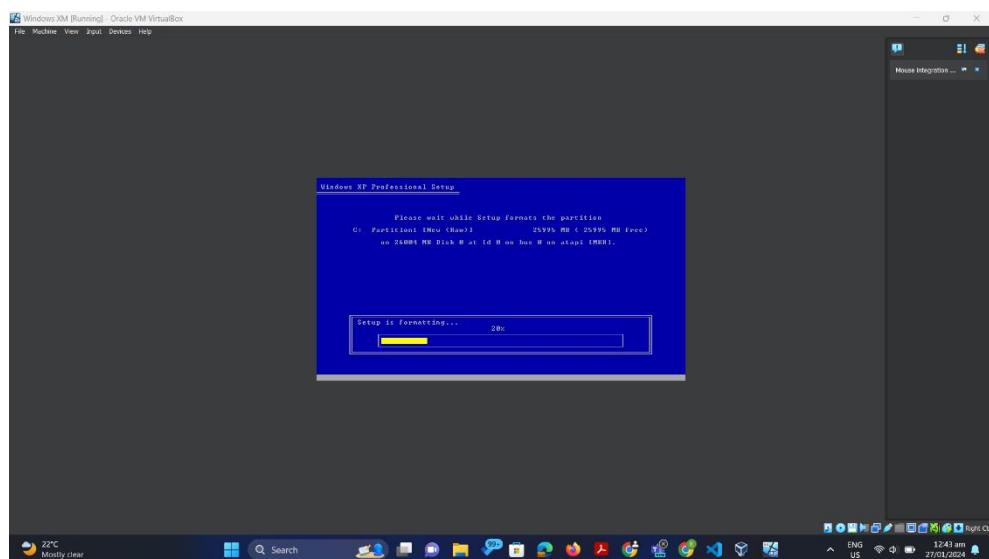


STEP 12: After Opening your Windows XP Professional, wait for it to start up.



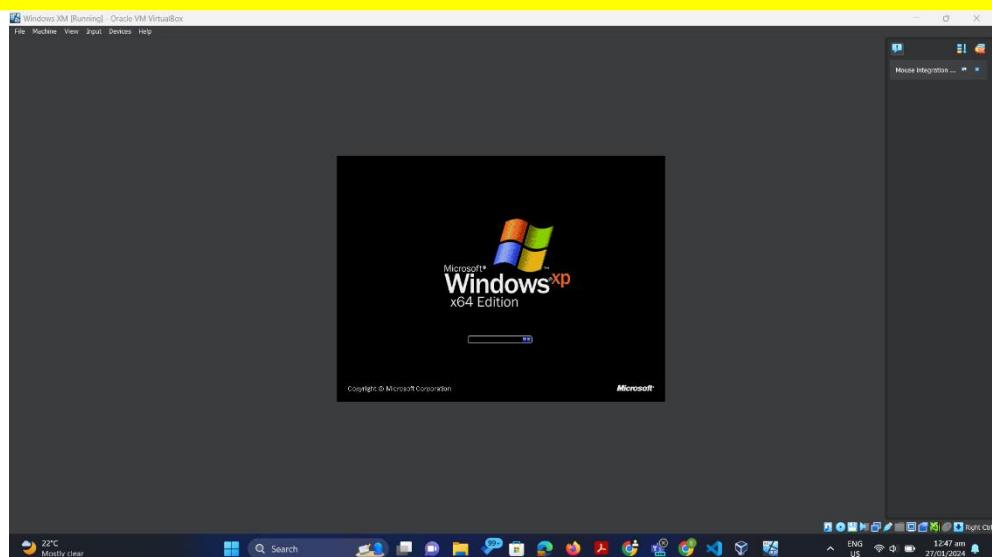


STEP 13: It will now be formatting the partitions. Wait for a couple of minutes to Setup the formatting.

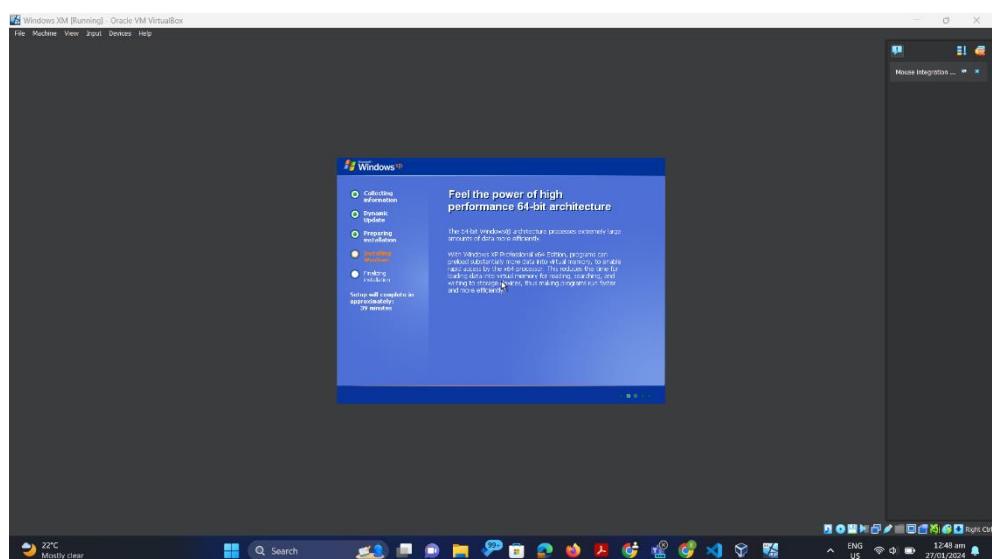


STEP 14: After the Windows XP Professional done formatting. Wait again for another couple of minute to start up the machine.





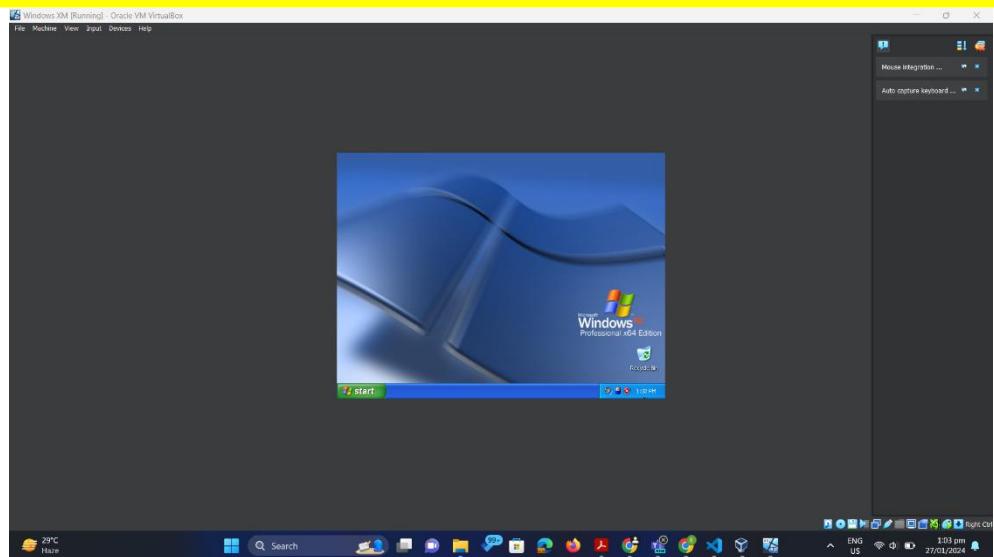
STEP 15: Wait again for another couple of minutes for setting up your Windows XP Professional.



STEP 16: After setup. You are now successfully added the Windows XP Professional into your Virtual Box.

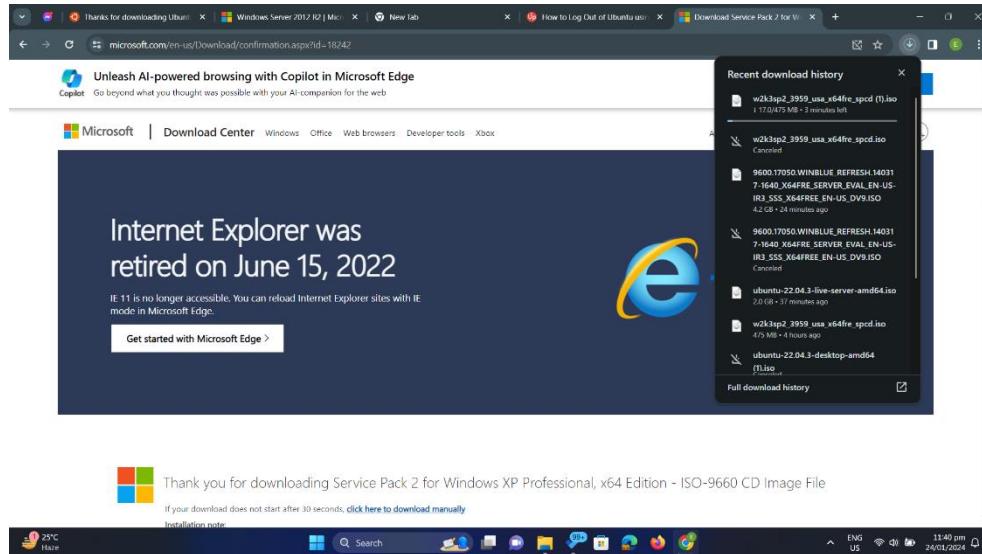


Study Guide in (Elective 1 – Systems and Network Administration 1)

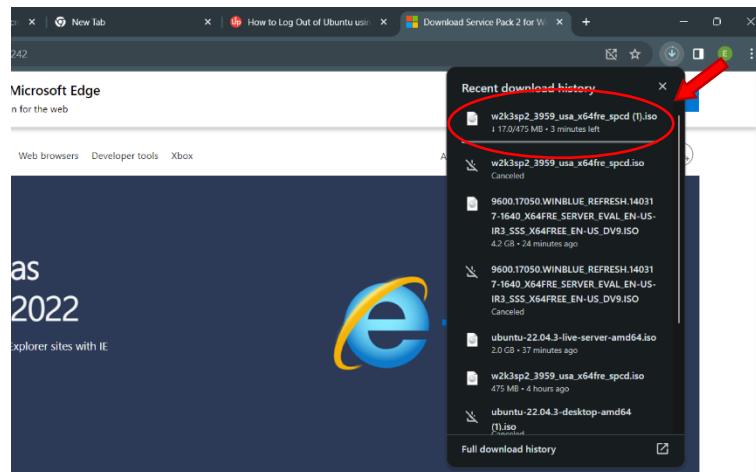
Module No. LabM01

Windows Server OS

STEP 1: Download the ISO of Linux Ubuntu Server. To download the ISO of Linux Ubuntu Server, go to this link <https://microsoft.com/en-us/Download/confirmation.aspx?id=18242> and it will automatically download the ISO.



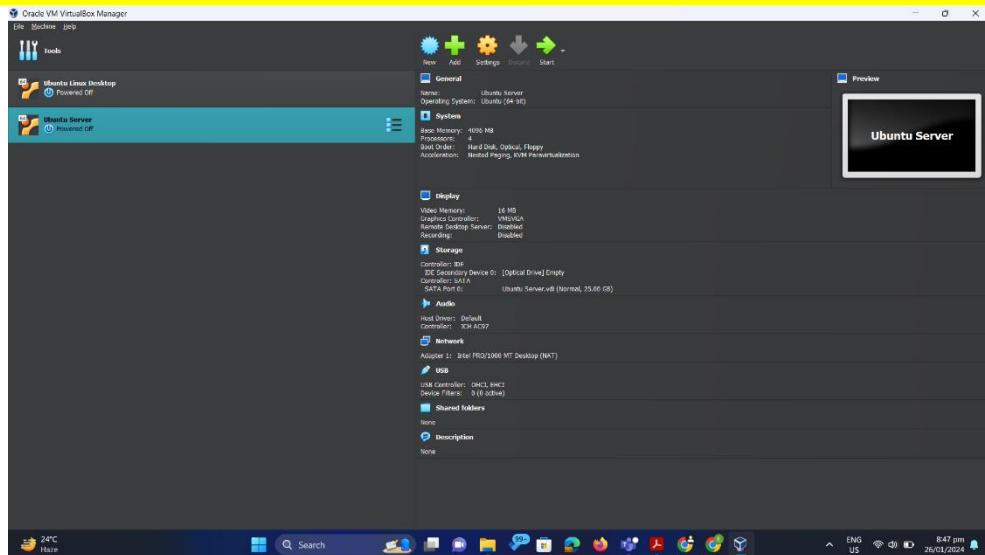
STEP 2: Wait for the installer to start downloading in your browser.



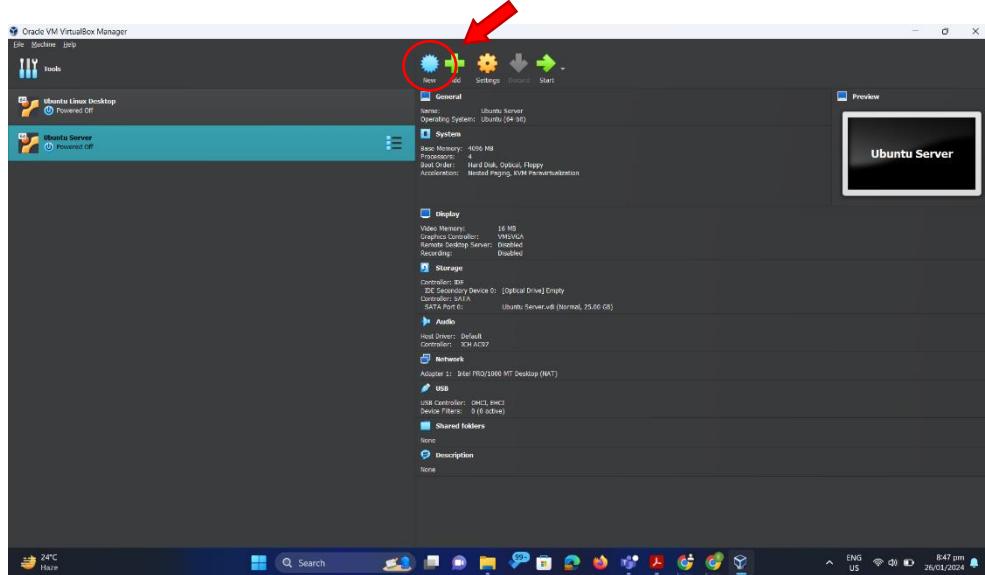
STEP 3: After you have finished downloading the Linux Ubuntu Server ISO. Open your Virtual Box.



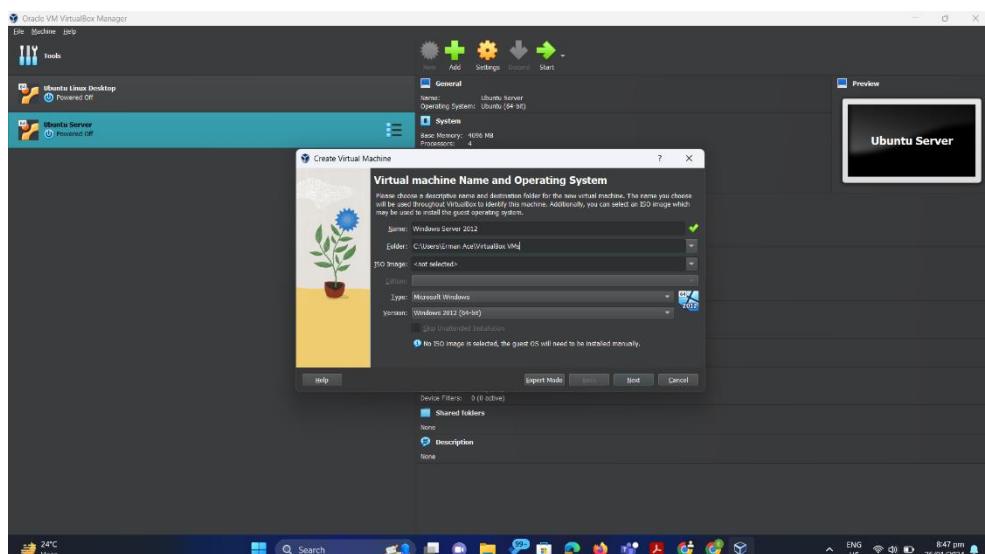
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

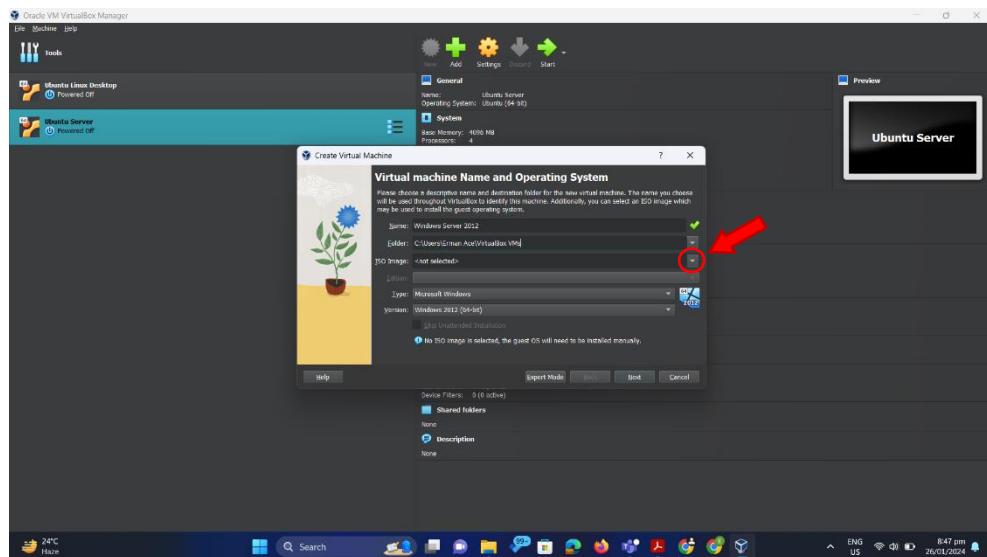
STEP 4: On the upper left corner of your Virtual Box, click the “New” button.



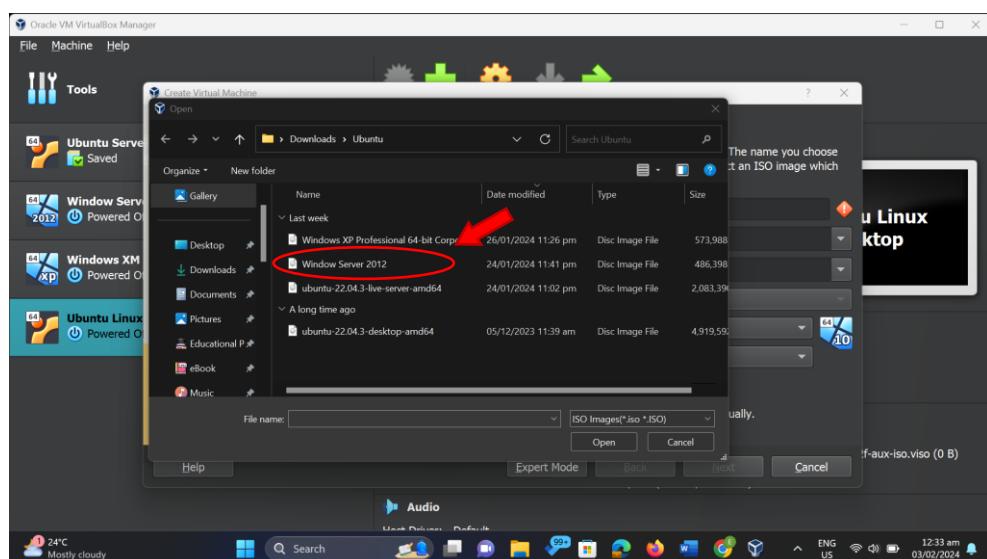
STEP 5: Enter the name of your Linux Ubuntu Server, for this example we will use “Ubuntu Server”



STEP 6: Select your Ubuntu Linux Server ISO. Go to the “ISO image” then click the dropdown menu.

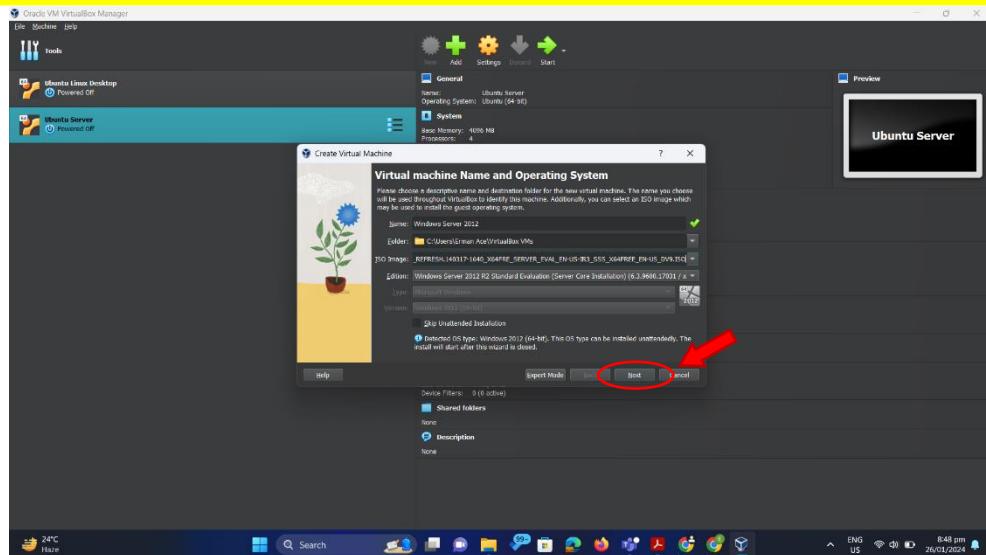


Then select the Ubuntu Linux Server ISO.

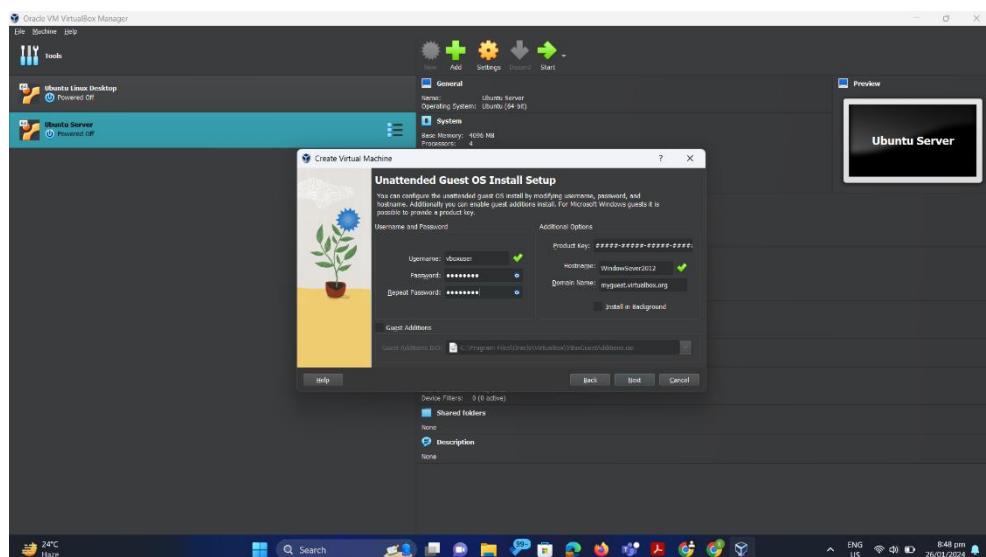


Make sure that the “ISO image” contains the Ubuntu Linux Server ISO. Then click “Next.”



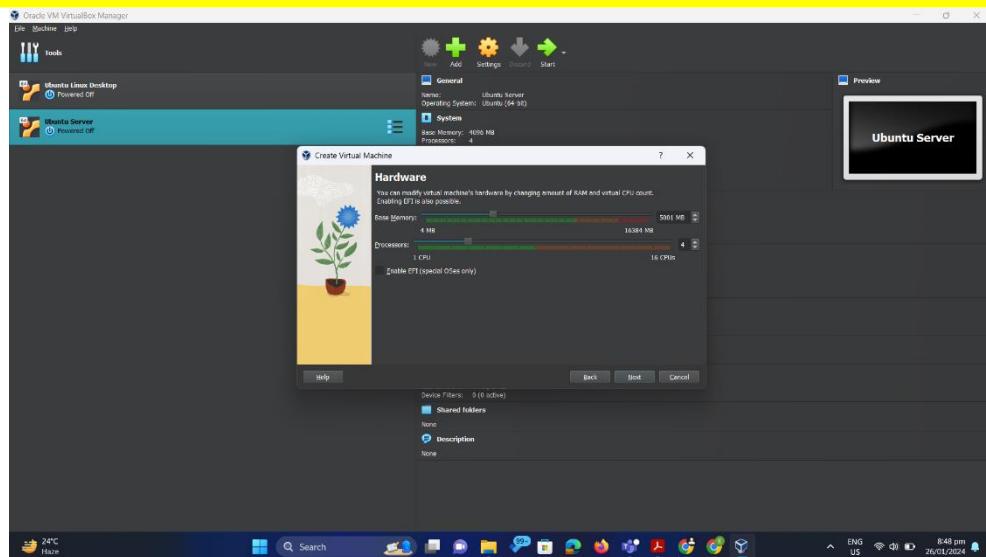


STEP 7: To secure your Ubuntu Linux Server you need to modify your username, password, and hostname. Change the Username, Password, and Hostname of your Ubuntu Linux Server. For this example, I set the username into “ubuntuServer”, Password to “21UR0280”, and hostname to “Ubuntu.” Then click next.

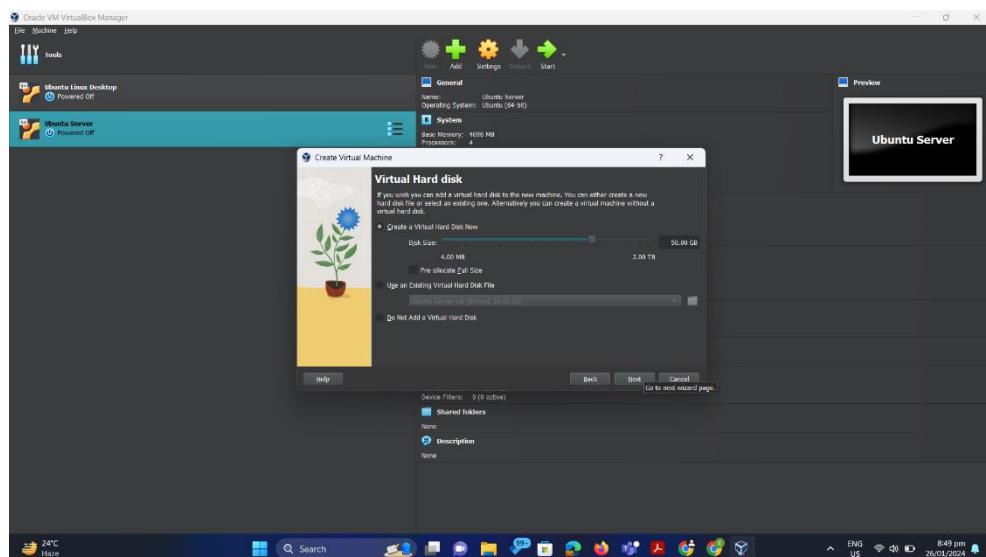


STEP 8: Set the amount of RAM and virtual CPU count of your Ubuntu Linux Server. For this example, I set the amount of RAM to “4096 MB” and CPU count to “4.” Then click “Next”





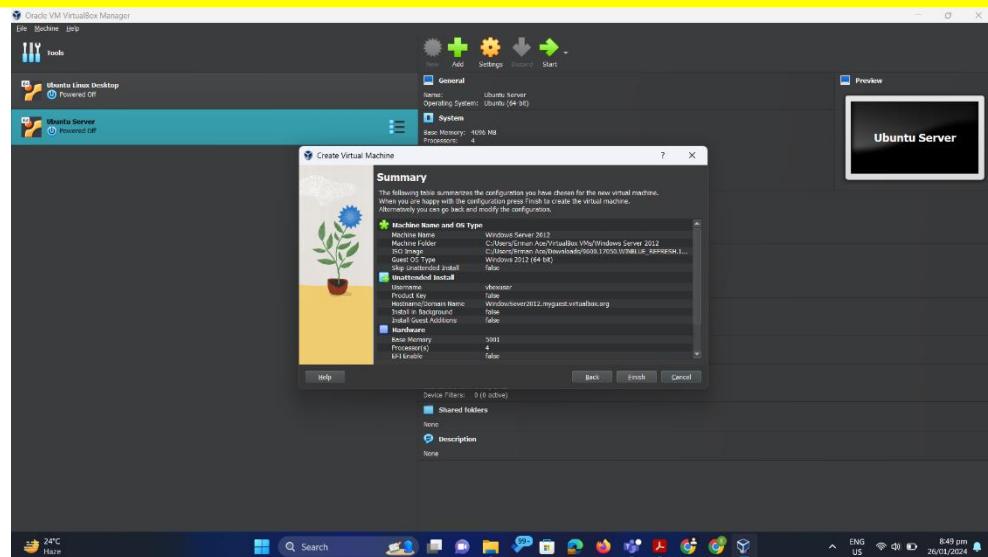
STEP 9: For Virtual Hard Disk. Choose the “Create a Virtual Hard Disk Now” then set your desire “Disk Size.” For this example, the disk size of Ubuntu Linux Server is “25.00GB.” Then click “Next.”



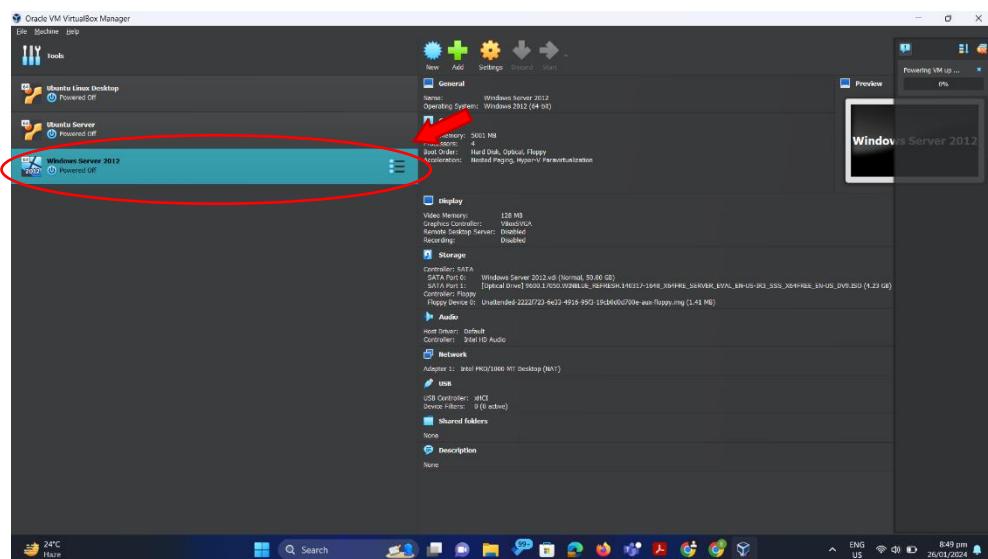
STEP 10: After setting up the necessary information for your Ubuntu Linux Server, the VirtualBox will now display a summary of the information you configured for your Ubuntu Linux Server. Double-check the details below, and if everything is correct, click the "Finish" button.



Study Guide in (Elective 1 – Systems and Network Administration 1)

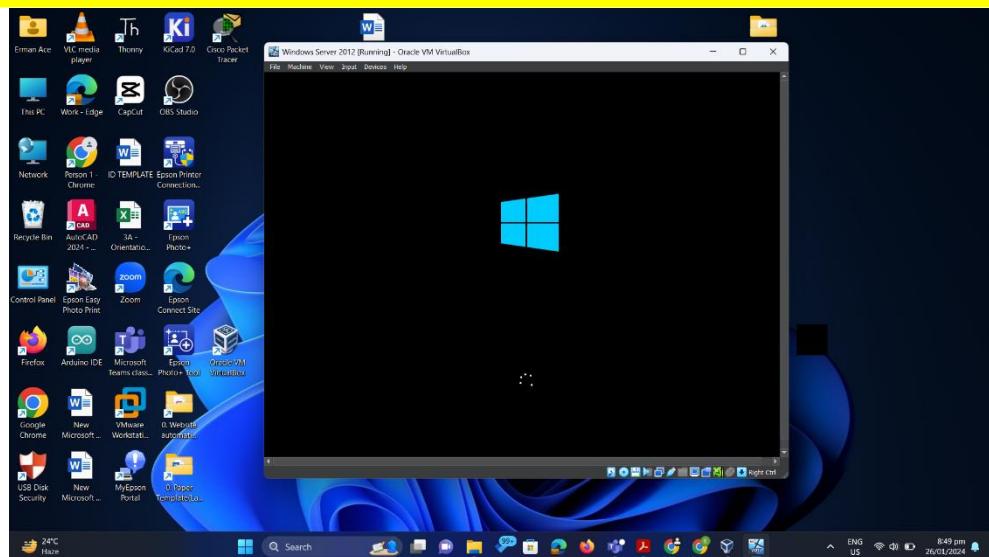
Module No. LabM01

STEP 11: You have successfully added the Ubuntu Linux Server to your VirtualBox. Please note that you have added the ISO of your Ubuntu Linux Server, and now you need to boot your Ubuntu Linux Server to start using it. To open your Ubuntu Linux Server, just double-click it and wait for it to start.

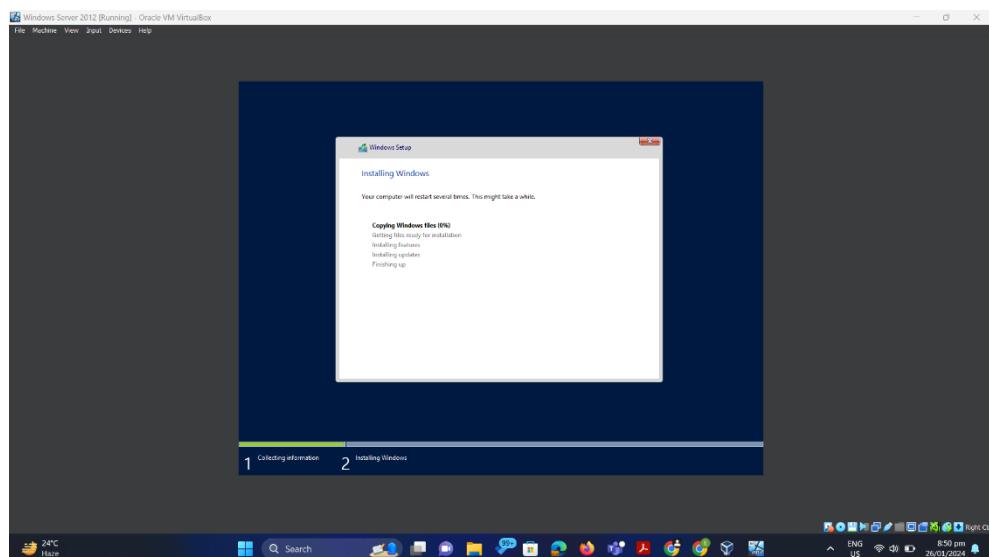


STEP 12: After Opening your Ubuntu Linux Server, wait for it to start up.



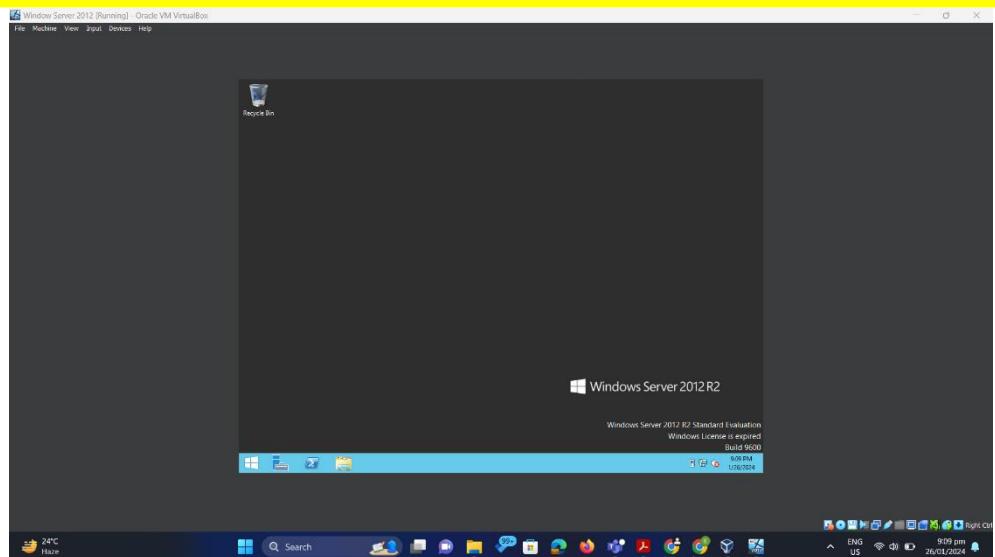


STEP 13: It will now start Installing the Windows Server. Wait for a couple of minutes until it is done installing.



STEP 14: After installing the Windows Server, you are now successfully added the windows server in your Virtual Box.





VIRTUAL INTERCONNECTION

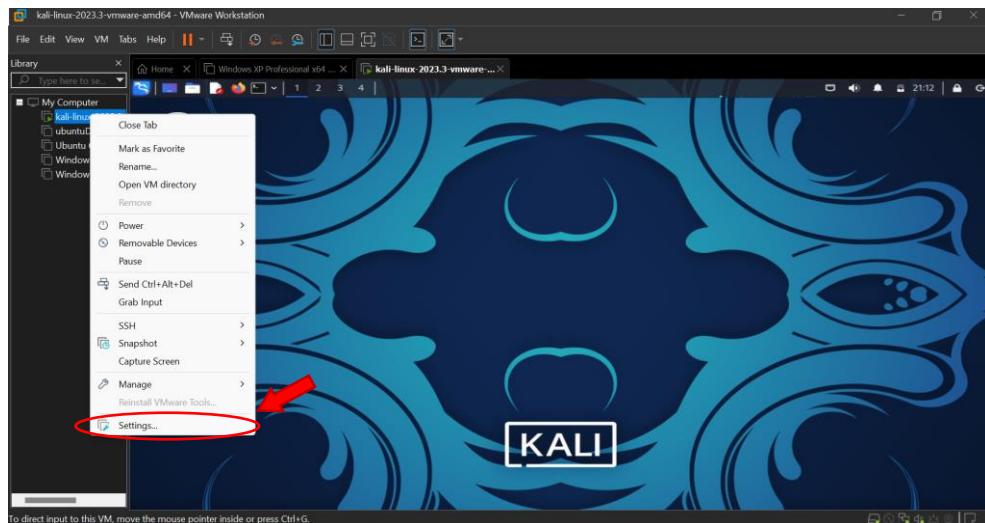
Physical to Virtual Interconnection

STEP 1: Open one of your Virtual Machine. For this example, I am going to use the Kali Linux

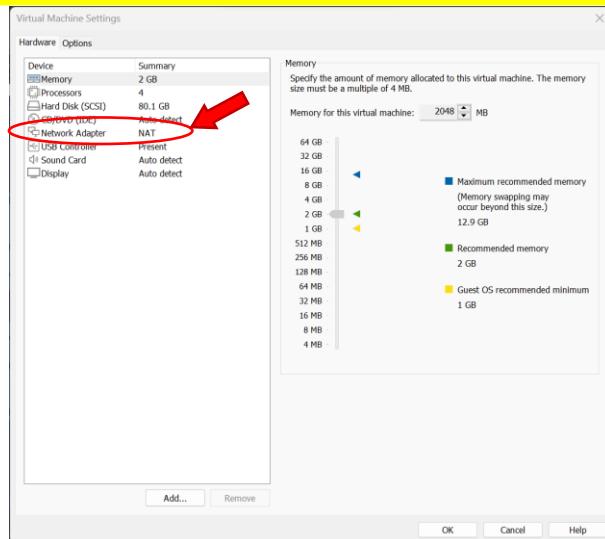


STEP 2: Setup your Virtual Machine. Make sure that the Network Adapter of your Virtual Machine is "NAT." Following step below on how you are going to change your Network Adapter into NAT.

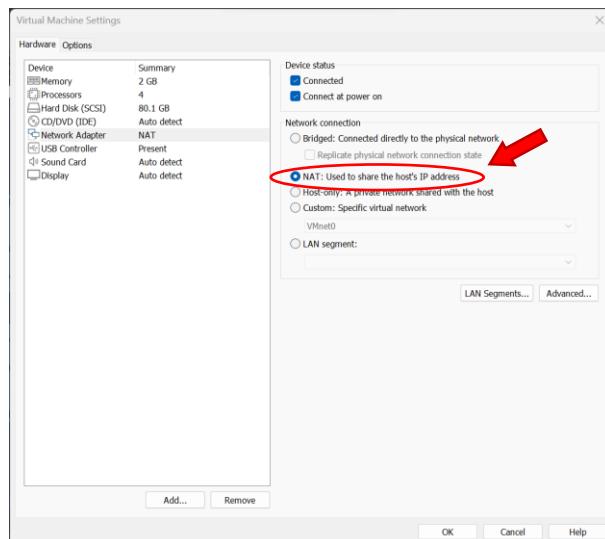
- Go to the library of your VMware and right click on your Virtual Machine and select "Settings".



- Select the Network Adapter.



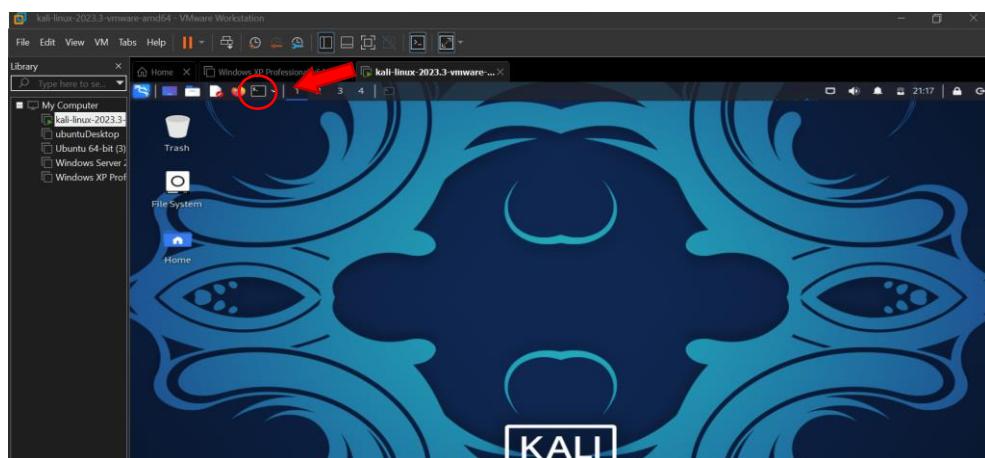
- c. Select the NAT then click “Apply” and “OK.”



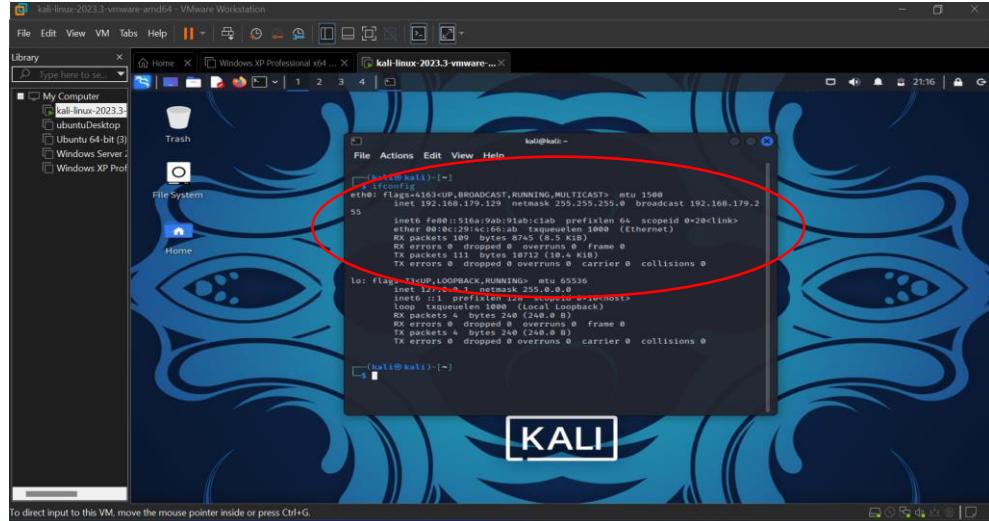
STEP 3: Connect your Virtual Machine and your computer to the same network. Then get the IP Address of your both machines.

a. Virtual Machine

- Open the terminal of your Virtual Machine.



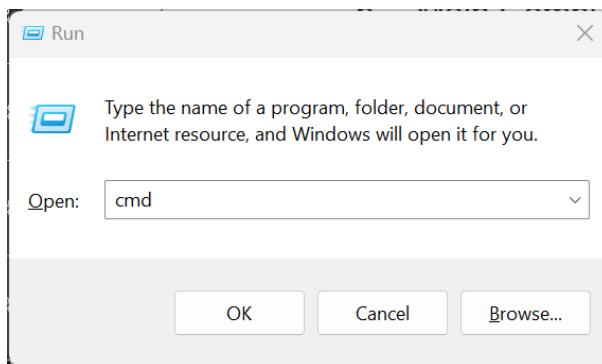
- Since we use the Kali Linux as our Virtual Machine use the command “ifconfig” to get the IP Address of your Virtual Machine.



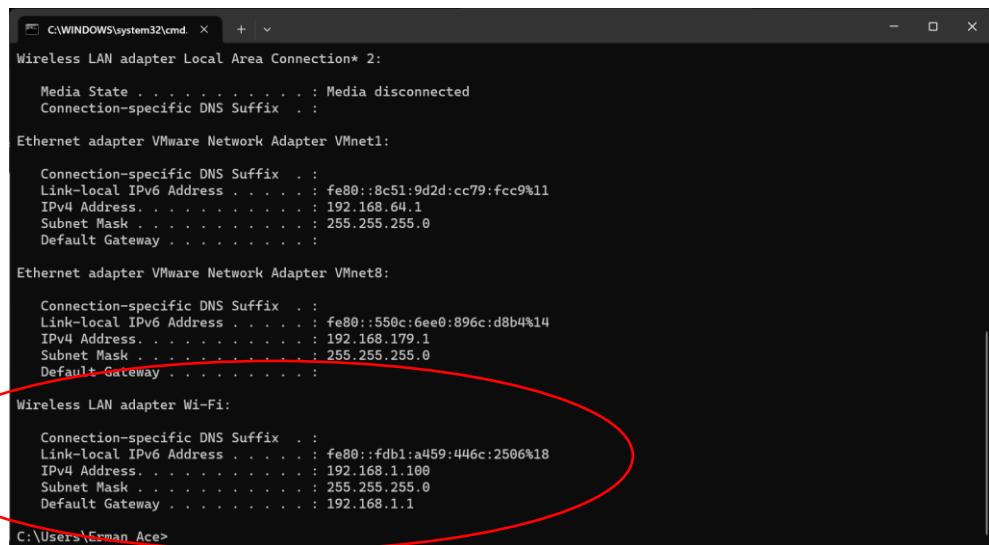
The IP Address of our virtual machine is “192.168.179.129”

b. Main Computer

- Open your Command Line by use the “Windows + R.” then enter “cmd.” Then click “OK.”



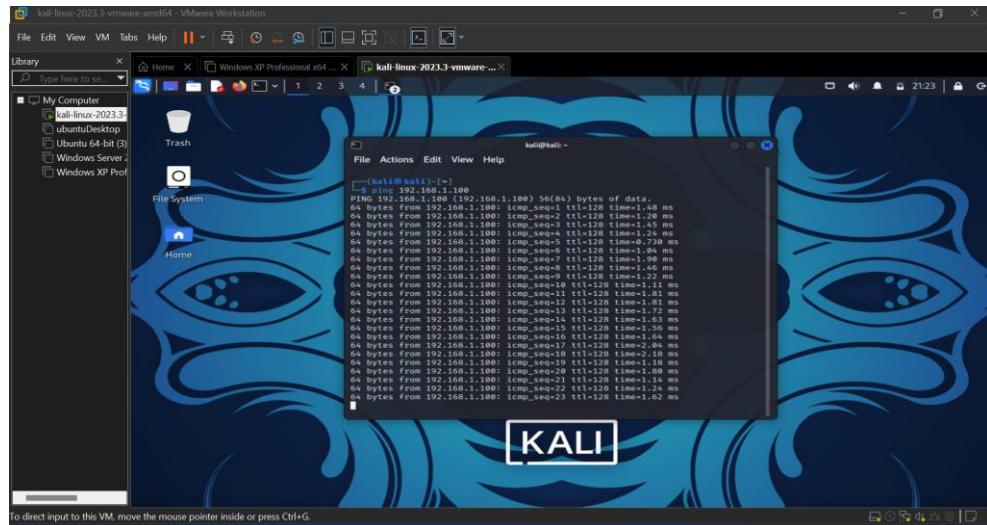
- Use the command “ipconfig” to get the IP Address of your Machine. Then select the IP of your “Wireless LAN adapter Wi-Fi.”



The IP Address of the computer is “192.168.1.100”

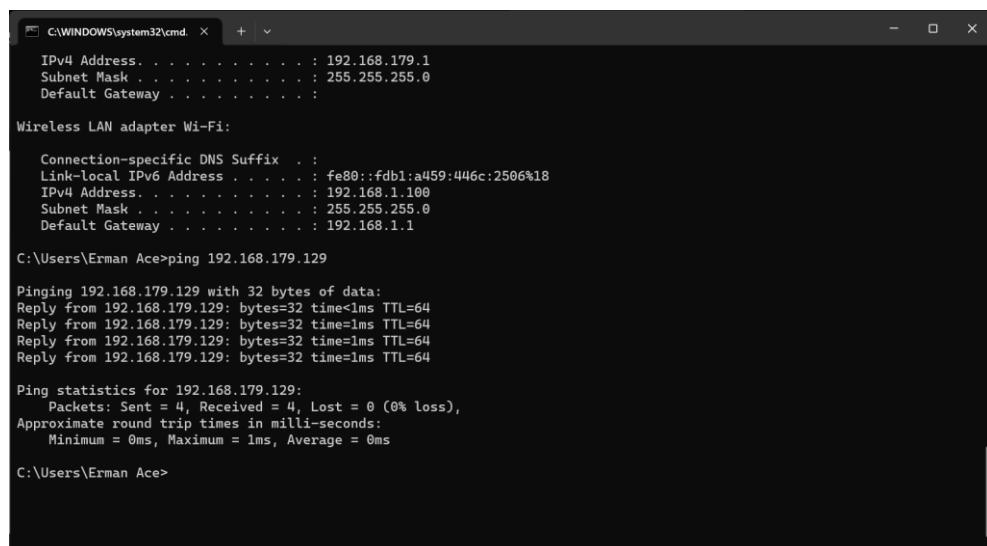
STEP 4: Try to Interconnect the Physical Machine and the Virtual Machine. Go to the command line and use the command “ping <ip address of the other machine>”

a. Virtual Machine Interconnect to Physical Machine



As you can see, we successfully interconnect the Virtual Machine to Physical Machine.

b. Physical Machine Interconnect to Virtual Machine



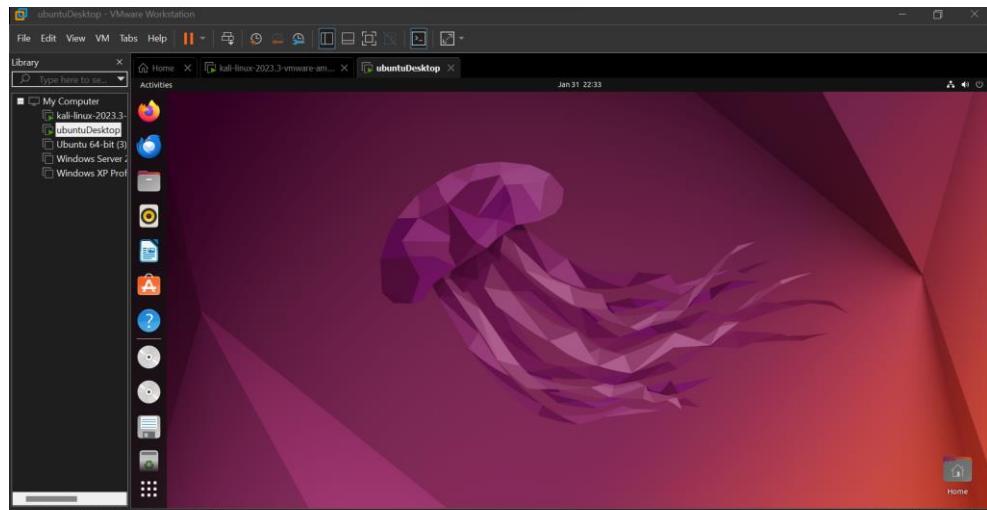
As you can see, we successfully interconnect the Physical Machine to Virtual Machine.

As you can see in the result in pinging above, both the Virtual Machine and Physical Machine can interconnect to each other.



Virtual to Virtual

STEP 1: Turn on your desired two virtual machines. For this example, I am going to use Kali Linux and Ubuntu Desktop.



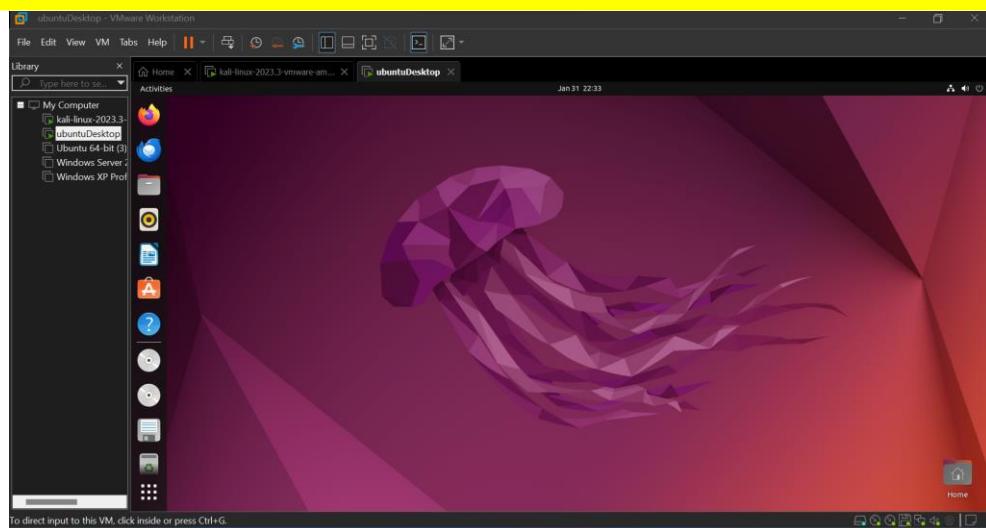
Ubuntu Desktop



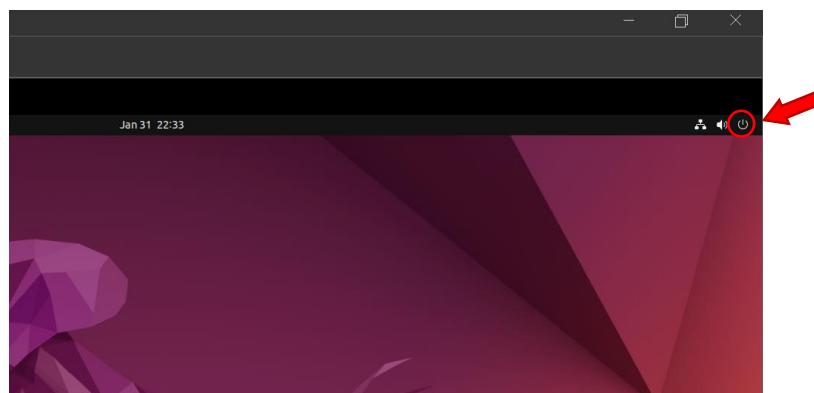
Kali Linux

STEP 2: Go to your first virtual machine. In this example, I will be using Ubuntu Desktop as the initial virtual machine.

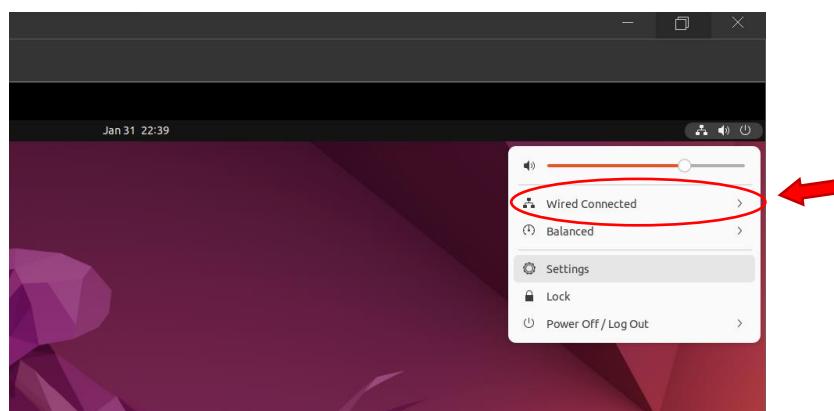




STEP 3: Go to your upper right corner of your Ubuntu Desktop and click the power button.

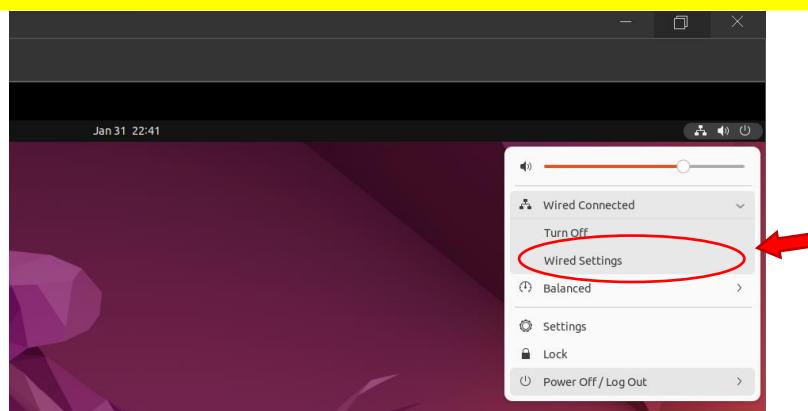


STEP 4: Then click “Wired Connected.”

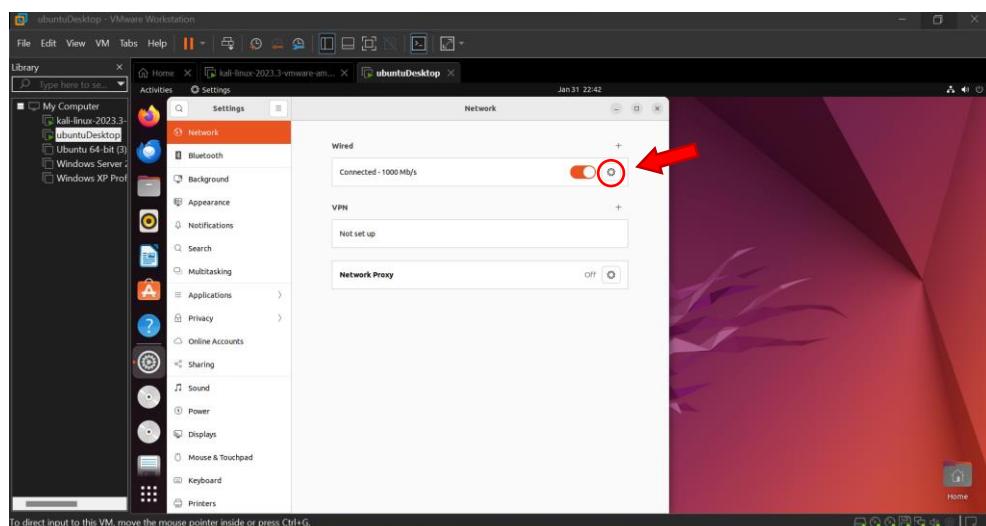


STEP 5: Then click “Wired Settings.”

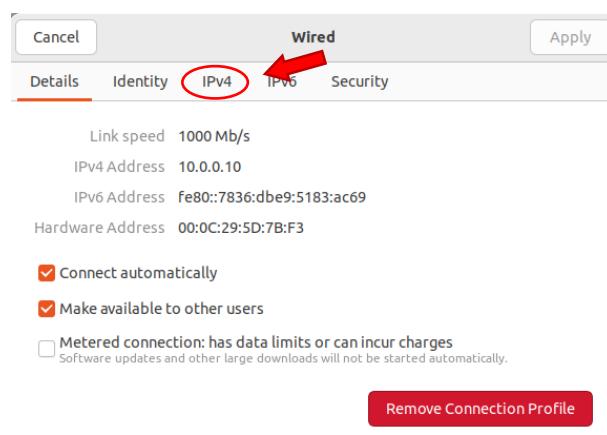




STEP 6: Check the “Wired” Setting and click the setting button (next to the toggle switch).

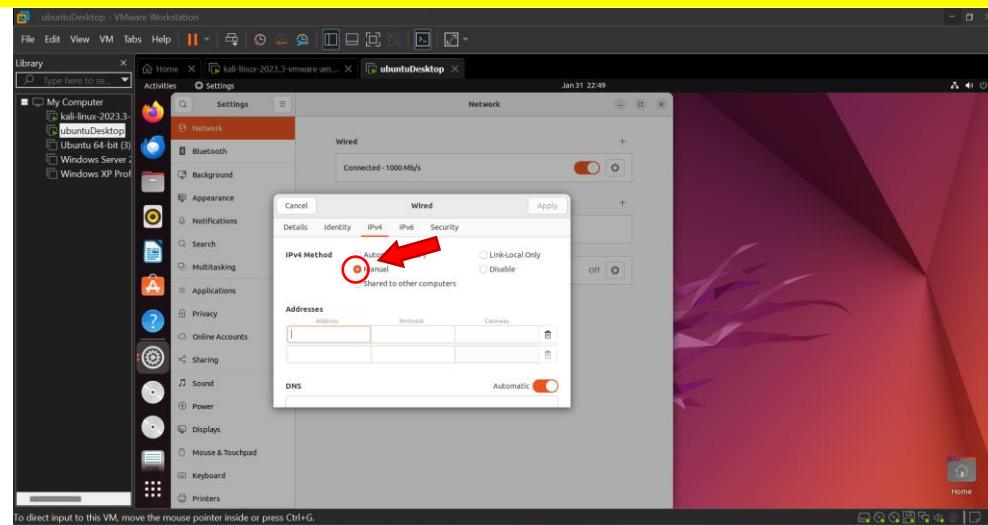


STEP 7: Then click “IPv4.”

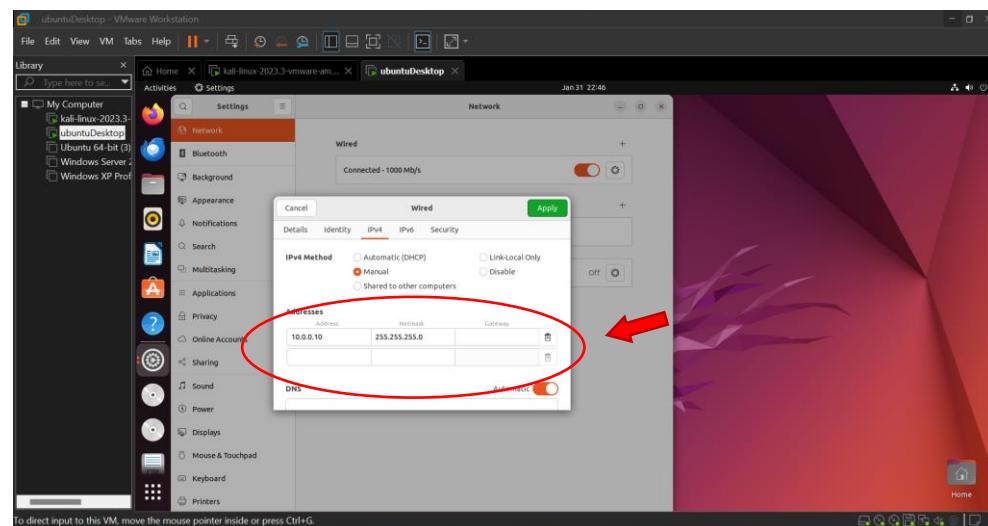


STEP 8: Go to the IPv4 Method then Click Manual.





STEP 9: In “Addresses” tab, set your “Address” to 10.0.0.10 and “Netmask” to 255.255.255.0 then click “Apply.”



STEP 10: Then turned off and on (the Toggle Switch) in Wired Setting.



STEP 11: After setting up the IP Address of your First Virtual Machine (Ubuntu Desktop), now you are going to set up the IP Address of your Second Virtual Machine (Kali Linux).



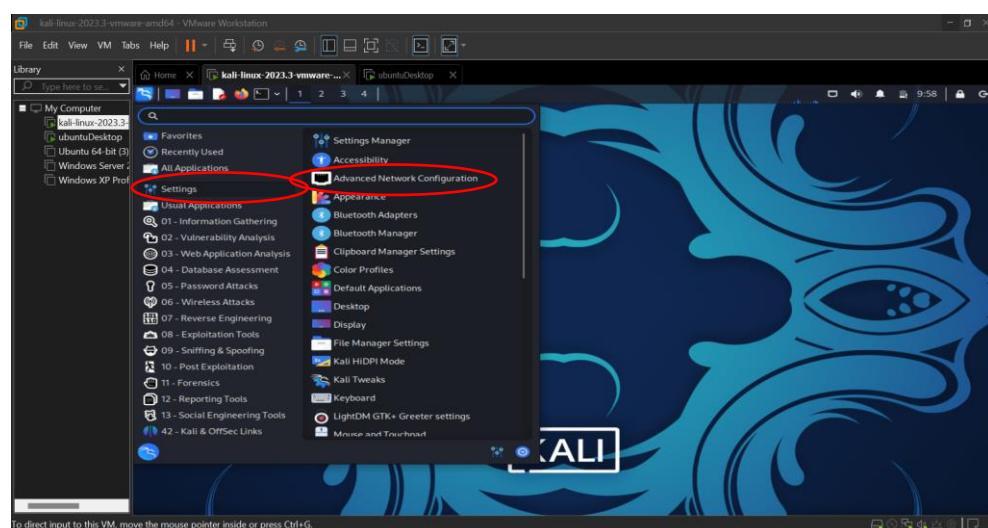
Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

STEP 12: On the Upper Left Corner of your Kali Linux Virtual Machine, click the icon.

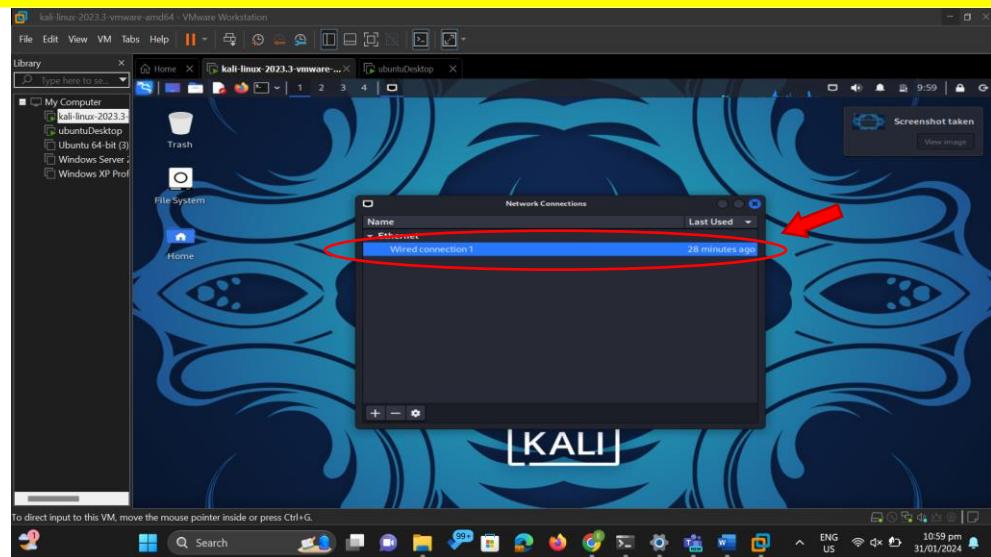


STEP 13: Go to “Settings” and click “Advanced Network Configuration.”

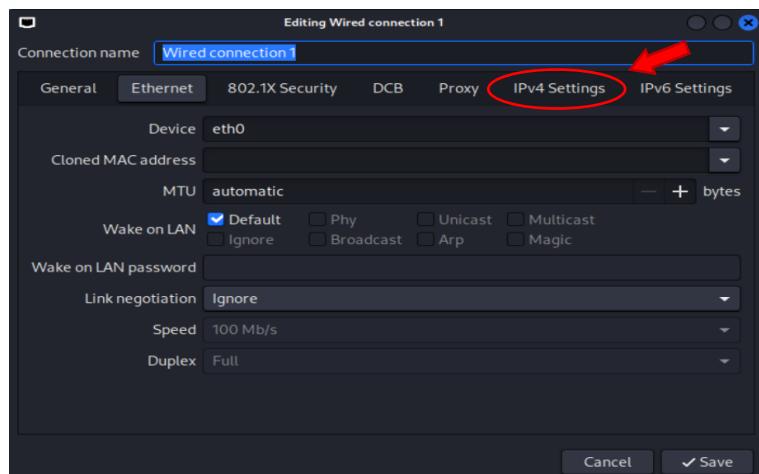


STEP 14: Click the “Wired Connection 1”

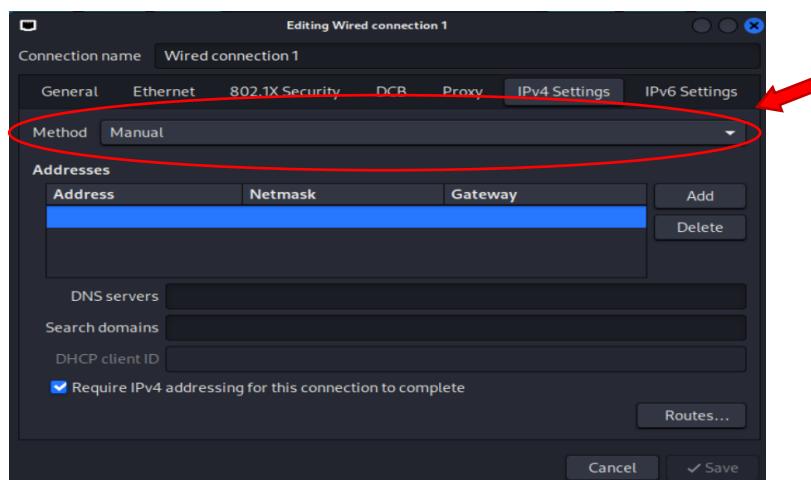




STEP 15: Go to “IPv4 Settings”



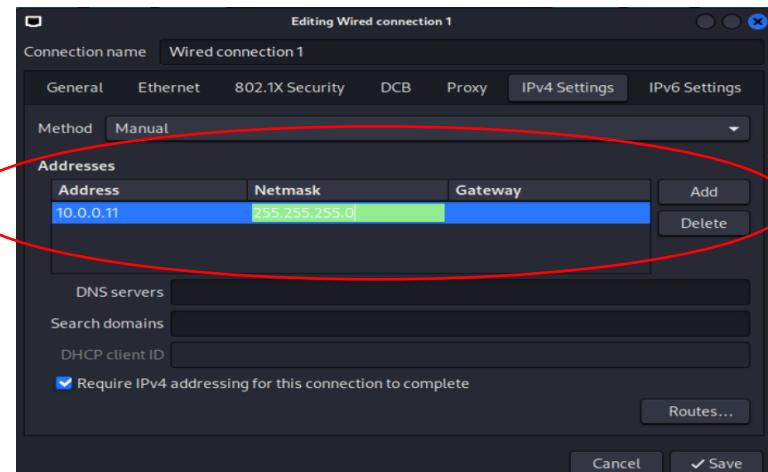
STEP 16: Change the Method into “Manual”



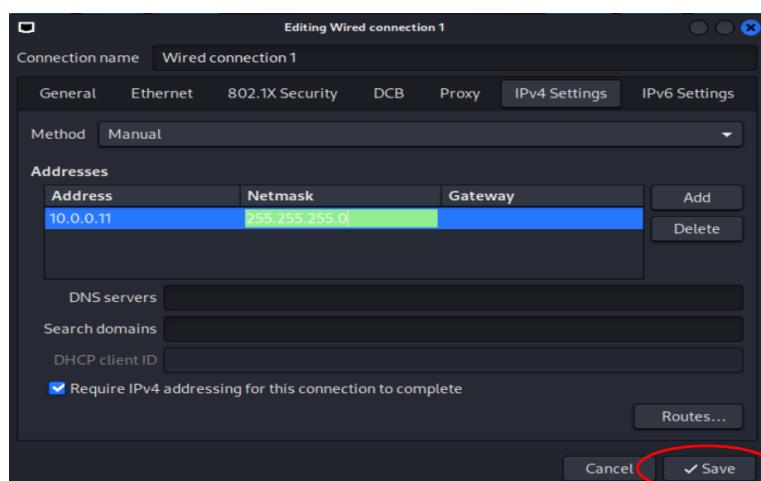
STEP 17: Go to “Addresses” and set the “Address” to “10.0.0.11” and the Netmask to “255.255.255.0.” Please note that the network addresses for both virtual machines should be similar (for this example, we use 10.0.0.___), and the Netmask should be identical as well (255.255.255.0).



Ensure consistency in addressing to establish proper communication between the two virtual machines. This step is crucial for the configuration of a harmonized network environment, promoting effective data exchange and collaboration.

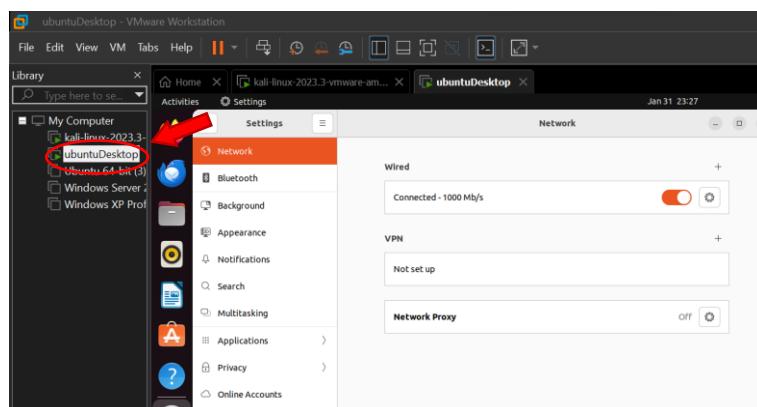


STEP 18: Then click save.



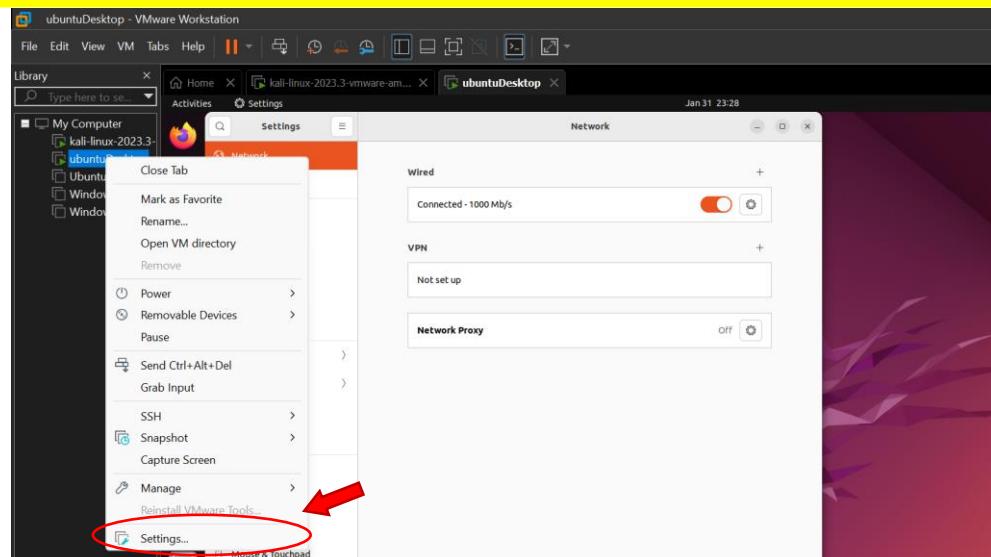
STEP 19: Connect the Ubuntu Desktop to the Virtual Switch.

- Go to library and right-click on Ubuntu Desktop

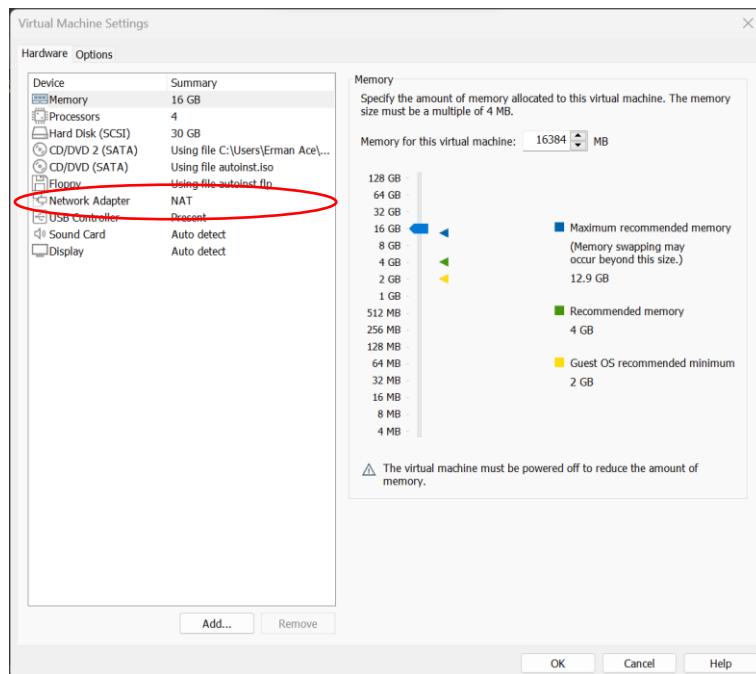


- Click Settings



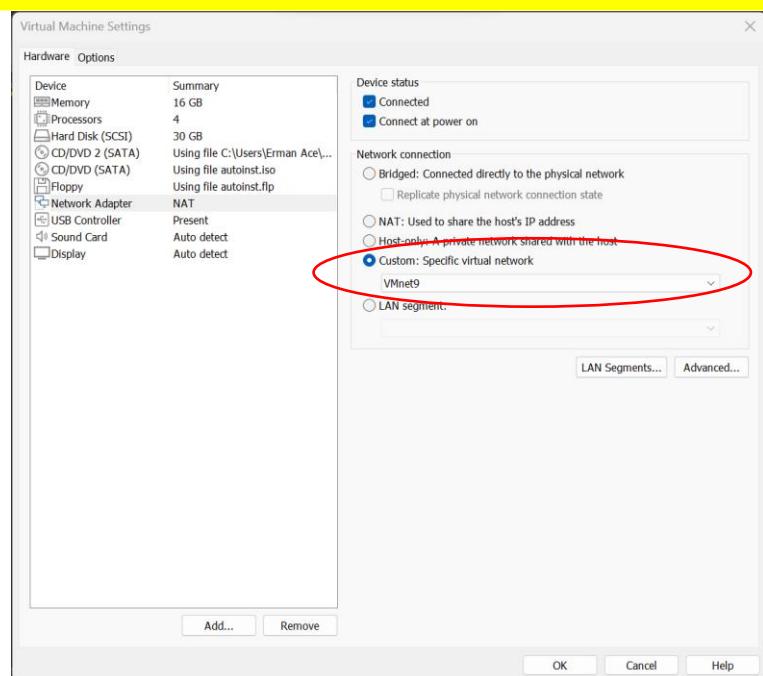


c. Go to “Network Adapter”

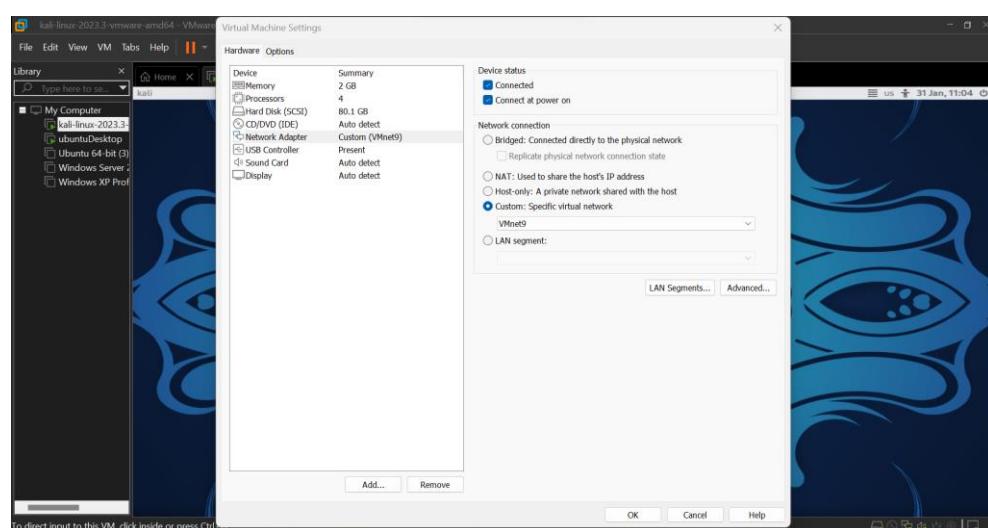


d. Click “Custom” and select your virtual Network. Note that you are not allowed to use the “VMnet1” and “VMnet8.” For this example, I select the “VMnet9” (You need to remember what virtual network you choose for this virtual machine). Then select “OK”





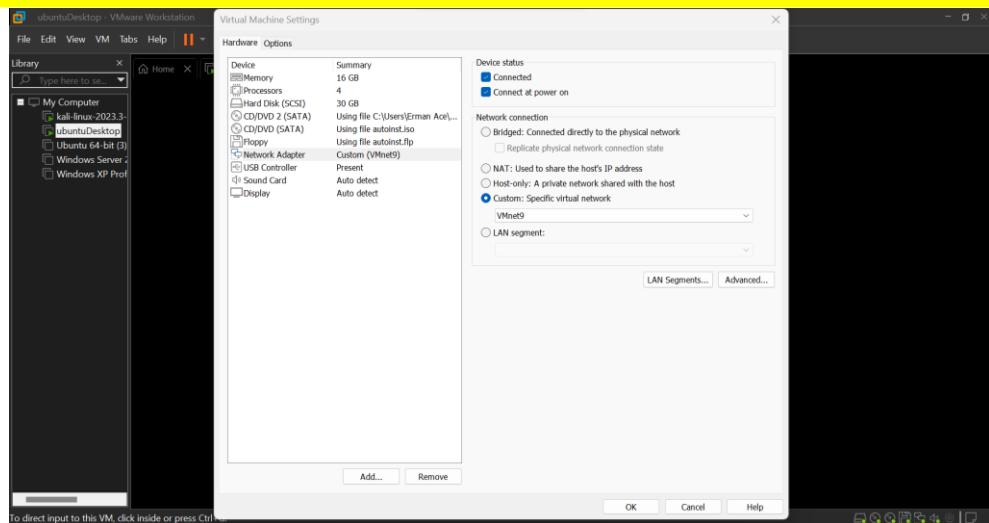
STEP 20: Connect the Kali Linux to the Virtual Switch. Follow the same procedure in STEP 19 into your Kali Linux. You need to make sure that both of your Virtual Machines are connected to same Virtual Network.



Kali Linux Network Adapter



Study Guide in (Elective 1 – Systems and Network Administration 1)

Module No. LabM01

Ubuntu Desktop Network Adapter.

STEP 21: We are now going to check if these two virtual machines are connected. We will going to use the “ping” command to check if this two virtual machines are connected. Before we do that, we need to make sure that both machines:

- Have a same IP address Network (For this example 10.0.0.____)
- Have a same Netmask (For this example 255.255.255.0)
- Are connected in one Virtual Network (For this example vmnet9)

If these three conditions satisfy. You can now start checking if both machines are connected to each other.

To ping each Virtual Machine, we need to go to terminal then type

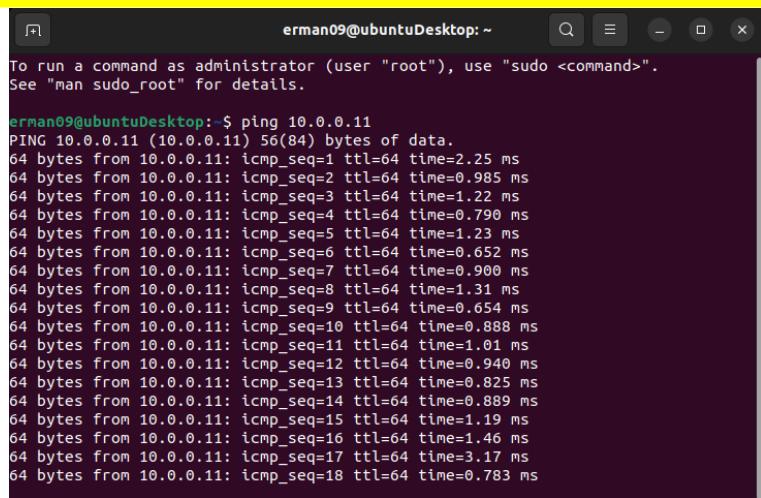
ping <ip address of another machine>

```
erman09@ubuntuDesktop:~$ ping 10.0.0.11
PING 10.0.0.11 (10.0.0.11) 56(84) bytes of data.
64 bytes from 10.0.0.11: icmp_seq=1 ttl=64 time=2.25 ms
64 bytes from 10.0.0.11: icmp_seq=2 ttl=64 time=0.985 ms
64 bytes from 10.0.0.11: icmp_seq=3 ttl=64 time=1.22 ms
64 bytes from 10.0.0.11: icmp_seq=4 ttl=64 time=0.790 ms
64 bytes from 10.0.0.11: icmp_seq=5 ttl=64 time=1.23 ms
64 bytes from 10.0.0.11: icmp_seq=6 ttl=64 time=0.652 ms
64 bytes from 10.0.0.11: icmp_seq=7 ttl=64 time=0.900 ms
64 bytes from 10.0.0.11: icmp_seq=8 ttl=64 time=1.31 ms
64 bytes from 10.0.0.11: icmp_seq=9 ttl=64 time=0.654 ms
64 bytes from 10.0.0.11: icmp_seq=10 ttl=64 time=0.888 ms
64 bytes from 10.0.0.11: icmp_seq=11 ttl=64 time=1.01 ms
64 bytes from 10.0.0.11: icmp_seq=12 ttl=64 time=0.940 ms
64 bytes from 10.0.0.11: icmp_seq=13 ttl=64 time=0.825 ms
64 bytes from 10.0.0.11: icmp_seq=14 ttl=64 time=0.889 ms
64 bytes from 10.0.0.11: icmp_seq=15 ttl=64 time=1.19 ms
64 bytes from 10.0.0.11: icmp_seq=16 ttl=64 time=1.46 ms
64 bytes from 10.0.0.11: icmp_seq=17 ttl=64 time=3.17 ms
64 bytes from 10.0.0.11: icmp_seq=18 ttl=64 time=0.783 ms
```

STEP 22: Ping Kali Linux in Ubuntu Desktop. We will start in Ubuntu Desktop (having an IP Address of 10.0.0.10) and we are going to ping the Kali Linux (IP Address of 10.0.0.11), therefore we will going to use the command:

ping 10.0.0.11



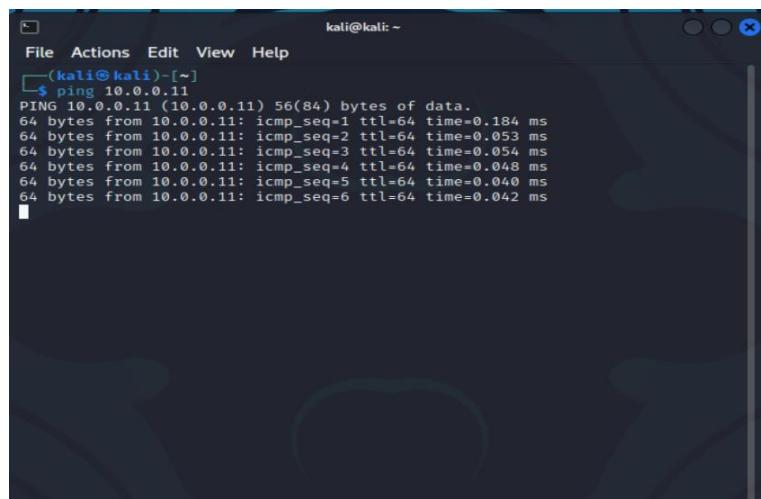


```
erman09@ubuntuDesktop:~$ ping 10.0.0.11
PING 10.0.0.11 (10.0.0.11) 56(84) bytes of data.
64 bytes from 10.0.0.11: icmp_seq=1 ttl=64 time=2.25 ms
64 bytes from 10.0.0.11: icmp_seq=2 ttl=64 time=0.985 ms
64 bytes from 10.0.0.11: icmp_seq=3 ttl=64 time=1.22 ms
64 bytes from 10.0.0.11: icmp_seq=4 ttl=64 time=0.790 ms
64 bytes from 10.0.0.11: icmp_seq=5 ttl=64 time=1.23 ms
64 bytes from 10.0.0.11: icmp_seq=6 ttl=64 time=0.652 ms
64 bytes from 10.0.0.11: icmp_seq=7 ttl=64 time=0.900 ms
64 bytes from 10.0.0.11: icmp_seq=8 ttl=64 time=1.31 ms
64 bytes from 10.0.0.11: icmp_seq=9 ttl=64 time=0.654 ms
64 bytes from 10.0.0.11: icmp_seq=10 ttl=64 time=0.888 ms
64 bytes from 10.0.0.11: icmp_seq=11 ttl=64 time=1.01 ms
64 bytes from 10.0.0.11: icmp_seq=12 ttl=64 time=0.940 ms
64 bytes from 10.0.0.11: icmp_seq=13 ttl=64 time=0.825 ms
64 bytes from 10.0.0.11: icmp_seq=14 ttl=64 time=0.889 ms
64 bytes from 10.0.0.11: icmp_seq=15 ttl=64 time=1.19 ms
64 bytes from 10.0.0.11: icmp_seq=16 ttl=64 time=1.46 ms
64 bytes from 10.0.0.11: icmp_seq=17 ttl=64 time=3.17 ms
64 bytes from 10.0.0.11: icmp_seq=18 ttl=64 time=0.783 ms
```

As you can see above, we successfully ping the Kali Linux from Ubuntu Desktop.

STEP 23: Ping Ubuntu Desktop in Kali Linux. To ping Ubuntu Desktop from Kali Linux, we are going to use the command:

ping 10.0.0.10



```
(kali㉿kali)-[~]
File Actions Edit View Help
ping 10.0.0.10
PING 10.0.0.10 (10.0.0.10) 56(84) bytes of data.
64 bytes from 10.0.0.10: icmp_seq=1 ttl=64 time=0.184 ms
64 bytes from 10.0.0.10: icmp_seq=2 ttl=64 time=0.053 ms
64 bytes from 10.0.0.10: icmp_seq=3 ttl=64 time=0.054 ms
64 bytes from 10.0.0.10: icmp_seq=4 ttl=64 time=0.048 ms
64 bytes from 10.0.0.10: icmp_seq=5 ttl=64 time=0.040 ms
64 bytes from 10.0.0.10: icmp_seq=6 ttl=64 time=0.042 ms
```

As you can see above, we successfully ping the Ubuntu Desktop from Kali Linux.



SUMMARY / CONCLUSION

In not more than three paragraphs, with four to five sentences per paragraph, place your conclusion here. (delete this sentence later.)

Virtualization software, such as VirtualBox and VMware, facilitates the operation of multiple operating systems on a single computer. This laboratory activity has provided me with insights into installing various operating systems on both VirtualBox and VMware, as well as utilizing these platforms effectively. This knowledge proves invaluable, especially when experimenting with alternative operating systems like Linux, eliminating the need to purchase additional hardware or reinstall operating systems on the primary computer. This is highly efficient, especially when we aim to explore the various available operating systems.



Furthermore, these virtualization tools allow us to establish connections between virtual machines and our physical machine, enabling the setup of a unified network. The exploration of different network adapters for virtual machines has expanded our understanding of networking within these environments. Additionally, we have learned to configure static IP addresses for diverse operating systems, facilitating seamless communication. Notably, despite the disparity in operating systems, the interconnectedness of virtual machines has been successfully demonstrated.

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