My Home Virtual IT Lab Project

This guide walks you through how I personally set up my own virtual IT lab at home using Oracle VirtualBox. It's the same detailed setup I use to experiment, test, and build IT environments right from my computer — without needing racks of physical hardware.

Index

Virtualization Overview

So, what exactly is virtualization? In the simplest form, it means running multiple computers virtually on a single system. Your physical PC acts as the host, while the virtual machines (VMs) run inside it as separate, self-contained systems. Each VM can have its own operating system, configuration, and network — giving you the freedom to simulate complex environments without needing multiple devices.

Think of it as running a full-blown computer inside another. This flexibility makes virtualization perfect for IT labs, development, and cybersecurity practice — all without risking your main computer.

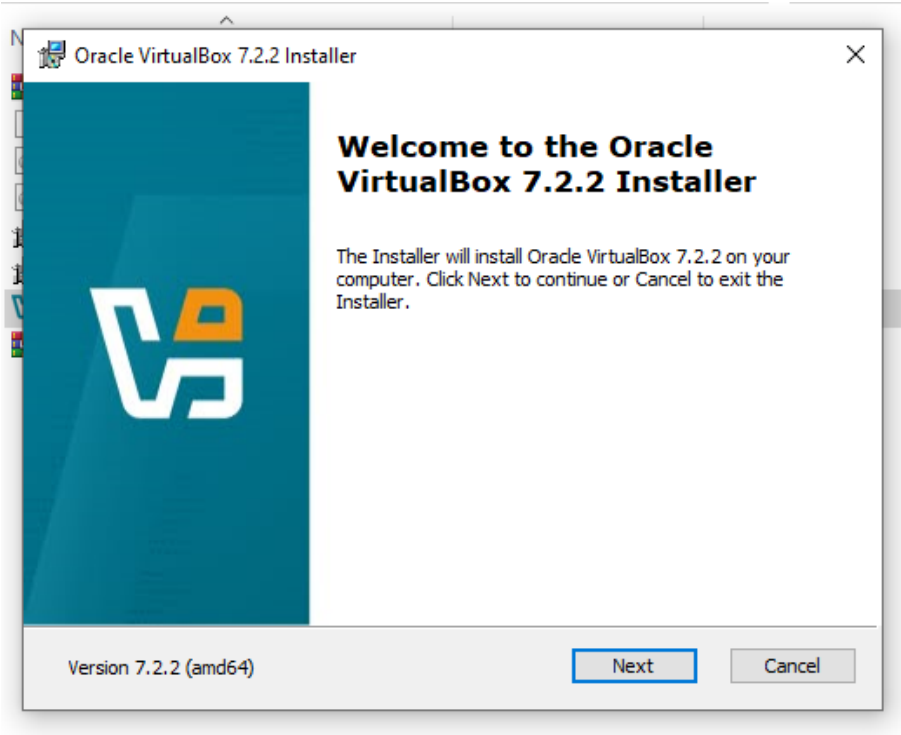
Free Virtualisation Software

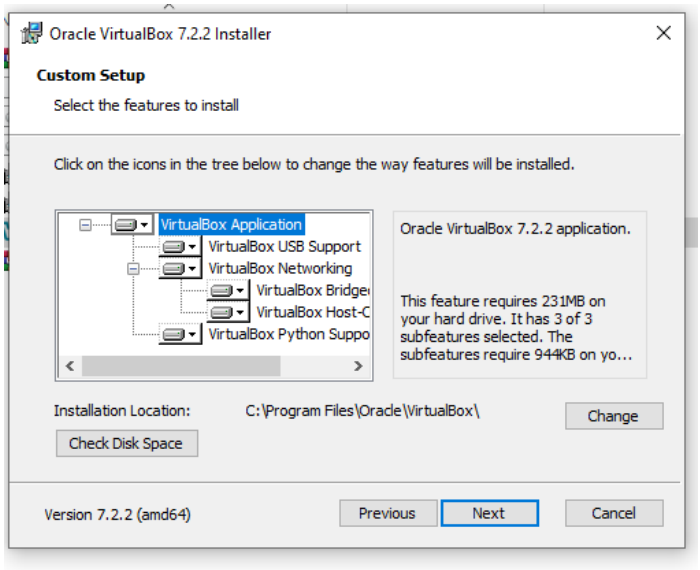
There are many virtualization tools available — VMware, Hyper-V, and Parallels among others — but for this project, I chose Oracle VM VirtualBox. It's free, open-source, and works well on both Windows and Linux.

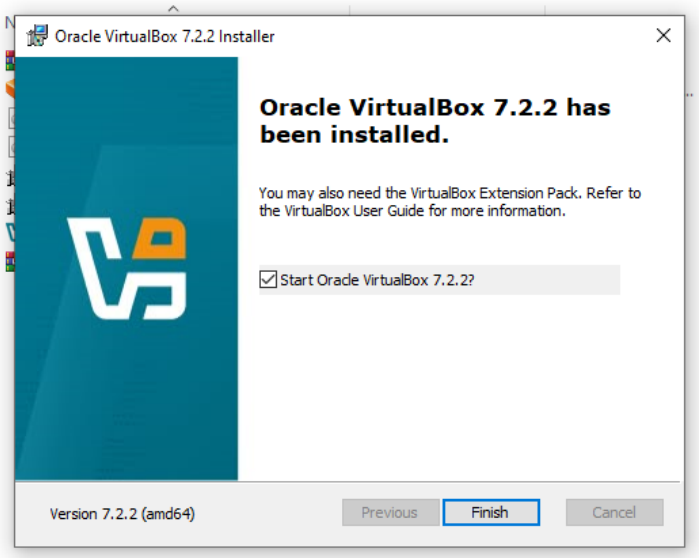
You can use any tool you prefer; the setup process is usually similar across most virtualization platforms.

Downloading and Installing VirtualBox

I downloaded Oracle VM VirtualBox from the official Oracle website. After the download completed, I ran the setup using all the default options. Whenever a prompt appeared, I simply clicked 'Yes' or 'Next'. When the installation finished, I launched VirtualBox to confirm it installed correctly.



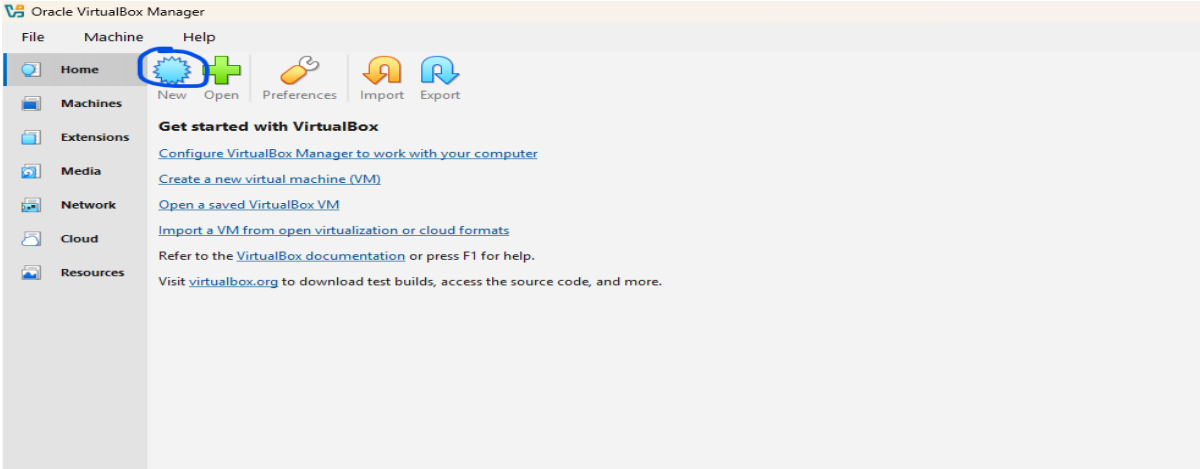




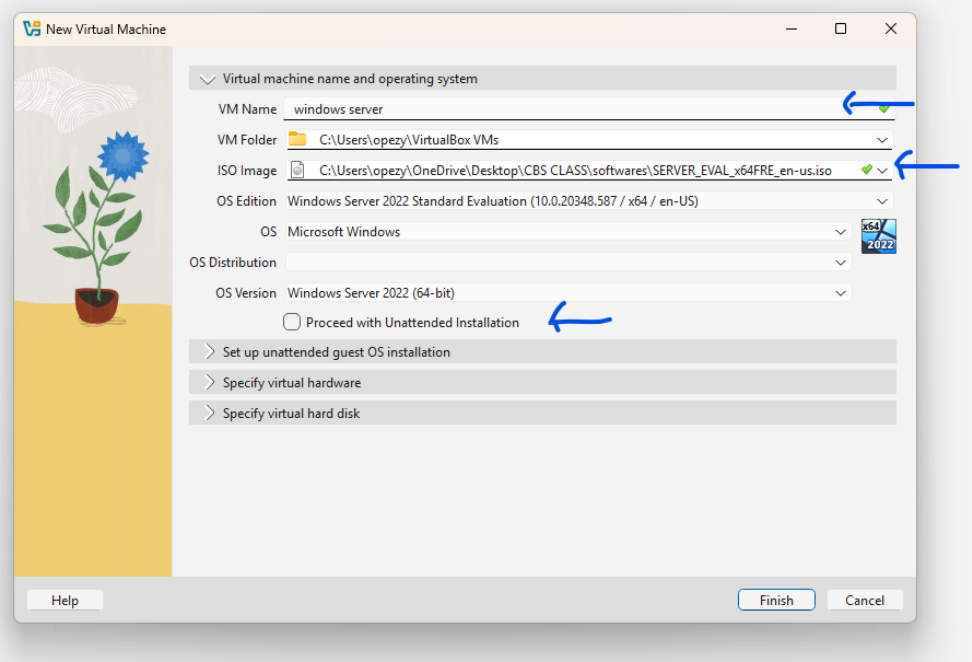
Creating a Virtual Machine

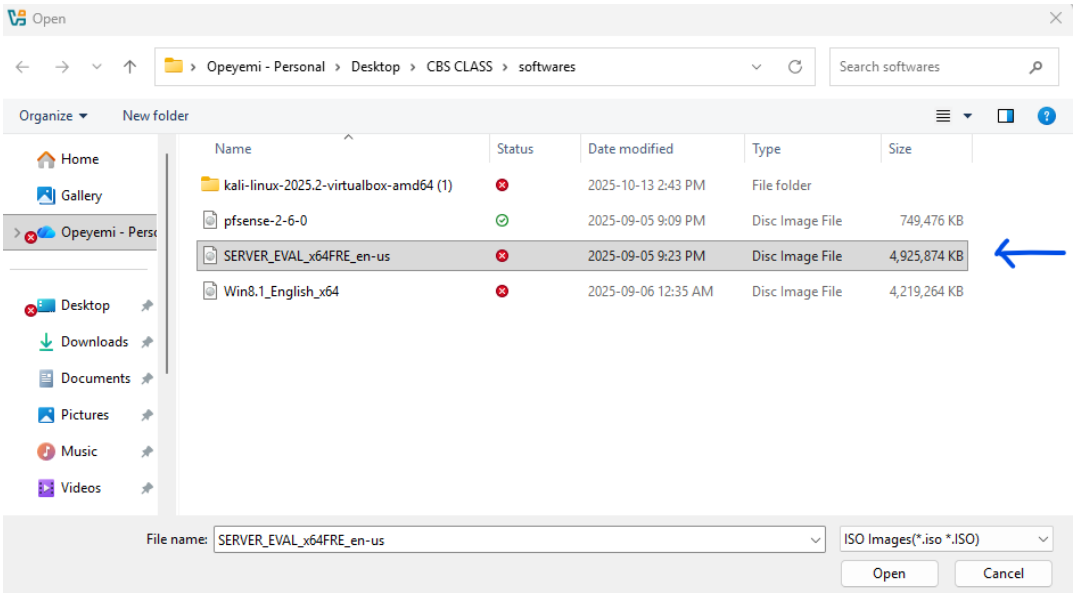
With VirtualBox ready, I created my first virtual machine.

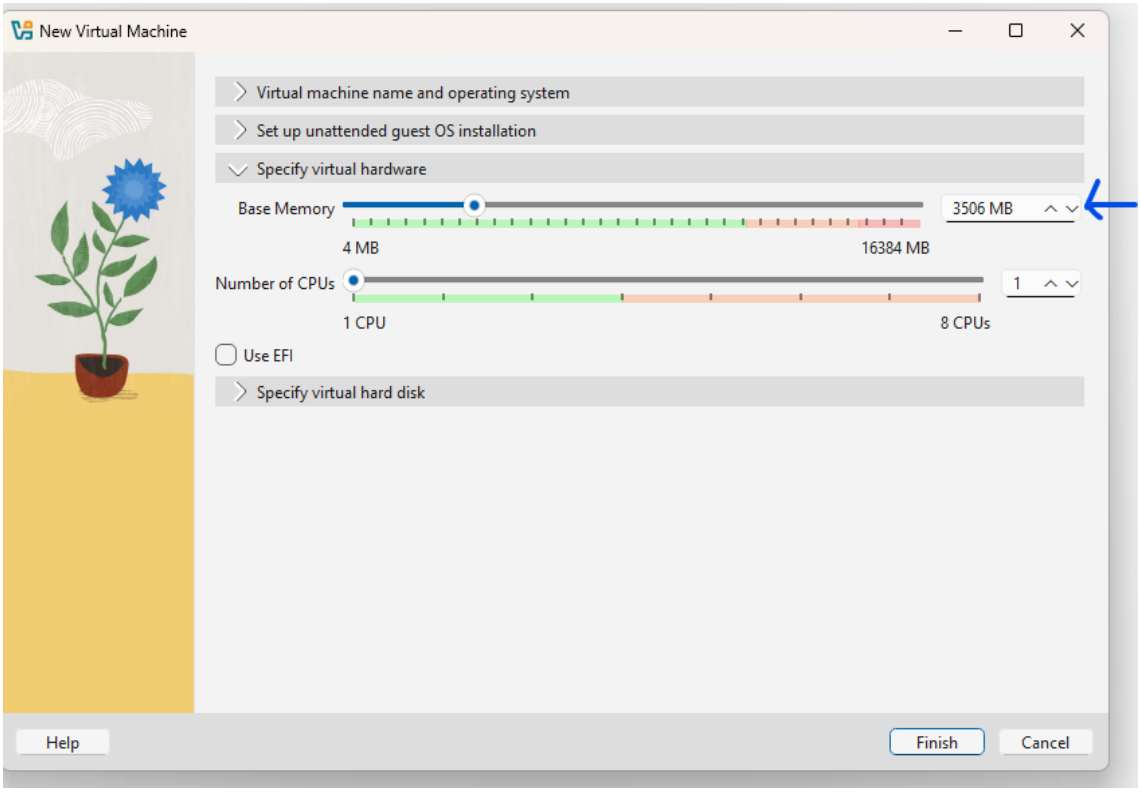
First we will install Windows Server, from the VirtualBox Manager, I clicked 'New', switched to Expert Mode, and entered the details. I named mine Windows server and allocated 3.5GB of RAM, and created a 50GB dynamically allocated virtual hard disk

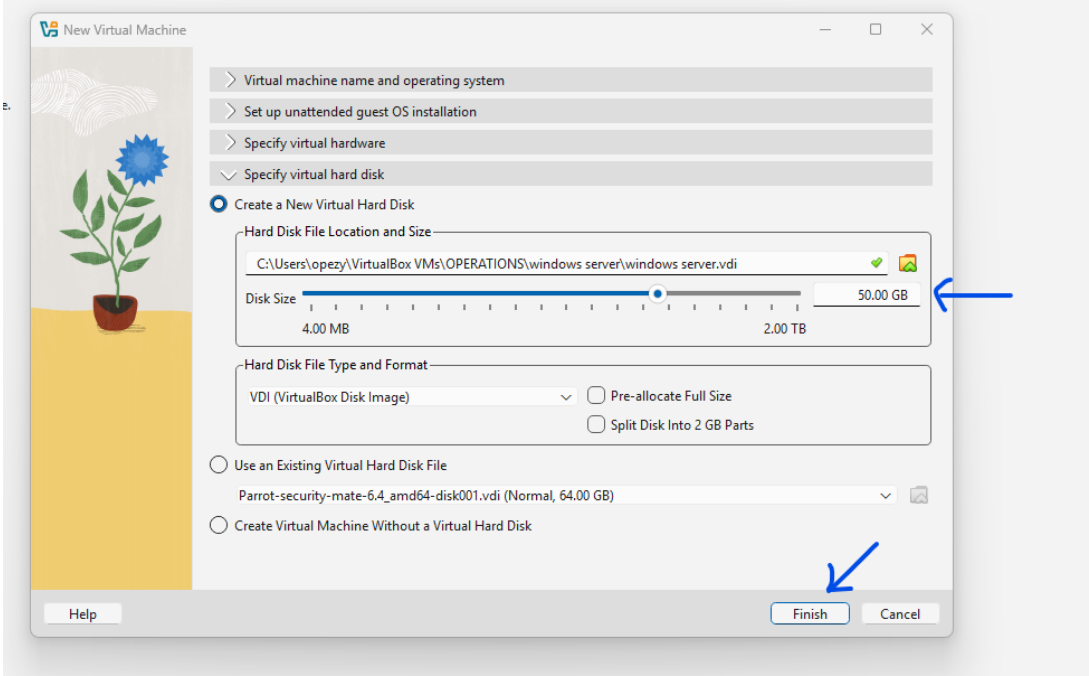


Select the windows ISO file from where its downloaded, uncheck unattended installation and click next

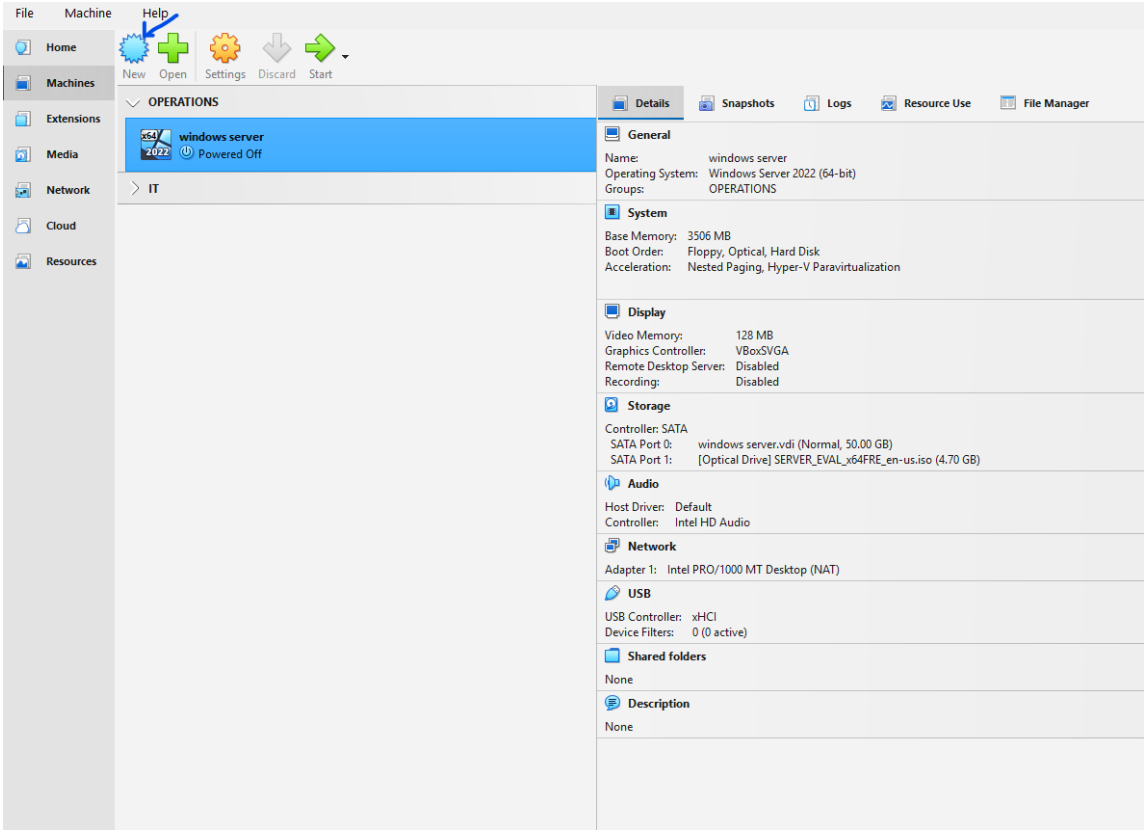


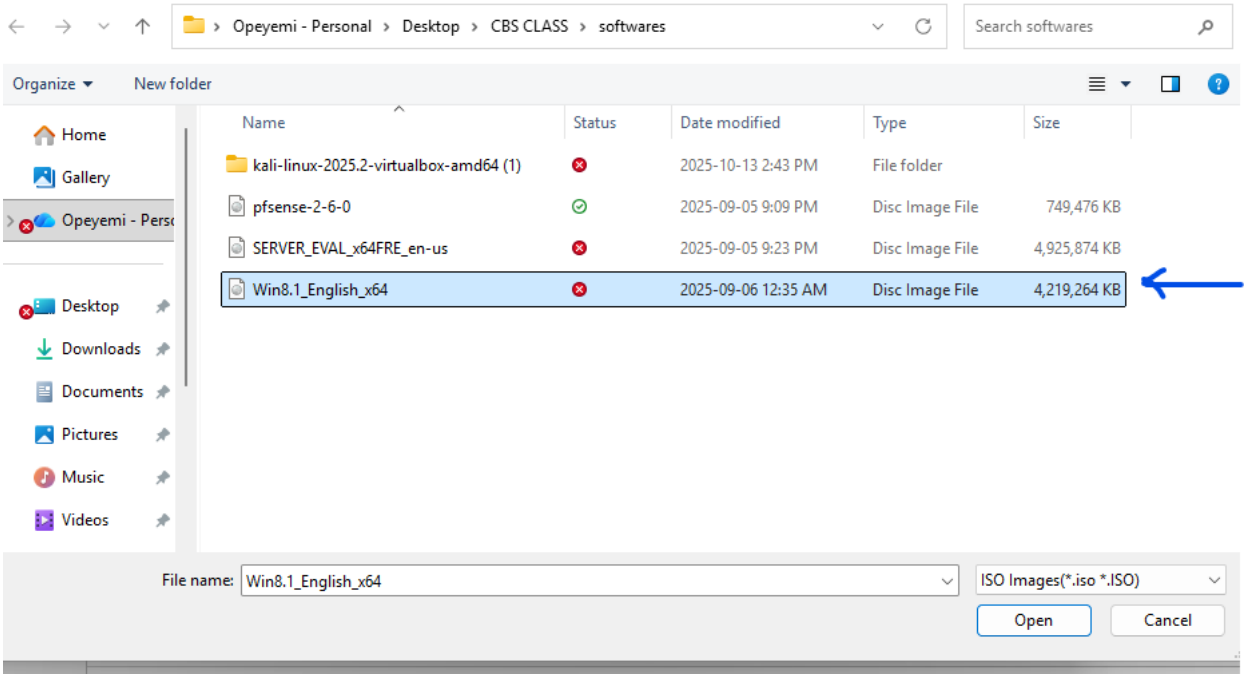

Open
Opeyemi - Personal › Desktop › CBS CLASS › softwares
Search softwares
Organize
New folder
Home
Gallery
Opeyemi - Pers
Desktop
Downloads
Documents
Pictures
Music
Videos
Name
Status
Date modified
Type
Size
kali-linux-2025.2-virtualbox-amd64 (1)
2025-10-13 2:43 PM
File folder
pfsense-2-6-0
2025-09-05 9:09 PM
Disc Image File
749,476 KB
SERVER_EVAL_x64FRE_en-us
2025-09-05 9:23 PM
Disc Image File
4,925,874 KB
Win8.1_English_x64
2025-09-06 12:35 AM
Disc Image File
4,219,264 KB
File name:
SERVER_EVAL_x64FRE_en-us
ISO Images(*.iso *.ISO)
Open
Cancel

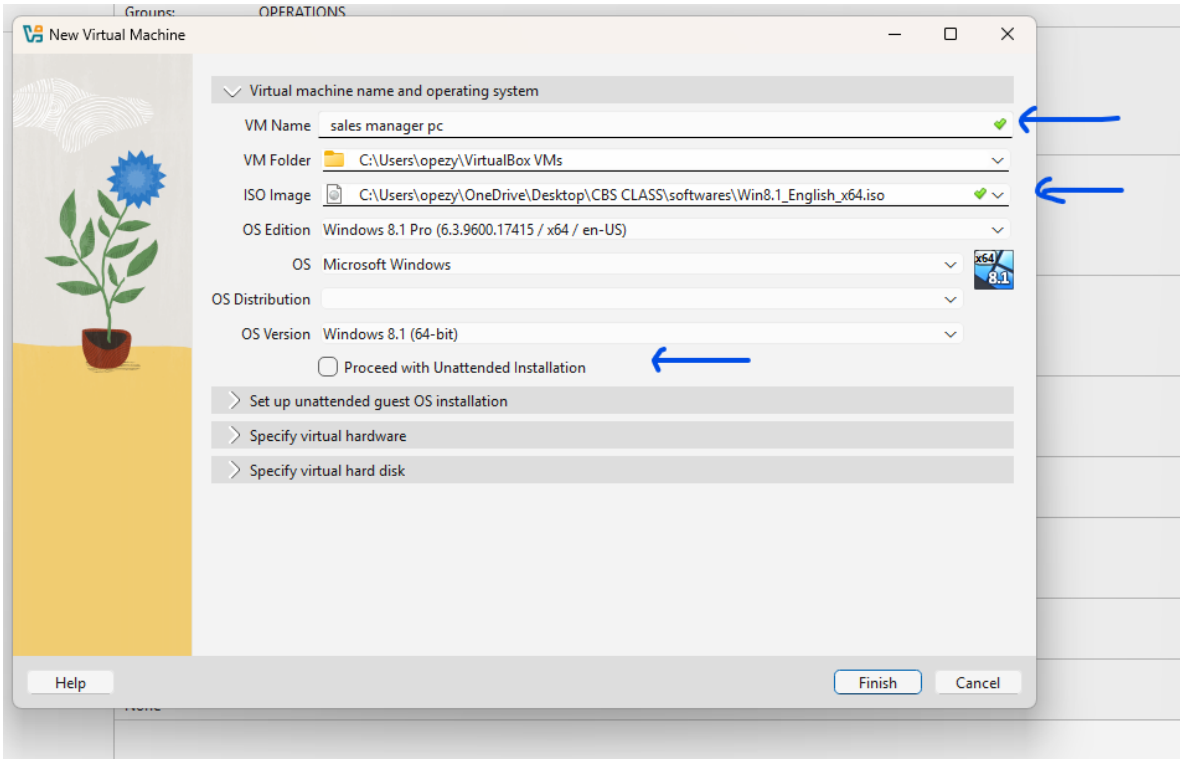

New Virtual Machine
Virtual machine name and operating system
Set up unattended guest OS installation
Specify virtual hardware
Base Memory
3506 MB
4 MB
16384 MB
Number of CPUs
1
1 CPU
8 CPUs
Use EFI
Specify virtual hard disk
Help
Finish
Cancel



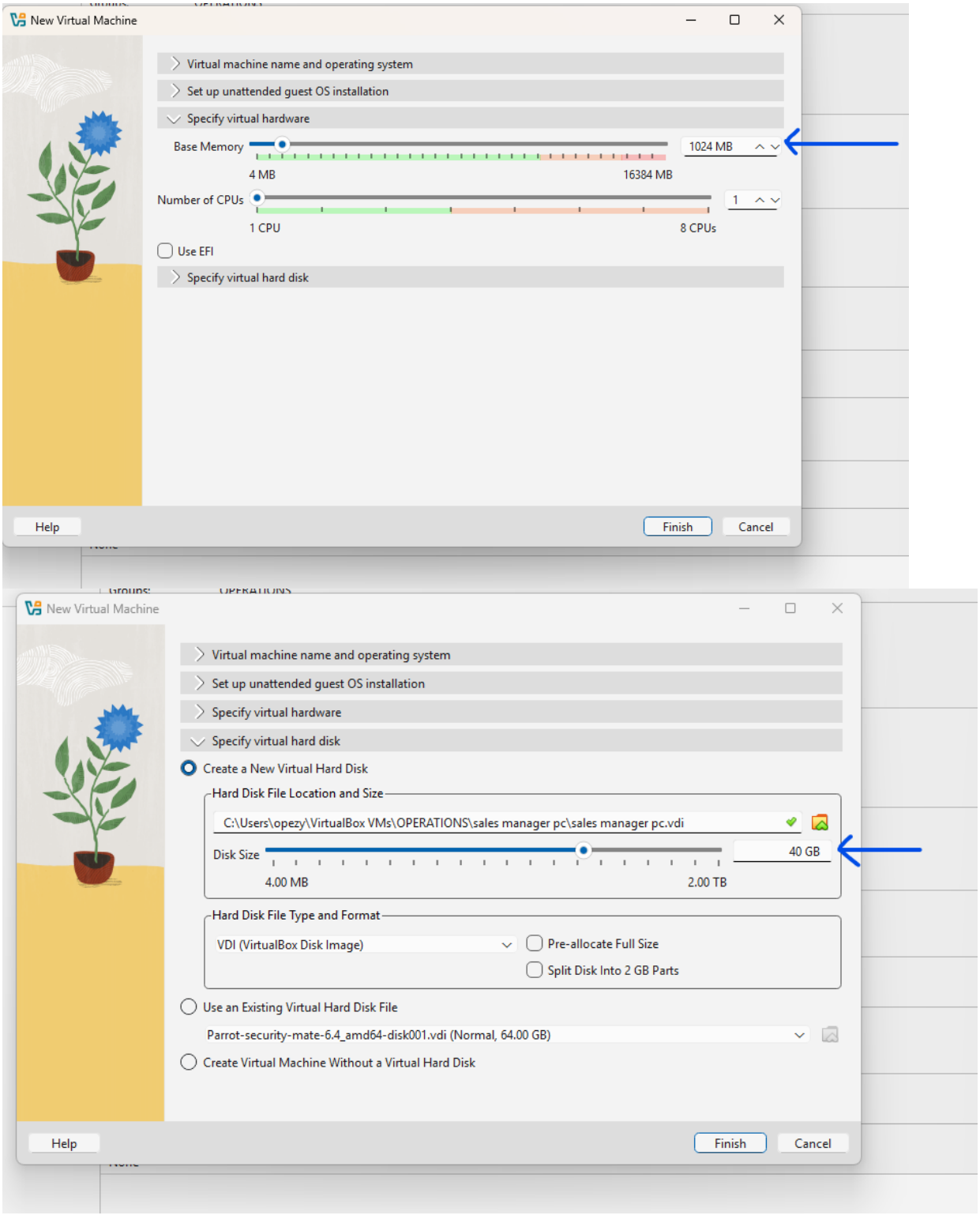
In the same manner, we will install the host machines, specifying the Ram and storage. We will install windows 8 ISO file



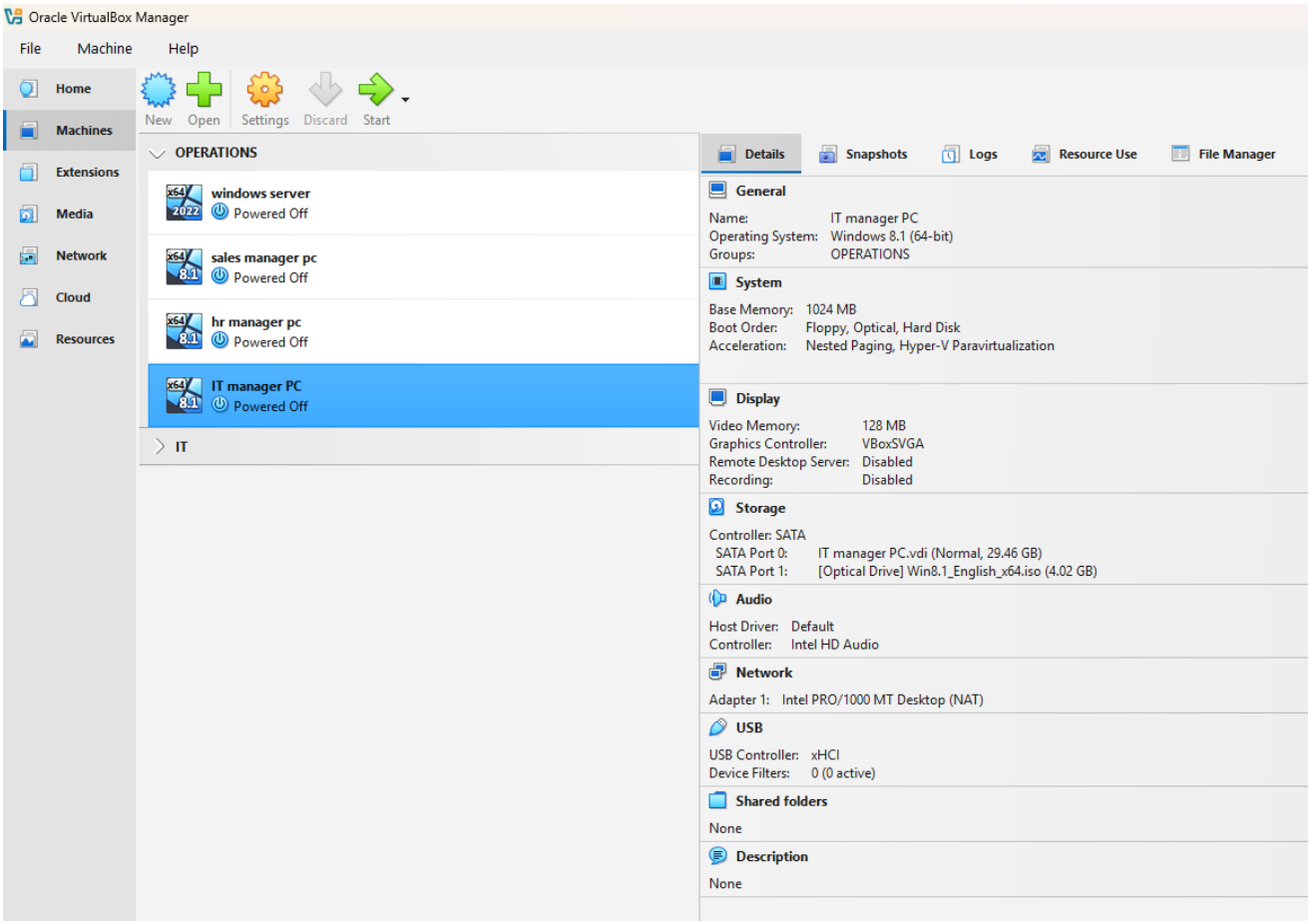




I will using 1 GB ram and 40 GB storage



We will repeat these steps for 2 more hosts (windows 8) and upon completion, it should look like the image below



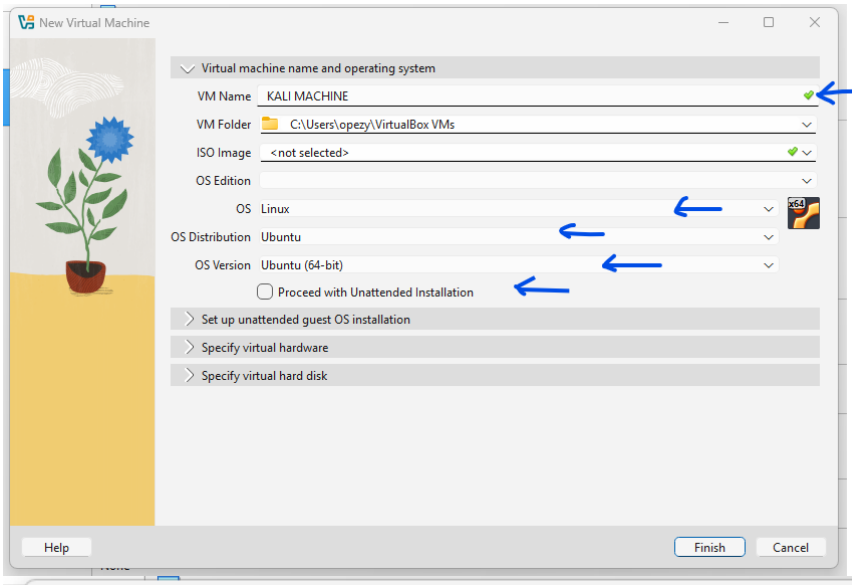
We will now install our Kali Linux, Parrot and Ubuntu server respectively.

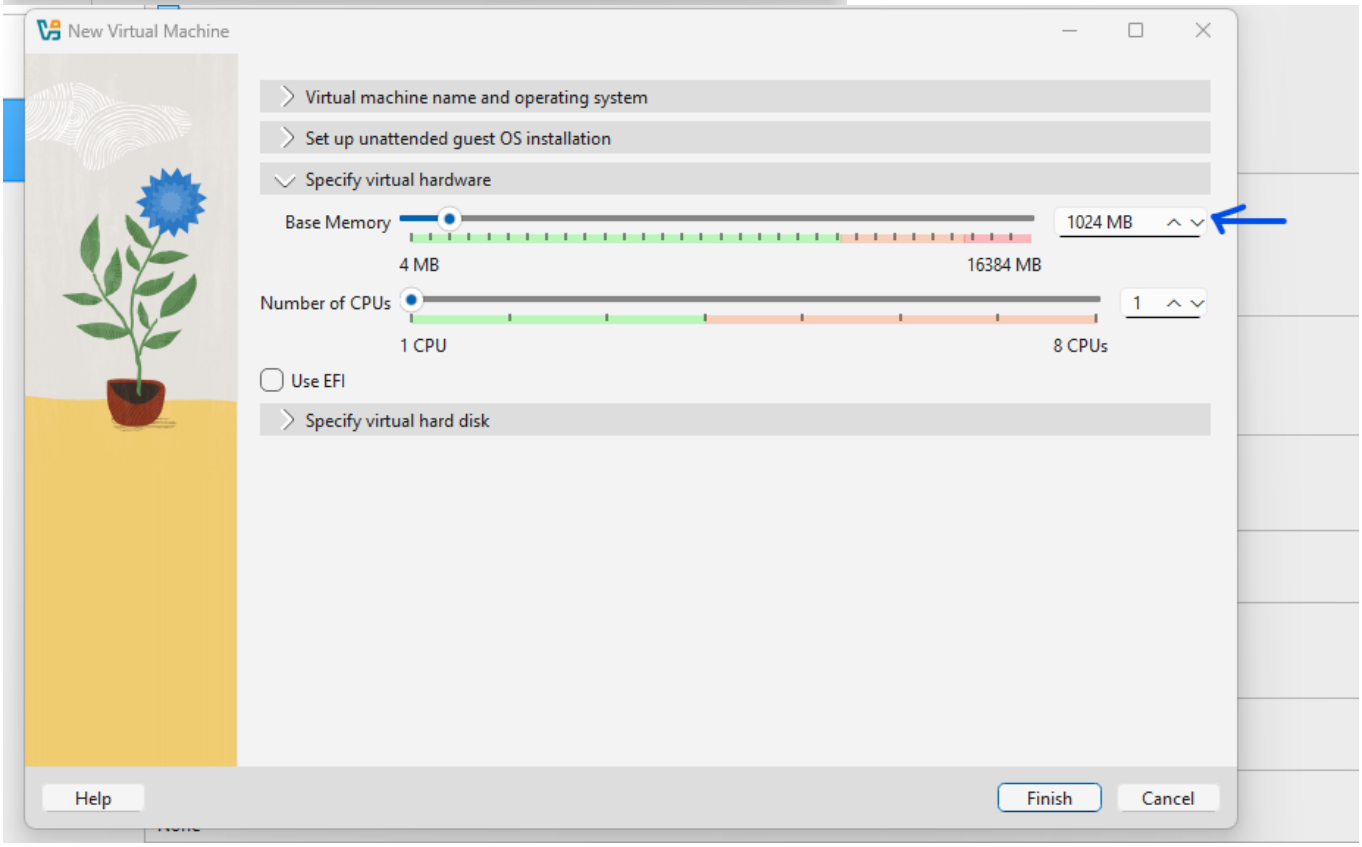
Firstly, we start with kali Linux, we give the machine a name, in this case Kali Machine, set ram at 1GB and storage 25GB.

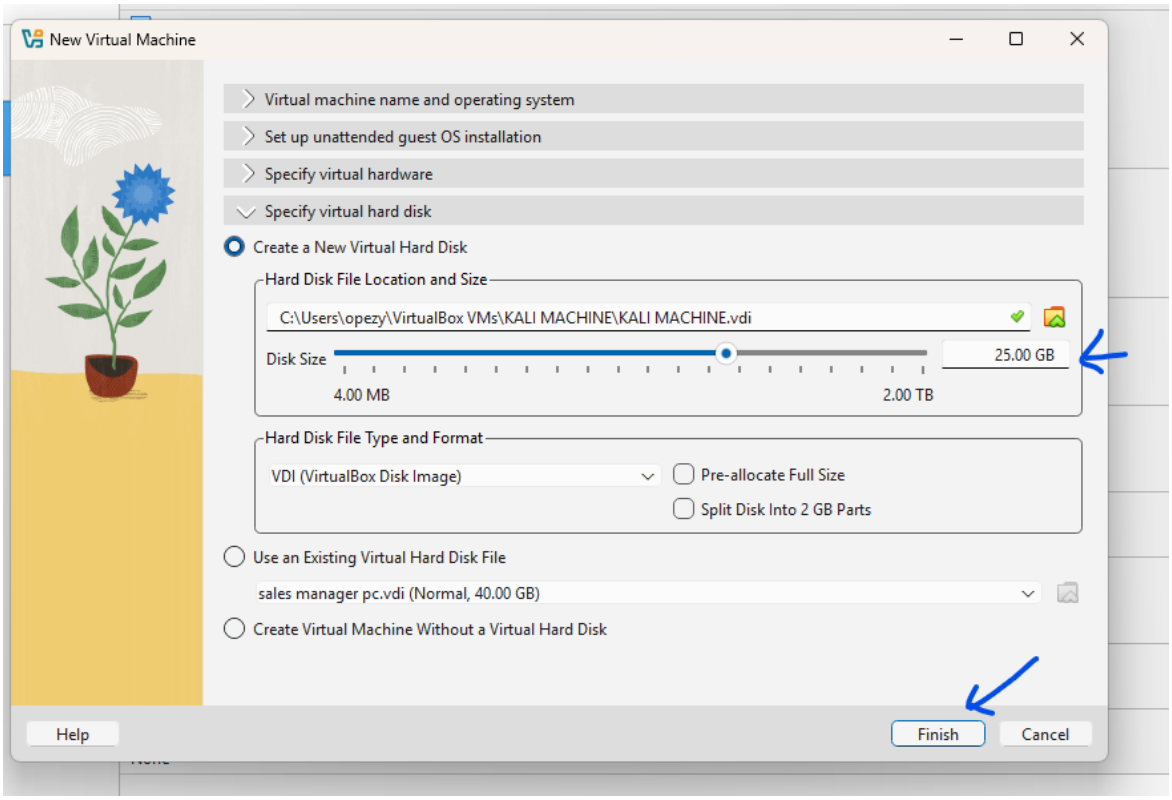
Note, you can set whatever value for your machine based on the available resource

Select OS as linux, OS distribution as Ubuntu and OS version as Ubuntu 64 bit

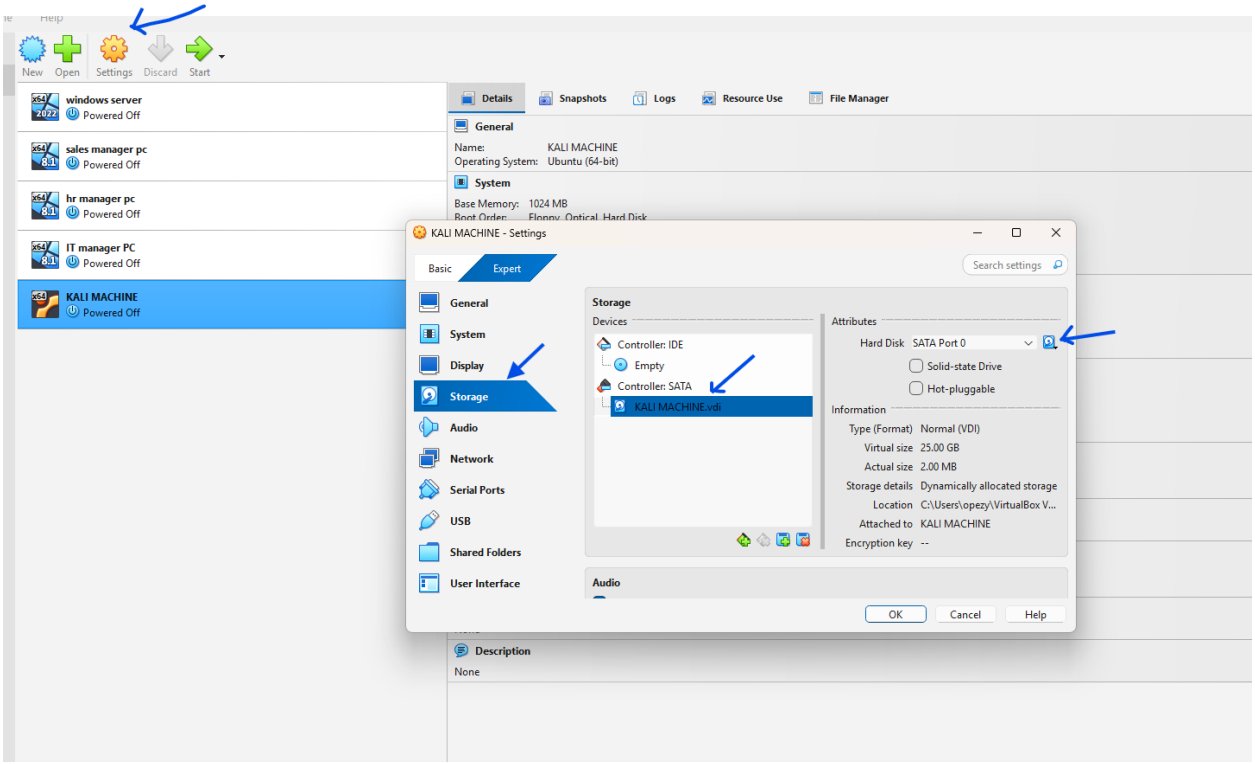
Click on the Kali machine, click setting >>storage>> attributes head disk

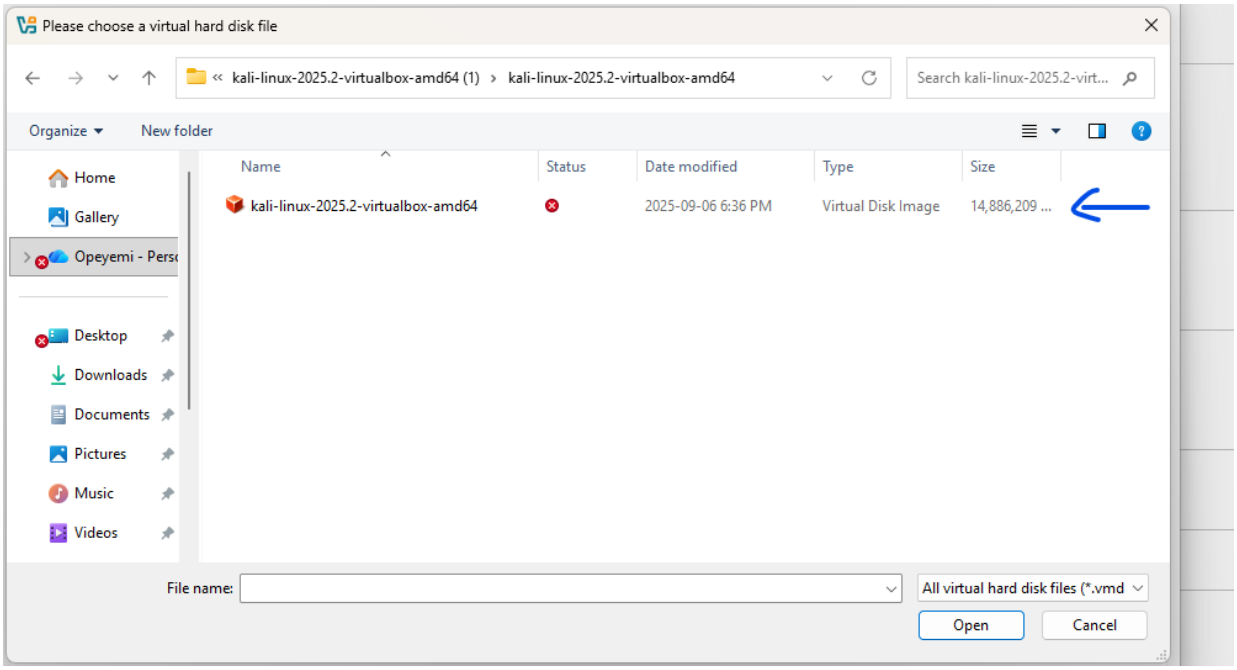

New Virtual Machine
Virtual machine name and operating system
VM Name
KALI MACHINE
VM Folder
C:\Users\opezy\VirtualBox VMs
ISO Image
<not selected>
OS Edition
OS
Linux
OS Distribution
Ubuntu
OS Version
Ubuntu (64-bit)
Proceed with Unattended Installation
Set up unattended guest OS installation
Specify virtual hardware
Specify virtual hard disk
Help
Finish
Cancel

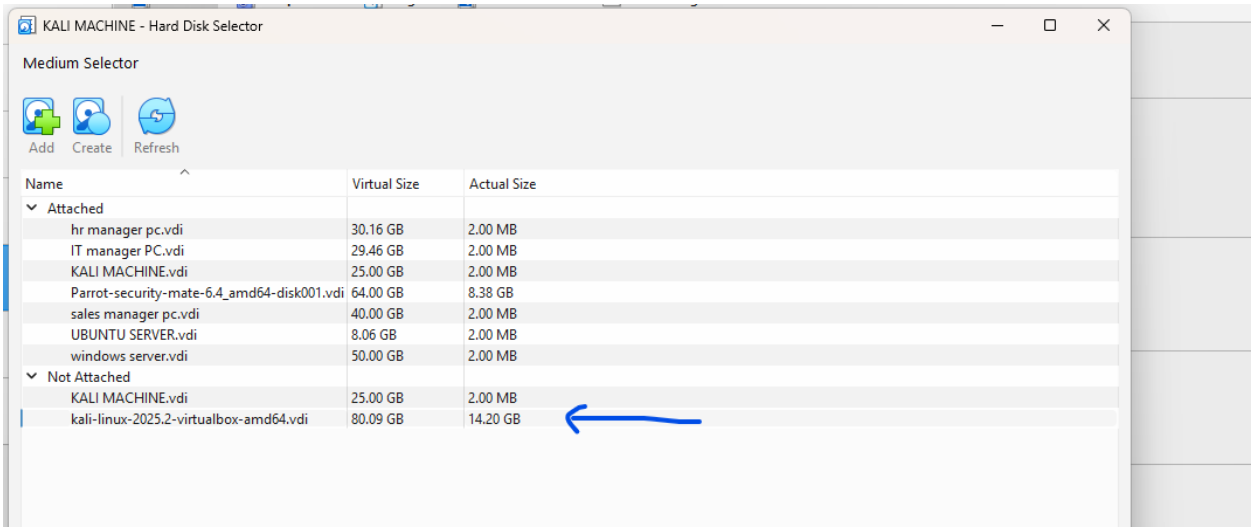

New Virtual Machine
Virtual machine name and operating system
Set up unattended guest OS installation
Specify virtual hardware
Base Memory
1024 MB
4 MB
16384 MB
Number of CPUs
1
1 CPU
8 CPUs
Use EFI
Specify virtual hard disk
Help
Finish
Cancel

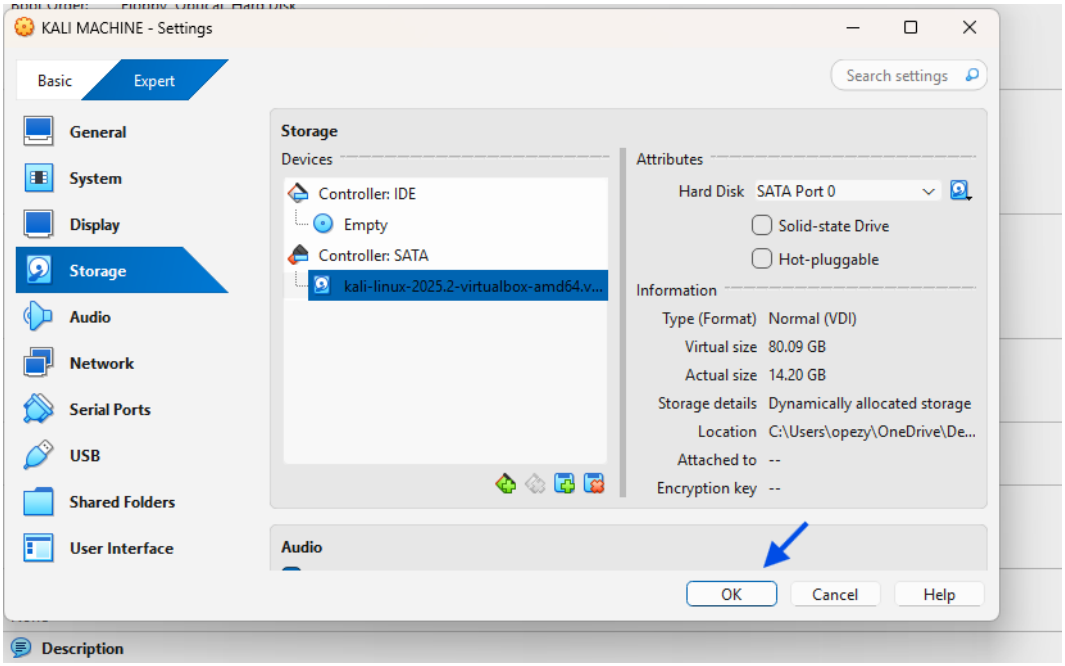


When complete, we will need to attach the downloaded Kali file as it does not have ISO file like windows.



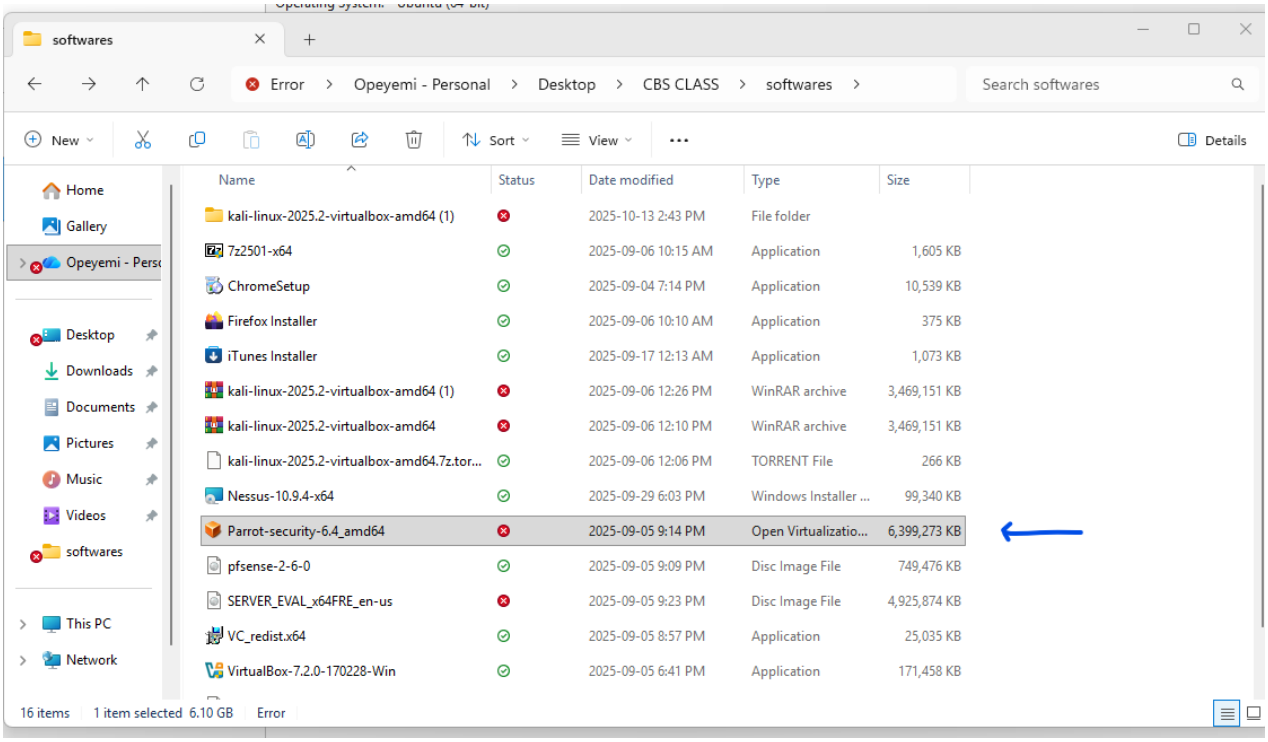

Please choose a virtual hard disk file
kali-linux-2025.2-virtualbox-amd64 (1) › kali-linux-2025.2-virtualbox-amd64
Search kali-linux-2025.2-virt...
Organize
New folder
Home
Gallery
Opeyemi - Perso
Desktop
Downloads
Documents
Pictures
Music
Videos
Name
Status
Date modified
Type
Size
kali-linux-2025.2-virtualbox-amd64
2025-09-06 6:36 PM
Virtual Disk Image
14,886,209 ...
File name:
All virtual hard disk files (*.vmd
Open
Cancel

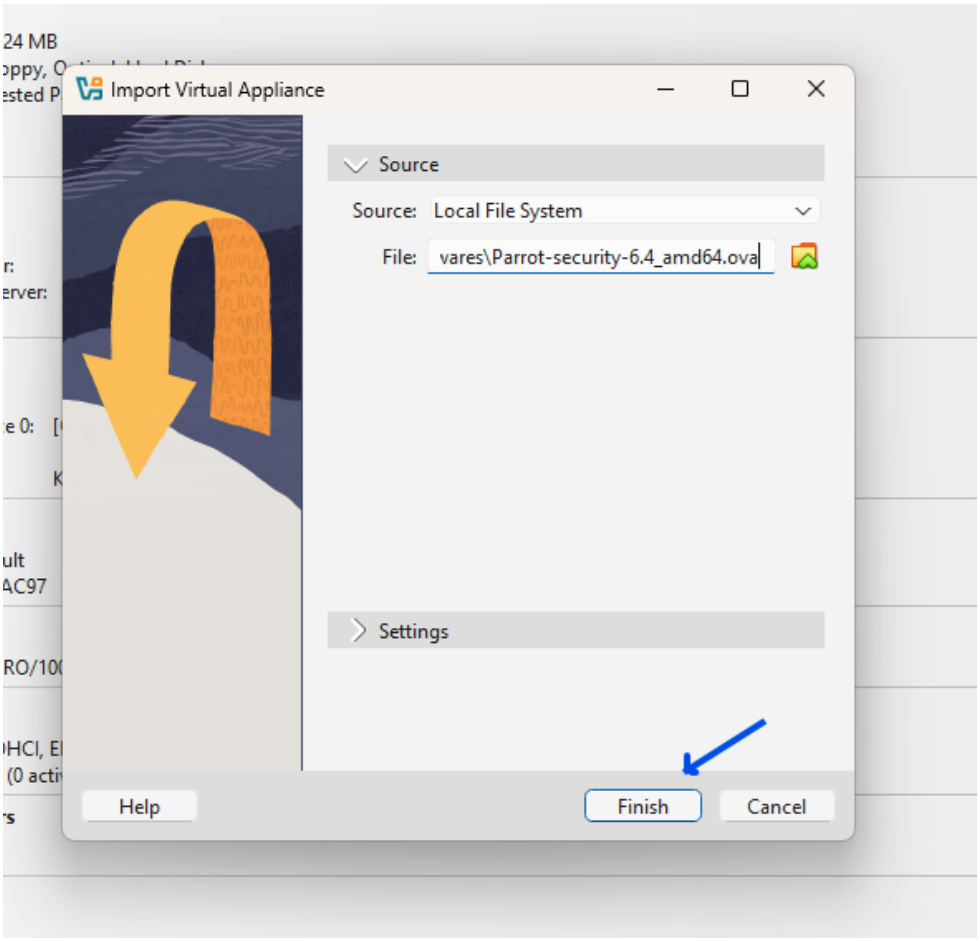

KALI MACHINE - Hard Disk Selector
Medium Selector
Add
Create
Refresh
Name
Virtual Size
Actual Size
Attached
hr manager pc.vdi 30.16 GB 2.00 MB
IT manager PC.vdi 29.46 GB 2.00 MB
KALI MACHINE.vdi 25.00 GB 2.00 MB
Parrot-security-mate-6.4_amd64-disk001.vdi 64.00 GB 8.38 GB
sales manager pc.vdi 40.00 GB 2.00 MB
UBUNTU SERVER.vdi 8.06 GB 2.00 MB
windows server.vdi 50.00 GB 2.00 MB
Not Attached
KALI MACHINE.vdi 25.00 GB 2.00 MB
kali-linux-2025.2-virtualbox-amd64.vdi 80.09 GB 14.20 GB

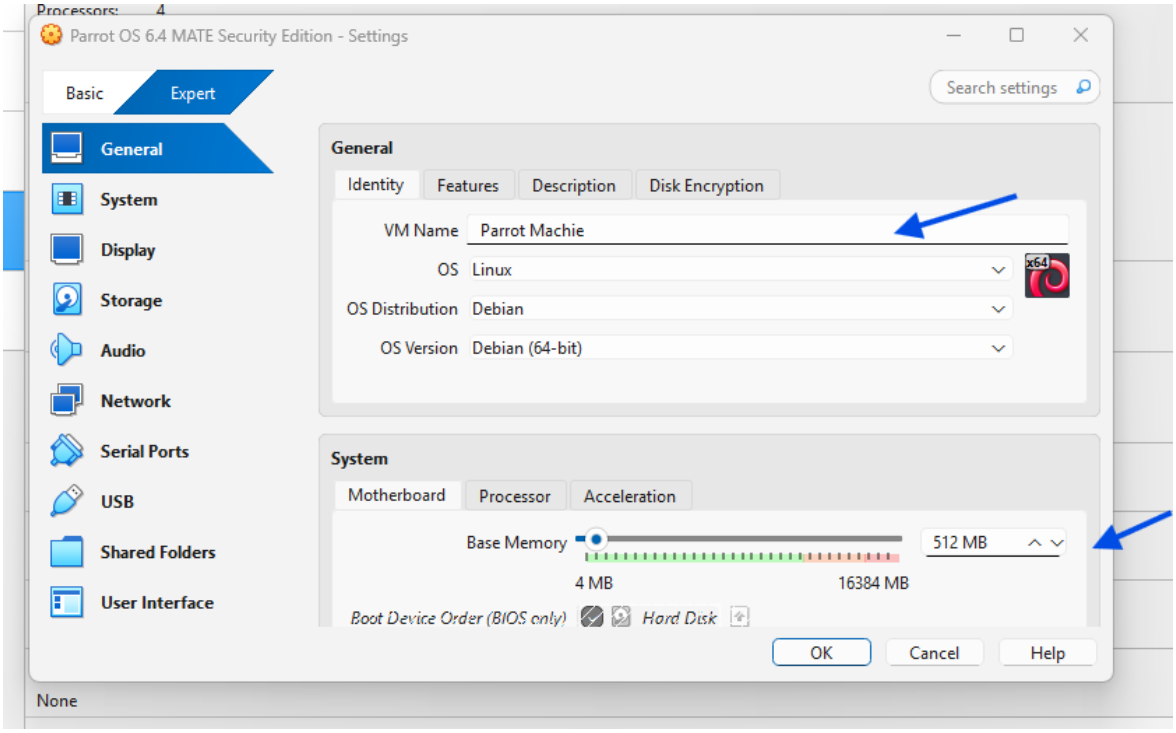


Click Ok and its all done.

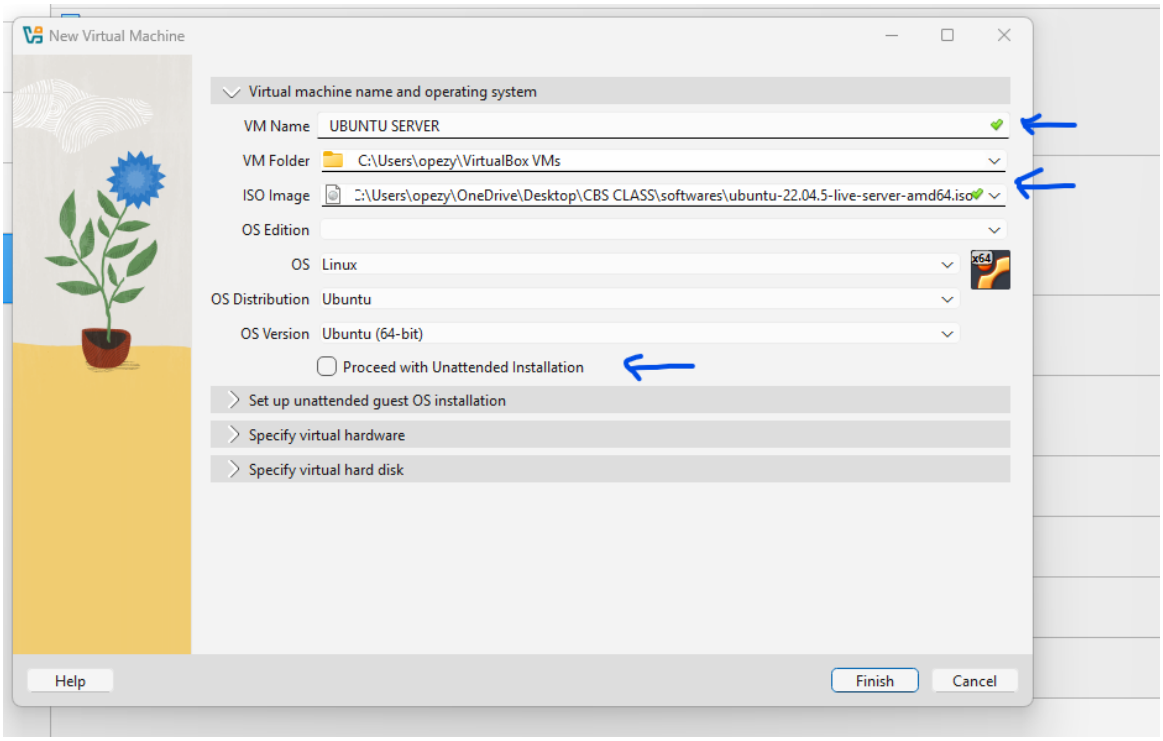
To install parrot software, simply double click on the Parrot executable file from the folder where it was downloaded. Follow all the prompts and install.

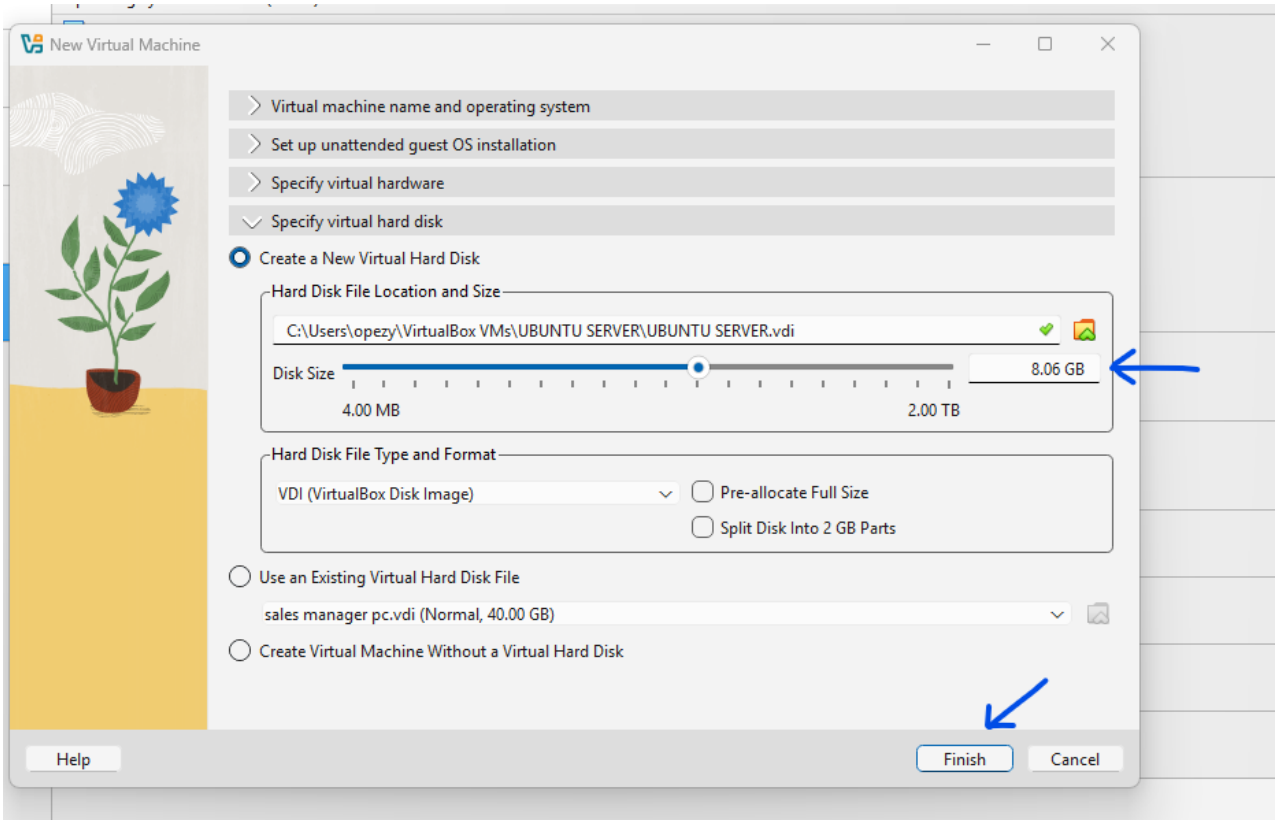



Import Virtual Appliance
Source
Source: Local File System
File: vares\Parrot-security-6.4_amd64.ova
Settings
Help
Finish
Cancel


Parrot OS 6.4 MATE Security Edition - Settings
Basic
Expert
Search settings
General
System
Display
Storage
Audio
Network
Serial Ports
USB
Shared Folders
User Interface
General
Identity
Features
Description
Disk Encryption
VM Name
Parrot Machie
OS
Linux
OS Distribution
Debian
OS Version
Debian (64-bit)
System
Motherboard
Processor
Acceleration
Base Memory
512 MB
4 MB
16384 MB
Boot Device Order (BIOS only)
Hard Disk
OK
Cancel
Help
None

For Ubuntu server, I will select the ISO file, set a desirable amount of Ram and storage , proceed with all prompts and finish installation.





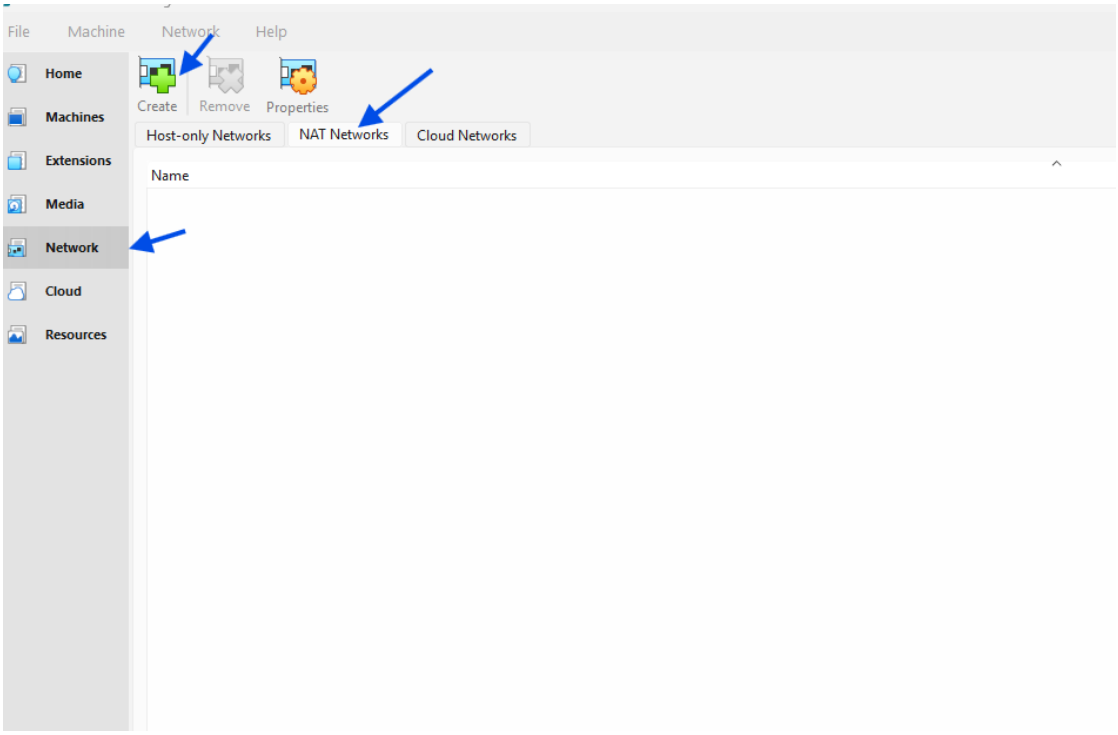
Creating a Virtual Network with VirtualBox

Next, I configured my virtual network so that my virtual machines could communicate with each other and access the internet. VirtualBox provides several network modes: NAT, NAT Network, Bridged, Internal, and Host-only.

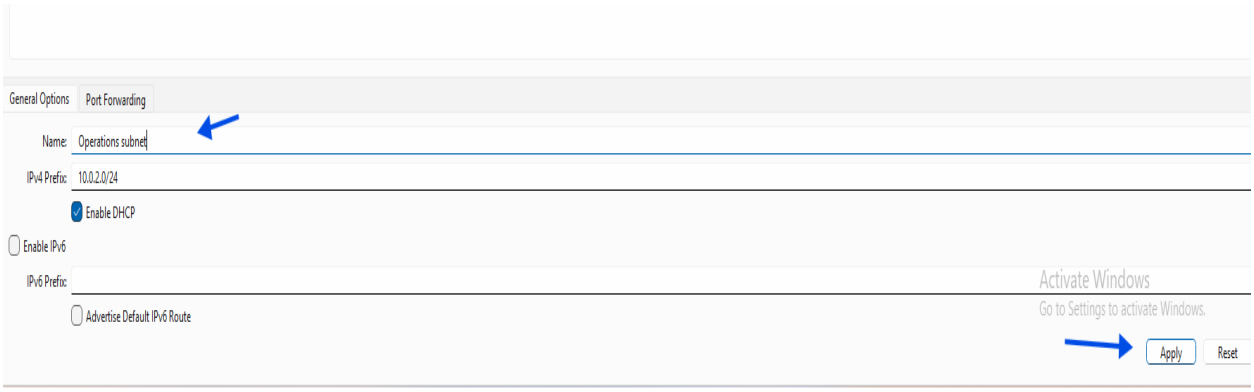
For my setup, I used the NAT Network mode. It allows VMs to talk to one another and still use the host's internet connection. It's also easy to manage and ideal for small home labs.

I will create 2 subnets, one for the windows system (operations subnet) and another for the Linux systems (IT subnet).

On the left side, select Network>>Create>>NAT networks

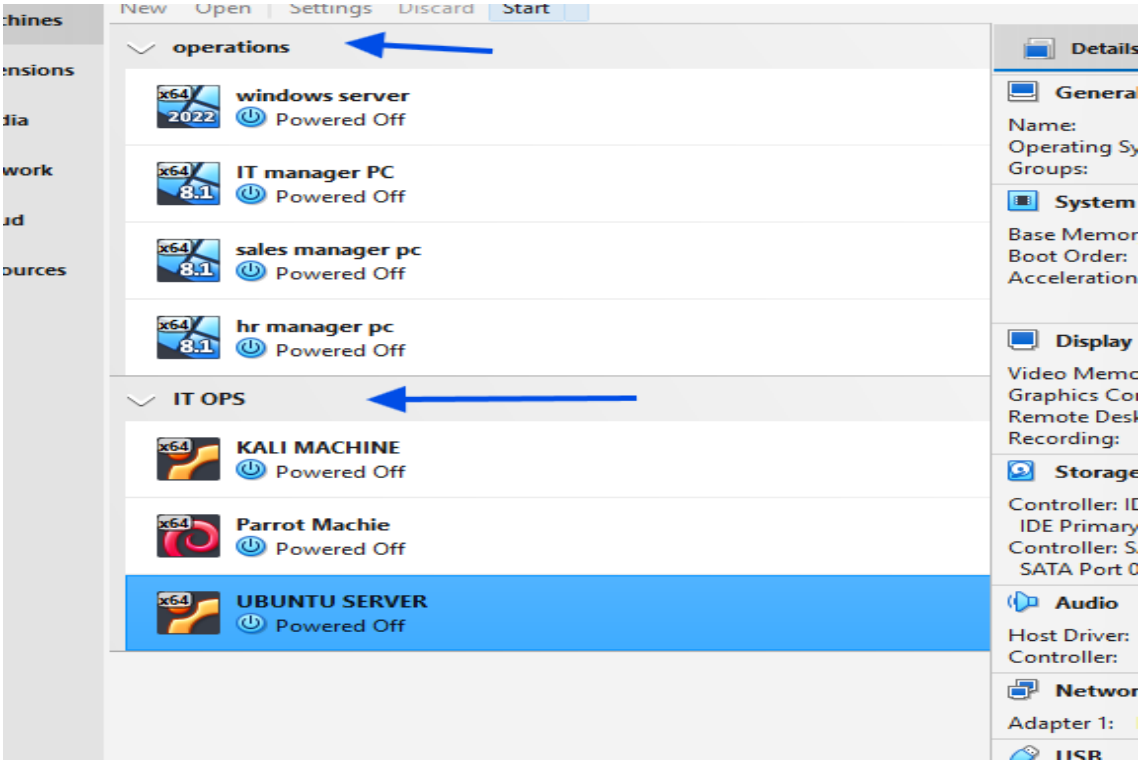


Name the network and click on apply



We will replicate the same steps and change the IPv4 prefix and apply

Once that is done, we can group our machines for better administration as demonstrated below

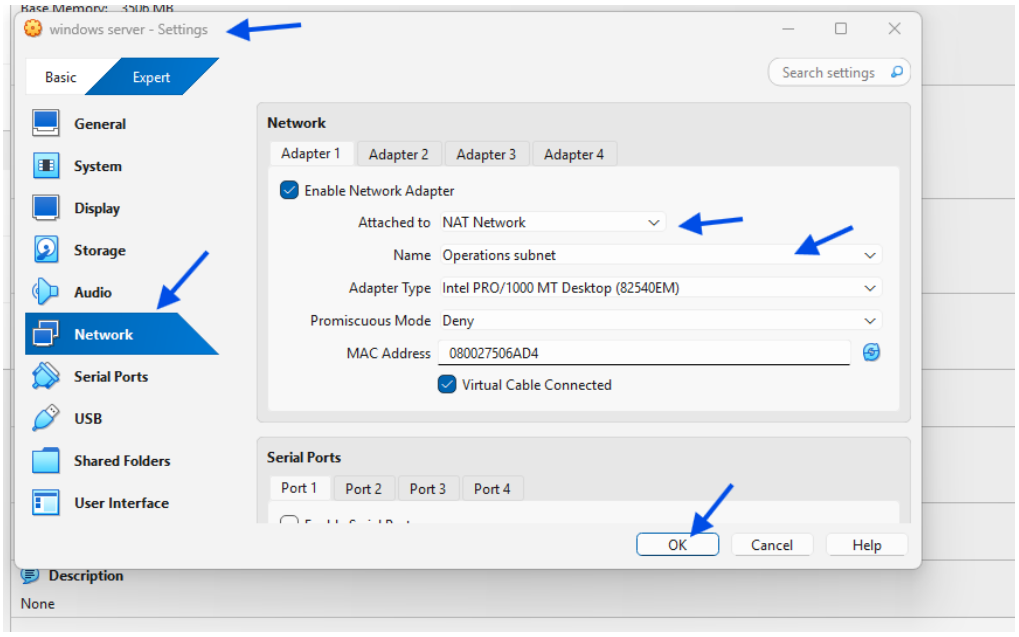


Now we will assign each machine to the network we desire.

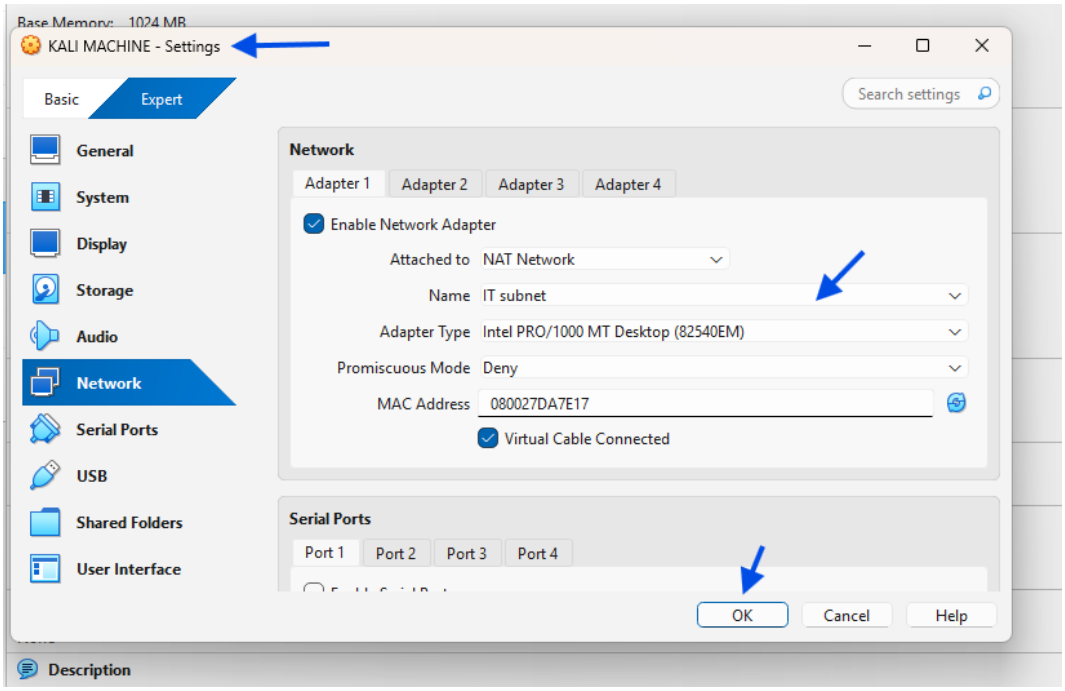
Select the windows server VM, click on settings>>Network>>Adapter 1

From the drop downs select NAT network and choose Operations subnet.

Repeat the same steps for the other windows VM we created



We will also do same for Kali, parrot and Ubuntu server with the IT subnet we created.



Installing an OS on Your Lab VMs

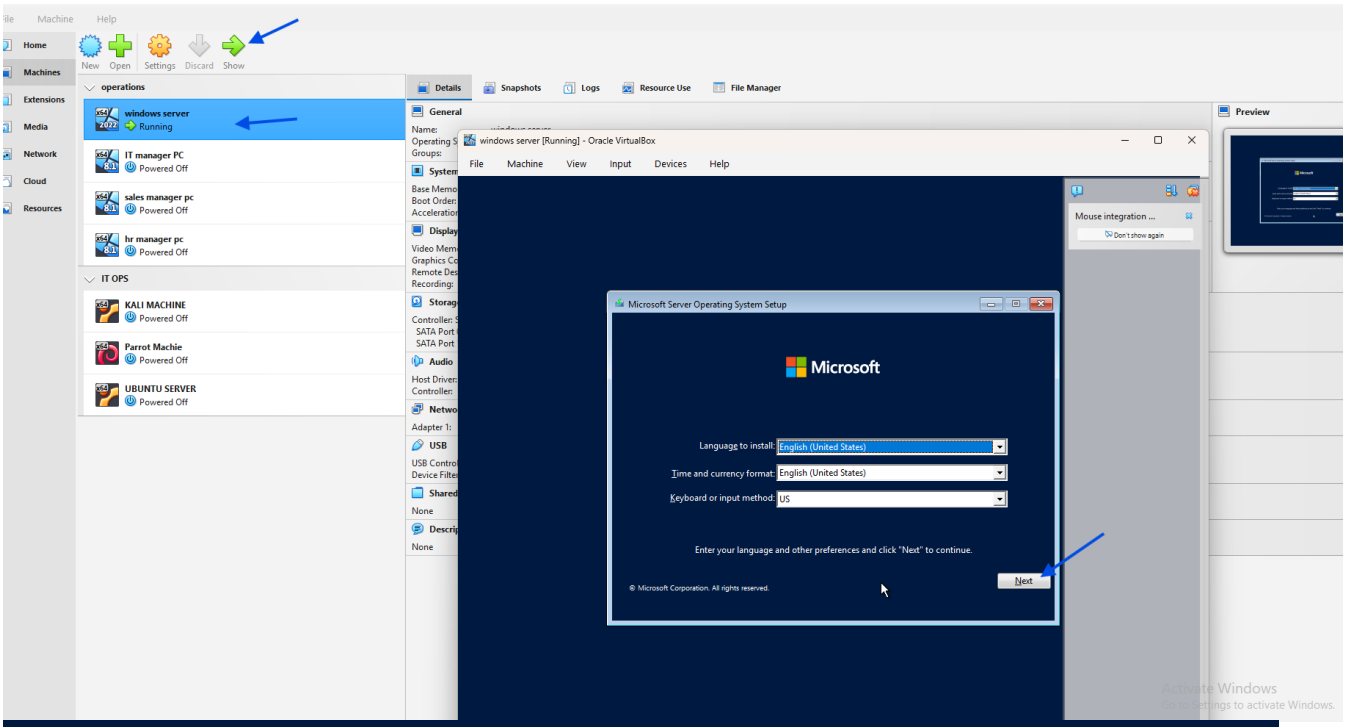
The OS file are mounted and ready, We will start the VM and install each OS.

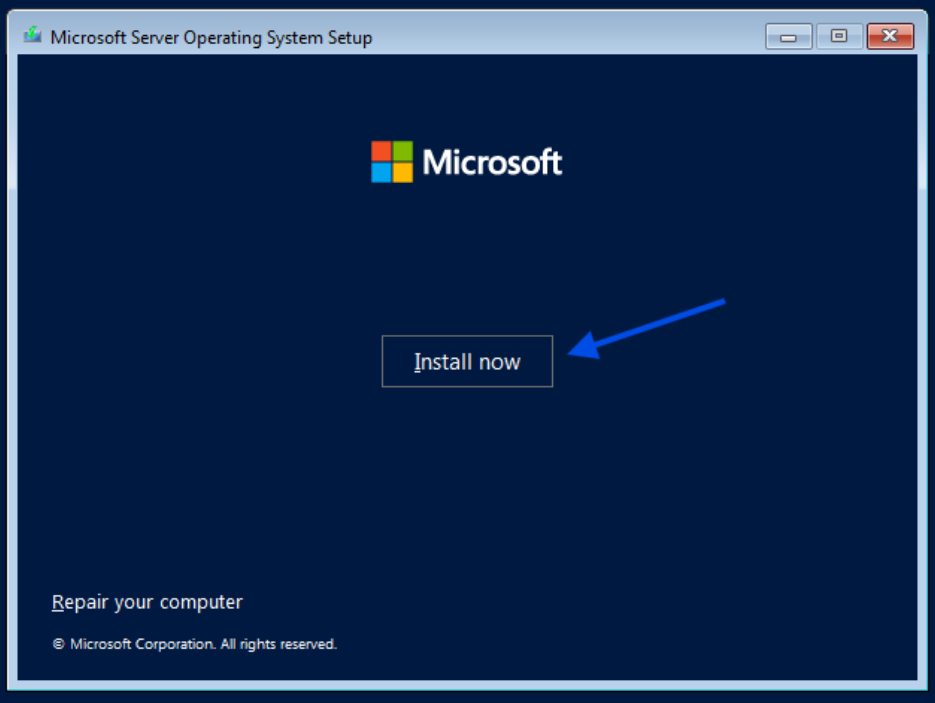
We will start with the Windows server

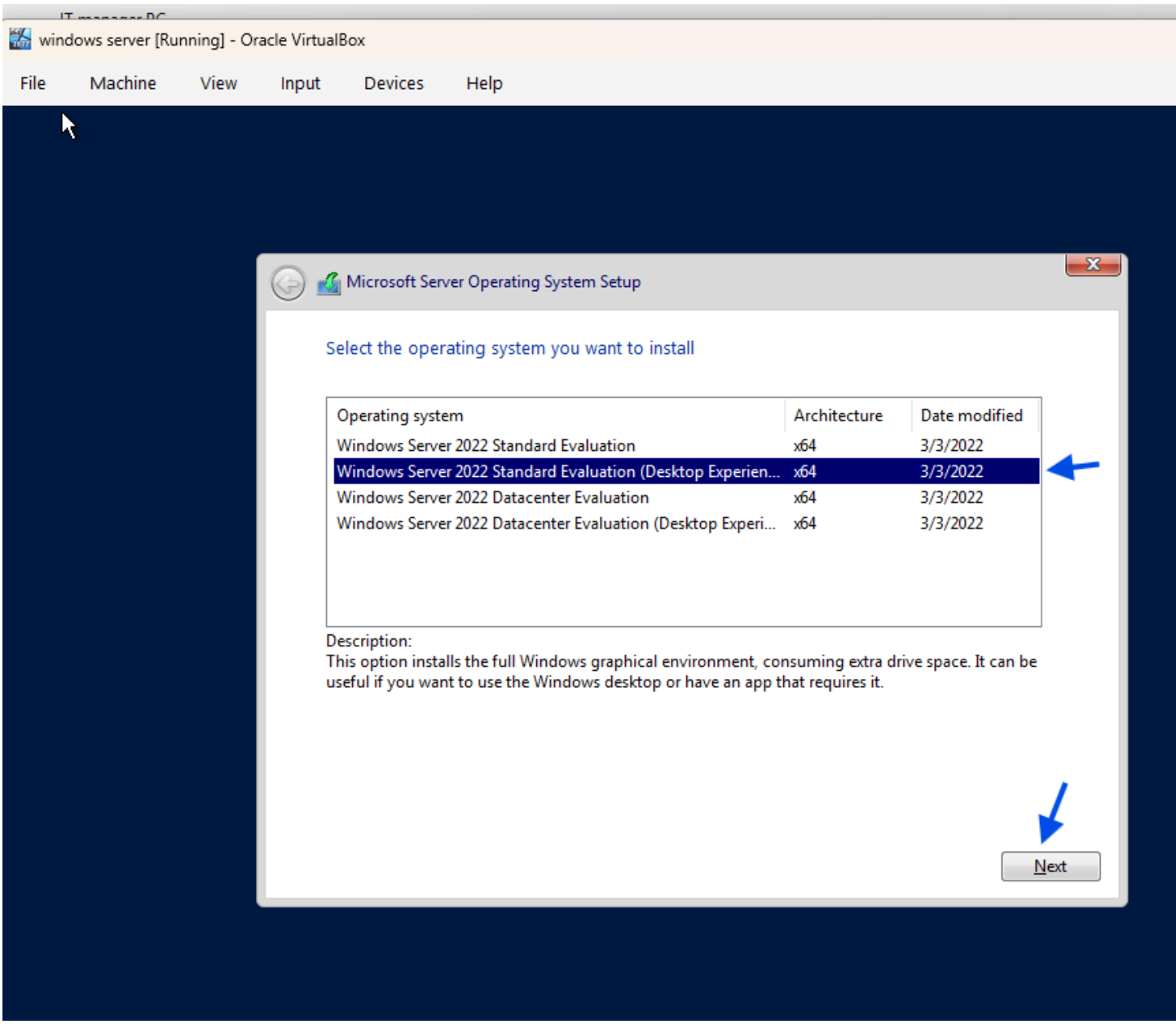
you can run them concurrently

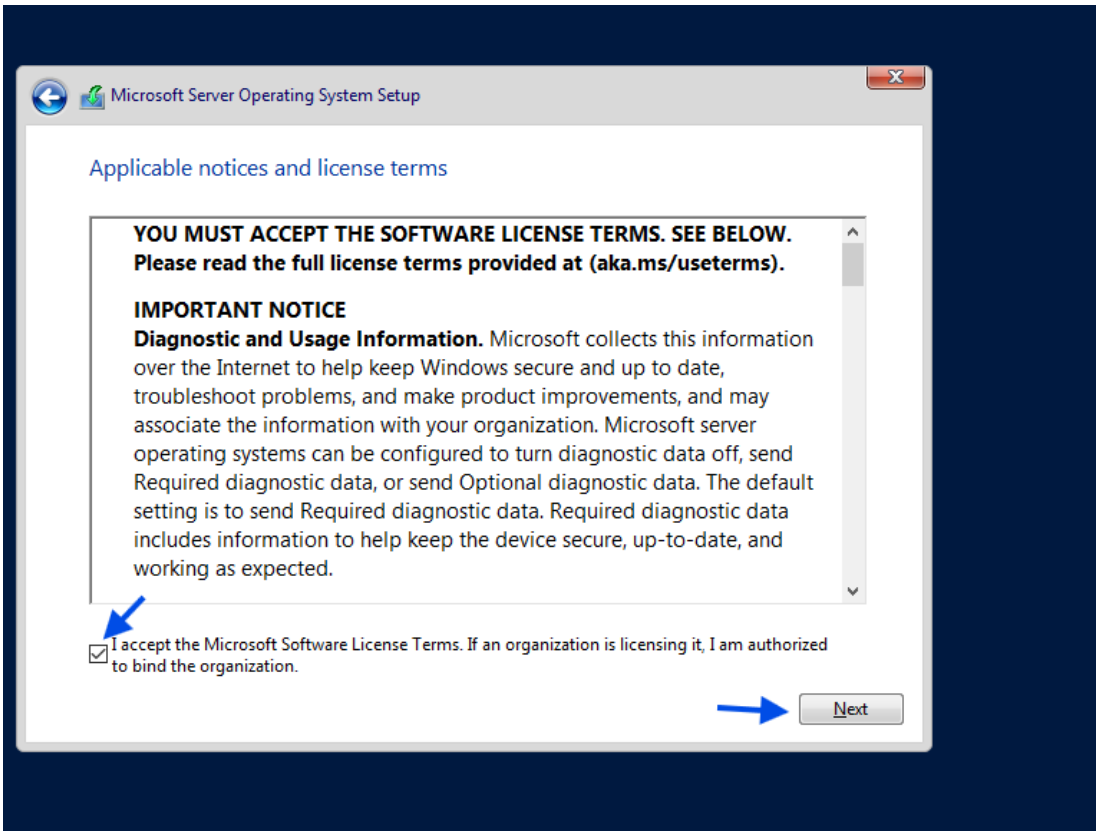
Select windows server>>start

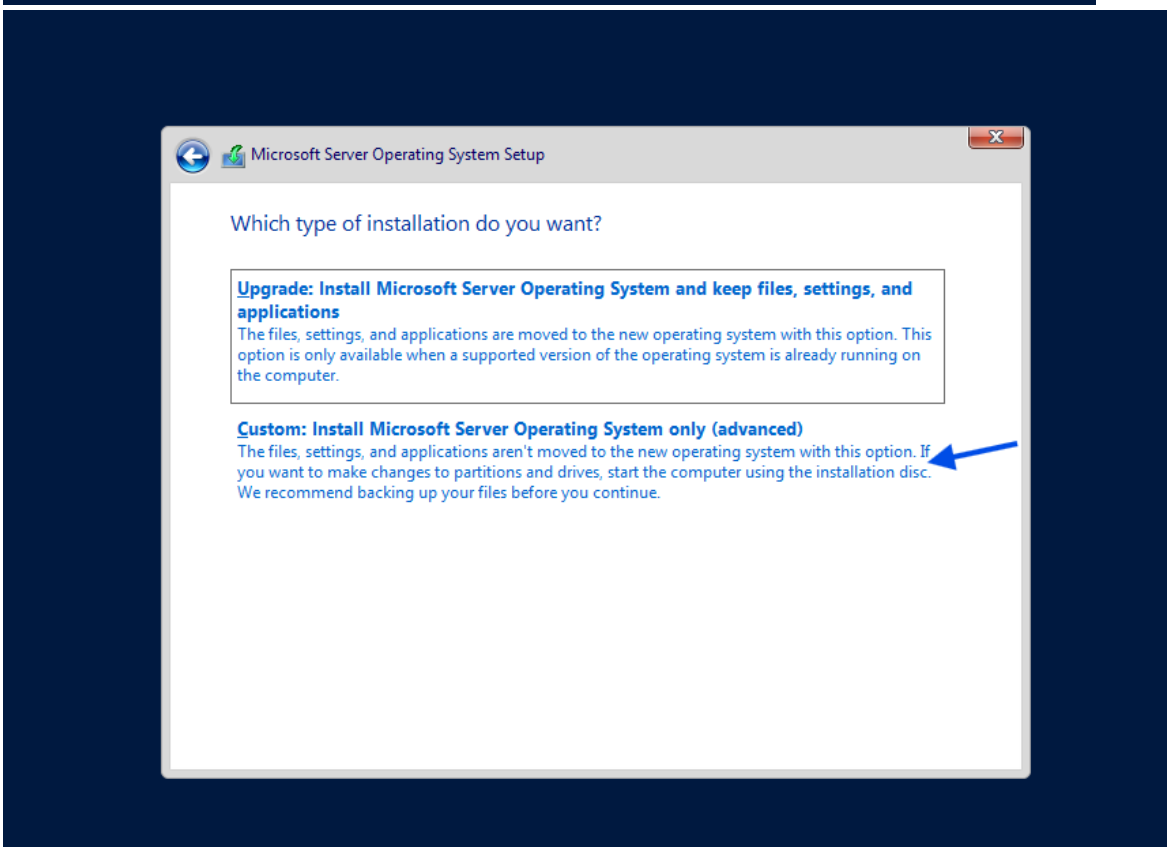
The VM will open a window and we cant start the installation of the OS by following the prompts as the diagrams below highlight

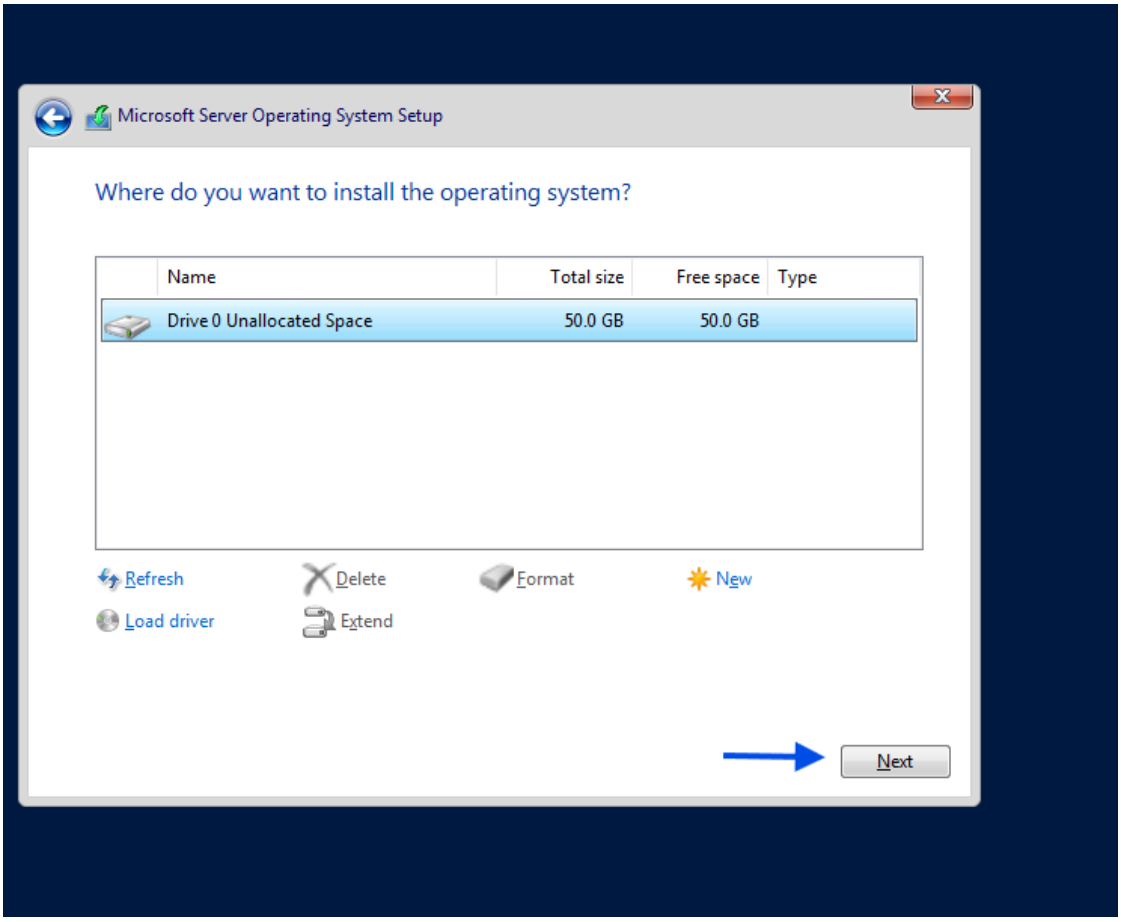

Machine
Help
Home
Machines
Extensions
Media
Network
Cloud
Resources
New
Open
Settings
Discard
Show
operations
windows server
Running
IT manager PC
Powered Off
sales manager pc
Powered Off
hr manager pc
Powered Off
IT OPS
KALI MACHINE
Powered Off
Parrot Machie
Powered Off
UBUNTU SERVER
Powered Off
Details
Snapshots
Logs
Resource Use
File Manager
General
Preview
windows server [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
Mouse integration ...
Don't show again
Microsoft Server Operating System Setup
Microsoft
Language to install: English (United States)
Time and currency format: English (United States)
Keyboard or input method: US
Enter your language and other preferences and click "Next" to continue.
© Microsoft Corporation. All rights reserved.
Next
Activate Windows

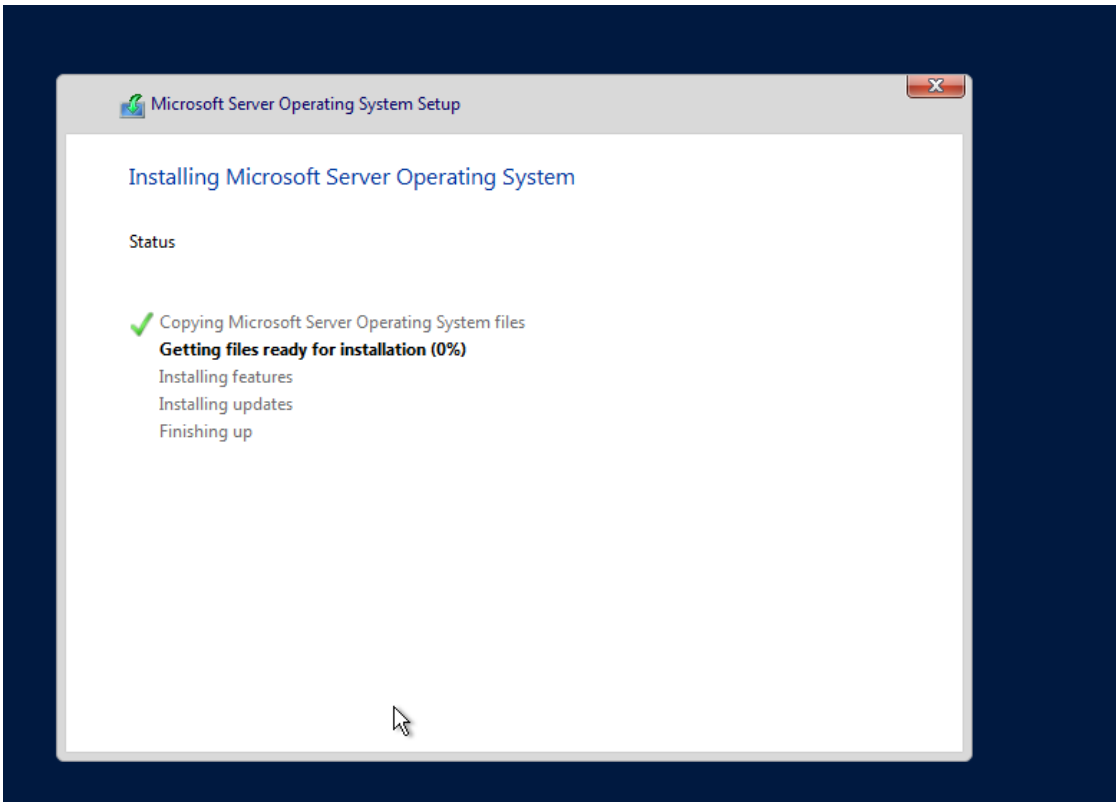

Microsoft Server Operating System Setup
Microsoft
Install now
Repair your computer
© Microsoft Corporation. All rights reserved.

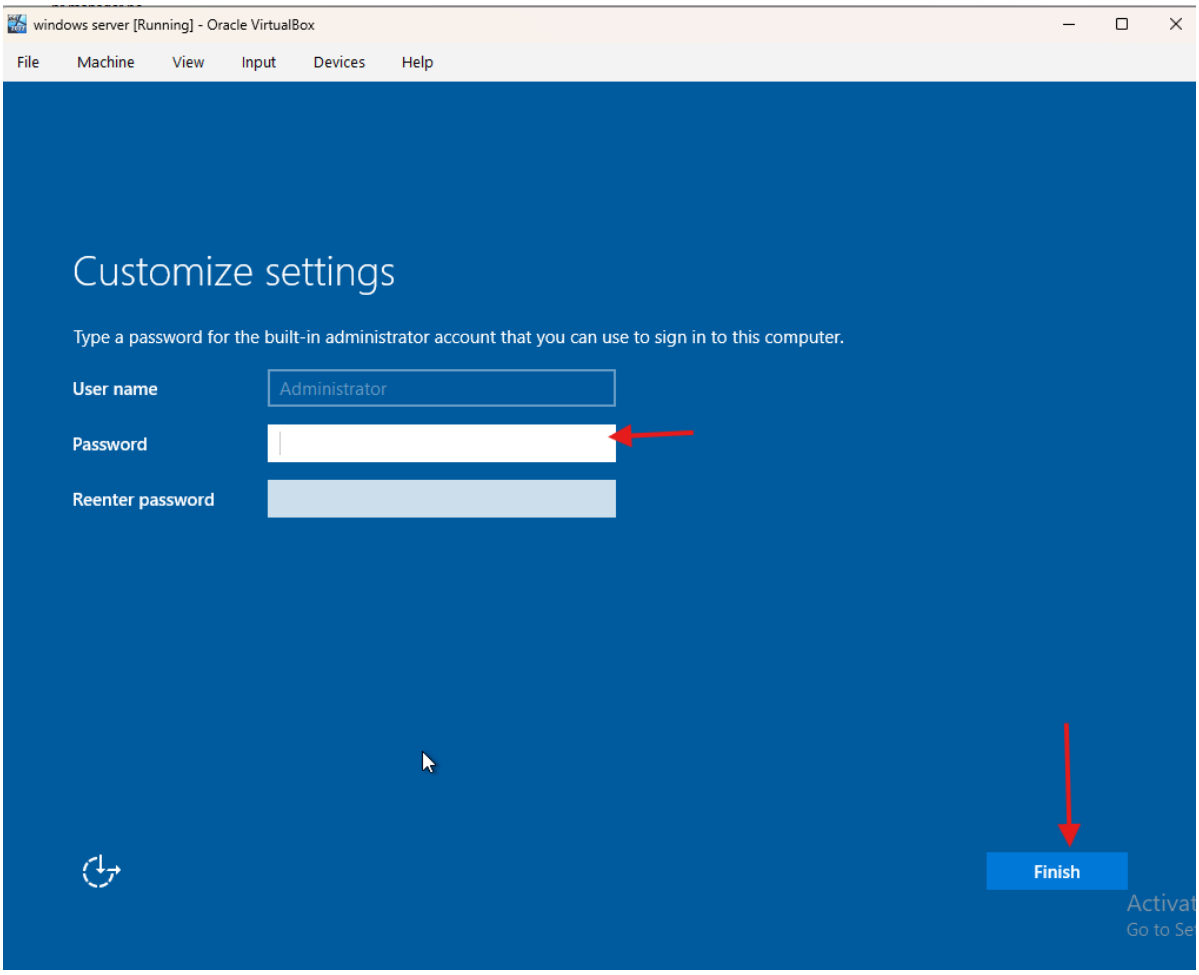

windows server [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
Microsoft Server Operating System Setup
Select the operating system you want to install
Operating system
Architecture
Date modified
Windows Server 2022 Standard Evaluation
x64
3/3/2022
Windows Server 2022 Standard Evaluation (Desktop Experien...
x64
3/3/2022
Windows Server 2022 Datacenter Evaluation
x64
3/3/2022
Windows Server 2022 Datacenter Evaluation (Desktop Experi...
x64
3/3/2022
Description:
This option installs the full Windows graphical environment, consuming extra drive space. It can be useful if you want to use the Windows desktop or have an app that requires it.
Next


Microsoft Server Operating System Setup
Applicable notices and license terms
YOU MUST ACCEPT THE SOFTWARE LICENSE TERMS. SEE BELOW.
Please read the full license terms provided at (aka.ms/useterms).
IMPORTANT NOTICE
Diagnostic and Usage Information. Microsoft collects this information over the Internet to help keep Windows secure and up to date, troubleshoot problems, and make product improvements, and may associate the information with your organization. Microsoft server operating systems can be configured to turn diagnostic data off, send Required diagnostic data, or send Optional diagnostic data. The default setting is to send Required diagnostic data. Required diagnostic data includes information to help keep the device secure, up-to-date, and working as expected.
I accept the Microsoft Software License Terms. If an organization is licensing it, I am authorized to bind the organization.
Next


Microsoft Server Operating System Setup
Which type of installation do you want?
Upgrade: Install Microsoft Server Operating System and keep files, settings, and applications
The files, settings, and applications are moved to the new operating system with this option. This option is only available when a supported version of the operating system is already running on the computer.
Custom: Install Microsoft Server Operating System only (advanced)
The files, settings, and applications aren't moved to the new operating system with this option. If you want to make changes to partitions and drives, start the computer using the installation disc. We recommend backing up your files before you continue.

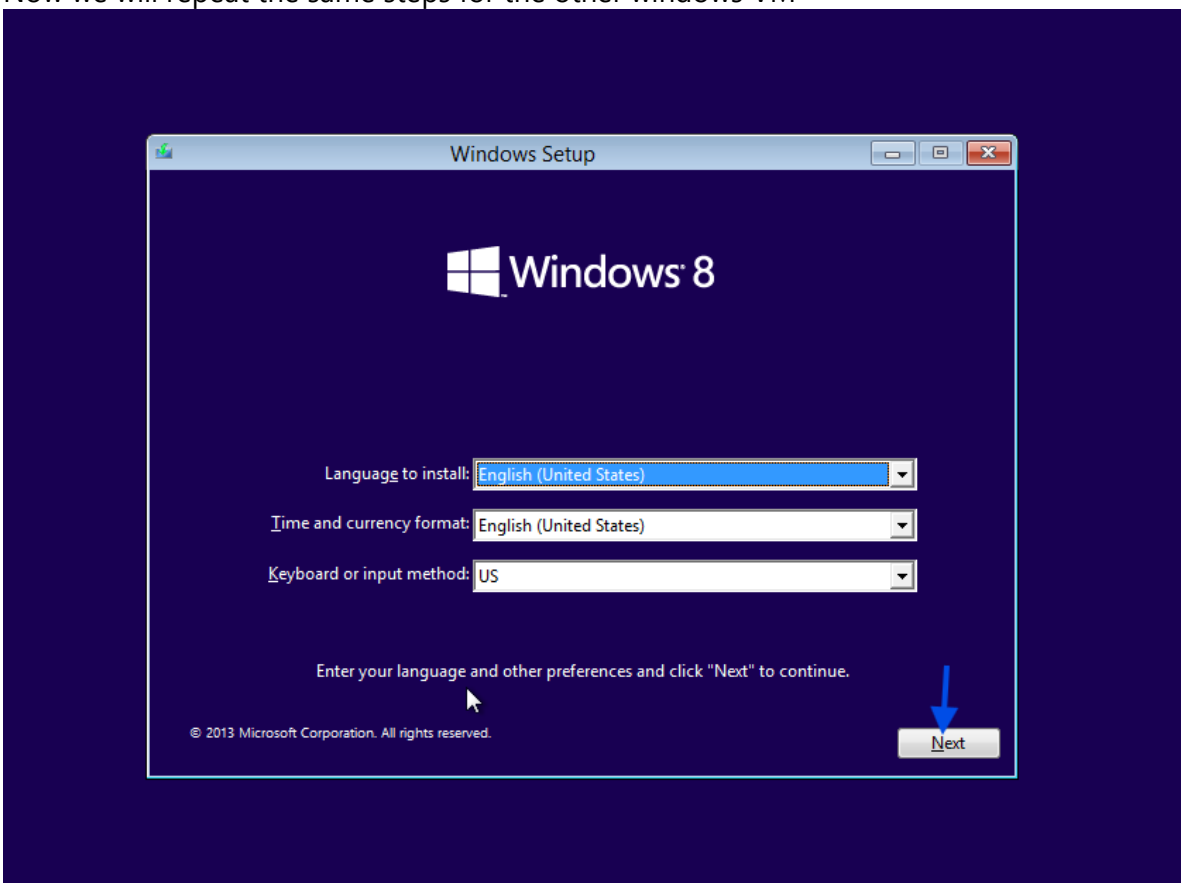

Microsoft Server Operating System Setup
Where do you want to install the operating system?
Name
Total size
Free space
Type
Drive 0 Unallocated Space
50.0 GB
50.0 GB
Refresh
Delete
Format
New
Load driver
Extend
Next

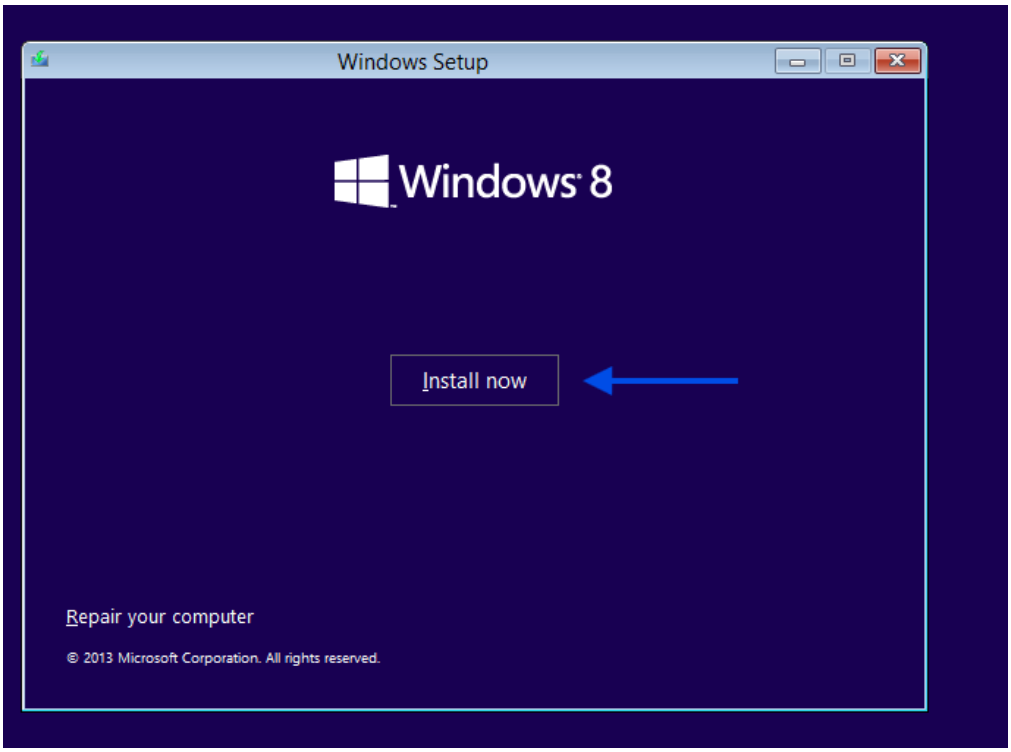

Microsoft Server Operating System Setup
Installing Microsoft Server Operating System
Status
Copying Microsoft Server Operating System files
Getting files ready for installation (0%)
Installing features
Installing updates
Finishing up

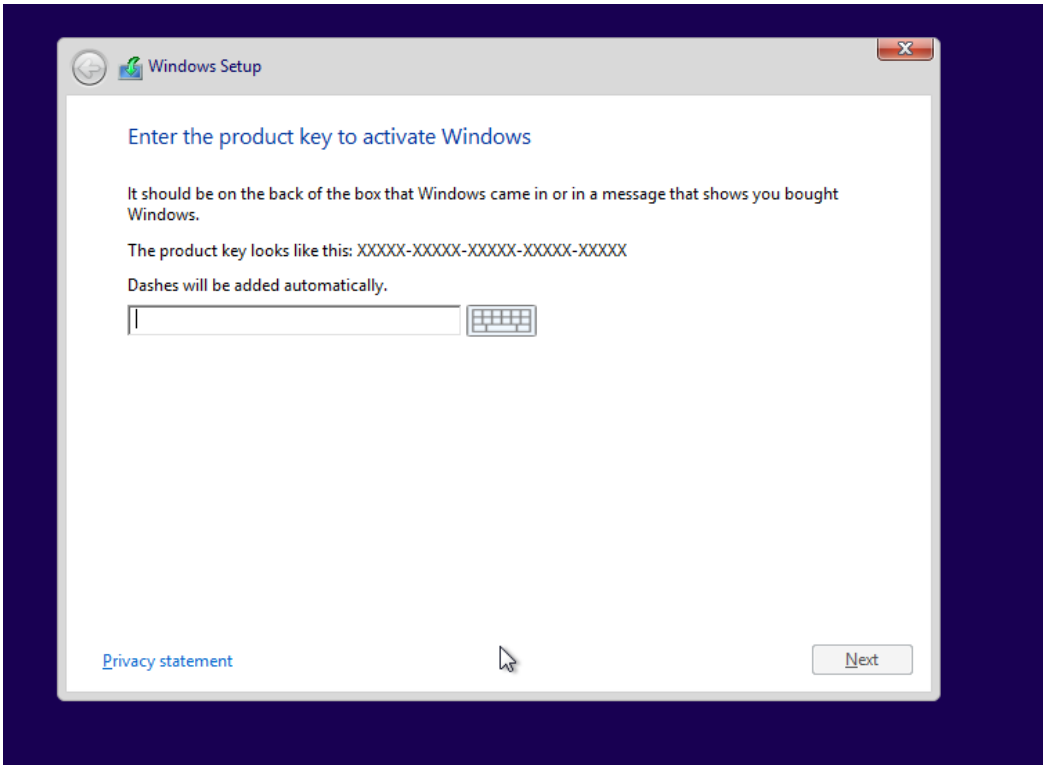


Set up a password and finish

Now we will repeat the same steps for the other windows VM

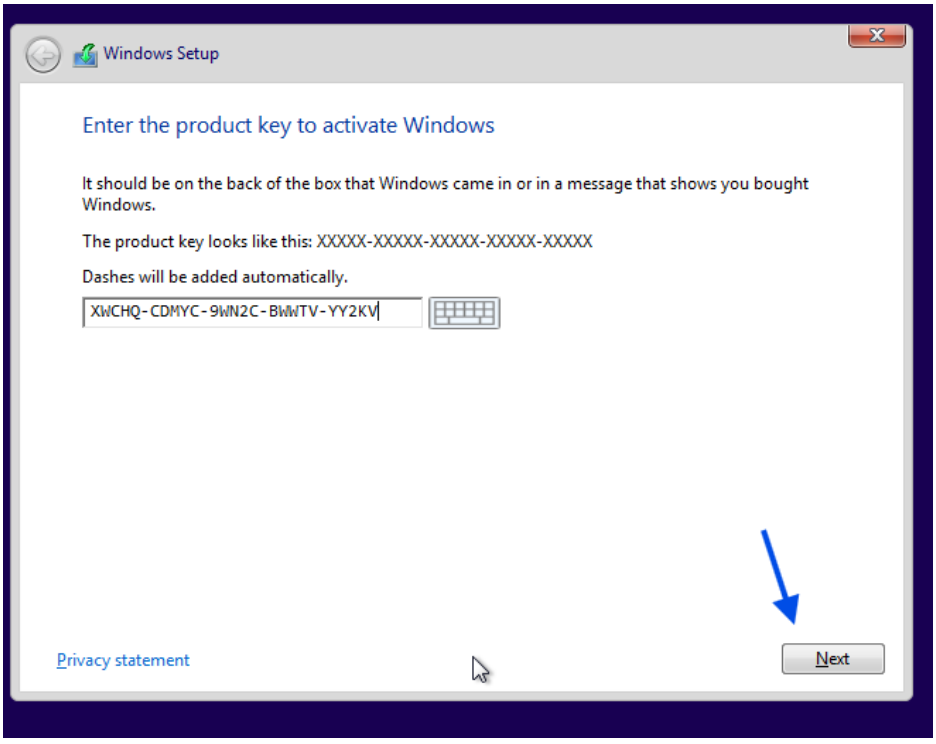


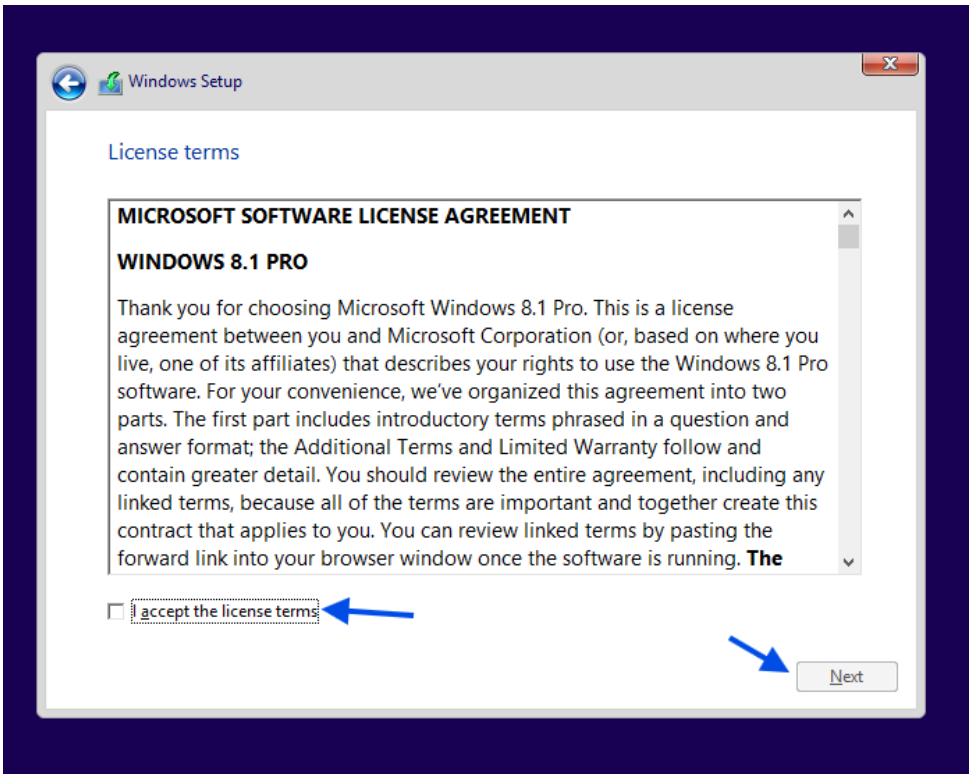


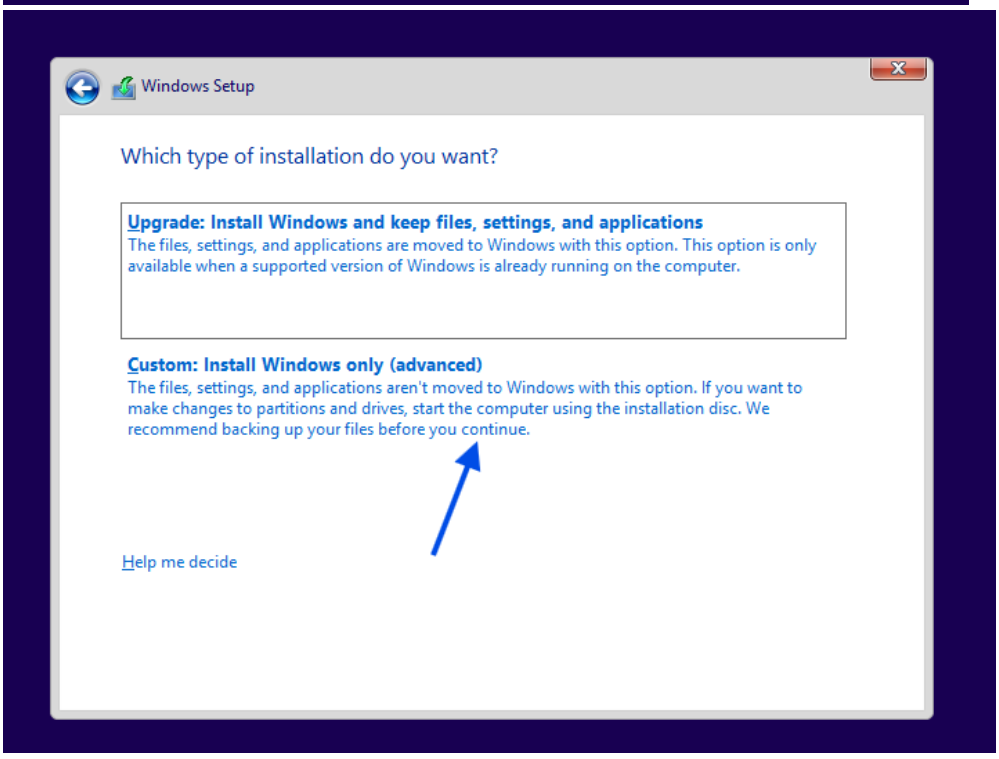


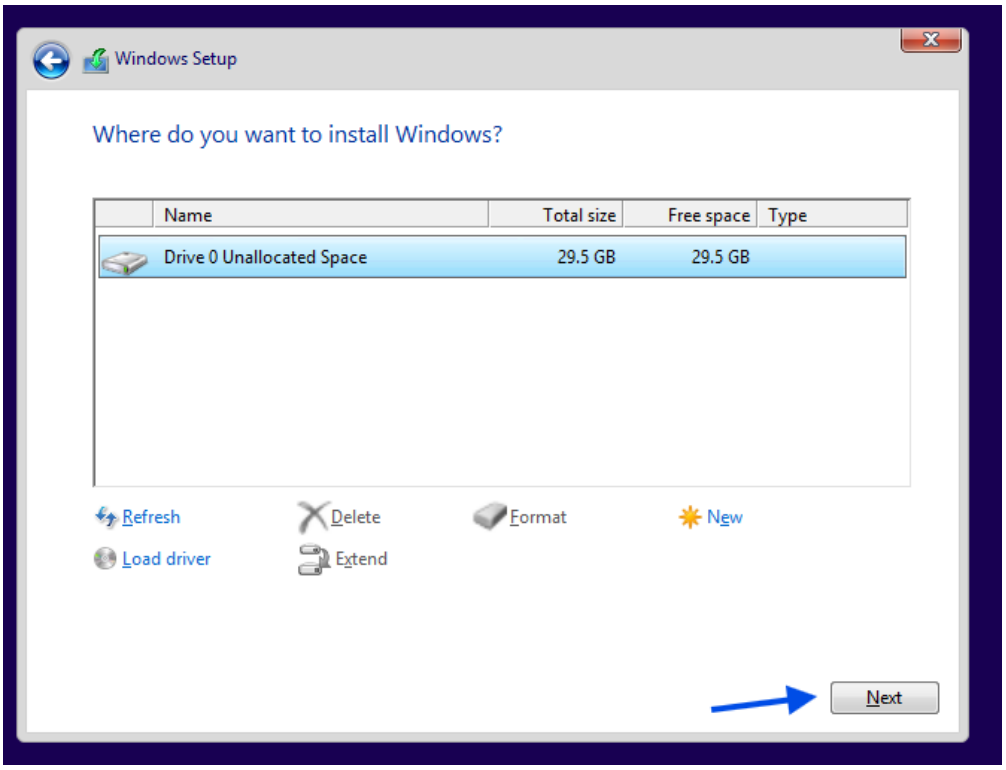
Product Keys (for Educational Use Only)

Windows 8.1 Pro: XWCHQ-CDMYC-9WN2C-BWWTV-YY2KV

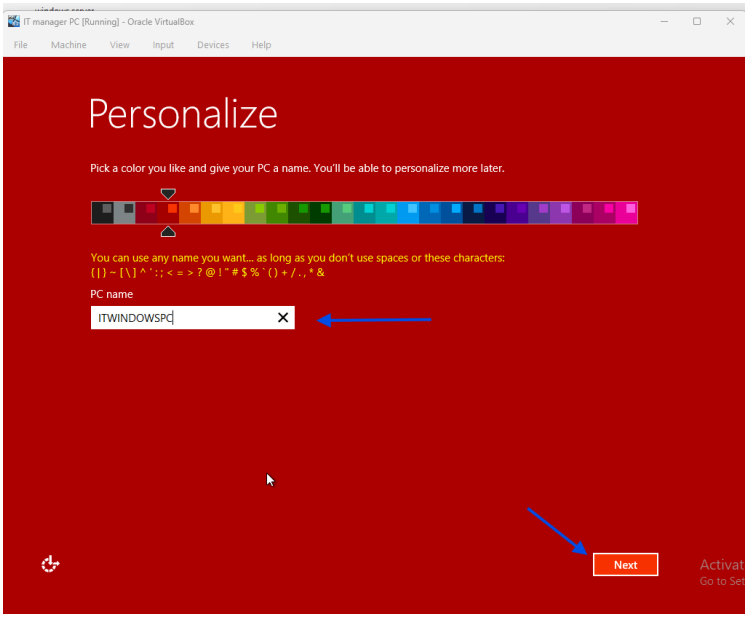


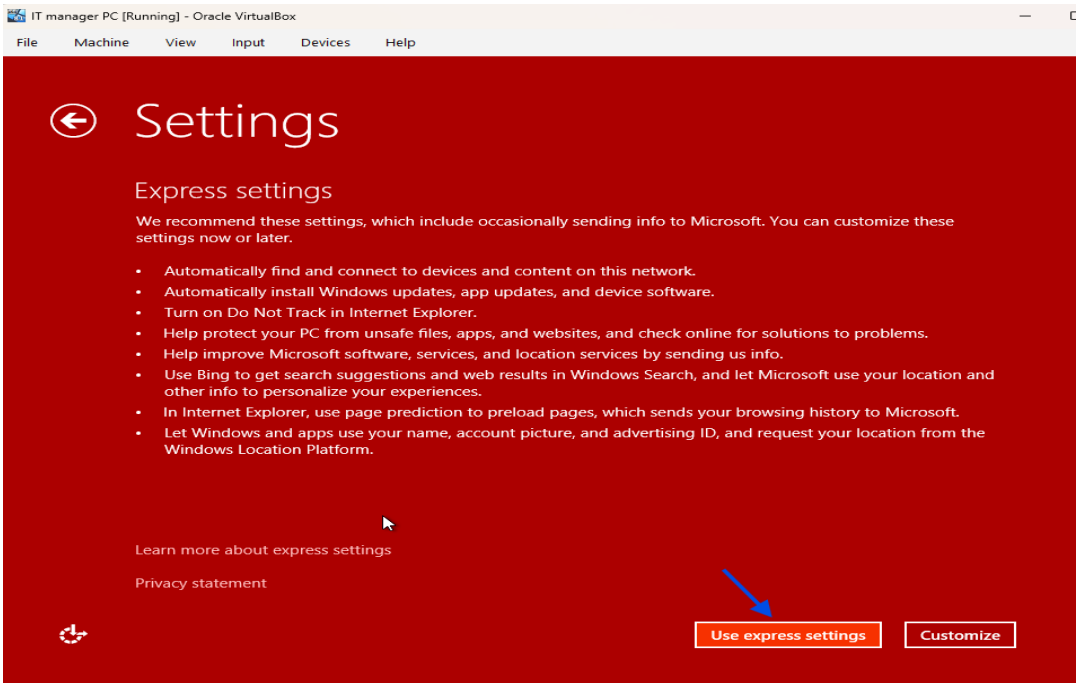

Windows Setup
License terms
MICROSOFT SOFTWARE LICENSE AGREEMENT
WINDOWS 8.1 PRO
Thank you for choosing Microsoft Windows 8.1 Pro. This is a license agreement between you and Microsoft Corporation (or, based on where you live, one of its affiliates) that describes your rights to use the Windows 8.1 Pro software. For your convenience, we've organized this agreement into two parts. The first part includes introductory terms phrased in a question and answer format; the Additional Terms and Limited Warranty follow and contain greater detail. You should review the entire agreement, including any linked terms, because all of the terms are important and together create this contract that applies to you. You can review linked terms by pasting the forward link into your browser window once the software is running. The
I accept the license terms
Next


Windows Setup
Which type of installation do you want?
Upgrade: Install Windows and keep files, settings, and applications
The files, settings, and applications are moved to Windows with this option. This option is only available when a supported version of Windows is already running on the computer.
Custom: Install Windows only (advanced)
The files, settings, and applications aren't moved to Windows with this option. If you want to make changes to partitions and drives, start the computer using the installation disc. We recommend backing up your files before you continue.
Help me decide

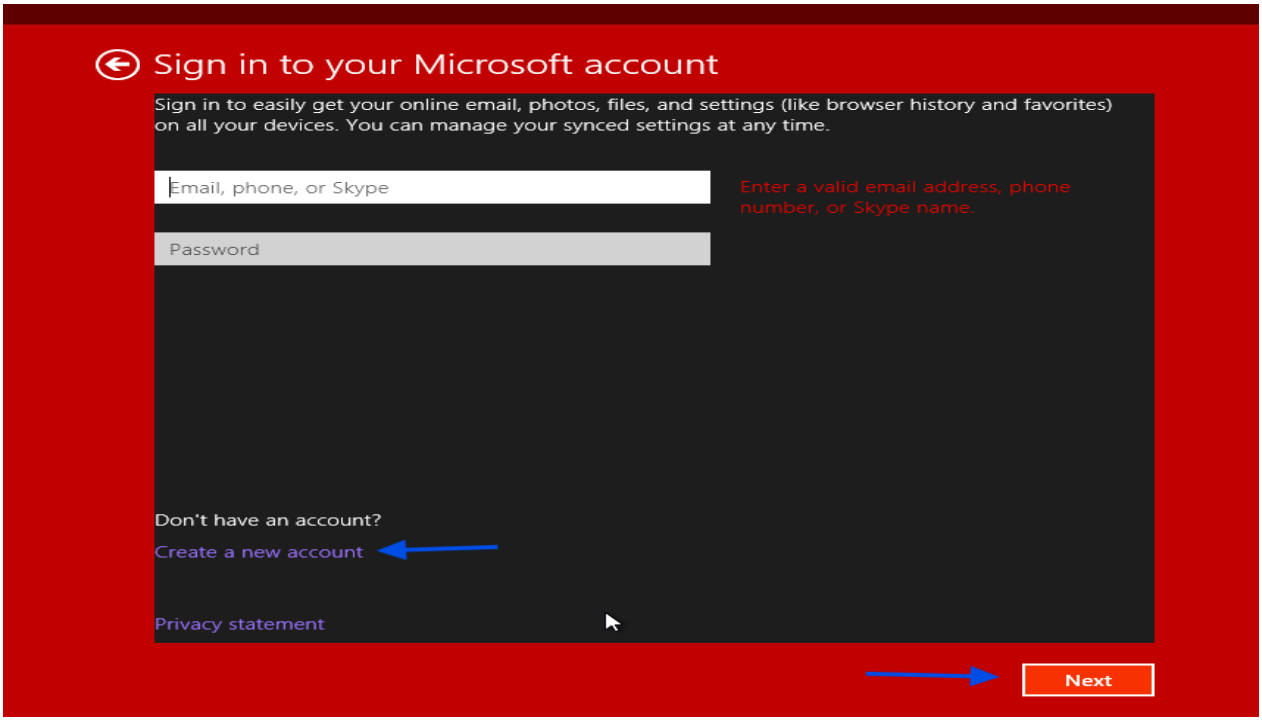


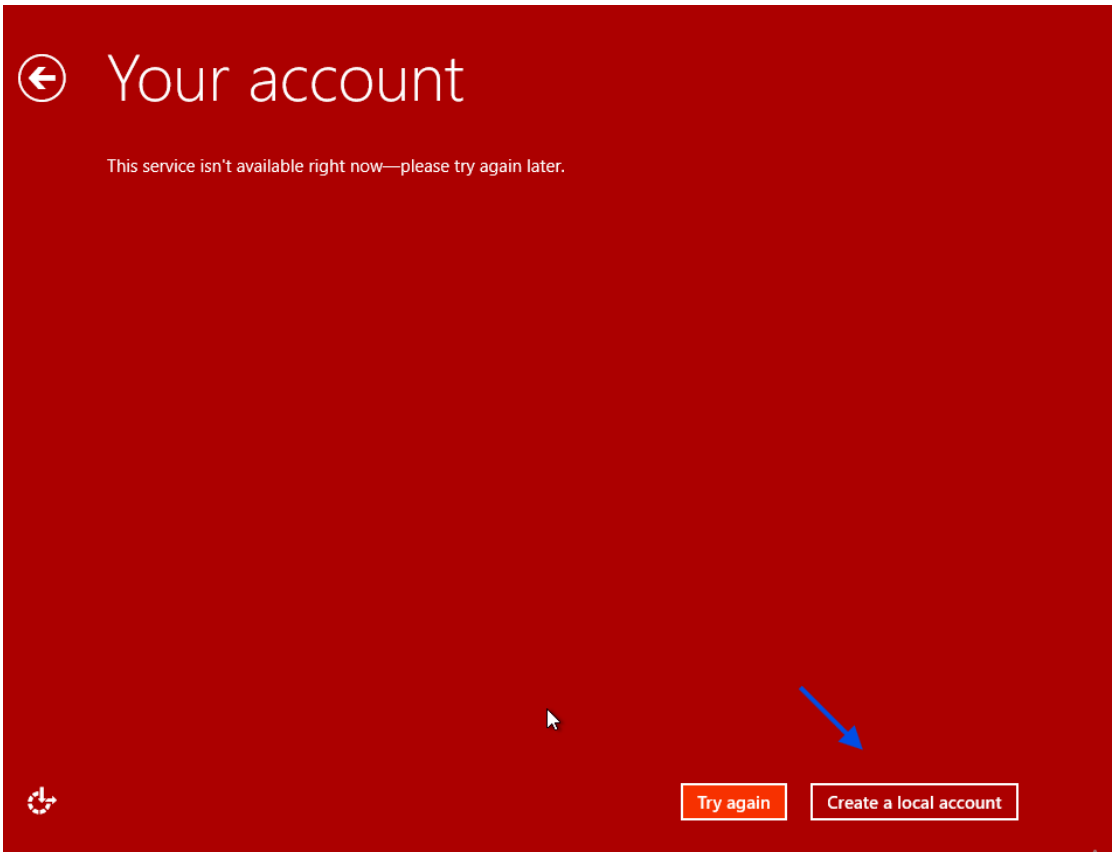
When, installation is complete, give the computer a name and follow the prompts by clicking next

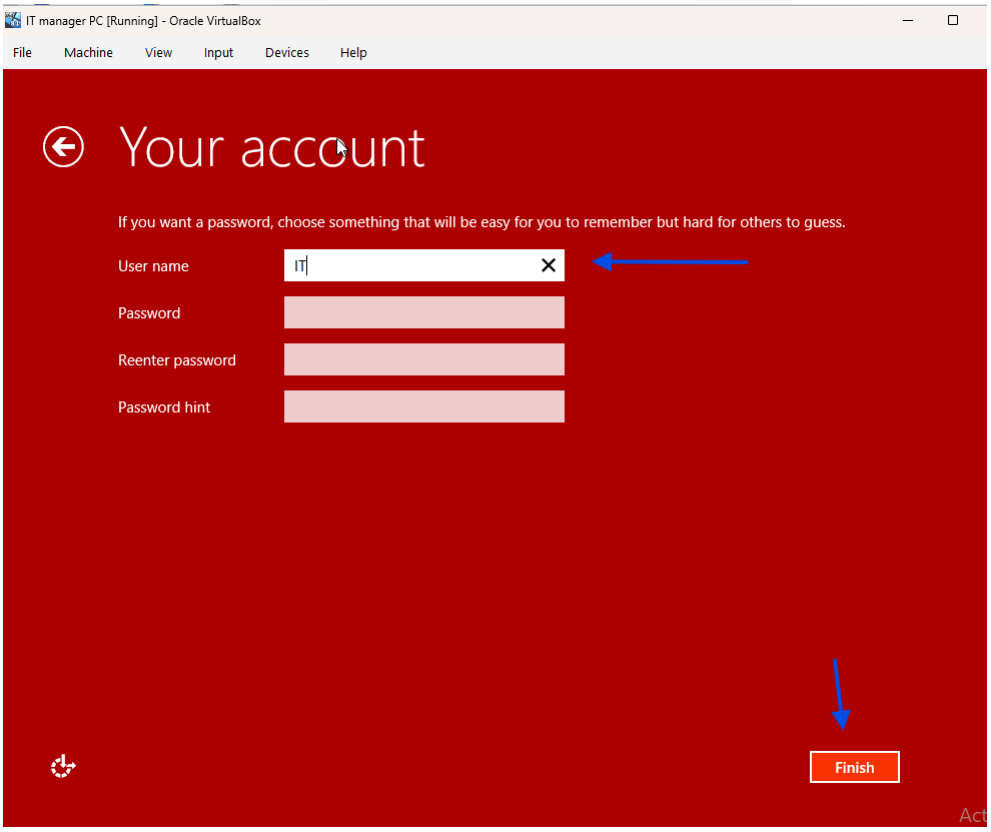




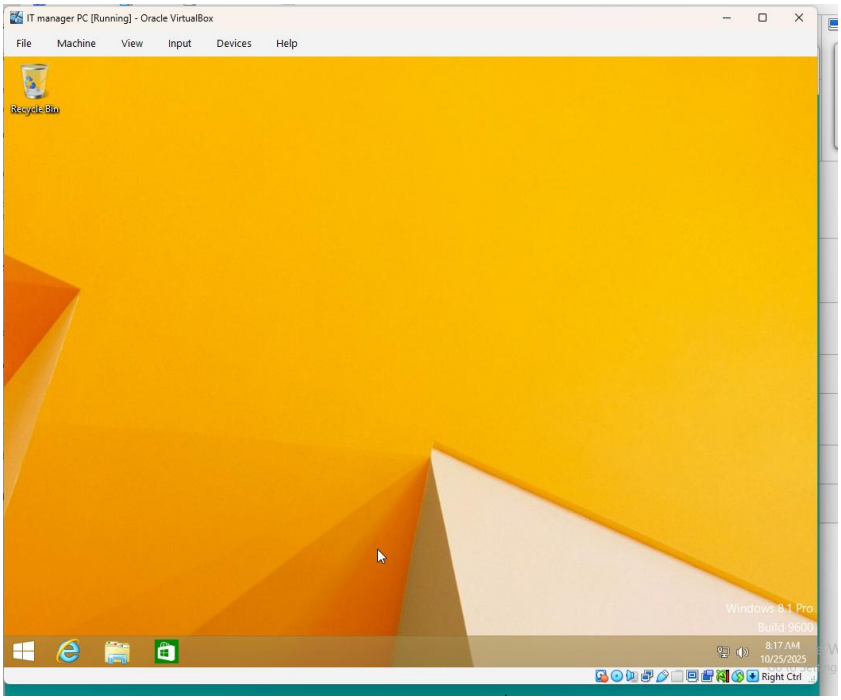
Create a Microsoft account if you have internet and if not create a local account, you can choose to have a password or leave it blank





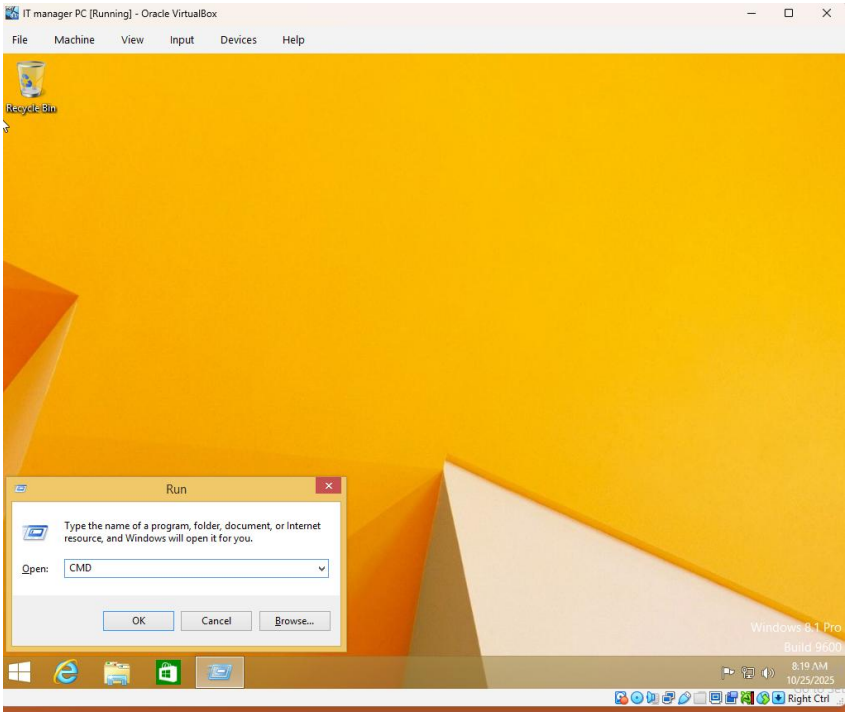


Click finish and wait for system to complete setup



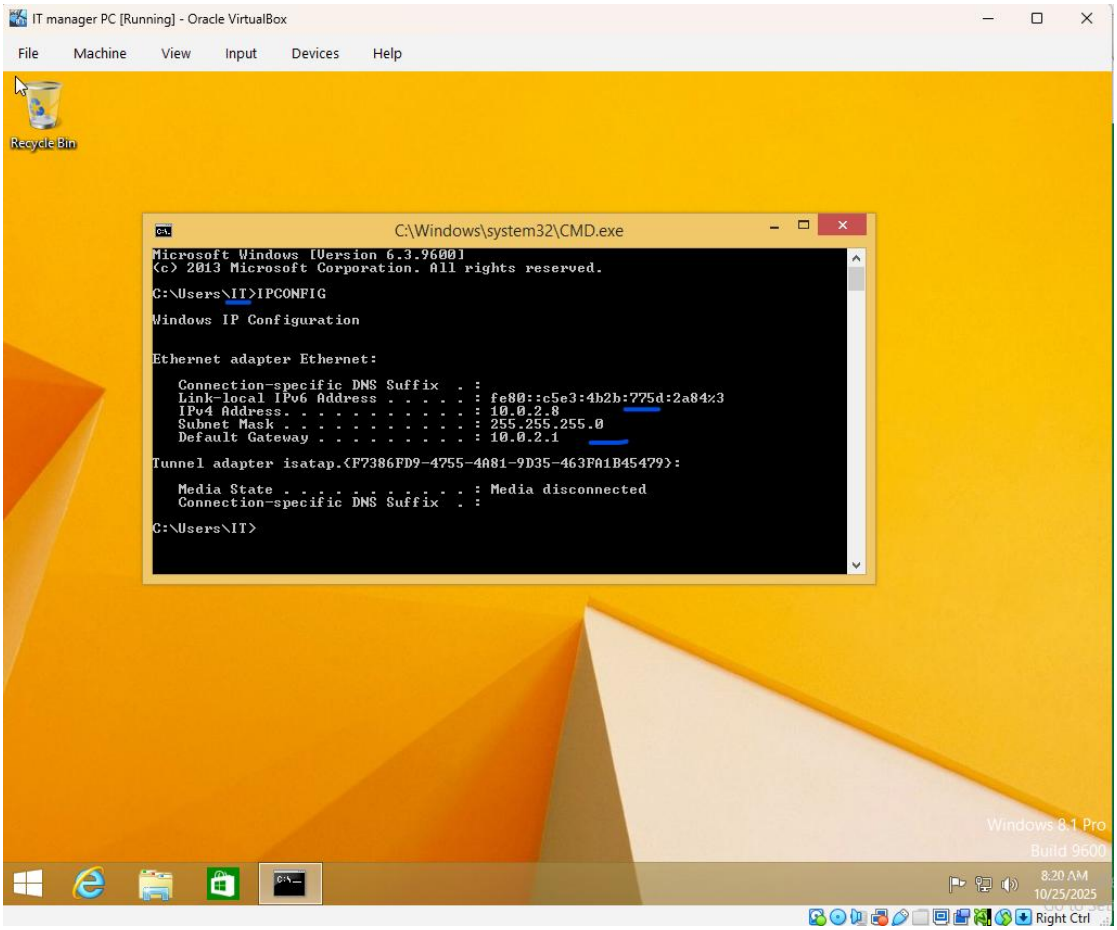
Now the PC is ready and we can check to confirm of our network setup was done properly

Press “Windows+R” button on keyboard to launch Run and click “OK”



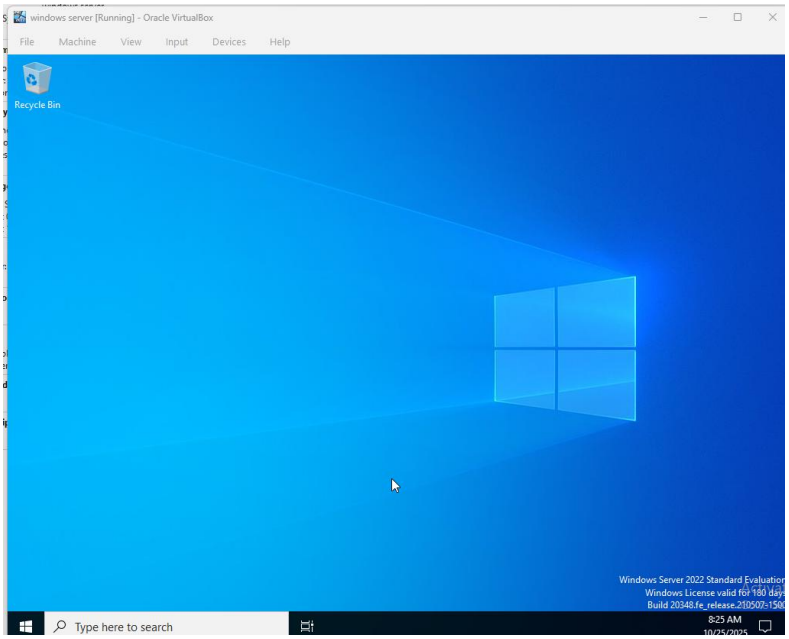
In command prompt, type “ipconfig” and press enter.

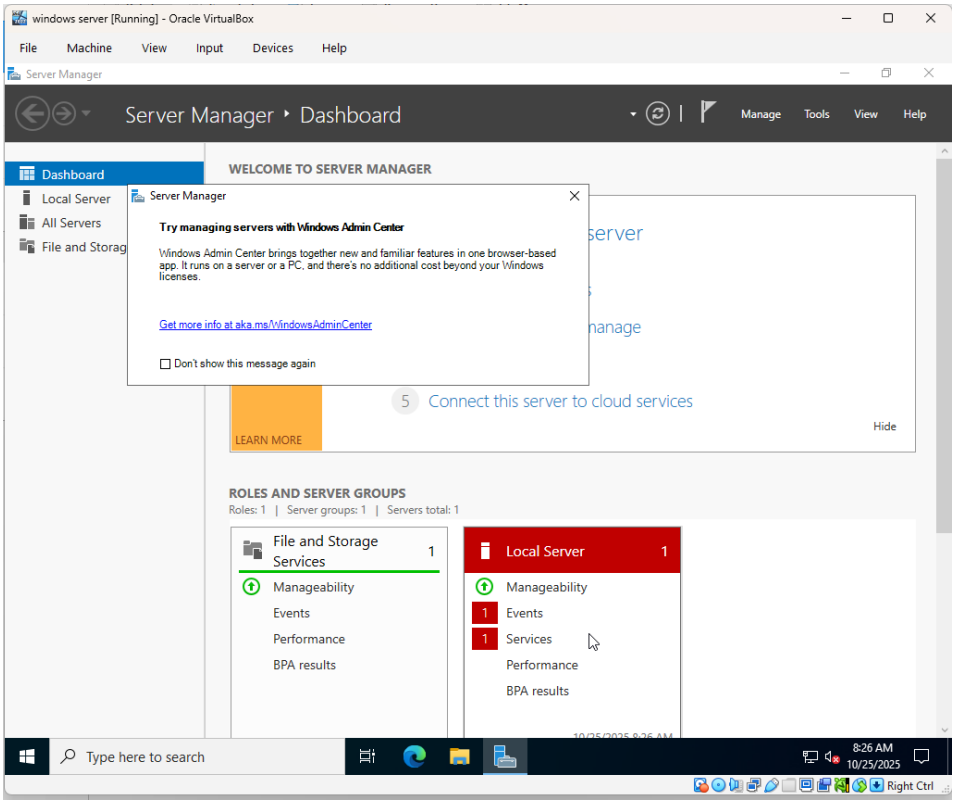
It will display the Host IP address, subnet mask and gateway

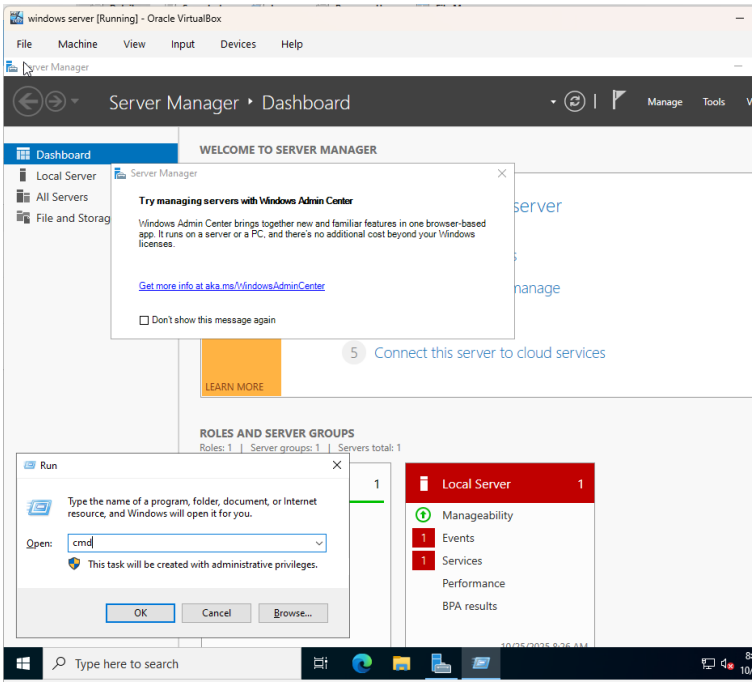


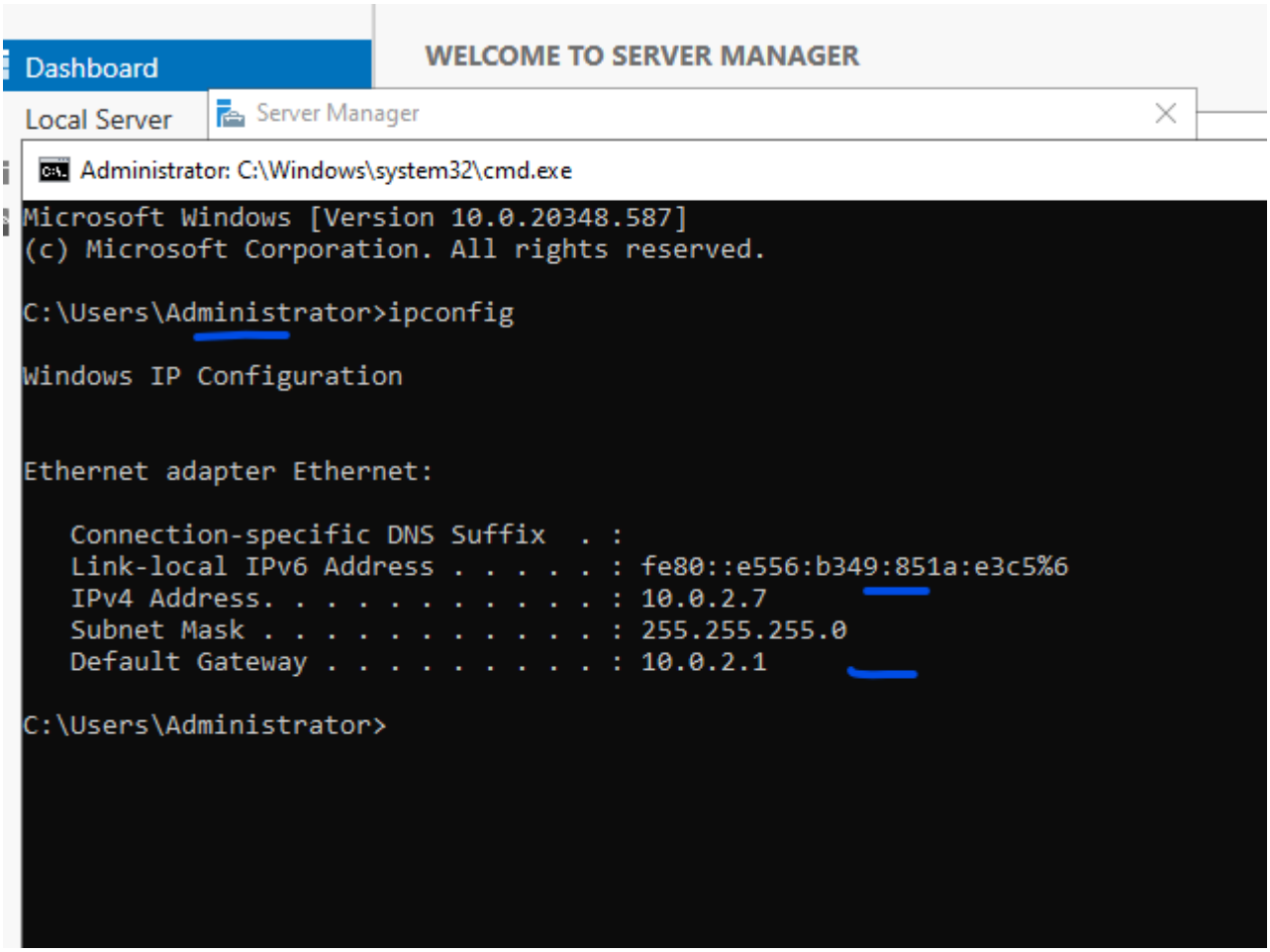
This can be done for the other windows 8 hosts.

Now let's take a look at that on the windows server




windows server [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Server Manager
Server Manager ▸ Dashboard
Manage Tools View Help
Dashboard
Local Server
All Servers
File and Storag
WELCOME TO SERVER MANAGER
Server Manager
Try managing servers with Windows Admin Center
Windows Admin Center brings together new and familiar features in one browser-based app. It runs on a server or a PC, and there's no additional cost beyond your Windows licenses.
Get more info at aka.ms/WindowsAdminCenter
Don't show this message again
5 Connect this server to cloud services
LEARN MORE
Hide
ROLES AND SERVER GROUPS
Roles: 1 | Server groups: 1 | Servers total: 1
File and Storage Services 1
Manageability
Events
Performance
BPA results
Local Server 1
Manageability
1 Events
1 Services
Performance
BPA results
Type here to search
8:26 AM
10/25/2025
Right Ctrl


windows server [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Server Manager ▸ Dashboard
Manage Tools
Dashboard
Local Server
All Servers
File and Storag
WELCOME TO SERVER MANAGER
Server Manager
Try managing servers with Windows Admin Center
Windows Admin Center brings together new and familiar features in one browser-based app. It runs on a server or a PC, and there's no additional cost beyond your Windows licenses.
Get more info at aka.ms/WindowsAdminCenter
Don't show this message again
5 Connect this server to cloud services
LEARN MORE
ROLES AND SERVER GROUPS
Roles: 1 | Server groups: 1 | Servers total: 1
Run
Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
Open: cmd
This task will be created with administrative privileges.
OK Cancel Browse...
Local Server 1
Manageability
1 Events
1 Services
Performance
BPA results
Type here to search

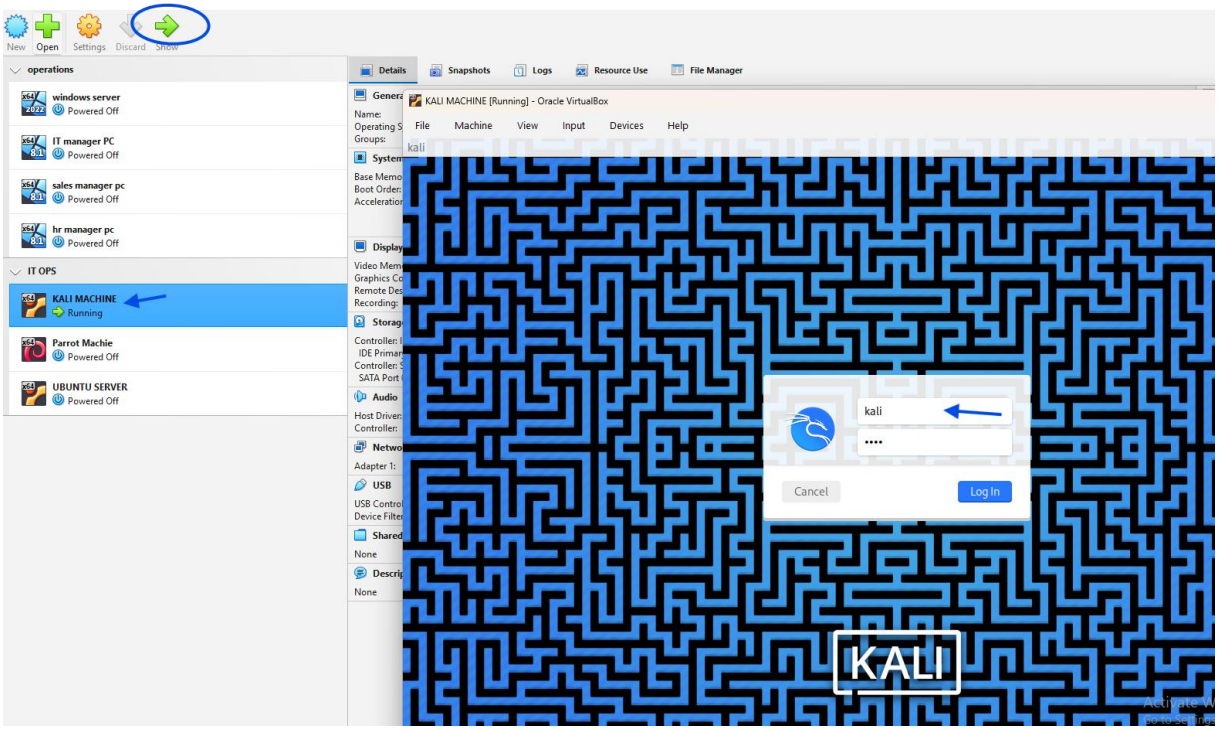


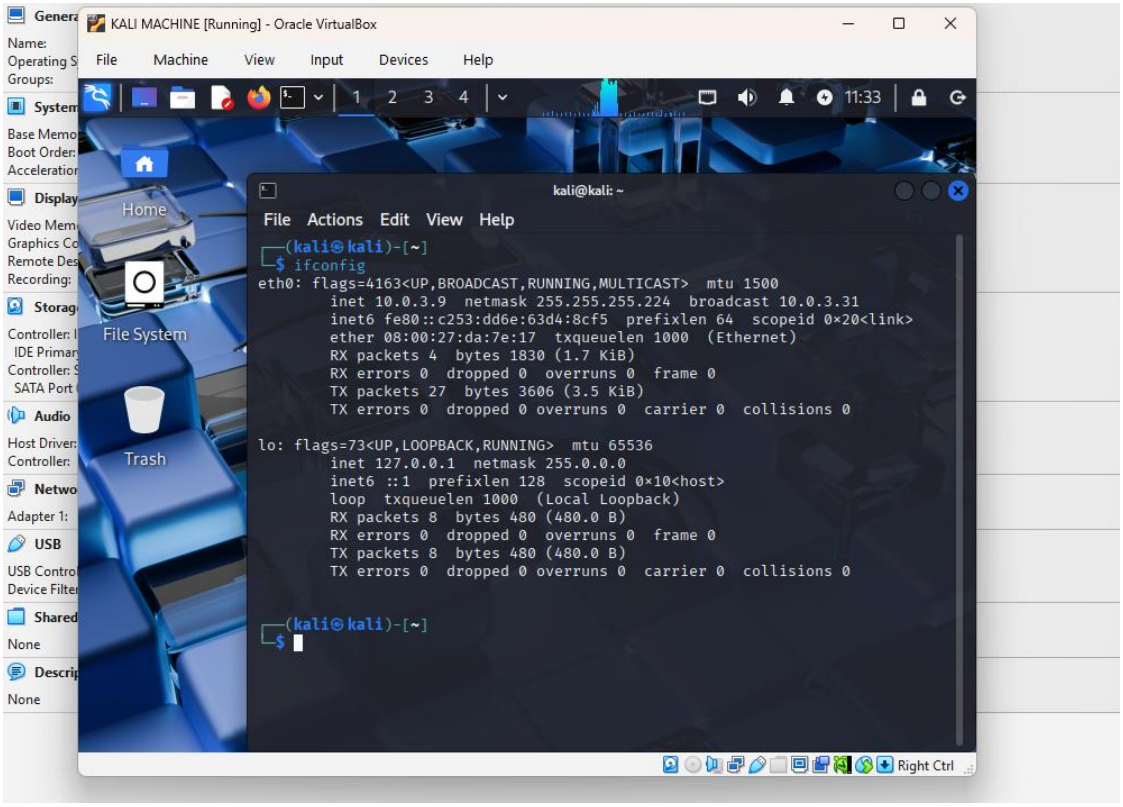
You will notice that the Host and the server have the same default gate way address.
This means the Nat network configuration is fine.

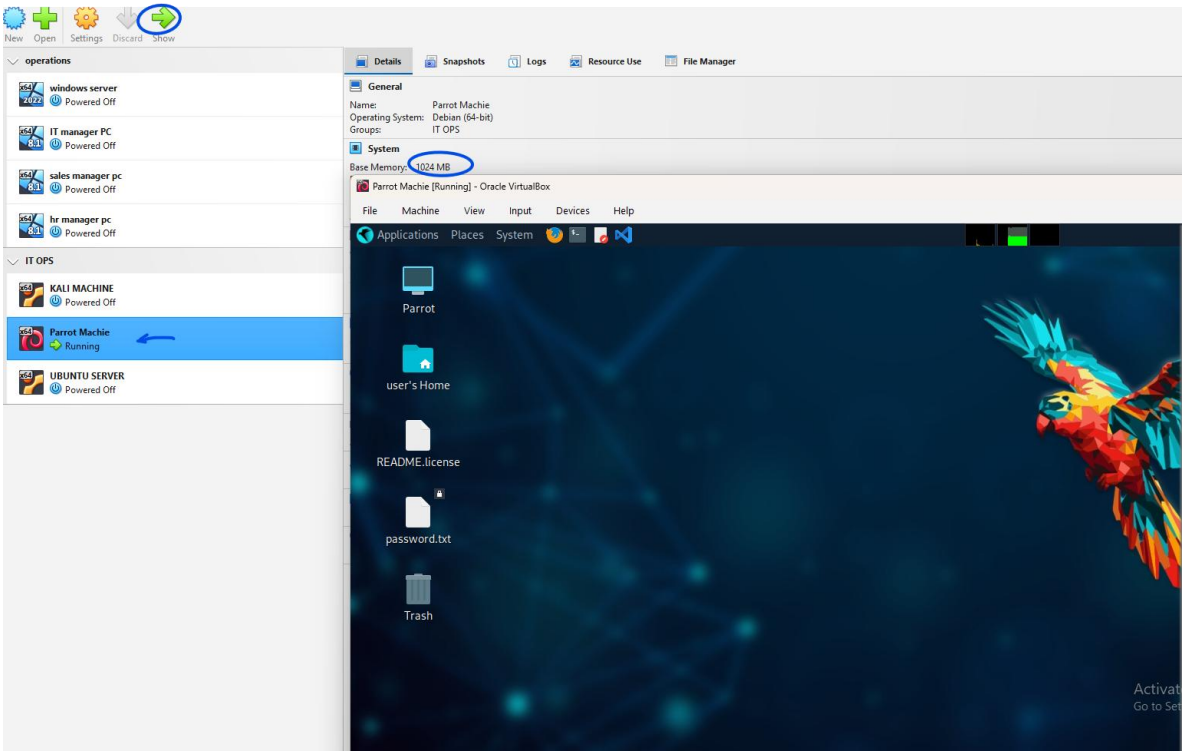
Now we launch the others machines in the IP OPS group and follow the prompts till they are installed.
For the kali machine, User name is kali and password is kali to log in.

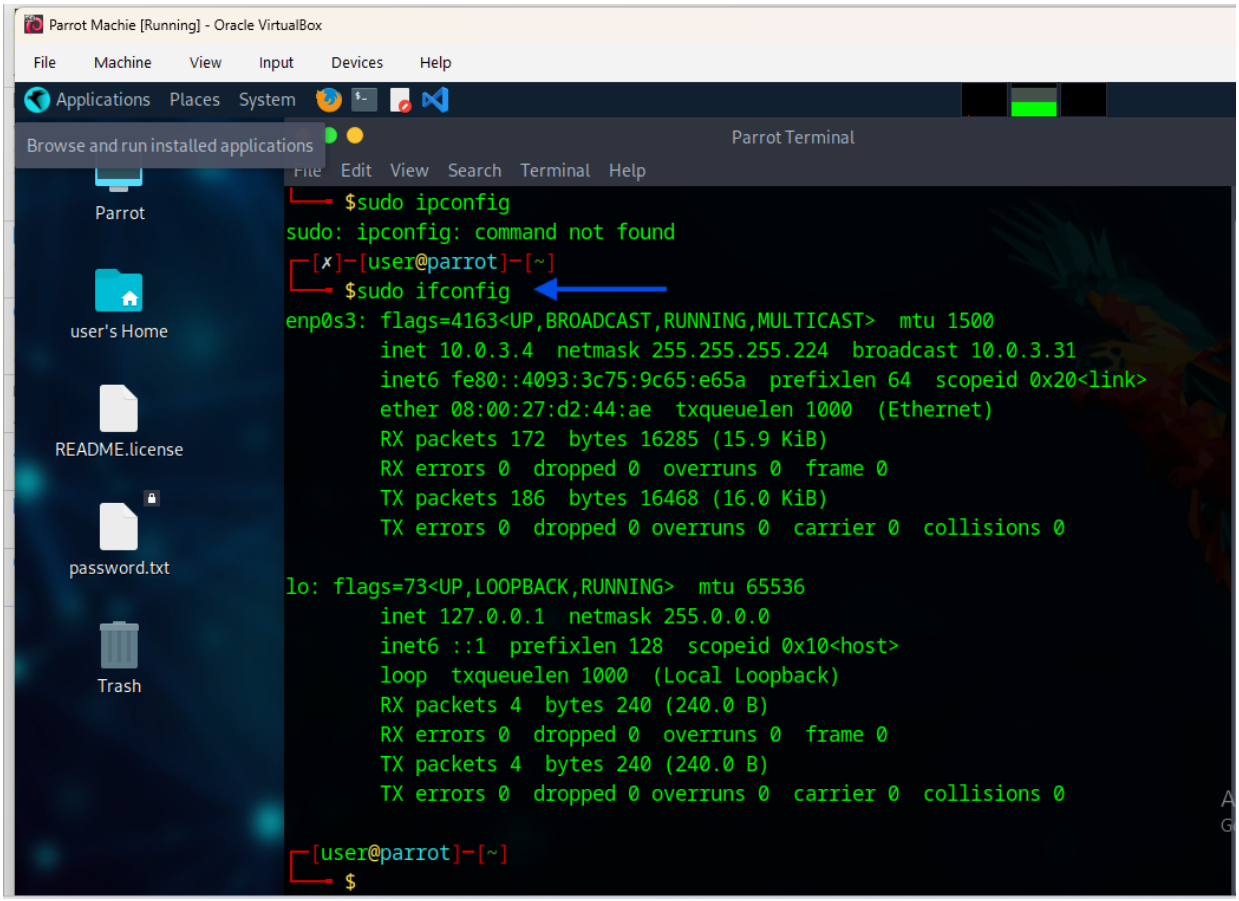
We can also check its IP address by clicking terminal and typing “ifconfig”

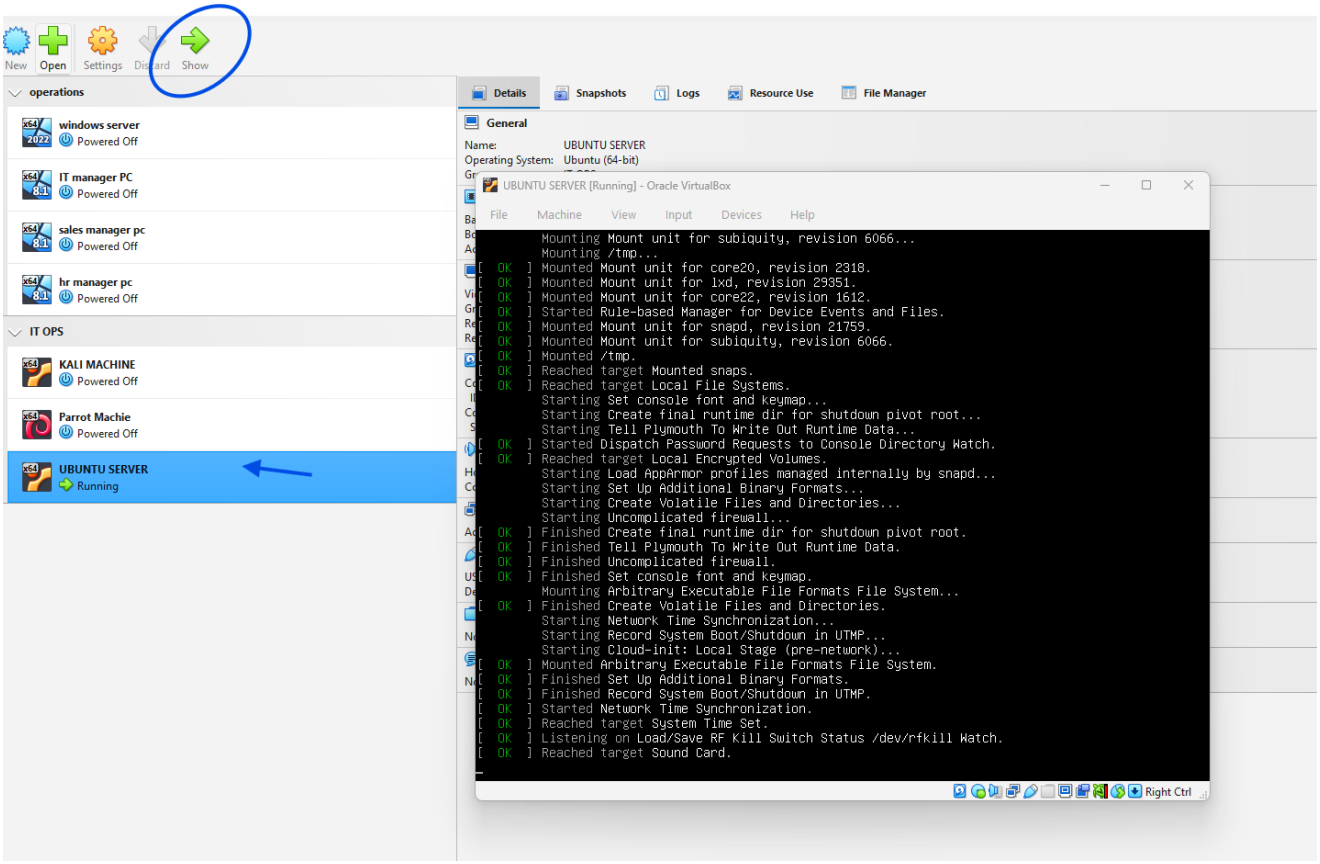
You will notice that the kali machine and Parrot machine have the same broadcast addres, meaning the NAT configuration was done correctly

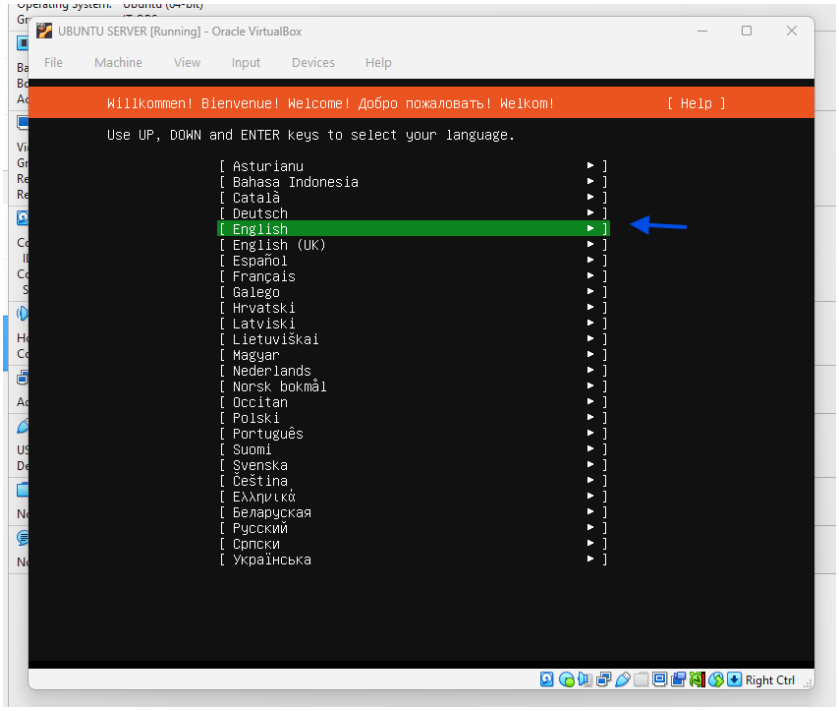

New
Open
Settings
Discard
Show
operations
windows server
Powered Off
IT manager PC
Powered Off
sales manager pc
Powered Off
hr manager pc
Powered Off
IT OPS
KALI MACHINE
Running
Parrot Machie
Powered Off
UBUNTU SERVER
Powered Off
Details
Snapshots
Logs
Resource Use
File Manager
KALI MACHINE [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
kali
Cancel
Log In
KALI


KALI MACHINE [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
11:33
Home
File System
Trash
kali@kali: ~
File
Actions
Edit
View
Help
(kali㉿kali)-[~]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 10.0.3.9 netmask 255.255.255.224 broadcast 10.0.3.31
inet6 fe80::c253:dd6e:63d4:8cf5 prefixlen 64 scopeid 0×20<link>
ether 08:00:27:da:7e:17 txqueuelen 1000 (Ethernet)
RX packets 4 bytes 1830 (1.7 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 27 bytes 3606 (3.5 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0×10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 8 bytes 480 (480.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 8 bytes 480 (480.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
(kali㉿kali)-[~]
$
Right Ctrl

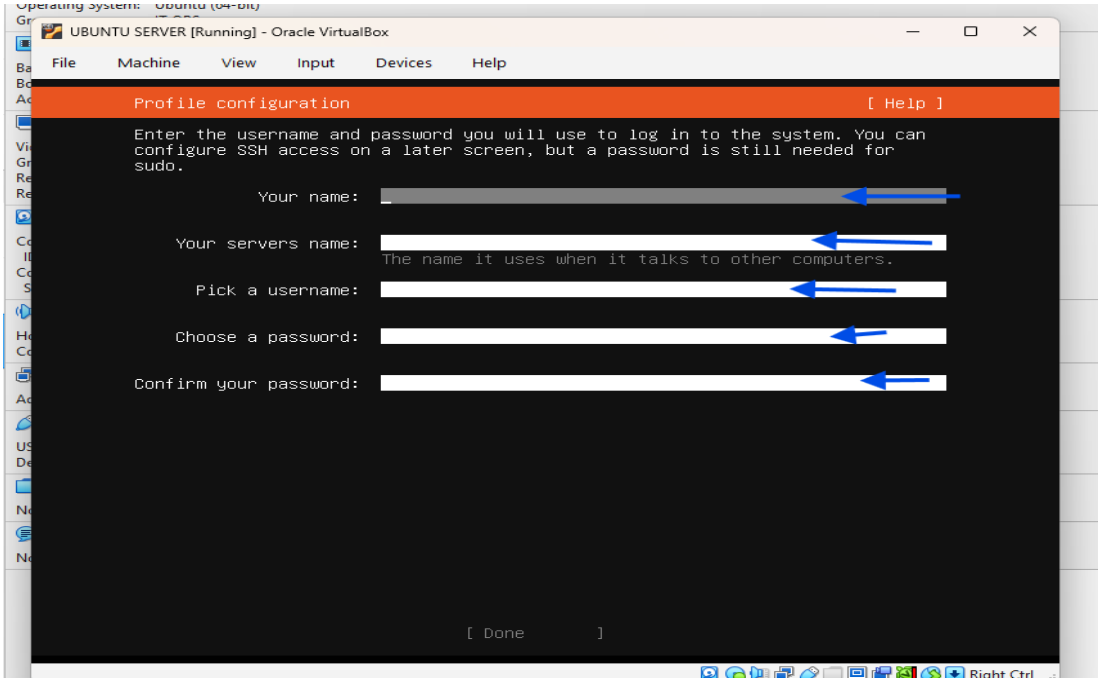

New
Open
Settings
Discard
Show
operations
windows server
Powered Off
IT manager PC
Powered Off
sales manager pc
Powered Off
hr manager pc
Powered Off
IT OPS
KALI MACHINE
Powered Off
Parrot Machie
Running
UBUNTU SERVER
Powered Off
Details
Snapshots
Logs
Resource Use
File Manager
General
Name: Parrot Machie
Operating System: Debian (64-bit)
Groups: IT OPS
System
Base Memory: 1024 MB
Parrot Machie [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
Applications
Places
System
Parrot
user's Home
README.license
password.txt
Trash


Parrot Machie [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
Applications
Places
System
Browse and run installed applications
Parrot Terminal
File
Edit
View
Search
Terminal
Help
$sudo ipconfig
sudo: ipconfig: command not found
[✗]-[user@parrot]-[~]
$sudo ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 10.0.3.4 netmask 255.255.255.224 broadcast 10.0.3.31
inet6 fe80::4093:3c75:9c65:e65a prefixlen 64 scopeid 0x20<link>
ether 08:00:27:d2:44:ae txqueuelen 1000 (Ethernet)
RX packets 172 bytes 16285 (15.9 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 186 bytes 16468 (16.0 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 4 bytes 240 (240.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 4 bytes 240 (240.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
[user@parrot]-[~]
$
Parrot
user's Home
README.license
password.txt
Trash

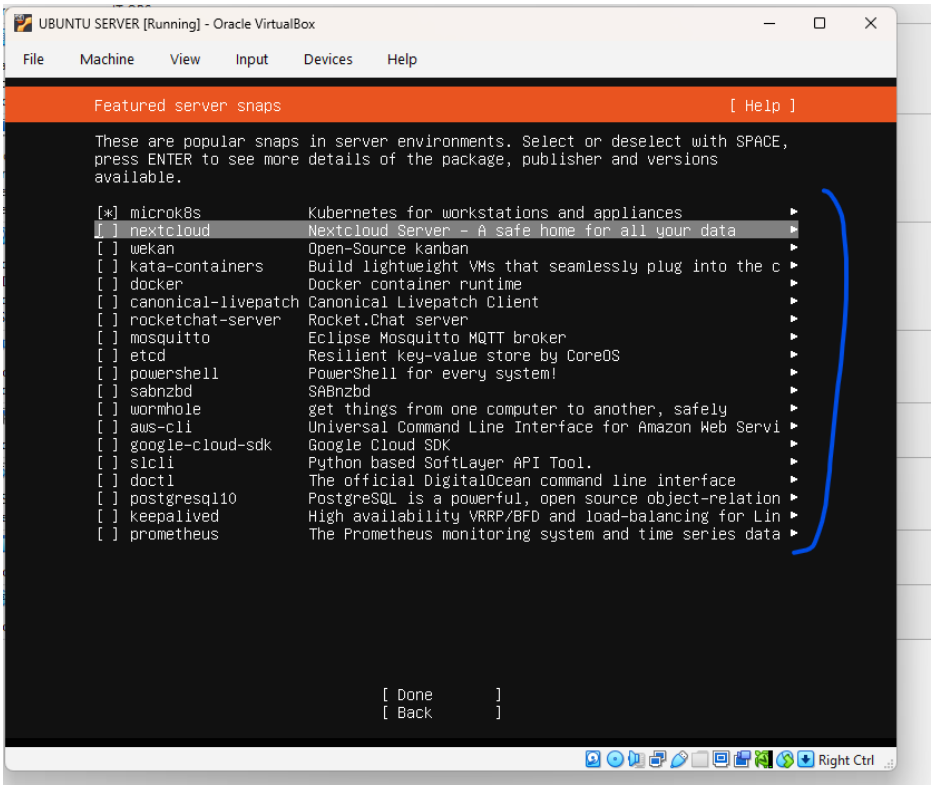

New
Open
Settings
Discard
Show
operations
windows server
Powered Off
IT manager PC
Powered Off
sales manager pc
Powered Off
hr manager pc
Powered Off
IT OPS
KALI MACHINE
Powered Off
Parrot Machie
Powered Off
UBUNTU SERVER
Running
Details
Snapshots
Logs
Resource Use
File Manager
General
Name: UBUNTU SERVER
Operating System: Ubuntu (64-bit)
UBUNTU SERVER [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
Mounting Mount unit for subiquity, revision 6066...
Mounting /tmp...
[OK] Mounted Mount unit for core20, revision 2318.
[OK] Mounted Mount unit for lxd, revision 29351.
[OK] Mounted Mount unit for core22, revision 1612.
[OK] Started Rule-based Manager for Device Events and Files.
[OK] Mounted Mount unit for snapd, revision 21759.
[OK] Mounted Mount unit for subiquity, revision 6066.
[OK] Mounted /tmp.
[OK] Reached target Mounted snaps.
[OK] Reached target Local File Systems.
Starting Set console font and keymap...
Starting Create final runtime dir for shutdown pivot root...
Starting Tell Plymouth To Write Out Runtime Data...
[OK] Started Dispatch Password Requests to Console Directory Watch.
[OK] Reached target Local Encrypted Volumes.
Starting Load AppArmor profiles managed internally by snapd...
Starting Set Up Additional Binary Formats...
Starting Create Volatile Files and Directories...
Starting Uncomplicated firewall...
[OK] Finished Create final runtime dir for shutdown pivot root.
[OK] Finished Tell Plymouth To Write Out Runtime Data.
[OK] Finished Uncomplicated firewall.
[OK] Finished Set console font and keymap.
Mounting Arbitrary Executable File Formats File System...
[OK] Finished Create Volatile Files and Directories.
Starting Network Time Synchronization...
Starting Record System Boot/Shutdown in UTMP...
Starting Cloud-init: Local Stage (pre-network)...
[OK] Mounted Arbitrary Executable File Formats File System.
[OK] Finished Set Up Additional Binary Formats.
[OK] Finished Record System Boot/Shutdown in UTMP.
[OK] Started Network Time Synchronization.
[OK] Reached target System Time Set.
[OK] Listening on Load/Save RF Kill Switch Status /dev/rfkill Watch.
[OK] Reached target Sound Card.
Right Ctrl

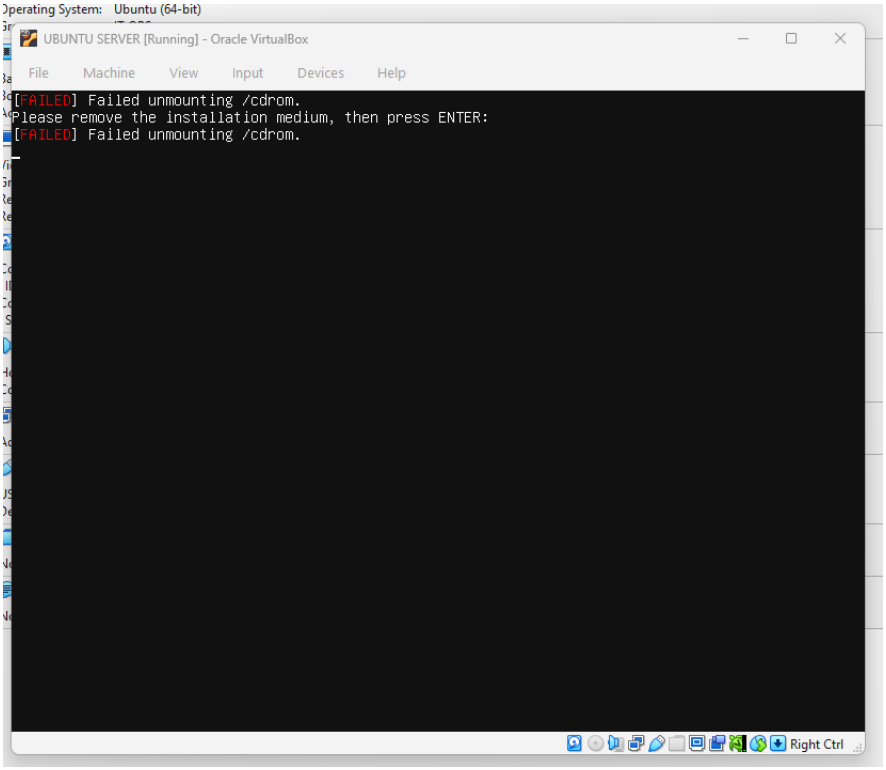

UBUNTU SERVER [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
Willkommen! Bienvenue! Welcome! Добро пожаловать! Welkom! [Help]
Use UP, DOWN and ENTER keys to select your language.
[Asturianu ▸]
[Bahasa Indonesia ▸]
[Català ▸]
[Deutsch ▸]
[English ▸]
[English (UK) ▸]
[Español ▸]
[Français ▸]
[Galego ▸]
[Hrvatski ▸]
[Latviski ▸]
[Lietuviškai ▸]
[Magyar ▸]
[Nederlands ▸]
[Norsk bokmål ▸]
[Occitan ▸]
[Polski ▸]
[Português ▸]
[Suomi ▸]
[Svenska ▸]
[Čeština ▸]
[Ελληνικά ▸]
[Беларуская ▸]
[Русский ▸]
[Српски ▸]
[Українська ▸]
Right Ctrl

Provide, names and password

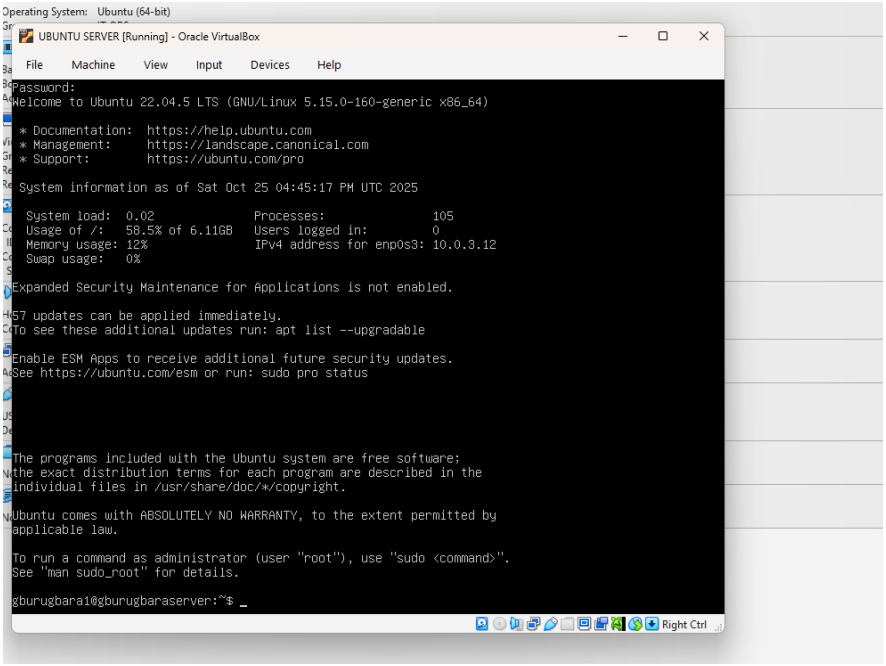


Select all by pressing the space bar and click done





Once installation is complete, close the server so it will unmount the cdrom installation file and restart



And with that we have successfully installed the Ubuntu server