

2025

# VIRTUAL MACHINE PROVISIONING & CONFIGURATION

YASIN SEKABIRA



VIRTUAL MACHINE PROVISIONING & CONFIGURATION

VM-PRO-NIT-0001

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**VIRTUAL MACHINE PROVISIONG  
AND  
CONFIGURATION  
(ORACLE VIRTUAL BOX)**

PREPARED BY:

**NIT ACADEMY**

**YASIN SEKABIRIA**

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## 2.0 INTRODUCTION

This document is a step-by-step instruction guide to provision a Linux virtual machine.

For this Linux Fundamentals course, we will work with the Red Hat family distributions (either install RHEL 9 or Rocky Linux 9, either of the two will be enough for this course. NOTE: RHEL9 or RockyLinux9 versions were tested; newer stable versions can be tried if preferred.

Why Red Hat? Red Hat Enterprise Linux is a commercial open-source Linux distribution developed by Red Hat for the commercial market. It is heavily used in the Enterprise environment.

Rocky Linux is an open-source enterprise operating system designed to be 100% bug-for-bug compatible with Red Hat Enterprise Linux

1. Red Hat Enterprise Linux 9 installation in VirtualBox
2. Rocky Linux 9 installation in VirtualBox
3. Other available options to provision a Linux VM

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### 3.0 VIRTUALIZATION AND VIRTUAL MACHINE

**Virtual Machine** is commonly shortened to just “VM”

- VM is a virtual computer running on top of another host computer

#### Virtualization

- Is the process of creating a software-based, or “Virtual” version of a computer, with dedicated amounts of CPU, memory, and storage that are “borrowed” from a physical host computer
- Makes it possible that any Operating System (OS) can run on top of any other physical host machine
- The VM is partitioned from the rest of the system, meaning it’s completely isolated and can’t interfere with the host computer’s primary OS

#### Hypervisor

- The essential component in the virtualization stack is a piece of software called a hypervisor
- One of the most popular hypervisor is open-source **Oracle VirtualBox**

#### Host Operating System (OS) vs Guest Operating System (OS)

- **Host OS** – runs directly on the hardware
- **Guest OS** – runs on the virtual machine

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## 4.0 LINUX VIRTUAL MACHINE PROVISIONING

### System Requirements for the VM

- 20GB free disk space
- Download [Oracle VirtualBox](#)
- RHEL9 ISO File
- A minimum of 1 GB RAM recommended for the Command Line Interface (CLI)
- 1 core or thread for each virtualized CPU

### NOTE, the physical machine, the key hardware requirements are

- A CPU with virtualization technology enabled (like Intel VT-x or AMD-V)
- Sufficient RAM to support both the host OS and the virtual machine
- Enough storage space for the virtual machine image
- Additionally, the BIOS should have the option to enable virtualization features

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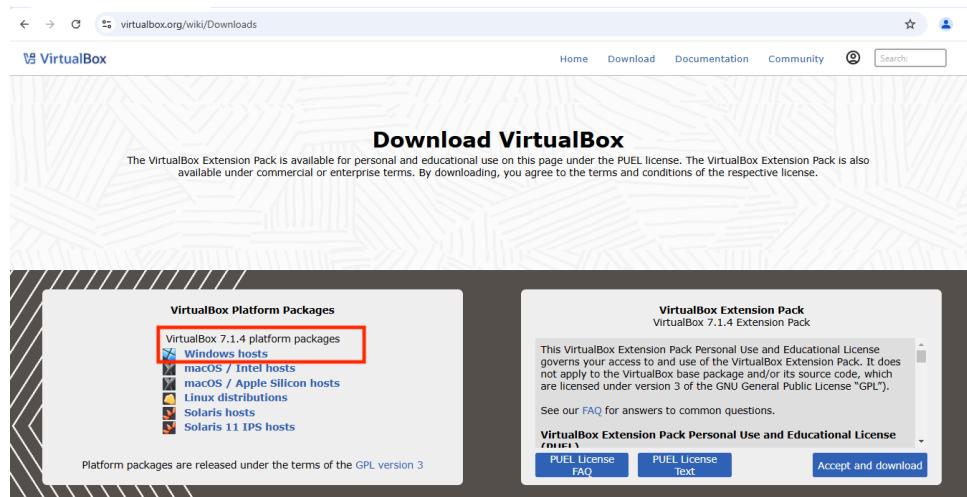
## 5.0 INSTALLATION STEPS

### NOTE:

- Installation steps assume you're running Windows Operating system on your Computer
- Windows 10 is recommended.

### 5.1 INSTALL ORACLE VIRTUALBOX HYPERVISOR

1. Proceed to [Oracle VirtualBox](https://www.virtualbox.org/wiki/Downloads) and download VirtualBox package for Windows platform

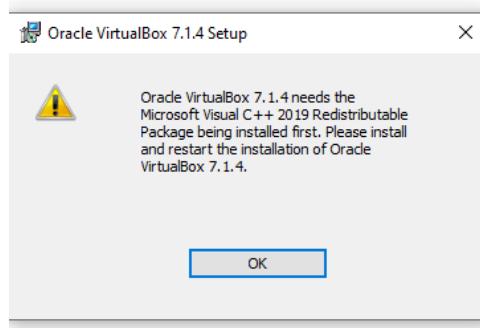


2. Run the downloaded package to Install Oracle VirtualBox

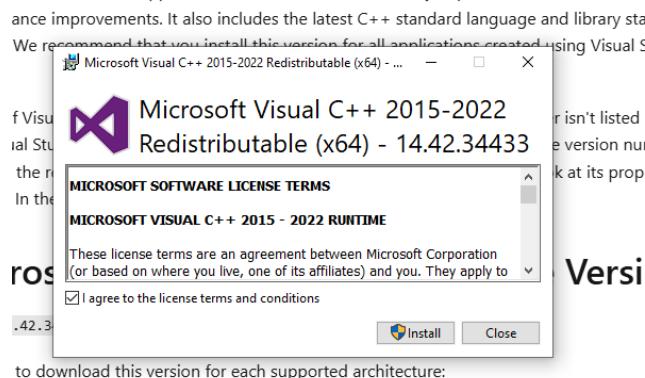


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3. If Error! – “Oracle VirtualBox needs Microsoft Visual C++ 2019 Redistributable Package”, proceed to step 4, otherwise continue with the VirtualBox installation, step 5



4. Download [Microsoft Visual C++ Redistributable package](#) and install it, computer might require to be restarted after installation. Then run the VirtualBox package to proceed with the installation – step 5



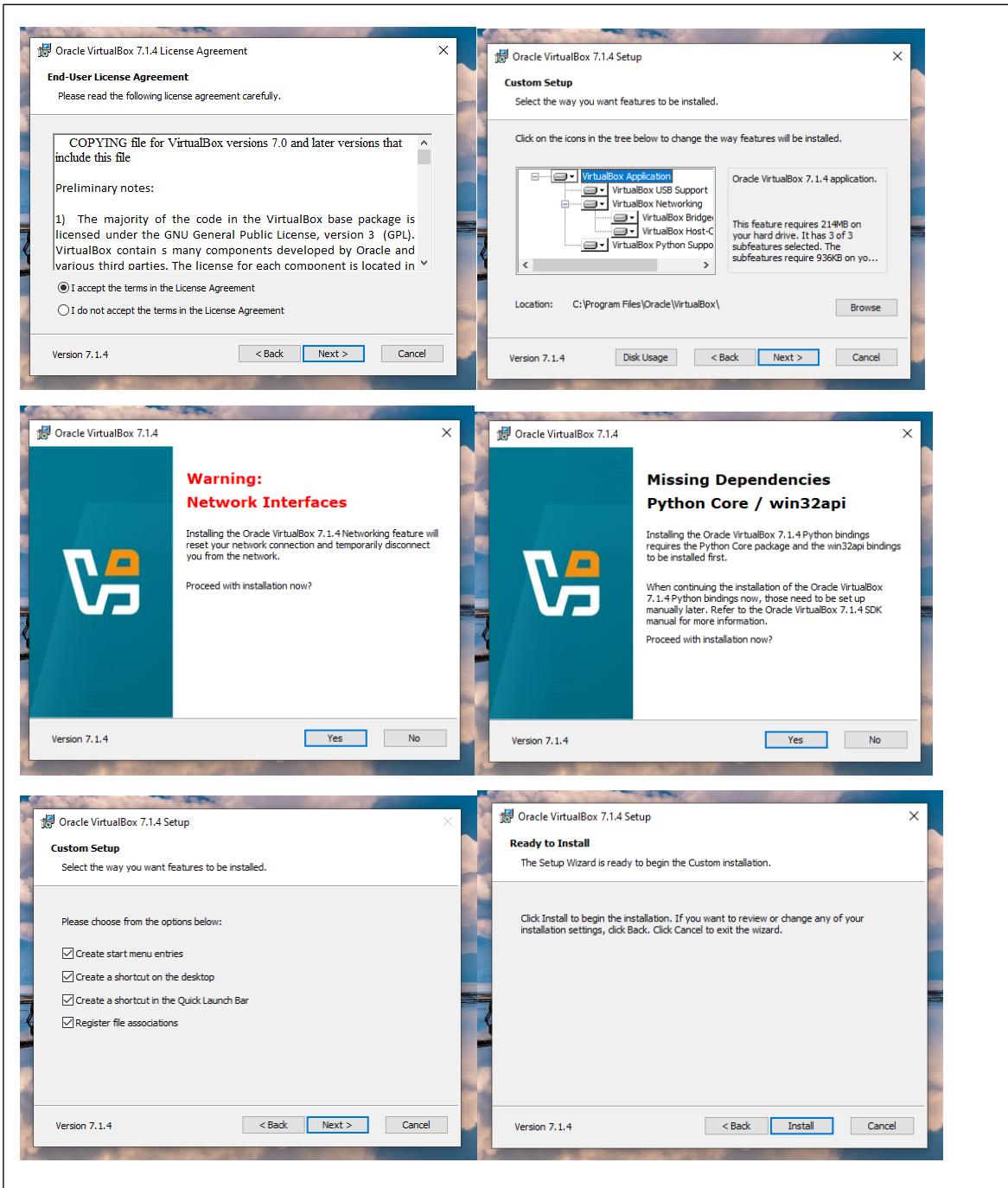
to download this version for each supported architecture:

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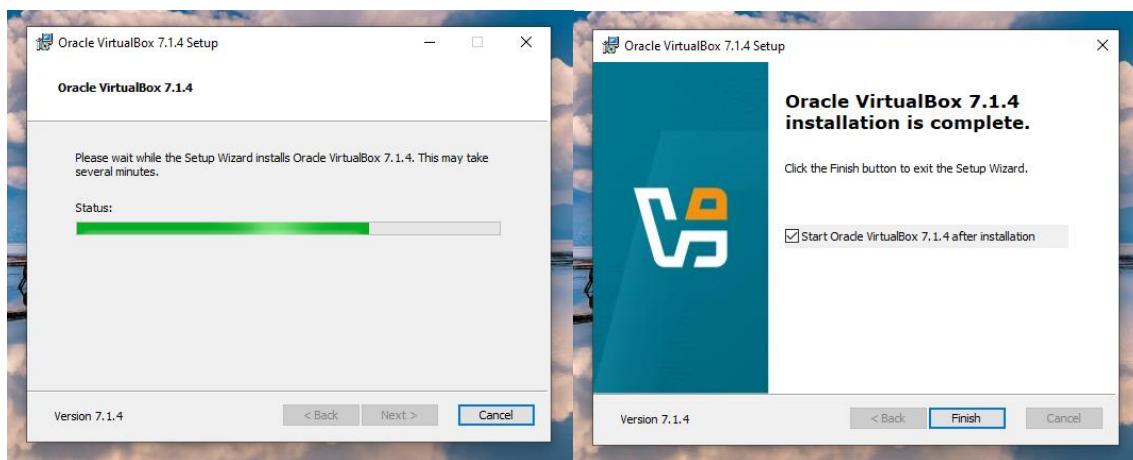
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## 5. VirtualBox installation continuation...



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- Open the fresh installed VirtualBox, choose the Expert Mode

If No issues or error upon opening VirtualBox, proceed to step 6 – installing VirtualBox extension, it's optional, you might skip it if you wish

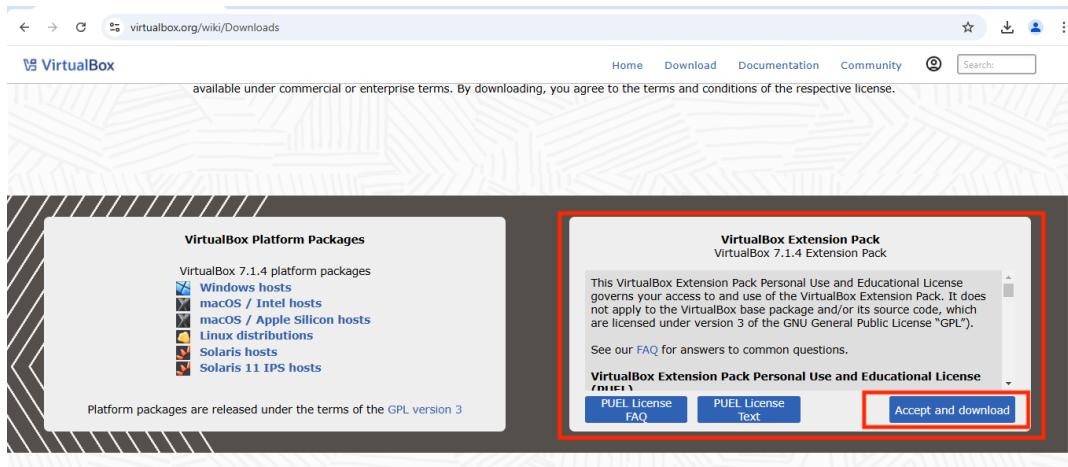
6. Optional - Installing VirtualBox extension pack, it is intended to extend the functionality of VirtualBox.

Extension pack adds the following functionality

- Support for USB 2.0 and USB 3.0 devices
- Host webcam pass-through
- VirtualBox Remote Desktop Protocol
- Disk encryption
- PXE boot for Intel cards

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Accept and Download Extension Pack, install it



The top part of the image shows a file download window for 'Oracle\_VirtualBox\_Extension\_Pack-7.1.4.vbox-extpack' from the URL <https://www.virtualbox.org>. The middle part shows a 'VirtualBox - Question' dialog box with a message about installing an extension pack, an 'Install' button, and a 'Cancel' button. The bottom part shows a 'VirtualBox License' dialog box with detailed legal text and 'I Agree' and 'I Disagree' buttons at the bottom.

Click **I Agree** and Extension Pack will be added to the installed VirtualBox

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## 5.2 RED HAT ENTERPRISE LINUX 9 INSTALLATION IN VIRTUALBOX

### 1. Download Red Hat Enterprise Linux 9 ISO

Proceed to [Red hat developer portal](#) and login, enter your username and password. If you don't have an account, create one and proceed to next steps. Signing up on the portal allows to download Red hat software at no-cost.

#### Featured products & portfolios

Rapidly build, test, and deploy applications that make work better for your organization.

[Red Hat Enterprise Linux AI](#)

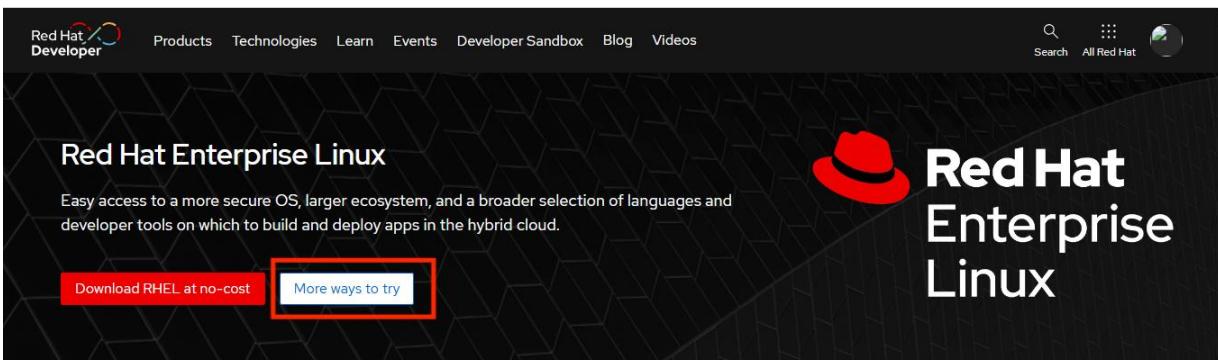
[Red Hat Enterprise Linux Try RHEL](#)

[Red Hat OpenShift Try Openshift](#)

[Red Hat Ansible Automation Platform](#)

- Once you've successful logged in, click on Products > Featured > RedHat Enterprise Linux

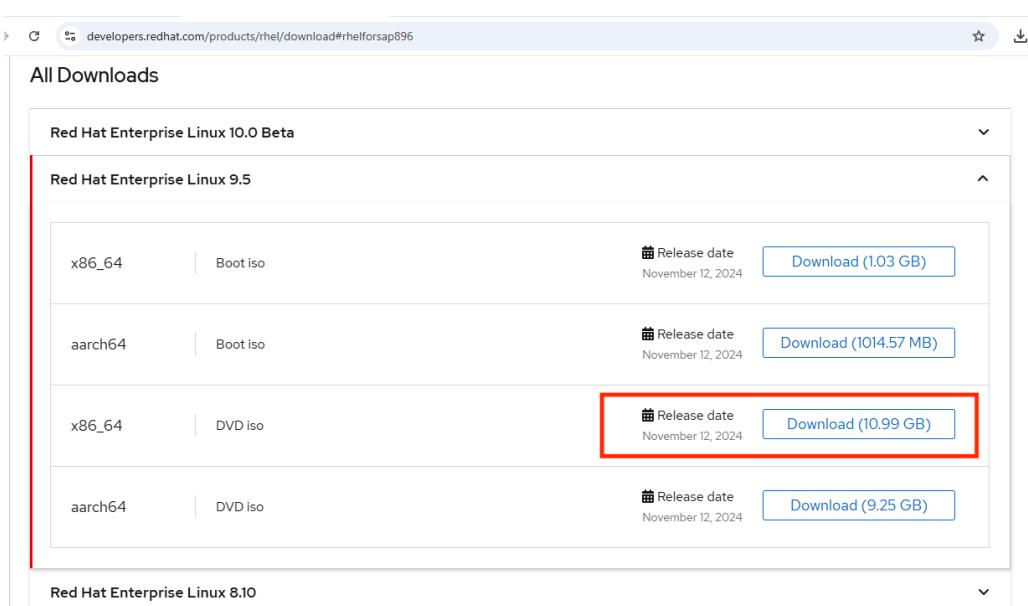
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The screenshot shows the Red Hat Developer website's product page for Red Hat Enterprise Linux. It features a large image of a red fedora hat with the text "Red Hat Enterprise Linux". Below the image are two buttons: "Download RHEL at no-cost" and "More ways to try", with the latter being highlighted by a red box. The page includes a brief description of RHEL's benefits and navigation links like "Overview", "Download/Sign up", and "Get started". The URL in the browser bar is developers.redhat.com/products/rhel/download#rhelforsap896.

**Deliver any application anywhere using Red Hat Enterprise Linux**

- Click **More ways to try** and scroll down to the **All Downloads Section** > Expand Red Hat Enterprise Linux 9.5 > Download x86\_64 DVD iso
- Once the download is complete, Save the iso image locally in the path you can easily access



The screenshot shows the "All Downloads" section of the Red Hat Developer website. It lists several Red Hat Enterprise Linux versions. The "Red Hat Enterprise Linux 9.5" section is expanded, showing four download options: x86\_64 Boot iso (Release date: November 12, 2024, Download 1.03 GB), aarch64 Boot iso (Release date: November 12, 2024, Download 1014.57 MB), x86\_64 DVD iso (Release date: November 12, 2024, Download 10.99 GB), and aarch64 DVD iso (Release date: November 12, 2024, Download 9.25 GB). The "x86\_64 DVD iso" download button is highlighted by a red box.

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## 2. Create a new RHEL9 virtual machine in VirtualBox

Open VirtualBox software we installed earlier and click on *New* to create a new VM

The screenshot shows the 'Create Virtual Machine' wizard in VirtualBox. It consists of two main panels:

- Name and Operating System:**
  - Name: nit-server1
  - Folder: C:\Users\Habiba\VirtualBox VMs
  - ISO Image: E:\os\Images\rhel-9.5-x86\_64-dvd.iso (highlighted with a red box)
  - Edition: Linux (x64)
  - Type: Linux
  - Subtype: Red Hat
  - Version: Red Hat (64-bit)
  - Skip Unattended Installation (highlighted with a red box)
- Unattended Install:**
  - Username and Password:
    - Username: vboxuser
    - Password: \*\*\*\*\*
    - Repeat Password: \*\*\*\*\*
  - Additional Options:
    - Product Key: #####-#####-#####-#####-#####
    - Hostname: nit-server1
    - Domain Name: myguest.virtualbox.org
    - Install in Background
  - Guest Additions
    - Guest Additions ISO: <not selected>

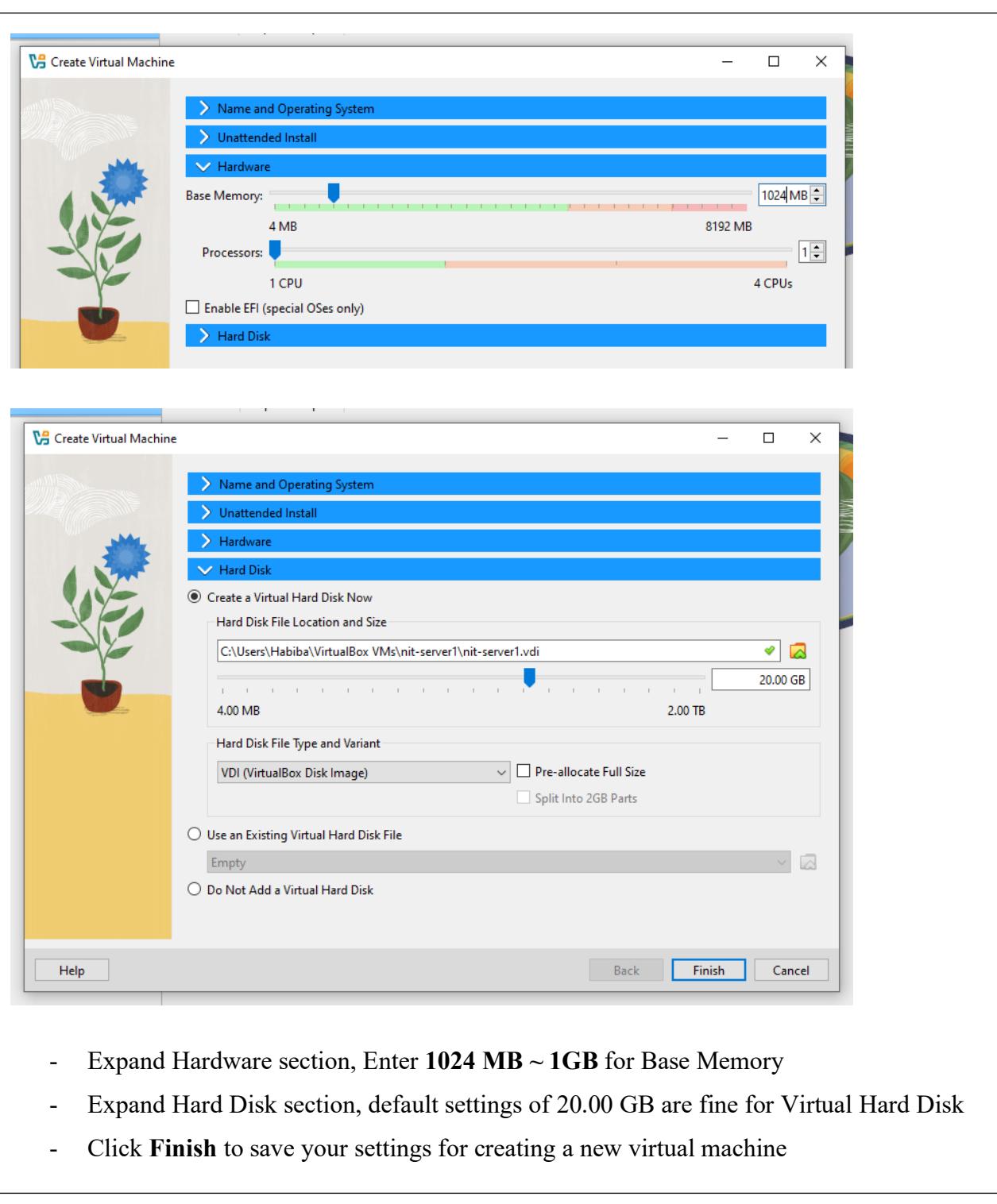
- Enter Name of VM to be created
- ISO Image, click to add RHEL9 iso image we downloaded earlier
- Check to Skip Unattended Installation as we don't use the default suggested username and password under Unattended Install

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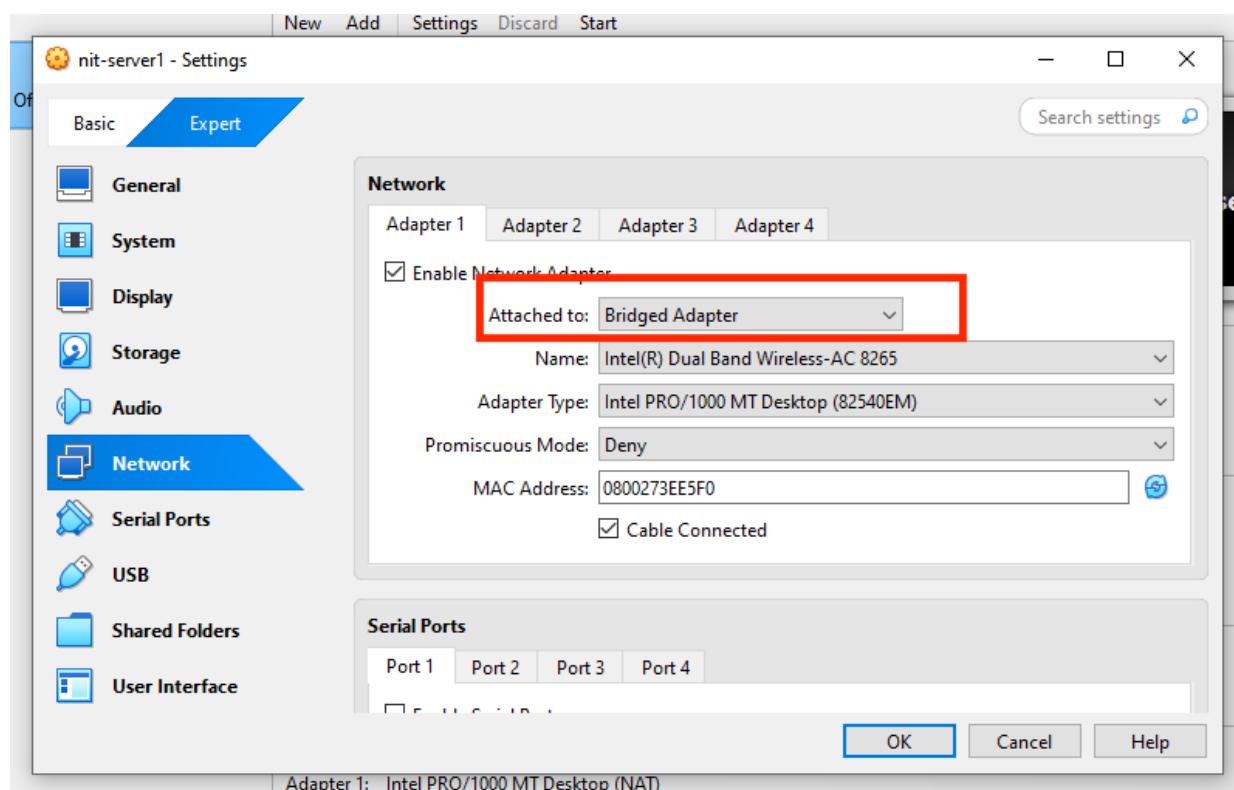
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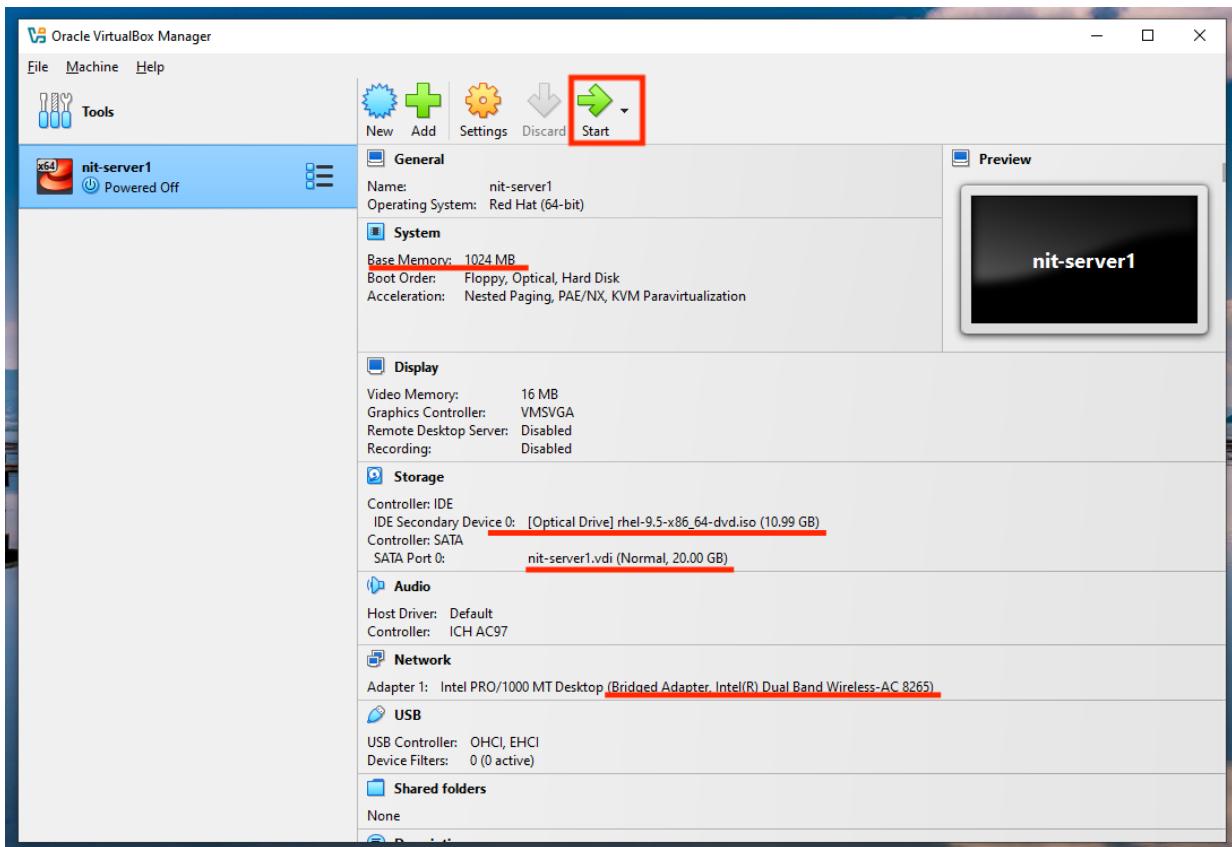
- Now on the Oracle VirtualBox Manager interface, click **Settings icon – This is Optional**



- Under Settings, Click Network, under Adapter1 > Attached to, click the dropdown icon to change from NAT to Bridged Adapter.
- The Bridged Adapter mirrors the Network Interface card (NIC) of the physical computer, and the VM to be created will automatically be assigned an IP address within your home/office LAN (Local area Network) range by your home/office router wirelessly via DHCP or manual by configuring it yourself.
- Click **OK**

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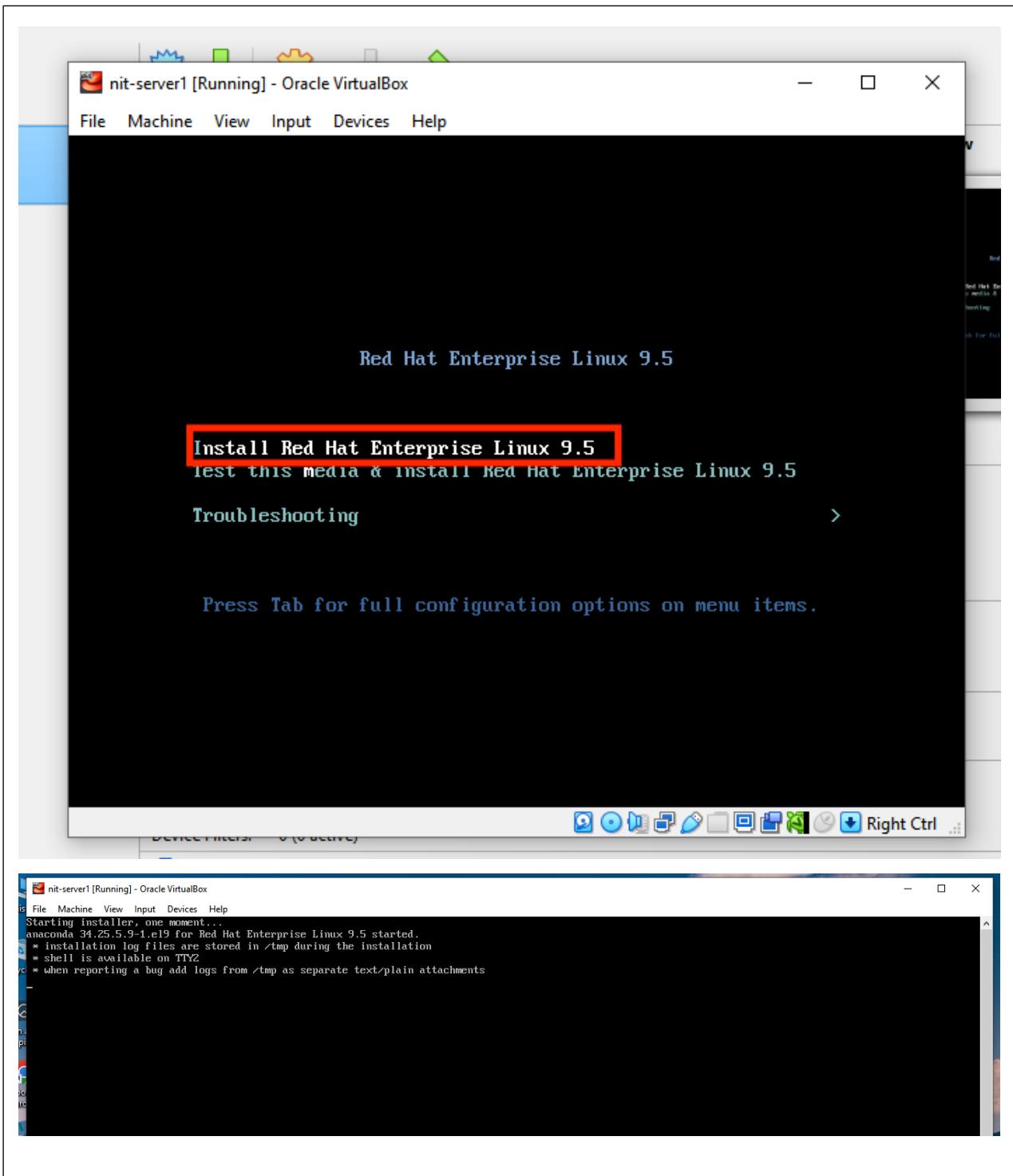
- Review the settings configured for the new VM



- Click **Start** to power on the VM and install RHEL9

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### 3. Install Red Hat Enterprise Linux



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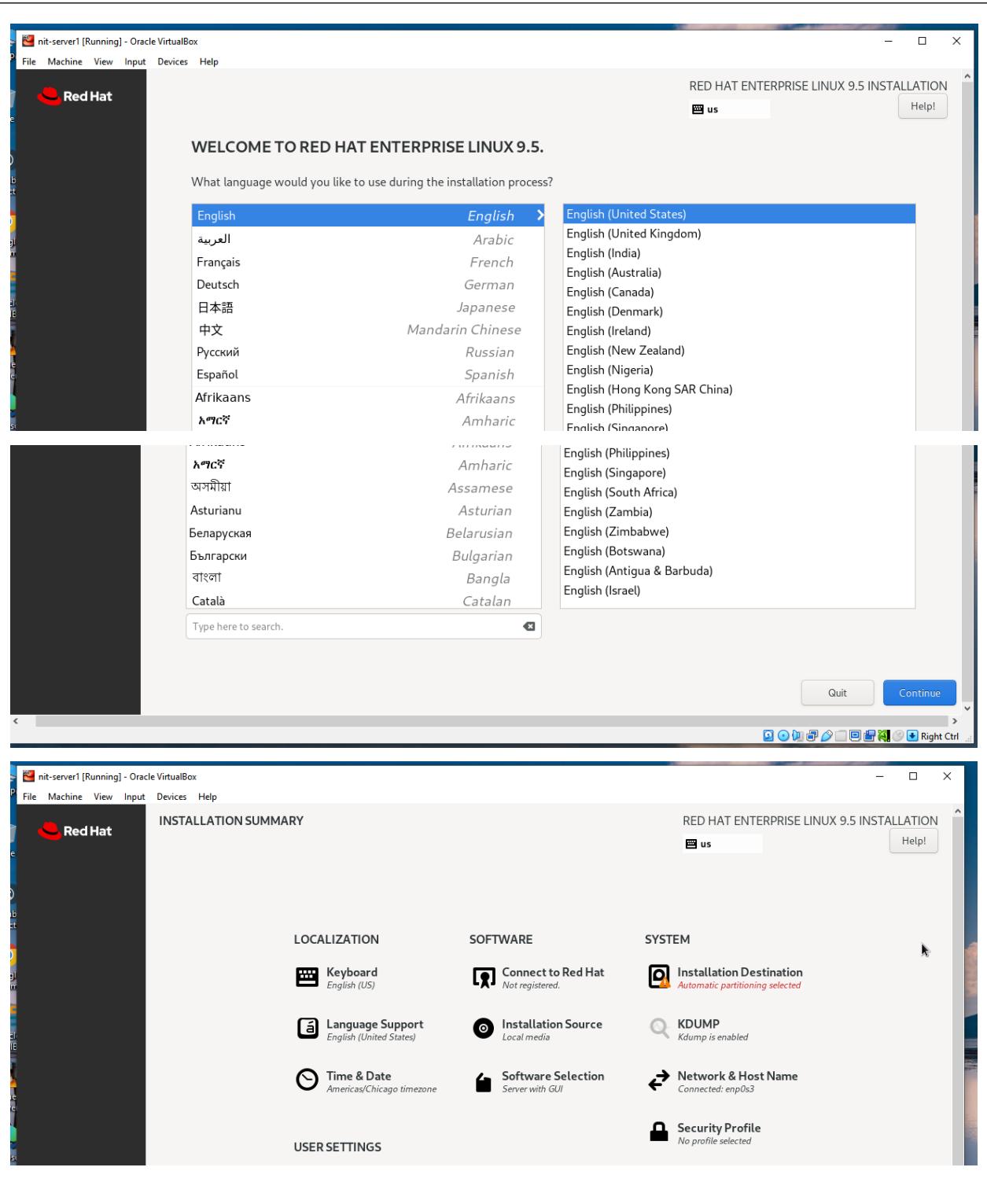
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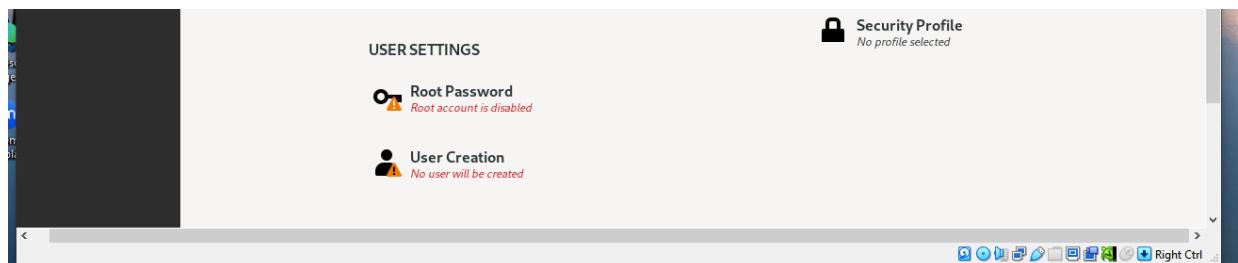


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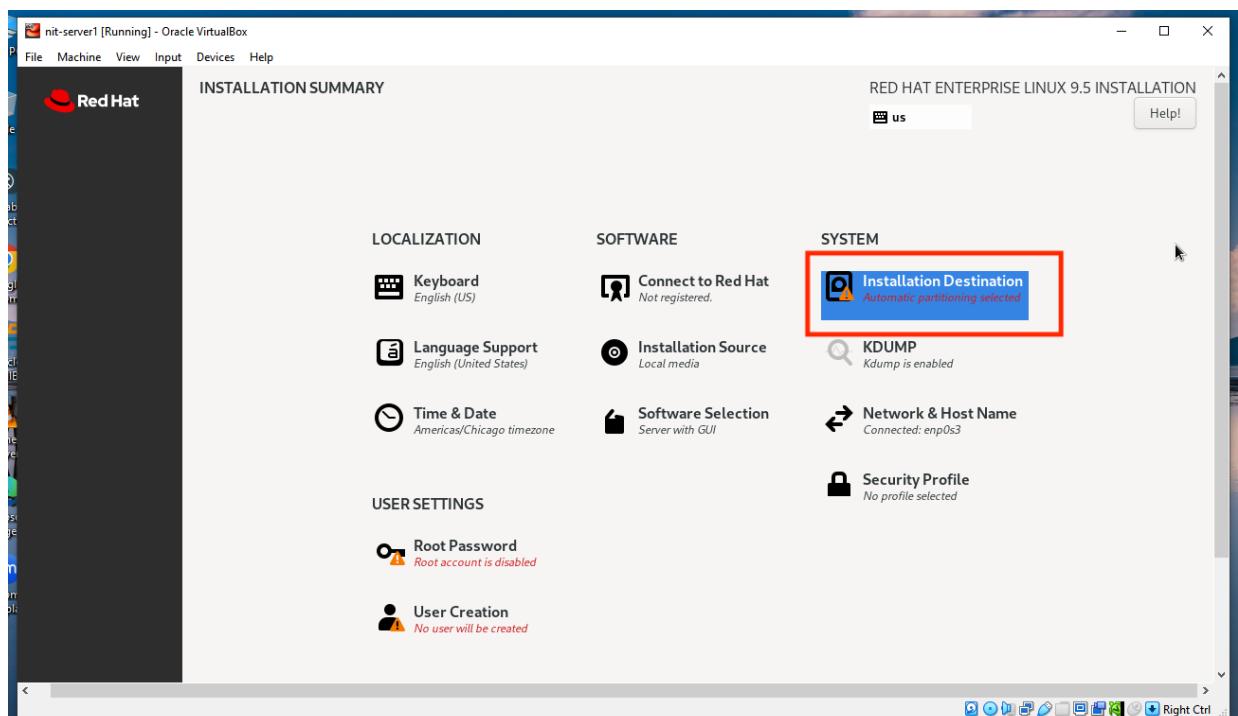
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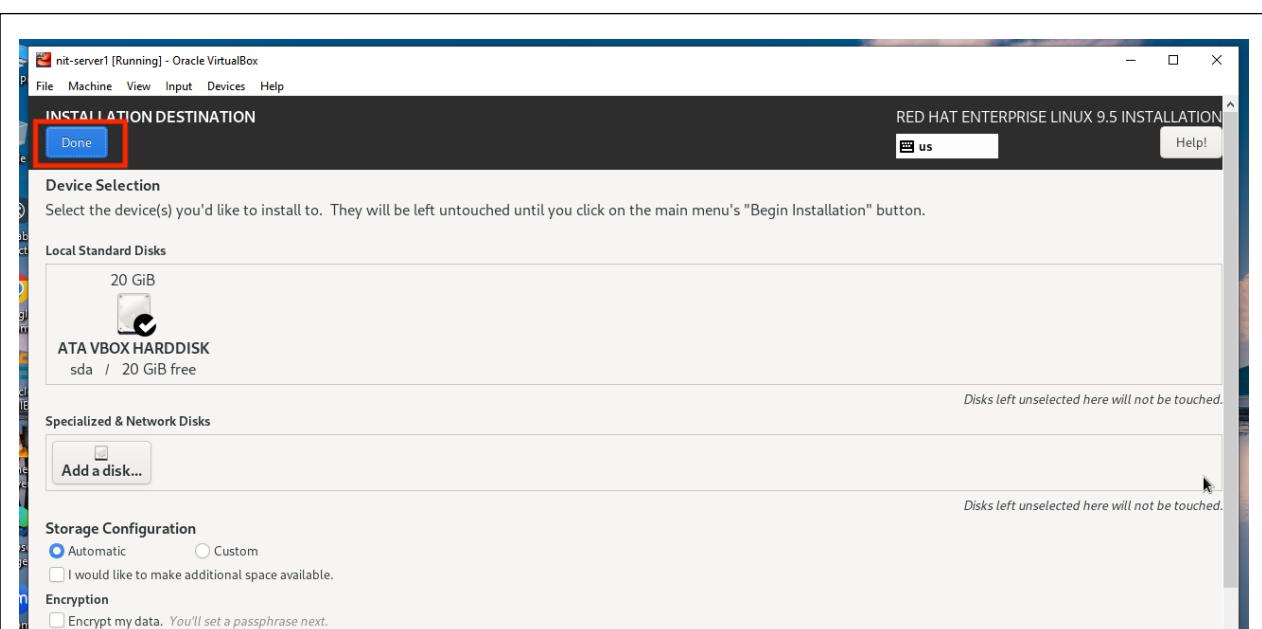
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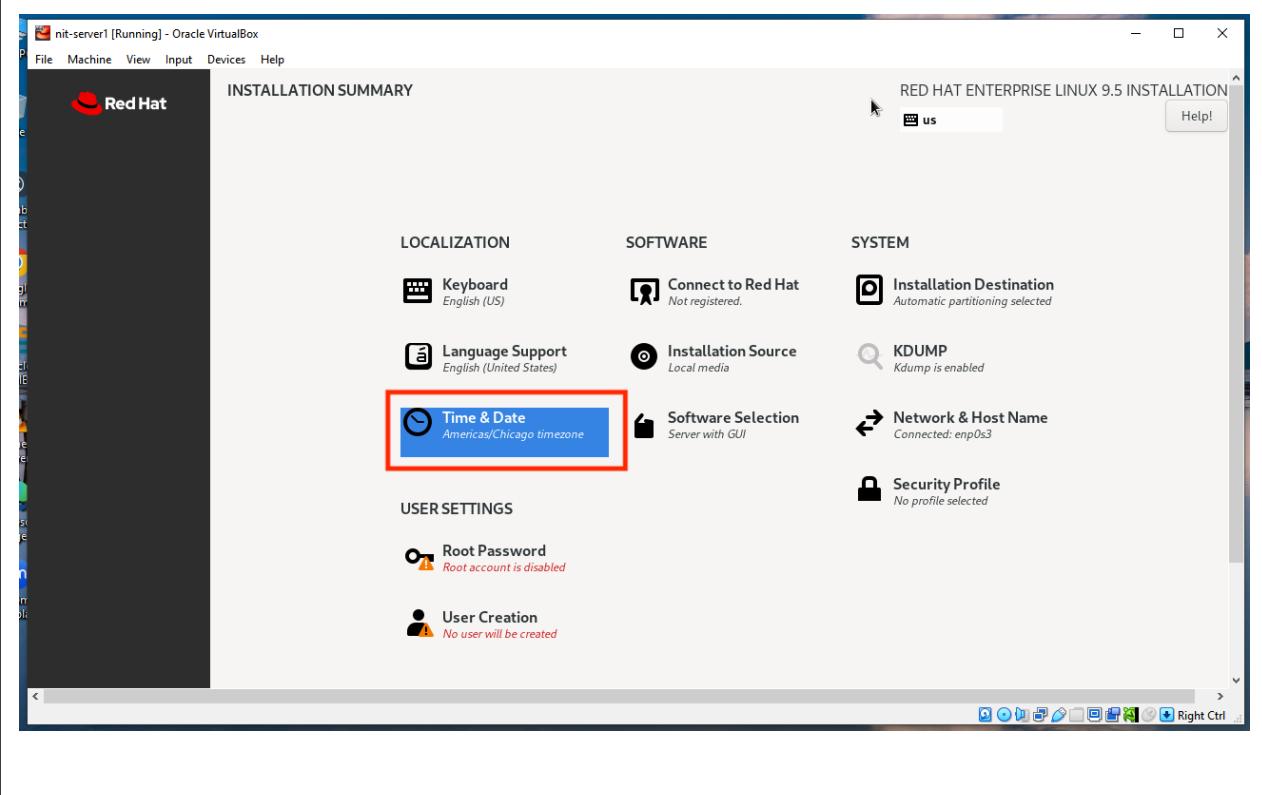
- Click Installation Destination, Just click **Done** to choose Automatic partitioning



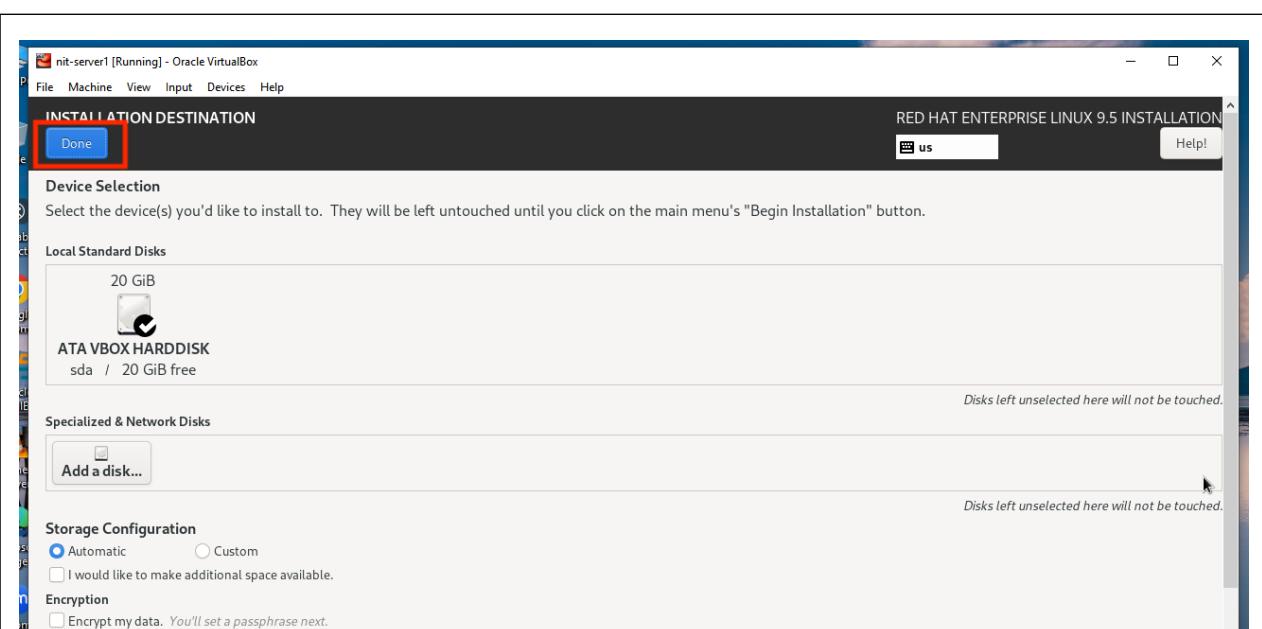
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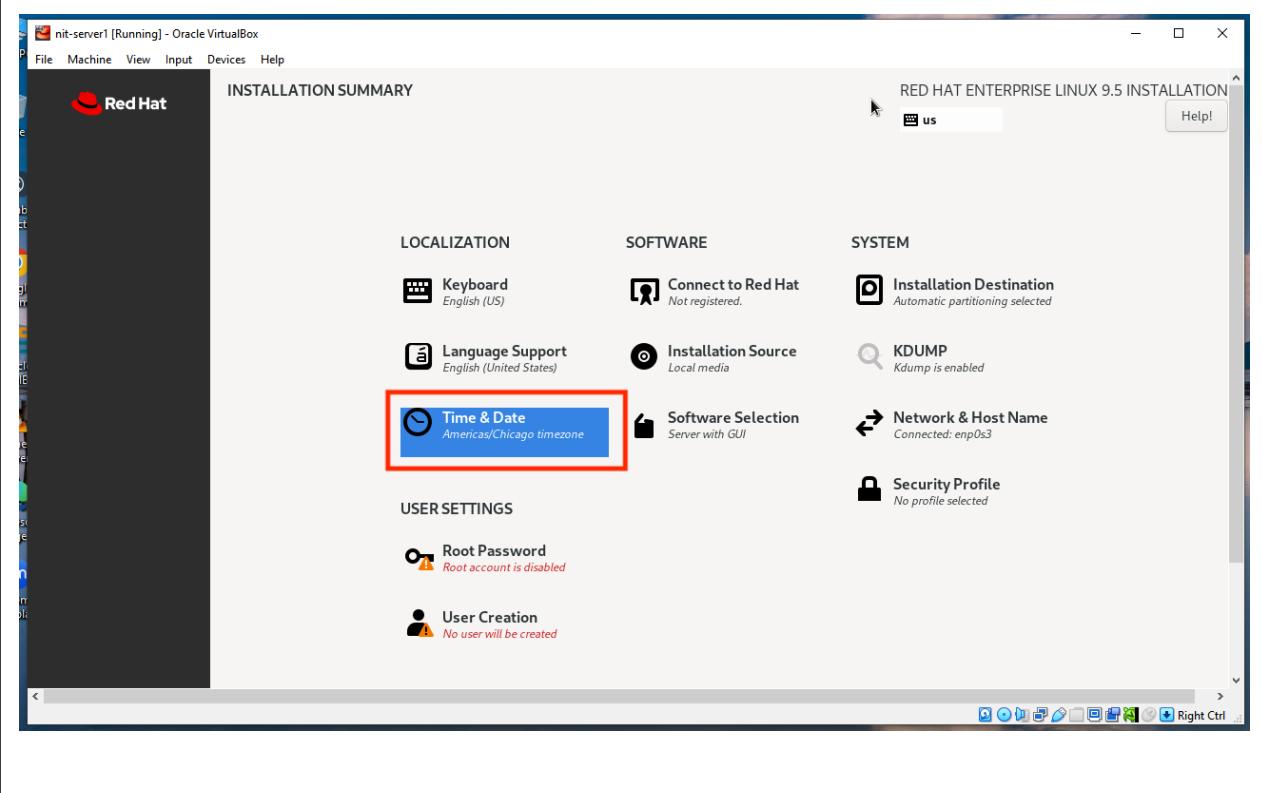
- Click **Time & Date** to choose your time zone



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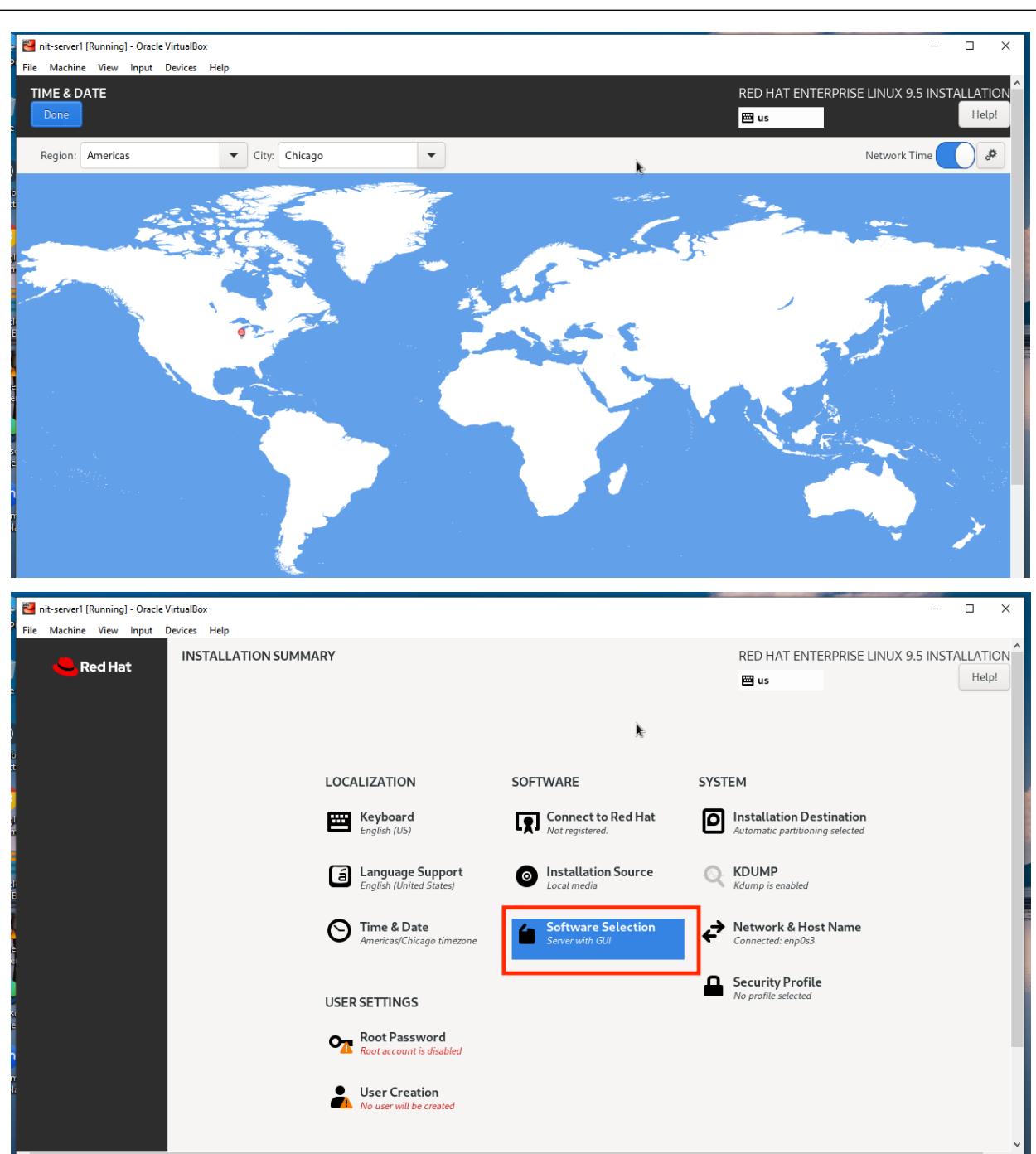


- Click **Time & Date** to choose your time zone, click **Done** after your selection



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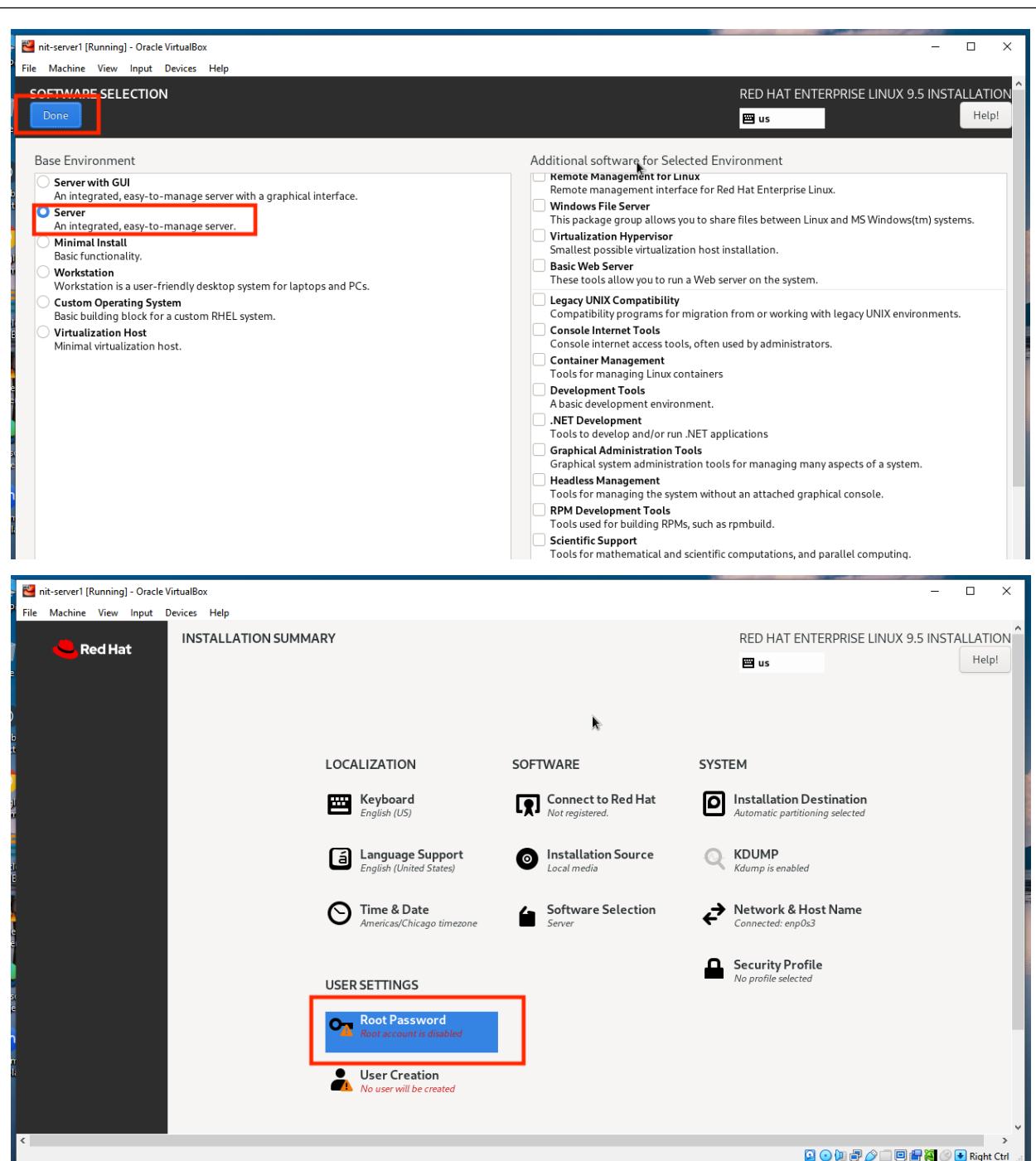
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- Click Software Selection, since we want the **CLI** only, select **Server**, click **Done**

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- Click **Root Password** to add password for the root user, Don't lock root, don't allow ssh

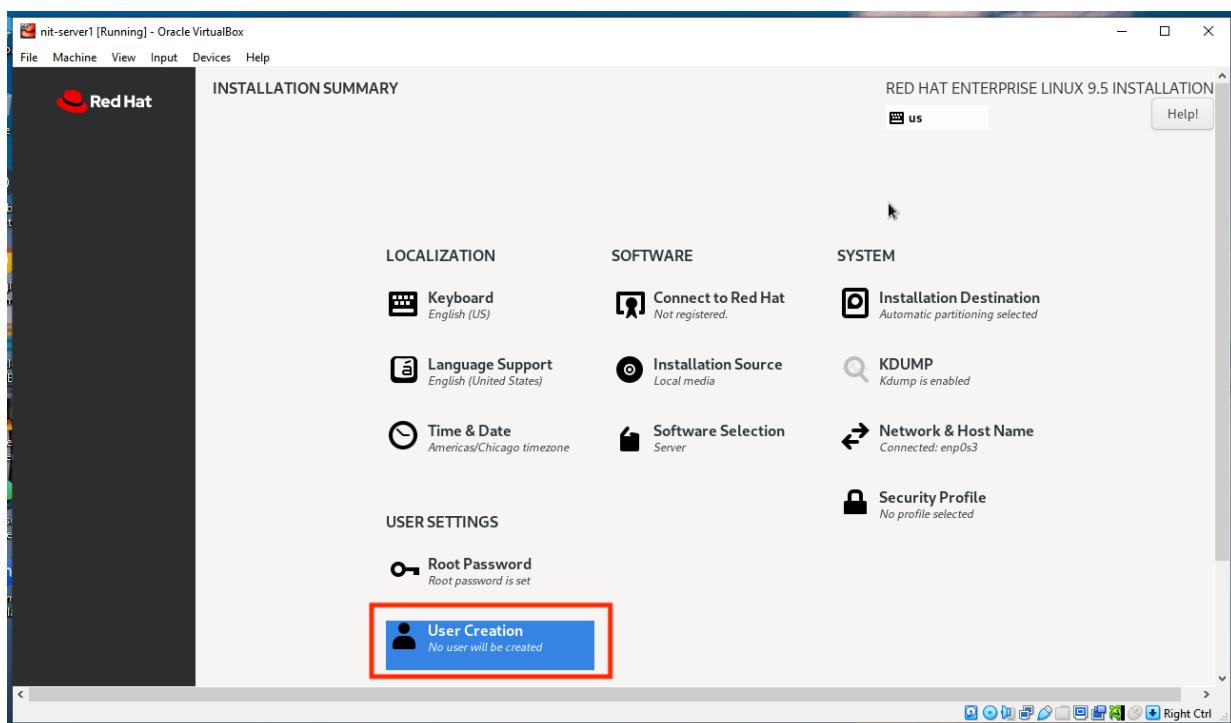
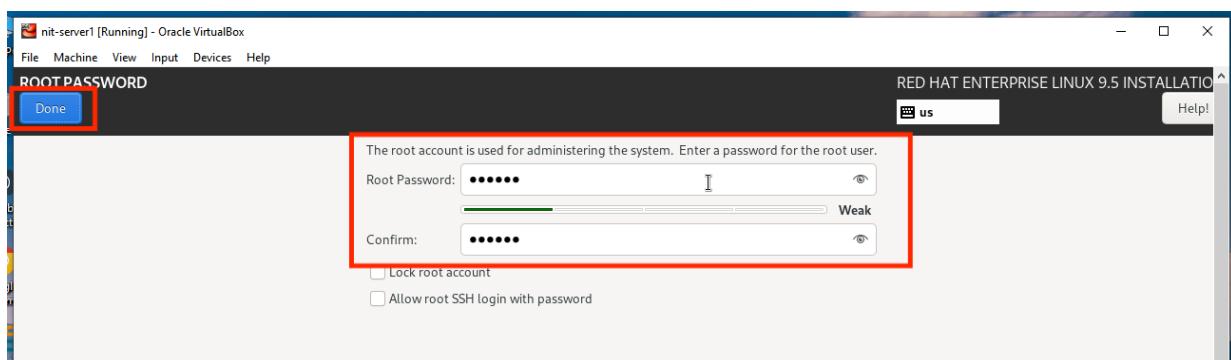
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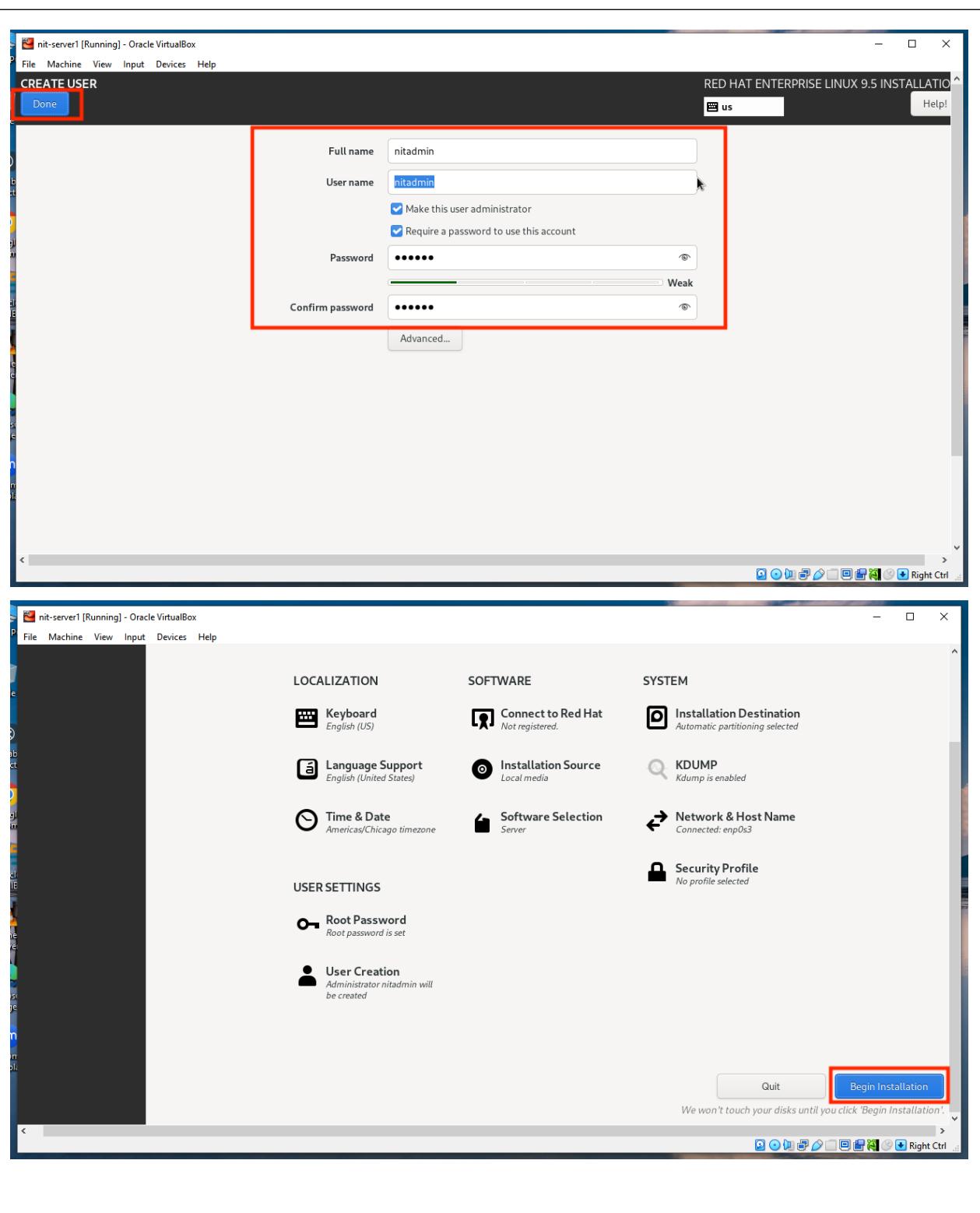
- Enter your preferred root user password, if password is weak and wish to just use it, click **Done** twice



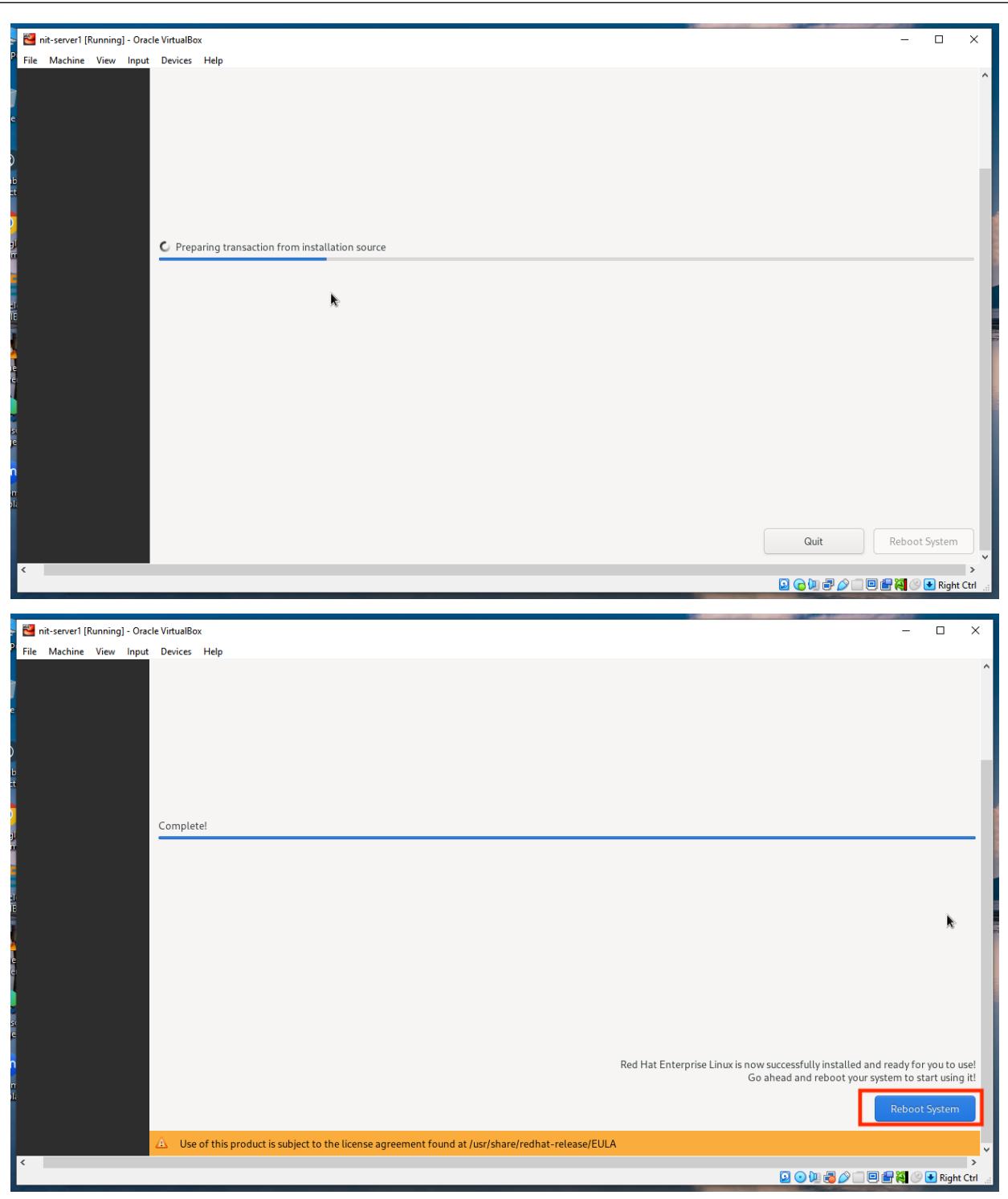
- Click **User Creation** to create a local user account, make the user administrator to have administrative privileges, click **Done**, for weak password, click Done twice

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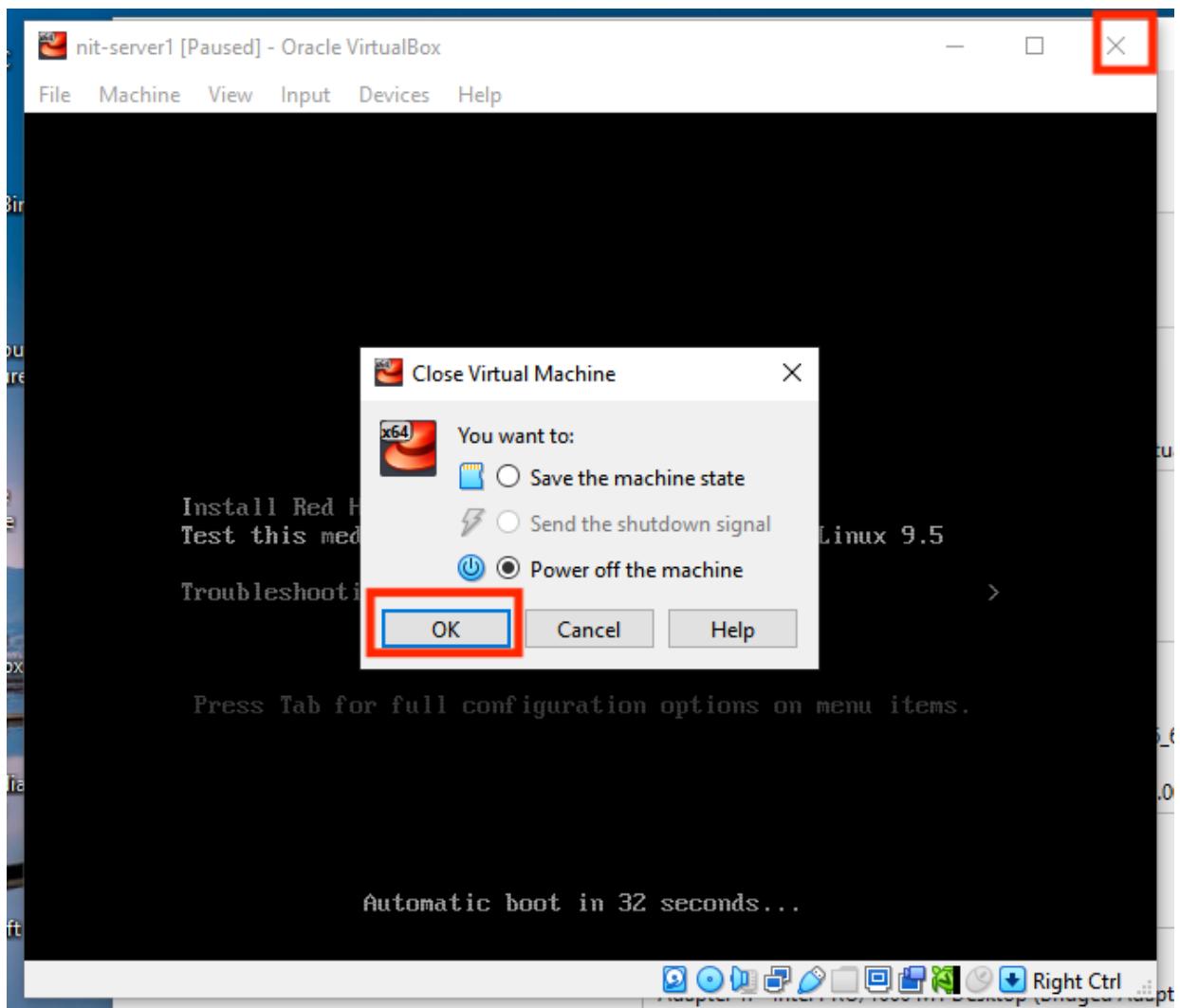


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- Great! Installation completed successful, click ***Reboot System***



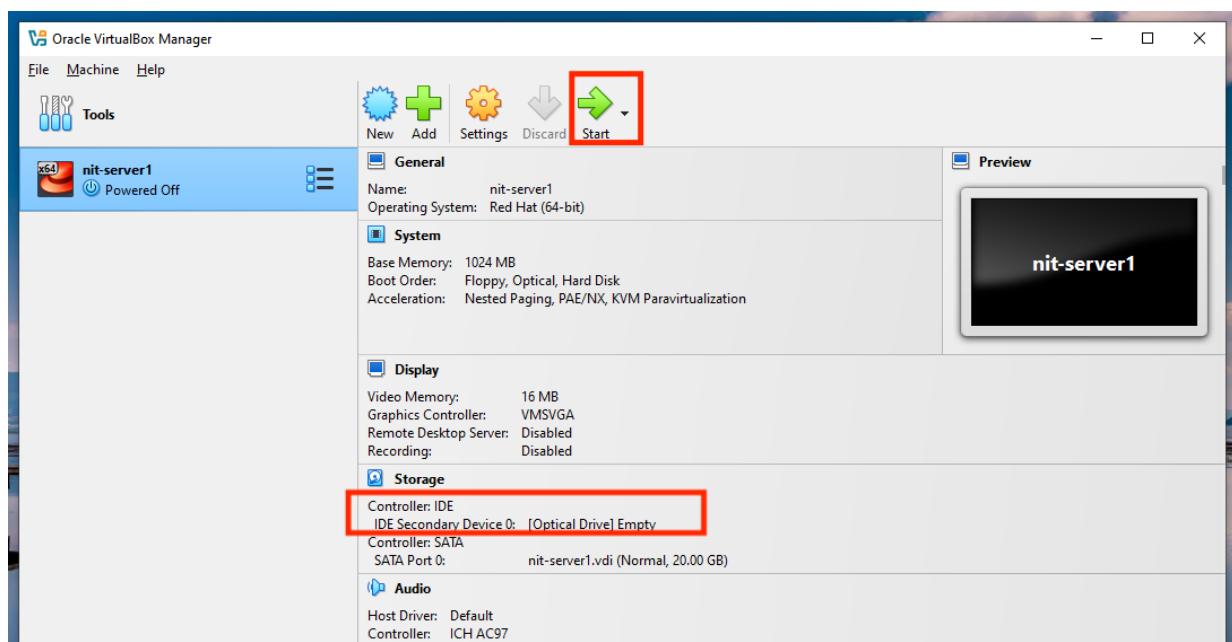
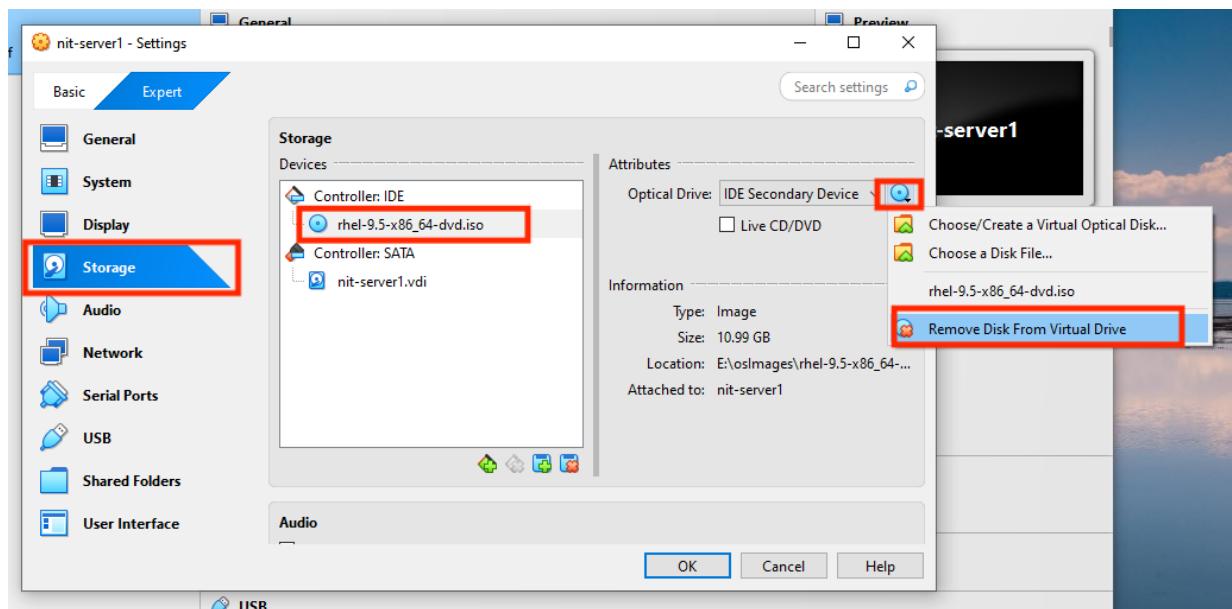
- **Hang on! Upon Reboot, VM is displaying the Install Red Hat Window! Arragh!**
- This is because our RHEL9 DVD iso image is still inserted in the VM CD/DVD ROM, we need to eject it out so that when the VM is powered on, it does boot from it.
- Close the window displaying the Install Red Hat Enterprise Linux 9.5 by click the X on the top right, then choose ***Power off the machine***

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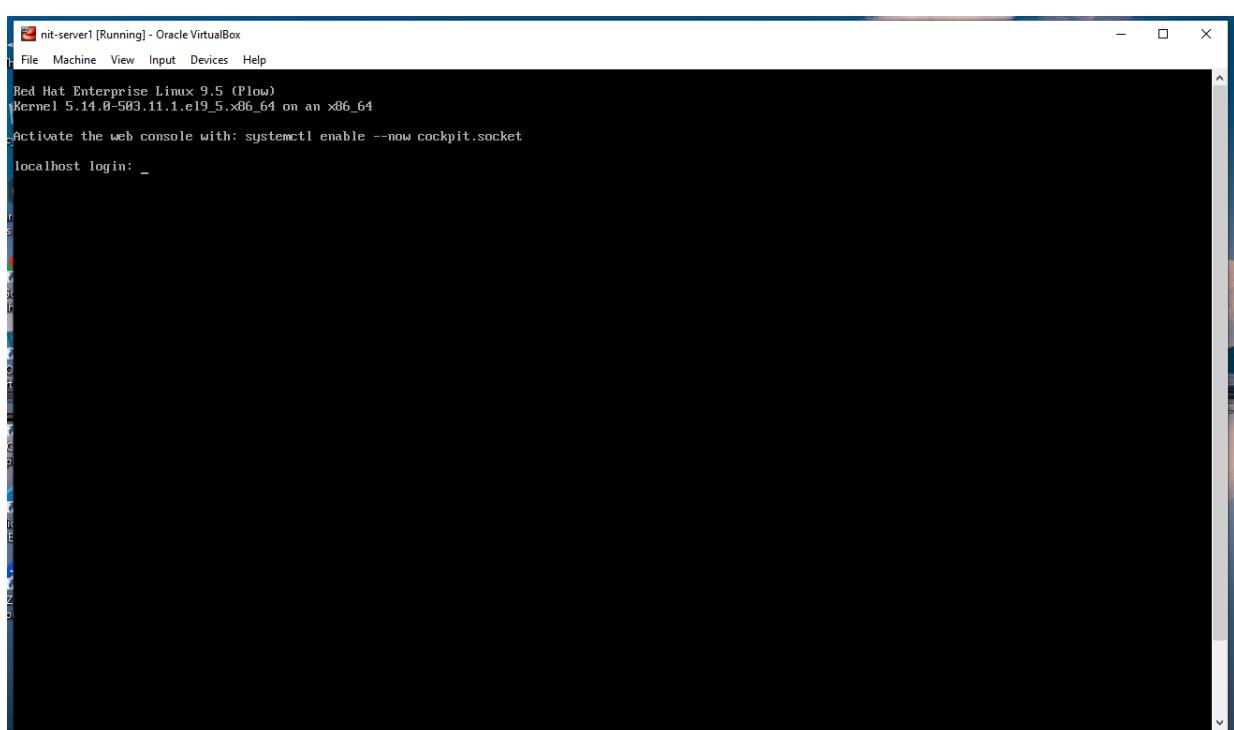
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- In the VirtualBox Manager interface, Click **Settings > Storage > CD/DVD Virtual Drive > Optical Drive > Remove Disk from Virtual > OK**



- Confirm Virtual Drive (Optical Drive) is Empty, and Power on the VM, Click **Start**

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- **Great! If you can see “localhost login: \_” – Your RHEL9 VM is up and running!**  
**Great on this Milestone! You have successful installed RHEL9!**
- Let's test our credentials! You remember the username and password you created during the installation? Enter the username and you will be prompted to enter the user password



- **Note,** When typing your password, there is no visibility, nothing displayed on the screen, once you have typed your password, press Enter to login.

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#### 4. Login to your new RHEL9 VM and run a few test commands

```

nit-server1 [Running] - Oracle VirtualBox
File Machine View Input Devices Help
localhost login: nitadmin
Password:
[Initadmin@HabibaPC ~]$ hostname -i
192.168.1.87 fe80::795:9120%eth0:2e9a3:e951 2680:1780:e61:1a28:45d7:3dc8:d2b1:4111 2680:1780:e61:1a28:39 2680:1780:e61:1a28:dc2:56ca:6304:bfa
[Initadmin@HabibaPC ~]$ 
[Initadmin@HabibaPC ~]$ ip a
1: lo <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 brd 127.255.255.255 scope host lo
            valid_lft forever preferred_lft forever
    inet6 ::1/128 brd 00:00:00:00:00:00 scope host
        valid_lft forever preferred_lft forever
2: enp0s3 <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:00:27:3e:e5:f8 brd ff:ff:ff:ff:ff:ff
        inet 192.168.1.87/24 brd 192.168.1.255 scope global dynamic noprefixroute enp0s3
            valid_lft 86310sec preferred_lft 86310sec
        inet6 fe80::a00:27ff:fe3e:e5f8/64 brd fe80::ff:ff:ff:ff:ff:ff scope link noprefixroute
            valid_lft forever preferred_lft forever
[Initadmin@HabibaPC ~]$ 
[Initadmin@HabibaPC ~]$ cat /etc/*release*
NAME="Red Hat Enterprise Linux"
VERSION="9.5 (Plow)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="9.5"
PLATFORM_ID="platform:e19"
PRETTY_NAME="Red Hat Enterprise Linux 9.5 (Plow)"
ANSI_COLOR="0;31"
LOGO="fedora-logo-icon"
CPE_NAME="cpe:/o:redhat:enterprise_linux:9::baseos"
HOME_URL="https://www.redhat.com"
DOCUMENTATION_URL="https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/9"
BUG_REPORT_URL="https://issues.redhat.com"
REDHAT_BUGZILLA_PRODUCT="Red Hat Enterprise Linux 9"
REDHAT_BUGZILLA_PRODUCT_VERSION=9.5
REDHAT_SUPPORT_PRODUCT="Red Hat Enterprise Linux"
REDHAT_SUPPORT_PRODUCT_VERSION="9.5"
Red Hat Enterprise Linux release 9.5 (Plow)
Red Hat Enterprise Linux release 9.5 (Plow)
cpe:/o:redhat:enterprise_linux:9::baseos
[Initadmin@HabibaPC ~]$ 
```

- From the above screen, I'm able to login to our RHEL9 VM as user “**nitadmin**”
- Run a few commands below, we will learn this commands later in the course

**\$ ip a**

- This command shows the IP address assigned to this VM which is **192.168.1.87**

**\$ cat /etc/\*release\***

- This command shows the information about the OS release running on your system

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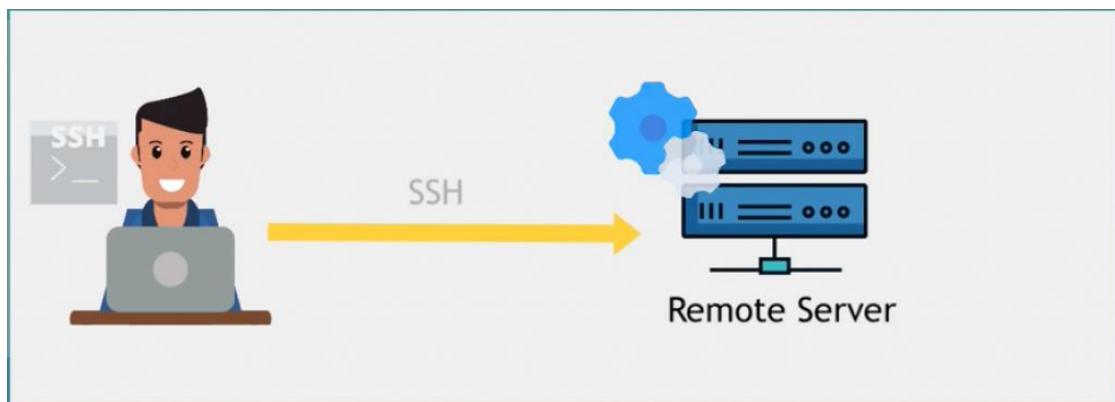
## 5. Login to your new RHEL9 VM from your Windows computer

### Introduction to SSH

- SSH or Secure Shell is a network protocol, that enables ***two computers to communicate securely.***
- It protects the communications security and integrity with strong encryption

### Use Case

- Often used to “login” and perform tasks on remote computers, like installing software on a new server or to copy a file to the server

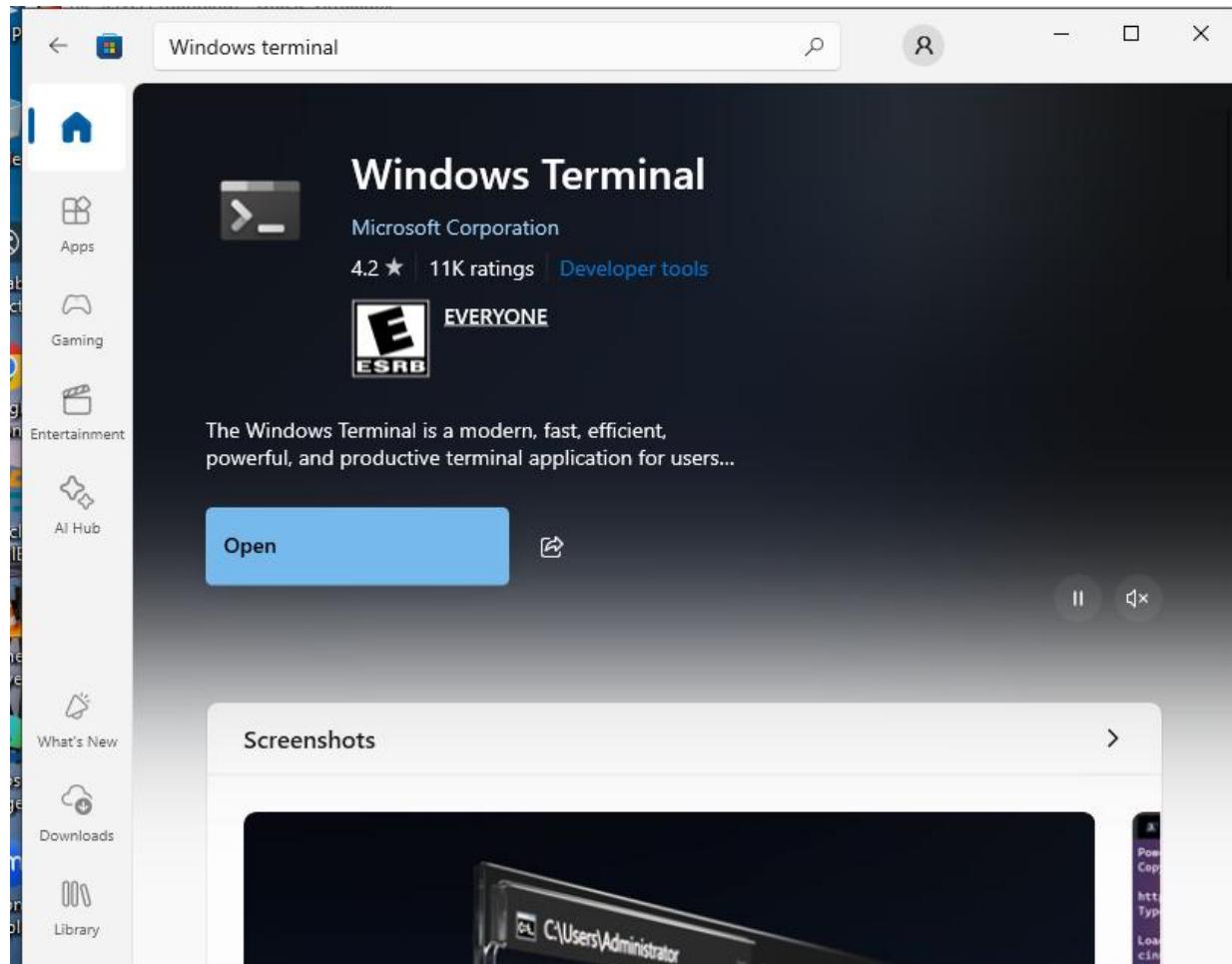


### How it works

- The protocol works in the client-server model, meaning you use a program on your computer (**ssh client**) to connect to the remote server (**SSH server**)

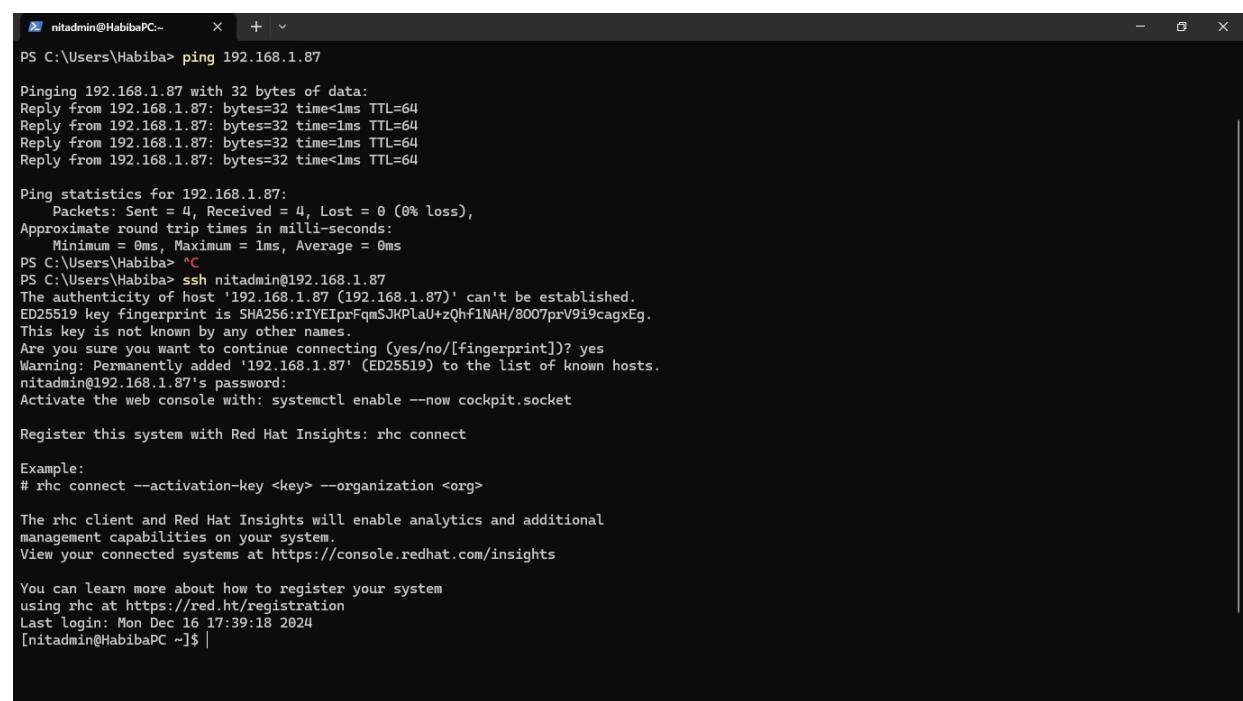
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## Windows Terminal



- Search for Windows Terminal in the Microsoft store and Install it on your computer
- Launch/Open Windows Terminal
- Remember, the IP address of our RHEL9 VM is 192.168.1.87
- Test from the Windows Terminal program if you can reach it (Test connectivity)
- Test if you can ssh into (connect into) our RHEL9 VM as user “nitadmin”

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```

PS C:\Users\Habiba> ping 192.168.1.87
Pinging 192.168.1.87 with 32 bytes of data:
Reply from 192.168.1.87: bytes=32 time=1ms TTL=64
Reply from 192.168.1.87: bytes=32 time=1ms TTL=64
Reply from 192.168.1.87: bytes=32 time=1ms TTL=64
Reply from 192.168.1.87: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.87:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
PS C:\Users\Habiba> ^C
PS C:\Users\Habiba> ssh nitadmin@192.168.1.87
The authenticity of host '192.168.1.87 (192.168.1.87)' can't be established.
ED25519 key fingerprint is SHA256:rIVElprqm5JKPlal+qhf1NAH/8007prV9i9cagxEg.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.87' (ED25519) to the list of known hosts.
nitadmin@192.168.1.87's password:
Activate the web console with: systemctl enable --now cockpit.socket

Register this system with Red Hat Insights: rhc connect

Example:
# rhc connect --activation-key <key> --organization <org>

The rhc client and Red Hat Insights will enable analytics and additional
management capabilities on your system.
View your connected systems at https://console.redhat.com/insights

You can learn more about how to register your system
using rhc at https://red.ht/registration
Last login: Mon Dec 16 17:39:18 2024
[nitadmin@HabibaPC ~]$ 

```

**Awesome!**

**You successful installed RHEL9 VM**

**You can remotely access your RHEL9 VM using ssh**

**Great!**

**NOTE: if you have able to smoothly follow up and your VM is running – This is Great!**

**#HappyLearning**

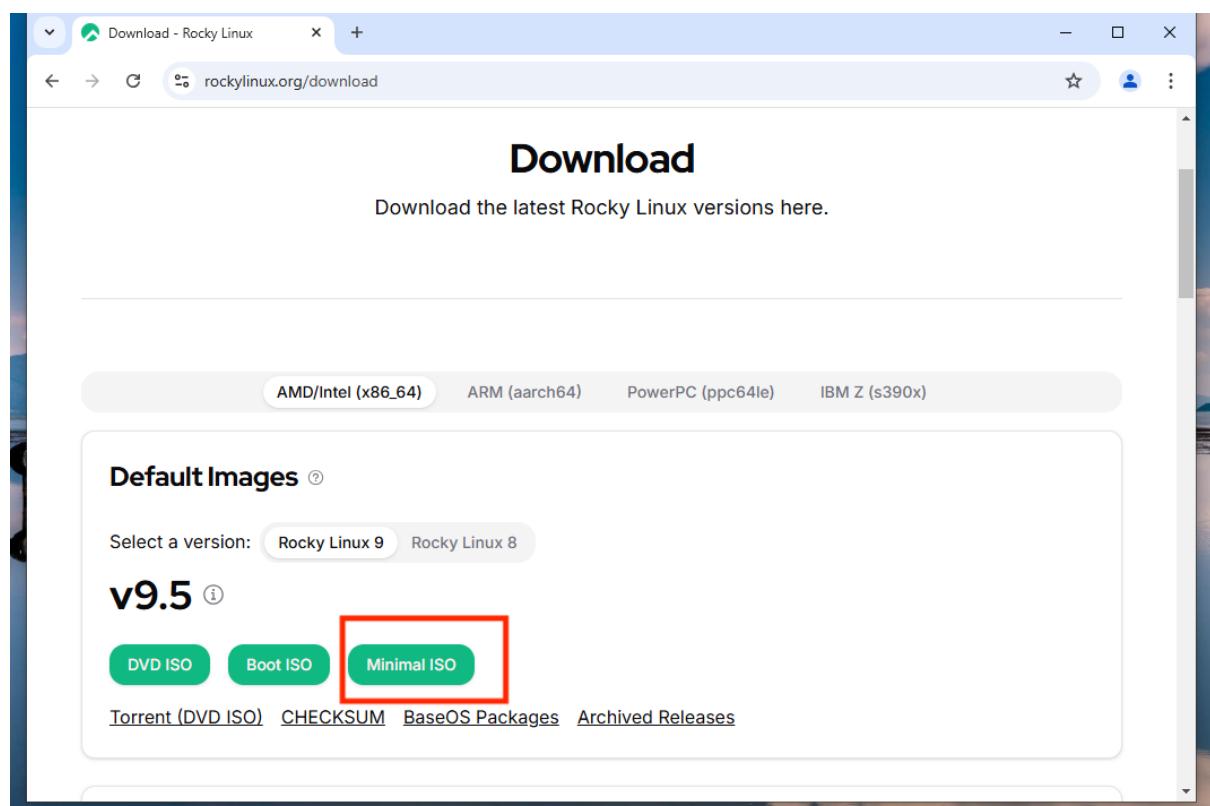
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### 5.3 ROCKY LINUX 9 INSTALLATION IN VIRTUALBOX

**NOTE:** If you were able to create RHEL9 VM, This is Optional, but you can explore if you wish to create a Rocky Linux VM – You're only required to have either a RHEL9 VM or Rocky Linux 9 VM to complete the Linux course.

#### 1. Download Rocky Linux 9 ISO

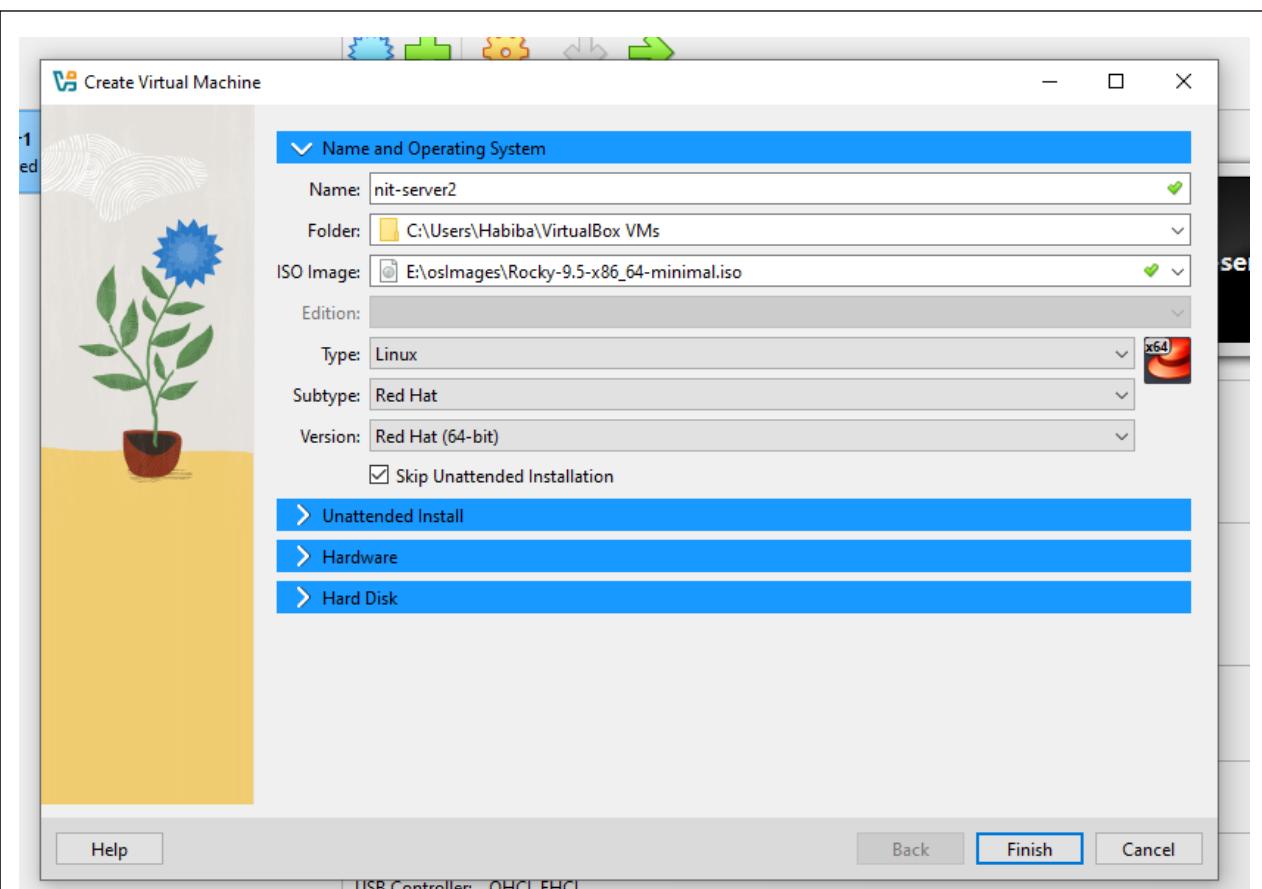
Proceed to [Rocky Linux Web portal](https://rockylinux.org/download) to download Rocky Linux 9 for free, download the Minimal ISO File



#### 2. Create a new Rocky Linux 9 virtual machine in VirtualBox

NOTE: You can reference the Red Hat section on how to create a new VM in VirtualBox

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- Enter preferred Name of the VM to be created
- Browse the Rocky Linux 9 ISO image
- Check to Skip Unattended Installation
- Expand Hardware, add 1GB (1024 MB) for the Base memory
- Expand Hard Disk, Default settings of 20 GB Virtual hard drive are fine
- Click Finish
- Click Settings to Modify the Network Adapter, change Adapter 1 from NAT to Bridged Adapter
- Review the configurations, if all is good, click Start to Power on the VM

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& CONFIGURATION

**INSTITUTE:**

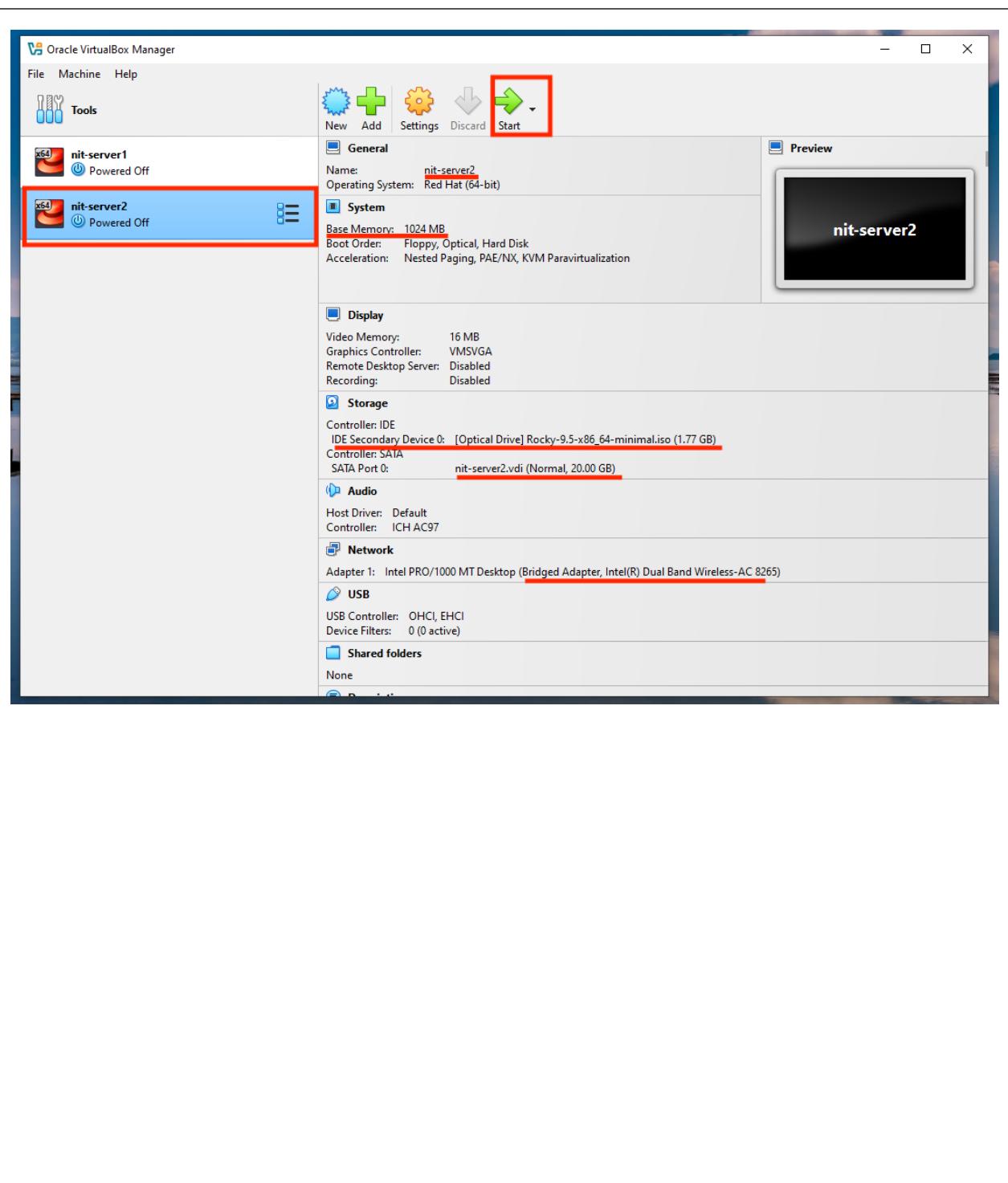
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**DOCUMENT NO:**

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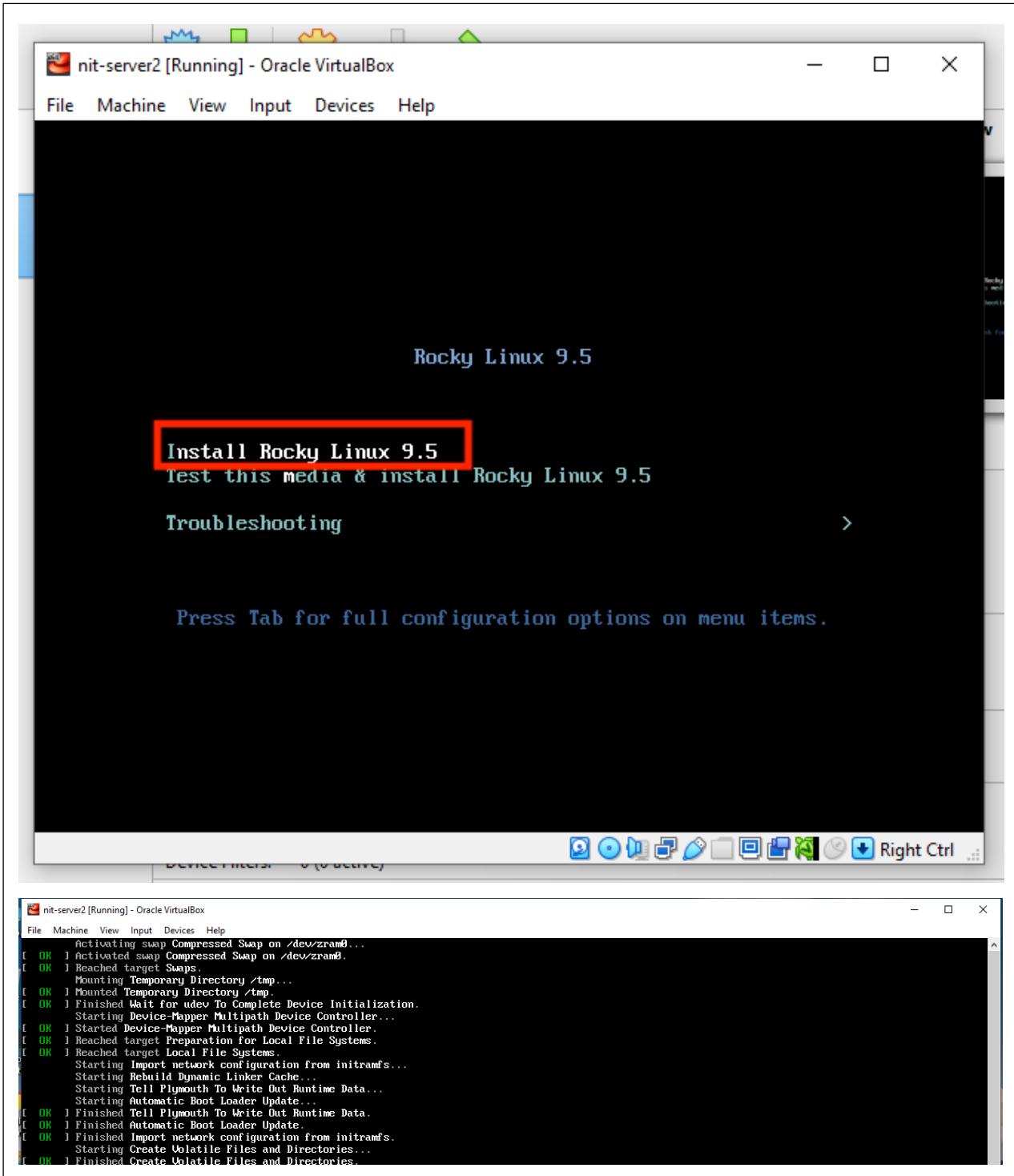
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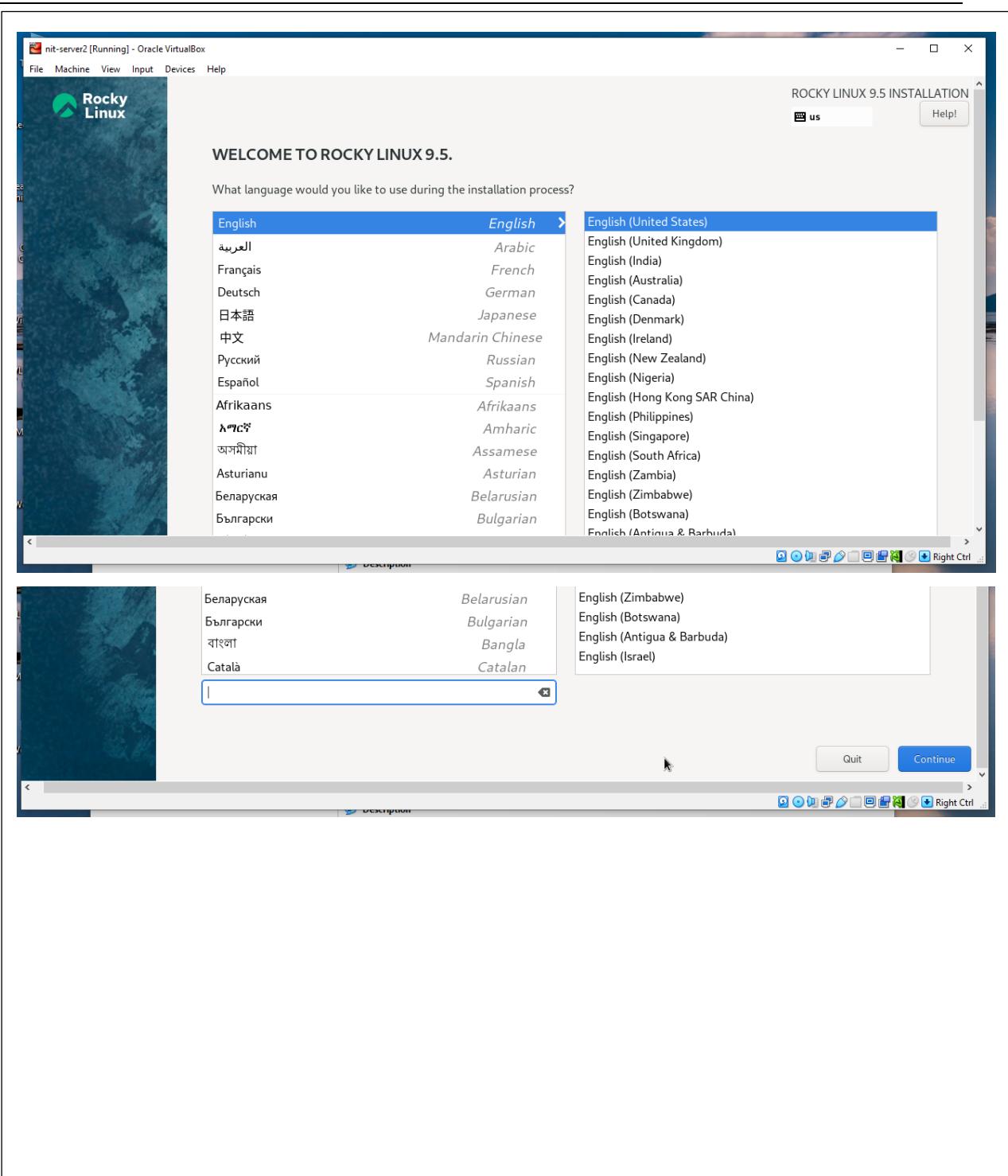


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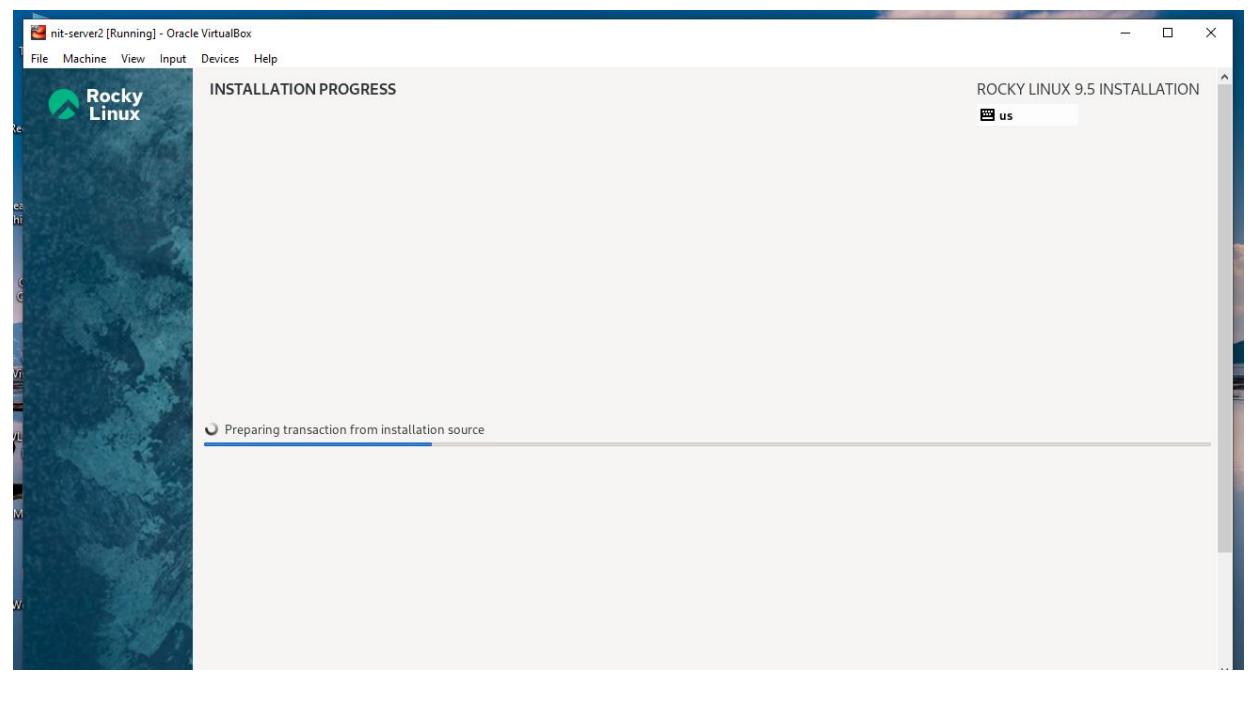
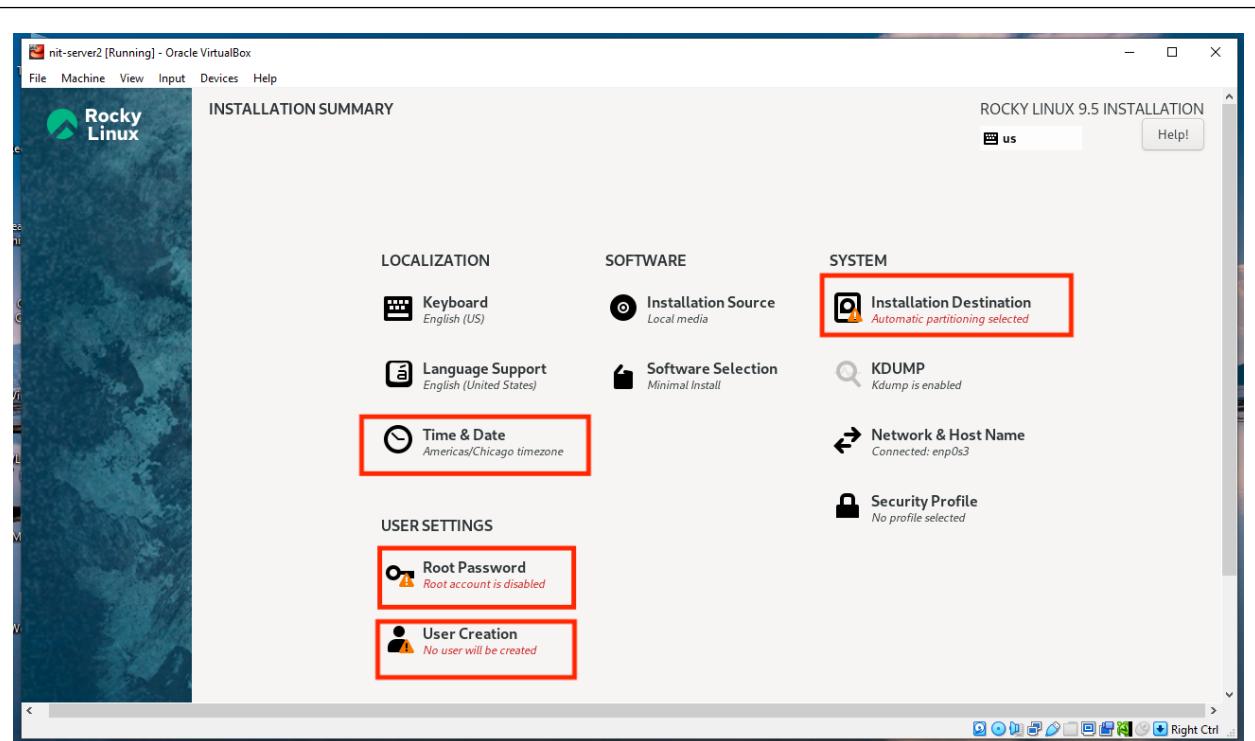
### 3. Install Rocky Linux 9



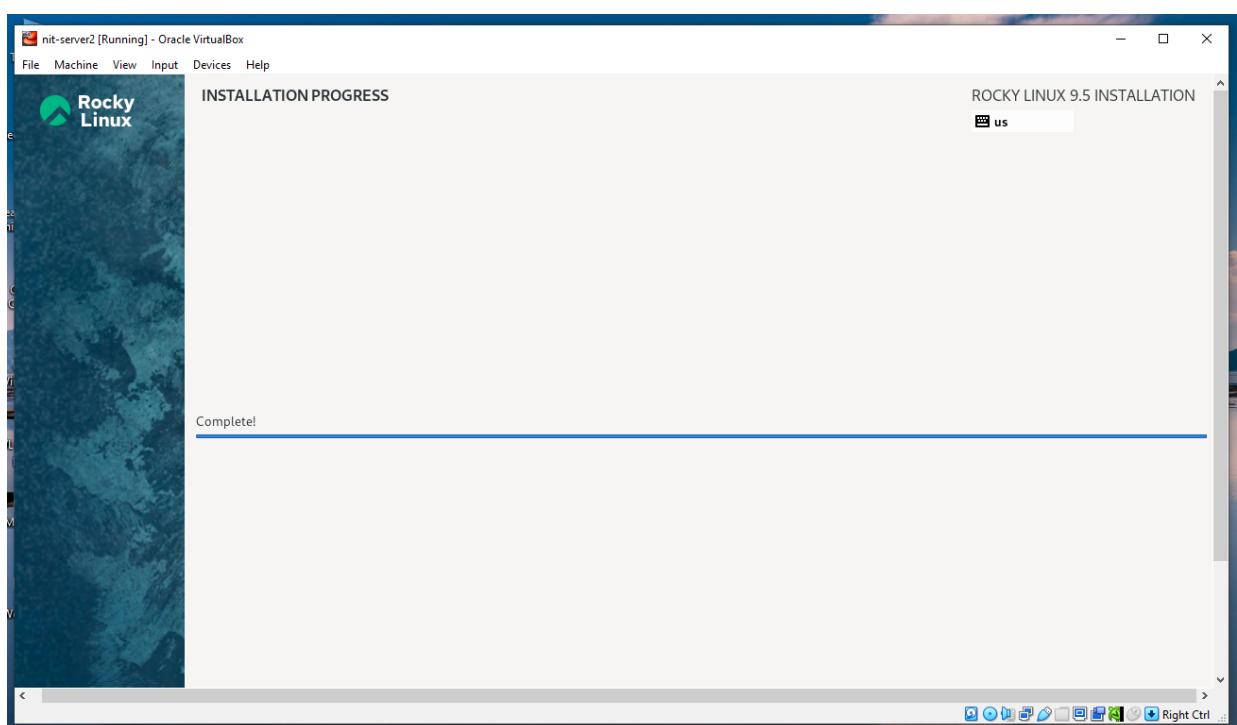
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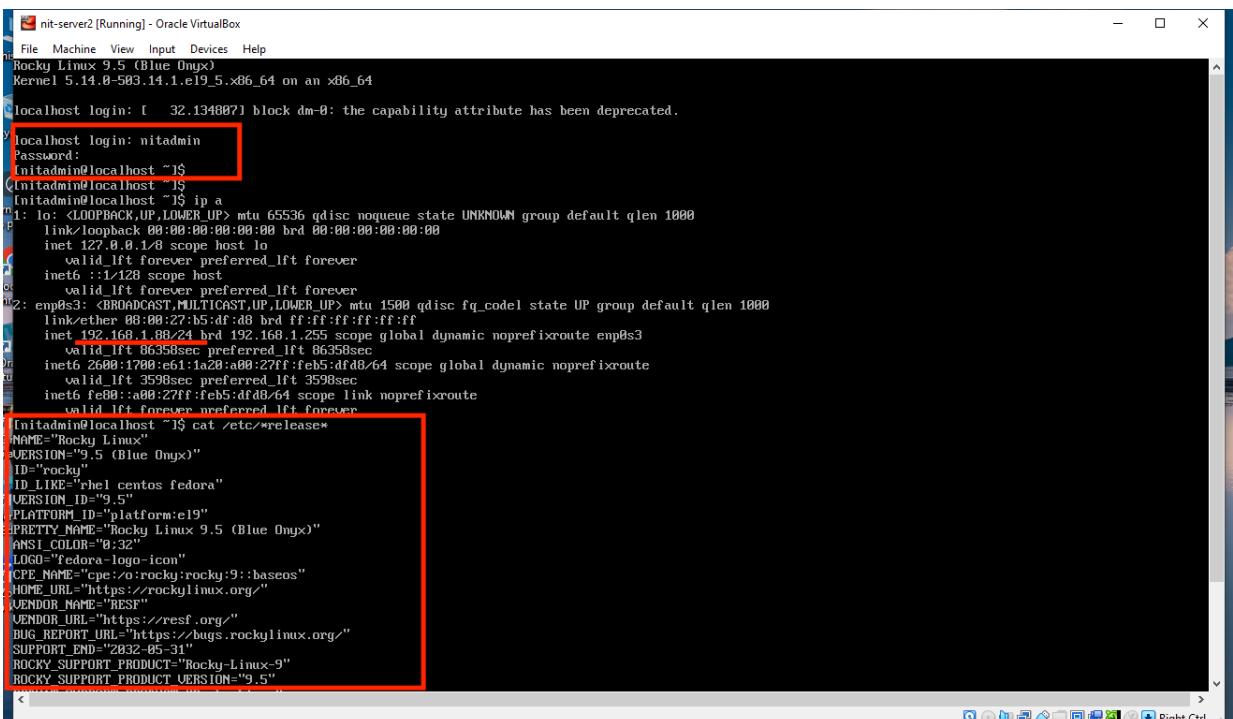


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- Installation complete, Reboot system
- **Hang on! Upon Reboot, VM is displaying the Install Rocky Linux Window!**
- This is because our Rocky Linux DVD iso image is still inserted in the VM CD/DVD ROM, we need to eject it out so that when the VM is powered on, it does not boot from it.
- Close the window displaying the Install Rocky Linux 9.5 by click the **X** on the top right, then choose ***Power off the machine***
- In the VirtualBox Manager interface, Click ***Settings > Storage > CD/DVD Virtual Drive > Optical Drive > Remove Disk from Virtual > OK***
- Review the Settings of the VM in VirtualBox Manager window, confirm Virtual Drive (Optical Drive) is Empty, and Power on the VM, Click ***Start***

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```

nit-server2 [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Rocky Linux 9.5 (Blue Onyx)
Kernel 5.14.0-503.14.1.e19.5.x86_64 on an x86_64

localhost login: [ 32.134807] block dm-0: the capability attribute has been deprecated.

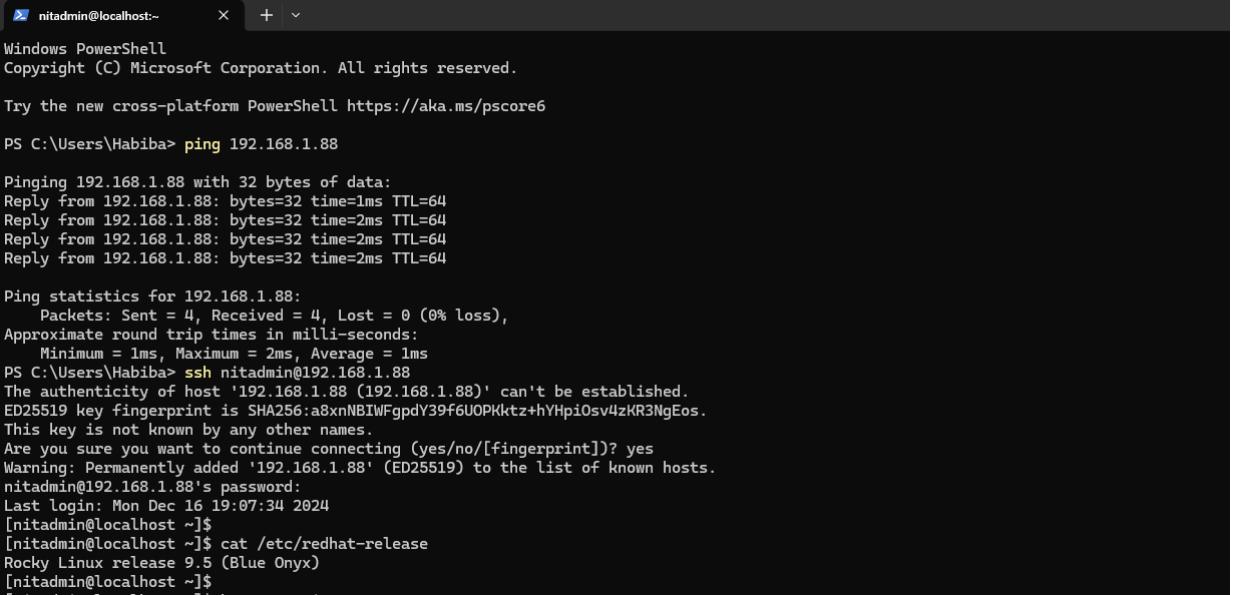
localhost login: nitadmin
Password:
Initadmin@localhost ~]$ 
Initadmin@localhost ~]$ 
Initadmin@localhost ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:00:27:b5:4b:ff brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.88/24 brd 192.168.1.255 scope global dynamic noprefixroute enp0s3
        valid_lft 86358sec preferred_lft 86358sec
3: enet6:2600:1700:61:1a20:00:27ff:feb5:dfdb/64 scope global dynamic nopref ixroute
        valid_lft 3598sec preferred_lft 3598sec
4: enet6:fe80::a00:27ff:feb5:dfdb/64 scope link noprefixroute
        valid_lft forever preferred_lft forever

Initadmin@localhost ~]$ cat /etc/*release*
NAME="Rocky Linux"
VERSION="9.5 (Blue Onyx)"
ID="rocky"
ID_LIKE="rhel centos fedora"
VERSION_ID="9.5"
PLATFORM_ID="platform:e19"
PRETTY_NAME="Rocky Linux 9.5 (Blue Onyx)"
ANSI_COLOR="0;32"
LOGO="fedora-logo-icon"
CPE_NAME="cpe:/o:rocky:rocky:9::baseos"
HOME_URL="https://rockylinux.org/"
VENDOR_NAME="RESP"
VENDOR_URL="https://resp.org/"
BUG_REPORT_URL="https://bugs.rockylinux.org/"
SUPPORT_END="2032-05-31"
ROCKY_SUPPORT_PRODUCT="Rocky Linux-9"
ROCKY_SUPPORT_PRODUCT_VERSION="9.5"

```

- Rocky Linux 9 VM is up and running, been able to login as user “nitadmin” and run a commands

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```

PS nitadmin@localhost:~ + 
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Habiba> ping 192.168.1.88

Pinging 192.168.1.88 with 32 bytes of data:
Reply from 192.168.1.88: bytes=32 time=1ms TTL=64
Reply from 192.168.1.88: bytes=32 time=2ms TTL=64
Reply from 192.168.1.88: bytes=32 time=2ms TTL=64
Reply from 192.168.1.88: bytes=32 time=2ms TTL=64

Ping statistics for 192.168.1.88:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms
PS C:\Users\Habiba> ssh nitadmin@192.168.1.88
The authenticity of host '192.168.1.88 (192.168.1.88)' can't be established.
ED25519 key fingerprint is SHA256:8xnNB1WFgpdY39f6UOPKktz+hYHpi0sv4zKR3NgEos.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.88' (ED25519) to the list of known hosts.
nitadmin@192.168.1.88's password:
Last login: Mon Dec 16 19:07:34 2024
[nitadmin@localhost ~]$ cat /etc/redhat-release
Rocky Linux release 9.5 (Blue Onyx)
[nitadmin@localhost ~]$ 
```

- Using windows Terminal
- Ping the IP address of Rocky Linux VM
- SSH into Rocky Linux 9 VM as user “nitadmin”

**Awesome!**

**You successful installed Rocky Linux 9 VM**

**You can remotely access your Rocky Linux 9 VM using ssh**

**Great!**

**NOTE: if you have able to smoothly follow up and your VM is running – This is Great!**

**#HappyLearning**

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## 6.0 OTHER AVAILABLE OPTIONS TO INSTALL LINUX

### 6.1 VAGRANT

Vagrant is a popular command-line tool that enables you to easily build and manage virtual machines on Linux, Windows, and macOS.

- It is commonly used by developers to create test and production environments within a very short time
- Vagrant requires a hypervisor to provision VMs on top of it and VirtualBox is the default provider for vagrant. It can use other hypervisors and providers such as VMware, Hyper-V, Docker, KVM and cloud platforms like AWS.

Key features of Vagrant include:

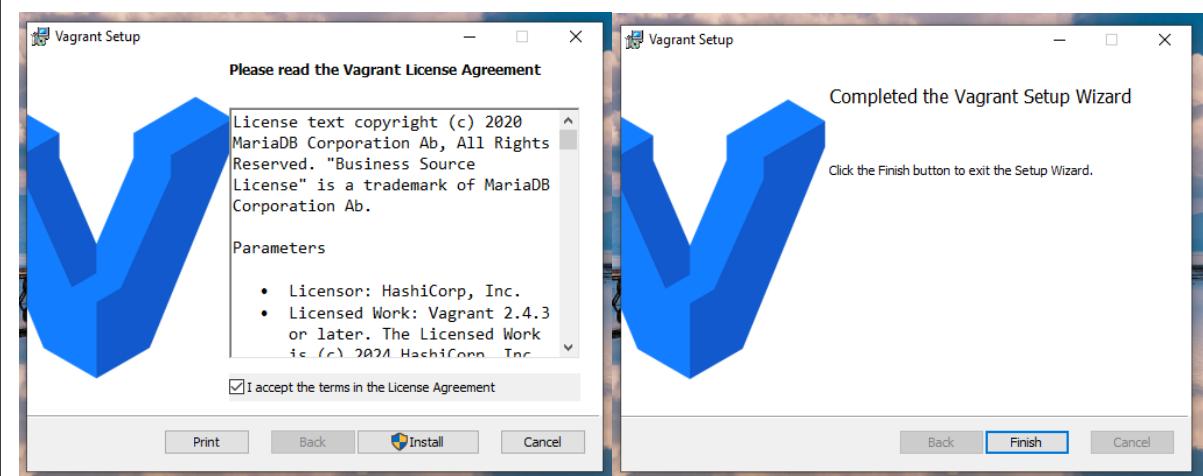
- **Virtual machine management:** Vagrant creates and manage virtual machines using virtualization software such as VirtualBox, VMware, and Hyper-V.
- **Simple configuration:** Vagrant uses a single configuration file (Vagrantfile) to define and manage the virtual environment.
- **Support for multiple platforms:** Vagrant supports multiple operating systems such as Linux, Windows, and macOS.
- **Provisioning and configuration:** Vagrant allows developers to easily provision and configure their virtual environment with tools such as Ansible, Chef, and Puppet.
- **Testing in multiple environments:** As a Developer you can test your code in multiple environments, reducing the risk of compatibility issues using Vagrant.
- **Version control integration:** Vagrant integrates seamlessly with popular version control systems such as Git.

In this guide, we are going to look at how to install and use Vagrant on Windows 10 system and using VirtualBox as the provider. **VirtualBox MUST be already Installed on your computer.**

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## 1. Download and Install [Vagrant](#) for Windows system

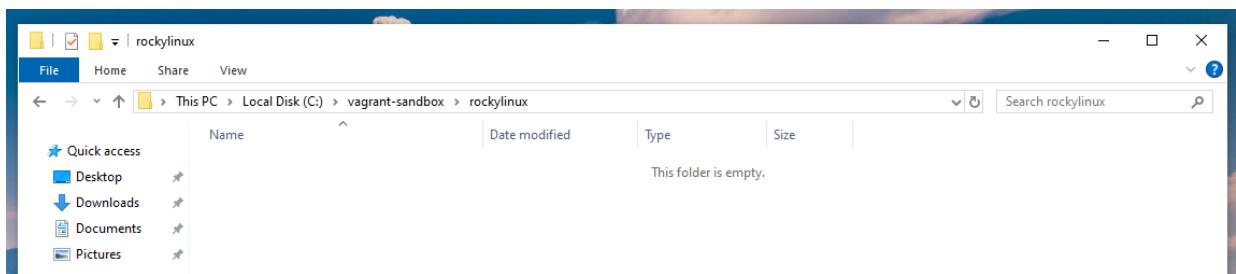
The screenshot shows the 'Install Vagrant' page on the HashiCorp website. The 'Windows' section is highlighted with a red box. It contains two download links: 'AMD64 Version: 2.4.3' and 'I686 Version: 2.4.3'. The 'About Vagrant' sidebar on the right explains that Vagrant is a command-line utility for managing the lifecycle of virtual machines.



- After successful installation, Windows system might require a restart.
- Once your is restarted, create a working directory where you wish to spin up your vagrant box

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## 2. Create a Rocky Linux 9 Vagrant VM/box



- I have created a directory **C:\vagrant-sandbox\rockylinux**
- Open Windows Terminal, change directory to the new directory created and run the below command

**vagrant init rockylinux/9 --box-version 4.0.0**

```

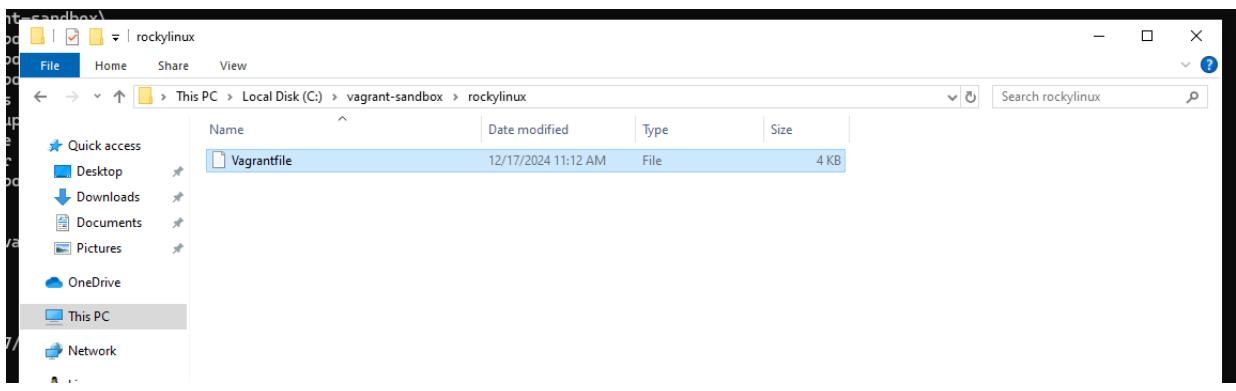
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Habiba> cd ..
PS C:\Users> cd ..
PS C:> cd .\vagrant-sandbox
PS C:\vagrant-sandbox> cd ..\rockylinux\
PS C:\vagrant-sandbox\rockylinux> dir
PS C:\vagrant-sandbox\rockylinux> vagrant init rockylinux/9 --box-version 4.0.0
A 'Vagrantfile' has been placed in this directory. You are now
ready to 'vagrant up' your first virtual environment! Please read
the comments in the Vagrantfile as well as documentation on
'vagrantup.com' for more information on using Vagrant.
PS C:\vagrant-sandbox\rockylinux> |

```

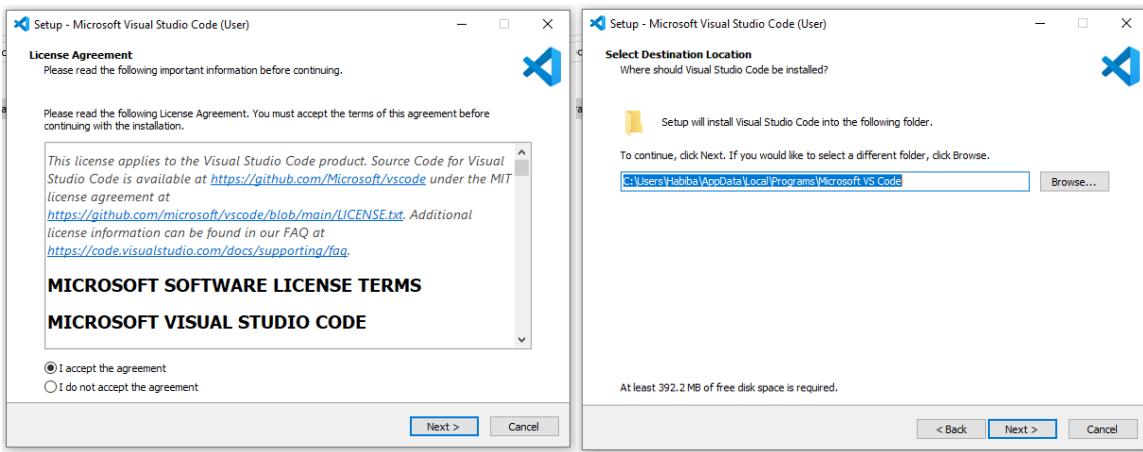
- A Vagrantfile will be created in that location



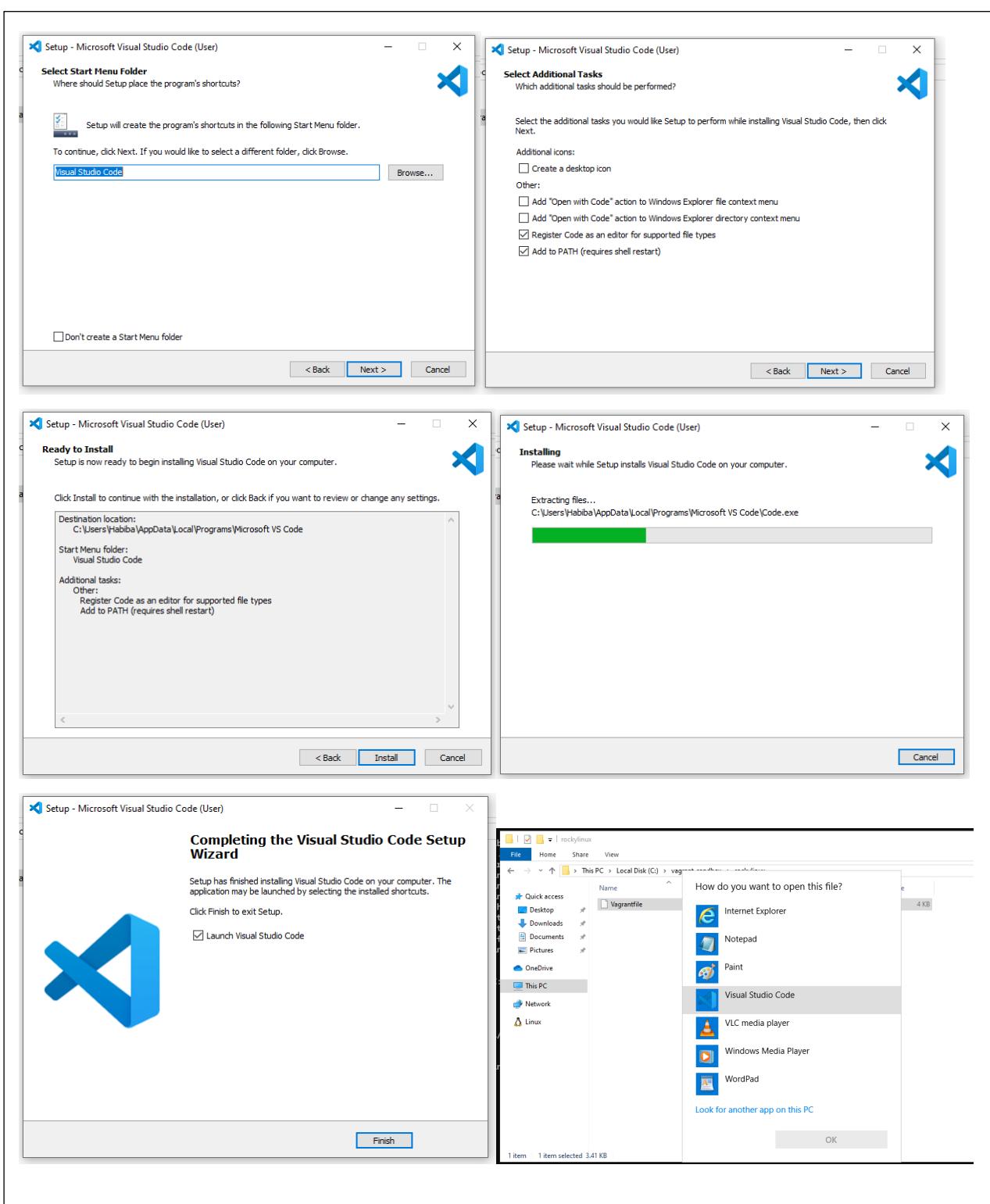
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- You can open the file with Notepad or Install a free code editor like VS code to open the file.
- [Download and Install VS code](#)

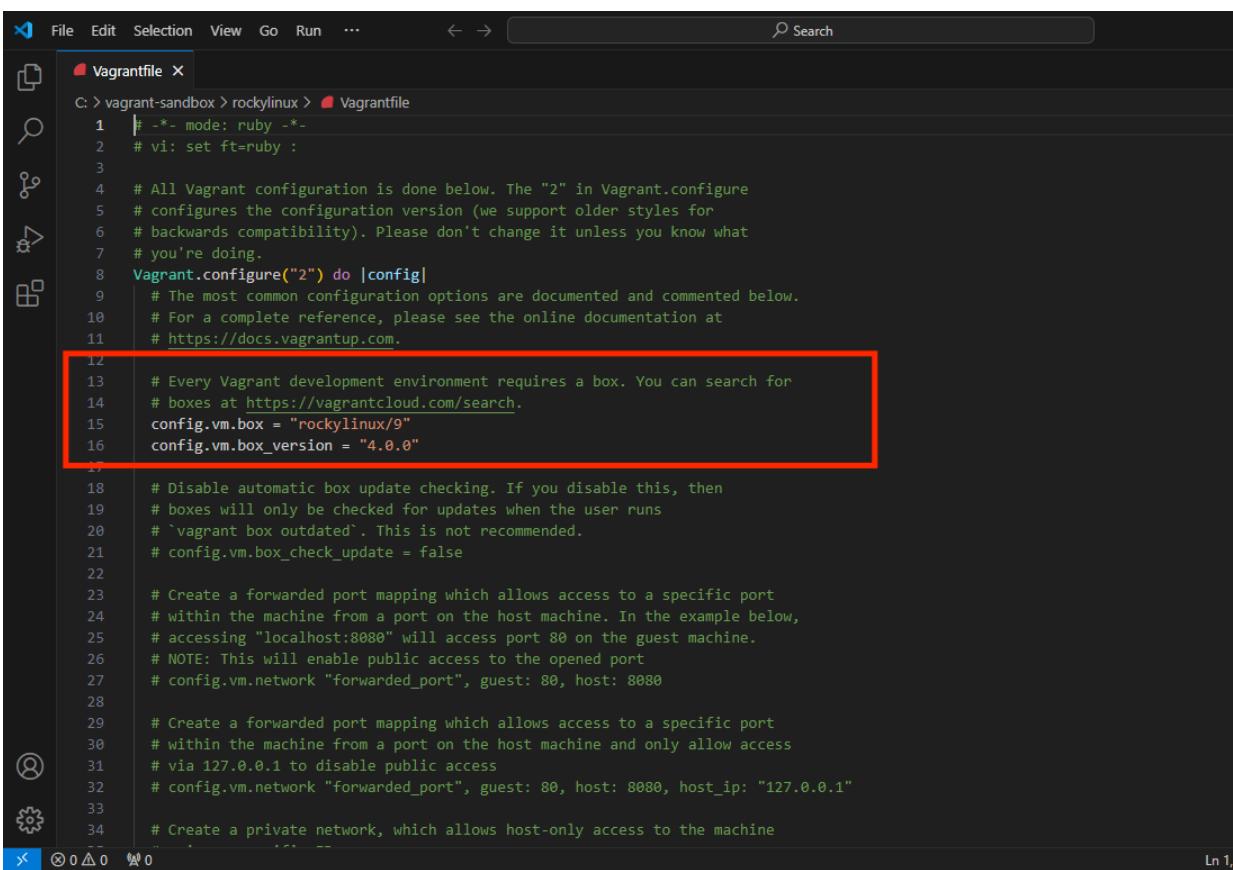
The screenshot shows the official Visual Studio Code website at [code.visualstudio.com](https://code.visualstudio.com). The page features a prominent banner with the text "Code faster with AI" and "Visual Studio Code with GitHub Copilot supercharges your code with AI-powered suggestions, right in your editor." Below the banner are two main download buttons: "Download for Windows" (in blue) and "Try GitHub Copilot" (in grey). A small note below the buttons says "Web, Insiders edition, or other platforms".



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```

File Edit Selection View Go Run ... ← → ⌂ Search
Vagrantfile X
C: > vagrant-sandbox > rockylinux > Vagrantfile
1   # -*- mode: ruby -*-
2   # vi: set ft=ruby :
3
4   # All Vagrant configuration is done below. The "2" in Vagrant.configure
5   # configures the configuration version (we support older styles for
6   # backwards compatibility). Please don't change it unless you know what
7   # you're doing.
8   Vagrant.configure("2") do |config|
9     # The most common configuration options are documented and commented below.
10    # For a complete reference, please see the online documentation at
11    # https://docs.vagrantup.com.
12
13    # Every Vagrant development environment requires a box. You can search for
14    # boxes at https://vagrantcloud.com/search.
15    config.vm.box = "rockylinux/9"
16    config.vm.box_version = "4.0.0"
17
18    # Disable automatic box update checking. If you disable this, then
19    # boxes will only be checked for updates when the user runs
20    # `vagrant box outdated`. This is not recommended.
21    # config.vm.box_check_update = false
22
23    # Create a forwarded port mapping which allows access to a specific port
24    # within the machine from a port on the host machine. In the example below,
25    # accessing "localhost:8080" will access port 80 on the guest machine.
26    # NOTE: This will enable public access to the opened port
27    # config.vm.network "forwarded_port", guest: 80, host: 8080
28
29    # Create a forwarded port mapping which allows access to a specific port
30    # within the machine from a port on the host machine and only allow access
31    # via 127.0.0.1 to disable public access
32    # config.vm.network "forwarded_port", guest: 80, host: 8080, host_ip: "127.0.0.1"
33
34    # Create a private network, which allows host-only access to the machine

```

PS C:\vagrant-sandbox\rockylinux> dir

Mode	LastWriteTime	Length	Name
-a---	12/17/2024 11:12 AM	3498	Vagrantfile

PS C:\vagrant-sandbox\rockylinux> vagrant up

- From windows terminal, running the command “**dir**”, the Vagrantfile that was created in the directory is listed.
- Now, spin up the VM by running the command “**vagrant up**”

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```

Windows PowerShell

PS C:\vagrant-sandbox\rockylinux> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Box 'rockylinux/9' could not be found. Attempting to find and install...
    default: Box Provider: virtualbox
    default: Box Version: 4.0.0
==> default: Loading metadata for box 'rockylinux/9'
    default: URL: https://vagrantcloud.com/api/v2/vagrant/rockylinux/9
==> default: Adding box 'rockylinux/9' (v4.0.0) for provider: virtualbox (amd64)
    default: Downloading: https://vagrantcloud.com/rockylinux/boxes/9/versions/4.0.0/providers/virtualbox/amd64/vagrant.box
Download redirected to host: dl.rockylinux.org
    default:
An error occurred while downloading the remote file. The error
message, if any, is reproduced below. Please fix this error and try
again.

The requested URL returned error: 404
PS C:\vagrant-sandbox\rockylinux>

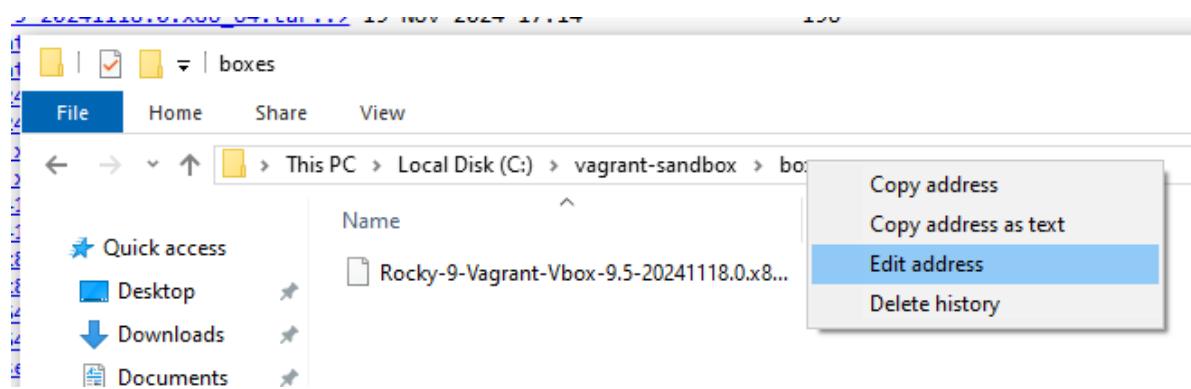
```

- **vagrant up** command is giving us a 404-error code! And notice from the log, the rocky Linux vagrant box being downloaded is redirected from default download URL to host [dl.rockylinux.org](http://dl.rockylinux.org)
- From rocky Linux forums, we are trying to download Rocky 9.4 which has been moved to vault and new vagrant images pointing to Rocky 9.5 have not been yet updated hence we can download the new vagrant box for Rocky 9.5 [here](#)
- [Download Rocky Linux 9.5 vagrant box](#) locally on your PC and add it to Vagrant

File	Date	Size
Rocky-9-GenericCloud-Base.latest.x86_64.qcow2.C...	19-Nov-2024 17:13	187
Rocky-9-GenericCloud-LVM-9.5-20241118.0.x86_64...	19-Nov-2024 03:53	619839488
Rocky-9-GenericCloud-LVM-9.5-20241118.0.x86_64...	19-Nov-2024 17:14	201
Rocky-9-GenericCloud-LVM.latest.x86_64.qcow2	19-Nov-2024 03:53	619839488
Rocky-9-GenericCloud-LVM.latest.x86_64.qcow2.CH...	19-Nov-2024 17:14	185
Rocky-9-GenericCloud.latest.x86_64.qcow2	19-Nov-2024 03:53	609812480
Rocky-9-GenericCloud.latest.x86_64.qcow2.CHECKSUM	19-Nov-2024 17:13	177
Rocky-9-OCP-Base-9.5-20241118.0.x86_64.qcow2	19-Nov-2024 03:54	1458307072
Rocky-9-OCP-Base-9.5-20241118.0.x86_64.qcow2.CH...	19-Nov-2024 17:14	186
Rocky-9-OCP-Base.latest.x86_64.qcow2	19-Nov-2024 03:54	1458307072
Rocky-9-OCP-Base.latest.x86_64.qcow2.CHECKSUM	19-Nov-2024 17:14	170
Rocky-9-Vagrant-Libvirt-9.5-20241118.0.x86_64.box	19-Nov-2024 03:55	381866019
Rocky-9-Vagrant-Libvirt-9.5-20241118.0.x86_64.b...	19-Nov-2024 17:14	195
Rocky-9-Vagrant-Libvirt.latest.x86_64.box	19-Nov-2024 03:55	381866019
Rocky-9-Vagrant-Libvirt.latest.x86_64.box.CHECKSUM	19-Nov-2024 17:14	179
Rocky-9-Vagrant-VMware-9.5-20241118.0.x86_64.box	19-Nov-2024 03:55	381229170
Rocky-9-Vagrant-VMware-9.5-20241118.0.x86_64.b...	19-Nov-2024 03:55	193
Rocky-9-Vagrant-VMware-9.5-20241119.0.x86_64.box	19-Nov-2024 17:14	933726484
Rocky-9-Vagrant-VMware-9.5-20241119.0.x86_64.b...	19-Nov-2024 17:14	193
Rocky-9-Vagrant-VMware.latest.x86_64.box	19-Nov-2024 17:14	933726484
Rocky-9-Vagrant-VMware.latest.x86_64.box.CHECKSUM	19-Nov-2024 17:14	177
Rocky-9-Vagrant-Vbox-9.5-20241118.0.x86_64.box	19-Nov-2024 03:55	359445369
Rocky-9-Vagrant-Vbox-9.5-20241118.0.x86_64.box...	19-Nov-2024 17:14	189
Rocky-9-Vagrant-Vbox.latest.x86_64.box	19-Nov-2024 03:55	359445369
Rocky-9-Vagrant-Vbox.latest.x86_64.box.CHECKSUM	19-Nov-2024 17:14	173

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- Save the downloaded box, note the location where it is saved



- Create a new directory, change into new directory and run **vagrant box add** command to add a custom vagrant box saved locally on your computer to **vagrant**

```
PS C:\vagrant-sandbox> mkdir rockylinux9

Directory: C:\vagrant-sandbox

Mode LastWriteTime Length Name
---- -- -- -- --
d---- 12/17/2024 11:59 AM      rockylinux9

PS C:\vagrant-sandbox> cd .\rockylinux9
PS C:\vagrant-sandbox\rockylinux9> vagrant box add rocky9 C:\vagrant-sandbox\boxes\Rocky-9-Vagrant-Vbox-9.5-20241118.0.x86_64.box
==> box: Box file was not detected as metadata. Adding it directly...
==> box: Adding box 'rocky9' (v0) for provider:
    box: Unpacking necessary files from: file:///C:/vagrant-sandbox/boxes/Rocky-9-Vagrant-Vbox-9.5-20241118.0.x86_64.box
    box:
==> box: Successfully added box 'rocky9' (v0) for ''
PS C:\vagrant-sandbox\rockylinux9> dir
PS C:\vagrant-sandbox\rockylinux9> vagrant init rocky9
A 'Vagrantfile' has been placed in this directory. You are now
ready to 'vagrant up' your first virtual environment! Please read
the comments in the Vagrantfile as well as documentation on
'vagrantup.com' for more information on using Vagrant.
PS C:\vagrant-sandbox\rockylinux9> dir

Directory: C:\vagrant-sandbox\rockylinux9

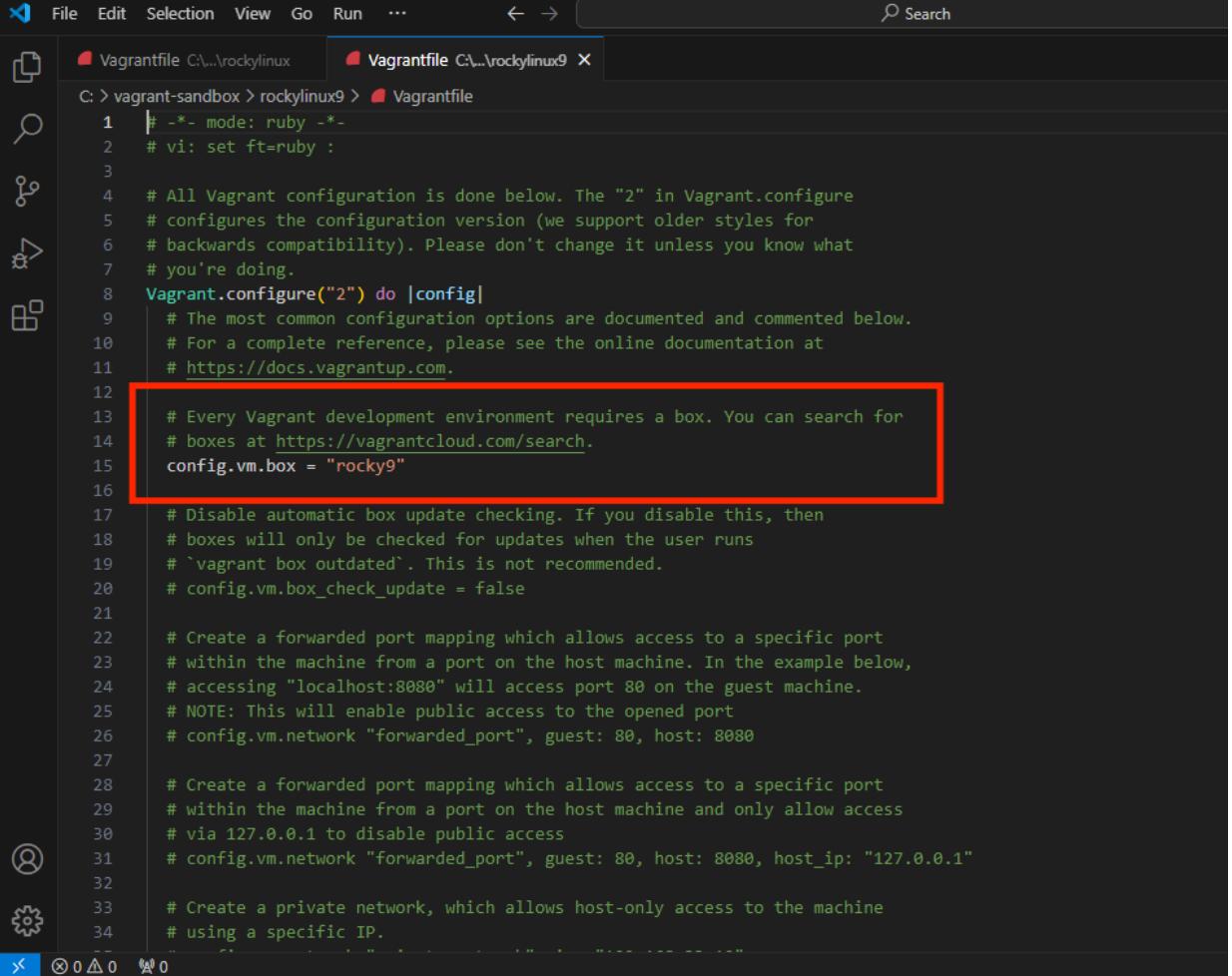
Mode LastWriteTime Length Name
---- -- -- -- --
-a--- 12/17/2024 12:05 PM      3457 Vagrantfile

PS C:\vagrant-sandbox\rockylinux9> vagrant up|
```

- Custom box **rocky9** has been added successful, run **vagrant init rocky9** which creates a **Vagrantfile**

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- Open the new Vagrantfile in VS code



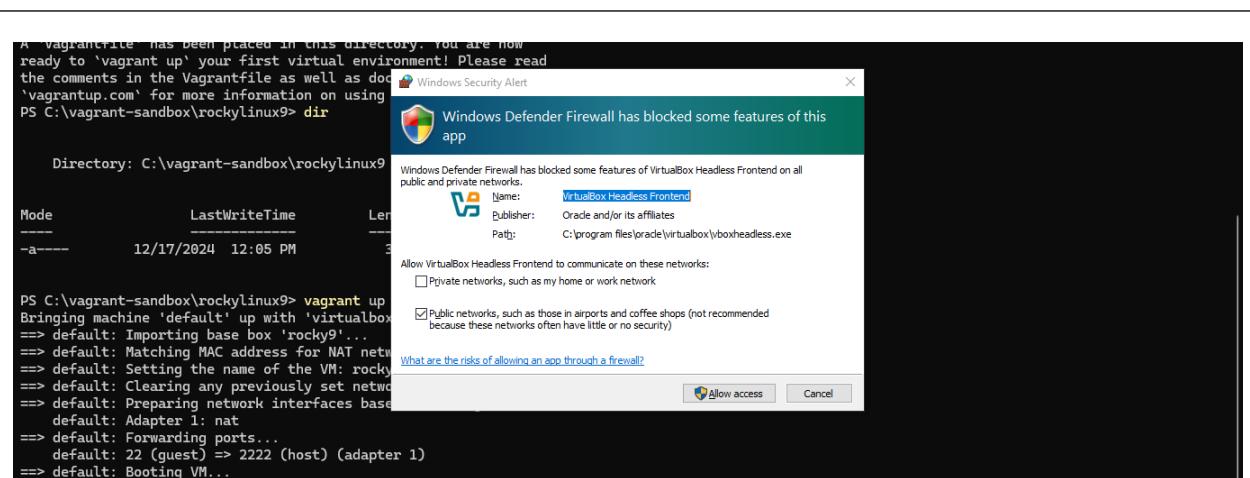
```

File Edit Selection View Go Run ... ⏪ ⏩ ⏴ Search
Vagrantfile C:\...\rockylinux Vagrantfile C:\...\rockylinux9 ✘
C: > vagrant-sandbox > rockylinux9 > Vagrantfile
1 # -*- mode: ruby -*-
2 # vi: set ft=ruby :
3
4 # All Vagrant configuration is done below. The "2" in Vagrant.configure
5 # configures the configuration version (we support older styles for
6 # backwards compatibility). Please don't change it unless you know what
7 # you're doing.
8 Vagrant.configure("2") do |config|
9   # The most common configuration options are documented and commented below.
10  # For a complete reference, please see the online documentation at
11  # https://docs.vagrantup.com.
12
13  # Every Vagrant development environment requires a box. You can search for
14  # boxes at https://vagrantcloud.com/search.
15  config.vm.box = "rocky9"
16
17  # Disable automatic box update checking. If you disable this, then
18  # boxes will only be checked for updates when the user runs
19  # `vagrant box outdated`. This is not recommended.
20  # config.vm.box_check_update = false
21
22  # Create a forwarded port mapping which allows access to a specific port
23  # within the machine from a port on the host machine. In the example below,
24  # accessing "localhost:8080" will access port 80 on the guest machine.
25  # NOTE: This will enable public access to the opened port
26  # config.vm.network "forwarded_port", guest: 80, host: 8080
27
28  # Create a forwarded port mapping which allows access to a specific port
29  # within the machine from a port on the host machine and only allow access
30  # via 127.0.0.1 to disable public access
31  # config.vm.network "forwarded_port", guest: 80, host: 8080, host_ip: "127.0.0.1"
32
33  # Create a private network, which allows host-only access to the machine
34  # using a specific IP.

```

- Run **vagrant up** to spin up a rocky9 vagrant VM running Rocky Linux 9
- Allow Windows Firewall popups
- If no issues, run **vagrant ssh** to login into the VM

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```
PS C:\vagrant-sandbox\rockylinux9> vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'rocky9'...
==> default: Matching MAC address for NAT networking...
==> default: Setting the name of the VM: rockylinux9_default_1734458892601_61580
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
Timed out while waiting for the machine to boot. This means that Vagrant was unable to communicate with the guest machine within the configured ("config.vm.boot_timeout" value) time period.
```

If you look above, you should be able to see the error(s) that Vagrant had when attempting to connect to the machine. These errors are usually good hints as to what may be wrong.

If you're using a custom box, make sure that networking is properly working and you're able to connect to the machine. It is a common problem that networking isn't setup properly in these boxes. Verify that authentication configurations are also setup properly, as well.

If the box appears to be booting properly, you may want to increase the timeout ("config.vm.boot\_timeout") value.

```
PS C:\vagrant-sandbox\rockylinux9> vagrant ssh
```

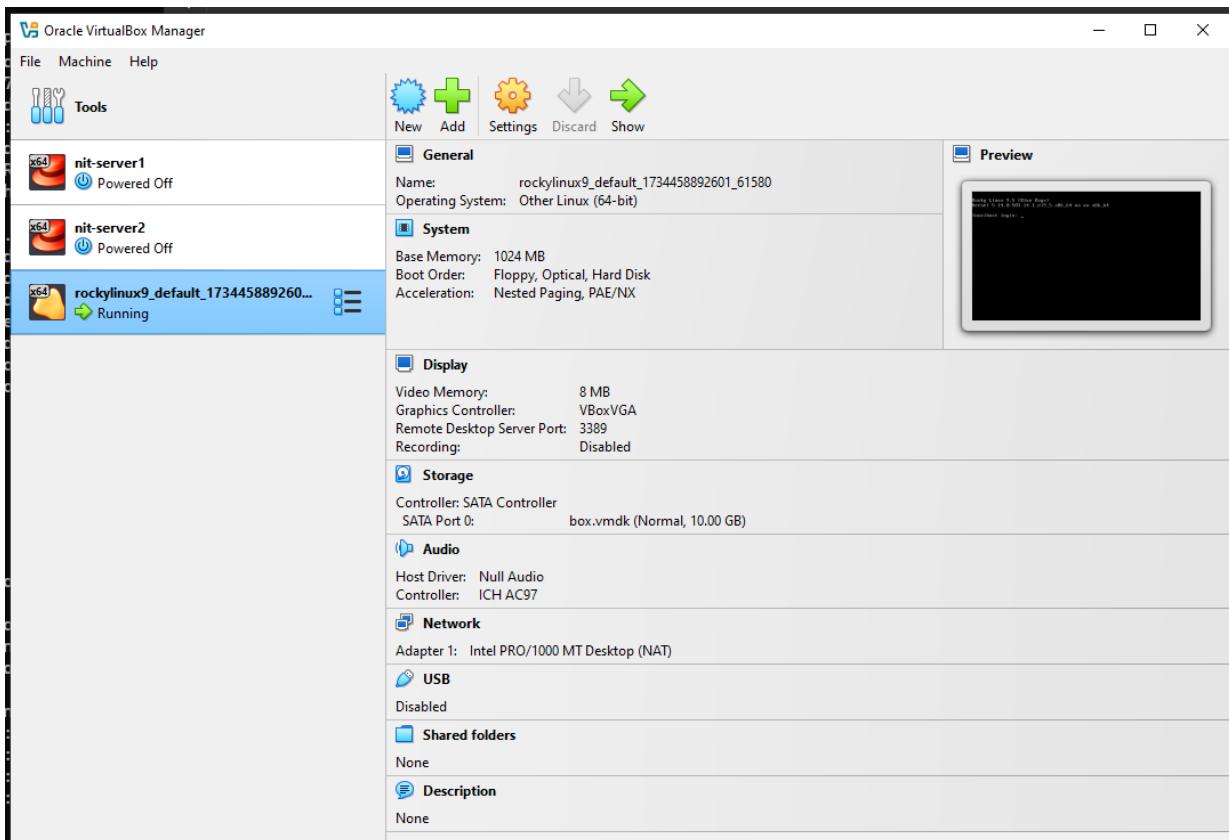
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```
[vagrant@vbox ~]$ 
[vagrant@vbox ~]$ 
[vagrant@vbox ~]$ cat /etc/*release*
NAME="Rocky Linux"
VERSION="9.5 (Blue Onyx)"
ID="rocky"
ID_LIKE="rhel centos fedora"
VERSION_ID="9.5"
PLATFORM_ID="platform:el9"
PRETTY_NAME="Rocky Linux 9.5 (Blue Onyx)"
ANSI_COLOR="0;32"
LOGO="fedora-logo-icon"
CPE_NAME="cpe:/o:rocky:rocky:9::baseos"
HOME_URL="https://rockylinux.org/"
VENDOR_NAME="RESF"
VENDOR_URL="https://resf.org/"
BUG_REPORT_URL="https://bugs.rockylinux.org/"
SUPPORT_END="2032-05-31"
ROCKY_SUPPORT_PRODUCT="Rocky Linux-9"
ROCKY_SUPPORT_PRODUCT_VERSION="9.5"
REDHAT_SUPPORT_PRODUCT="Rocky Linux"
REDHAT_SUPPORT_PRODUCT_VERSION="9.5"
Rocky Linux release 9.5 (Blue Onyx)
Rocky Linux release 9.5 (Blue Onyx)
Derived from Red Hat Enterprise Linux 9.5
Rocky Linux release 9.5 (Blue Onyx)
cpe:/o:rocky:rocky:9::baseos
[vagrant@vbox ~]$ whoami
vagrant
[vagrant@vbox ~]$ uname -a
Linux vbox 5.14.0-503.14.1.el9_5.x86_64 #1 SMP PREEMPT_DYNAMIC Fri Nov 15 12:04:32 UTC 2024 x86_64 x86_64 x86_64 GNU/Linux
[vagrant@vbox ~]$ |
```

```
vagrant@vbox:~ x + 
[vagrant@vbox ~]$ whoami
vagrant
[vagrant@vbox ~]$ uname -a
Linux vbox 5.14.0-503.14.1.el9_5.x86_64 #1 SMP PREEMPT_DYNAMIC Fri Nov 15 12:04:32 UTC 2024 x86_64 x86_64 x86_64 GNU/Linux
[vagrant@vbox ~]$ 
[vagrant@vbox ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:16:3e:0e:40:a1 brd ff:ff:ff:ff:ff:ff
        altname enp0s3
        inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute eth0
            valid_lft 85964usec preferred_lft 85964usec
        inet6 fd00::216:3eff:fe0e:40a1/64 scope global dynamic mngtmpaddr
            valid_lft 86187usec preferred_lft 14187usec
        inet6 fe80::216:3eff:fe0e:40a1/64 scope link
            valid_lft forever preferred_lft forever
[vagrant@vbox ~]$ 
[vagrant@vbox ~]$ df -h
Filesystem      Size   Used  Avail Use% Mounted on
devtmpfs        4.0M     0  4.0M  0% /dev
tmpfs          481M     0  481M  0% /dev/shm
tmpfs          193M   5.3M  187M  3% /run
/dev/sda4       8.9G   2.9G  6.1G  32% /
/dev/sda3       936M  123M  814M  14% /boot
/dev/sda2      100M   7.0M   93M  8% /boot/efi
tmpfs          97M     0   97M  0% /run/user/1000
[vagrant@vbox ~]$ whoami
vagrant
[vagrant@vbox ~]$ pwd
/home/vagrant
[vagrant@vbox ~]$ |
```

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- Check VirtualBox Manager interface, a rocky Linux was provisioned behind the scenes when running the Vagrant commands



- Run **vagrant halt** command to shut down the VM

```
vagrant@vbox ~]$ pws
/home/vagrant
[vagrant@vbox ~]$ exit
logout
PS C:\vagrant-sandbox\rockylinux9> vagrant halt
==> default: Attempting graceful shutdown of VM...
default:
default: Vagrant insecure key detected. Vagrant will automatically replace
default: this with a newly generated keypair for better security.
default:
default: Inserting generated public key within guest...
default: Removing insecure key from the guest if it's present...
default: Key inserted! Disconnecting and reconnecting using new SSH key...
PS C:\vagrant-sandbox\rockylinux9> |
```

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---

Great! We have been able to spin up a Rocky Linux 9 vagrant VM

**Awesome!**

**You successful installed Rocky Linux 9 VM using Vagrant**

**Vagrant ssh into the VM**

**Great!**

**NOTE: if you have able to smoothly follow up and your VM is running – This is Great!**

**#HappyLearning**

## 6.2 WINDOWS SUBSYSTEM FOR LINUX (WSL)

Linux is a widely used operating system and is quite important for developers

Developers can access the power of both Windows and Linux at the same time on a Windows machine. The Windows Subsystem for Linux (WSL) lets developers install a Linux distribution (such as Ubuntu, OpenSUSE, Kali, Debian, Arch Linux, etc) and use Linux applications, utilities, and Bash command-line tools directly on Windows, unmodified, without the overhead of a traditional virtual machine or dual boot setup.

Prerequisites

You must be running Windows 10 version 2004 and higher (Build 19041 and higher) or Windows 11.

WSL2 (Windows Subsystem for Linux version 2) is the latest version of WSL. WSL2 architecture replaces WSL's architecture by using a lightweight virtual machine. In the new version, you can run an actual Linux kernel which improves overall performance.

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## How to Install WSL2

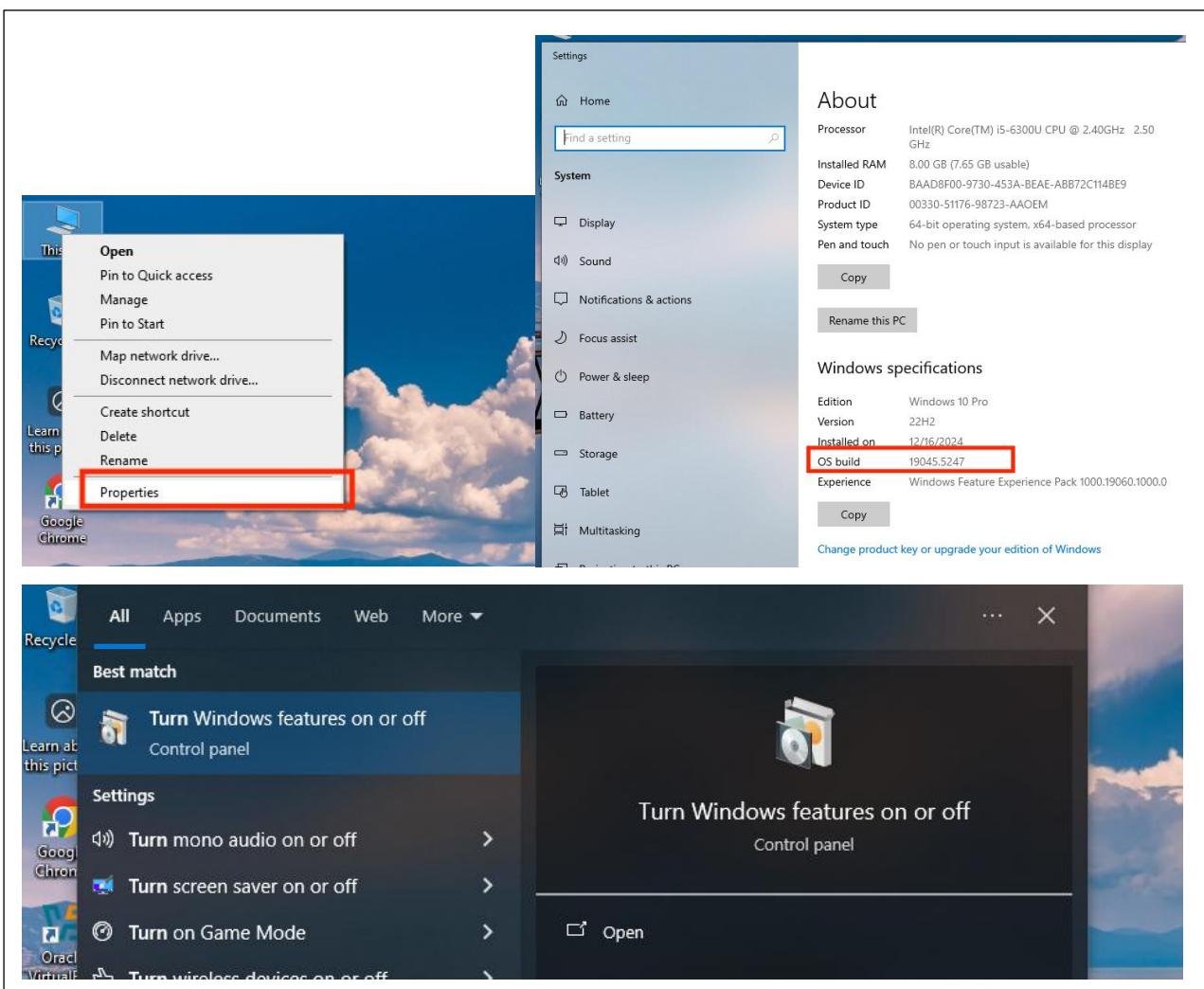
First, enable the windows subsystem for Linux option in settings.

Go to Start. Search for "Turn Windows features on or off."

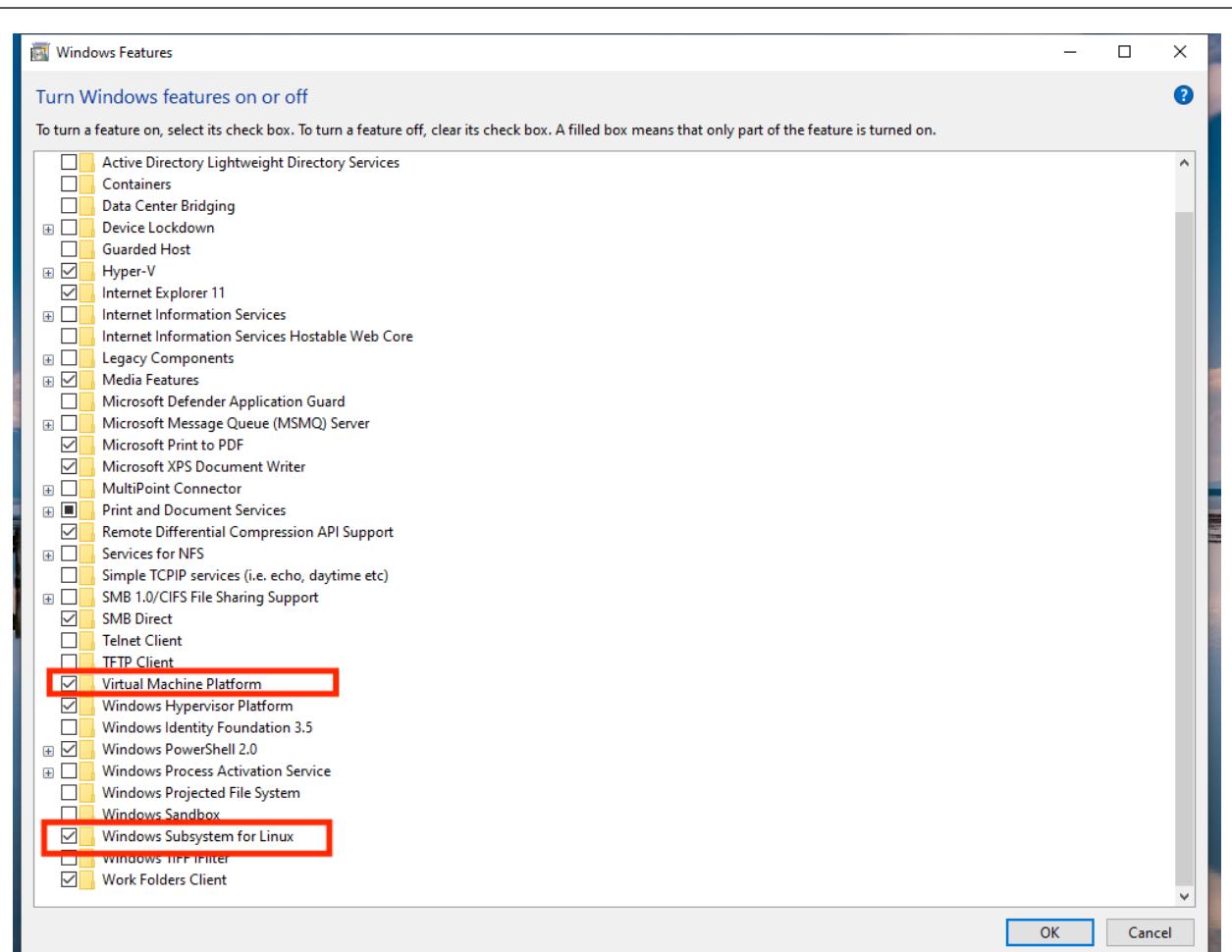
Check the option Windows Subsystem for Linux.

Next, open your command prompt and provide the installation commands.

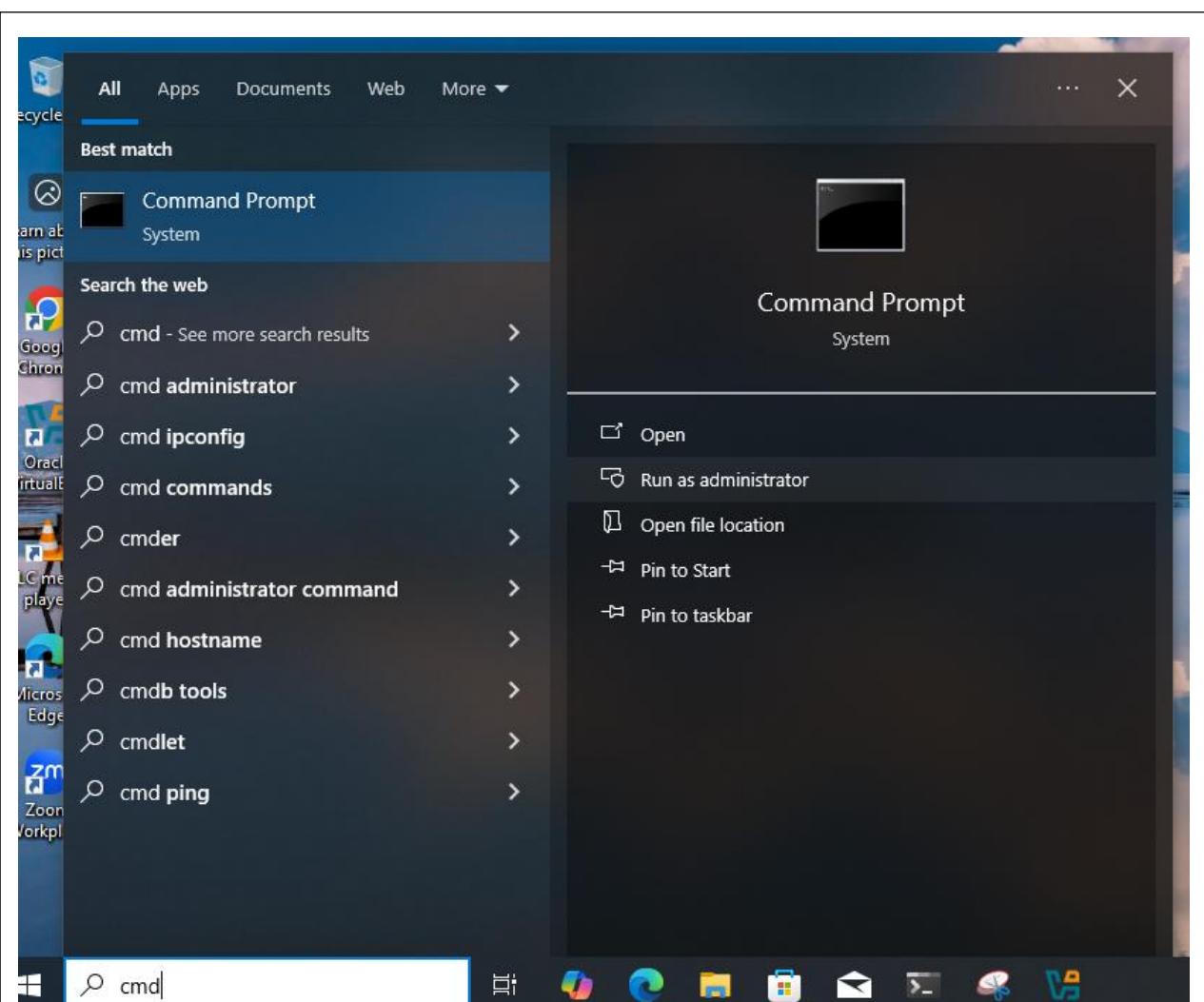
Open Command Prompt as an administrator.



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- List the online available Linux Distro  
**wsl -list -online**
- To install a specific distro, use the command below  
**wsl -install -d <Distro Name>**  
Follow the prompts and the specific distribution will be installed

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```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19045.5247]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>wsl --list --online
The following is a list of valid distributions that can be installed.
Install using 'wsl --install -d <Distro>'.

NAME                      FRIENDLY NAME
Ubuntu                    Ubuntu
Debian                    Debian GNU/Linux
kali-linux                Kali Linux Rolling
Ubuntu-18.04              Ubuntu 18.04 LTS
Ubuntu-20.04              Ubuntu 20.04 LTS
Ubuntu-22.04              Ubuntu 22.04 LTS
Ubuntu-24.04              Ubuntu 24.04 LTS
OracleLinux_7_9            Oracle Linux 7.9
OracleLinux_8_7            Oracle Linux 8.7
OracleLinux_9_1            Oracle Linux 9.1
openSUSE-Leap-15.6          openSUSE Leap 15.6
SUSE-Linux-Enterprise-15-SP5 SUSE Linux Enterprise 15 SP5
SUSE-Linux-Enterprise-15-SP6 SUSE Linux Enterprise 15 SP6
openSUSE-Tumbleweed         openSUSE Tumbleweed

C:\Windows\system32>
```

```
OracleLinux_7_9            Oracle Linux 7.9
OracleLinux_8_7            Oracle Linux 8.7
OracleLinux_9_1            Oracle Linux 9.1
openSUSE-Leap-15.6          openSUSE Leap 15.6
SUSE-Linux-Enterprise-15-SP5 SUSE Linux Enterprise 15 SP5
SUSE-Linux-Enterprise-15-SP6 SUSE Linux Enterprise 15 SP6
openSUSE-Tumbleweed         openSUSE Tumbleweed

C:\Windows\system32>wsl --install -d Ubuntu
Installing: Ubuntu
[                                     0.0%                               ]
```

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VIRTUAL MACHINE (VM) PROVISIONING  
& CONFIGURATION

**INSTITUTE:**

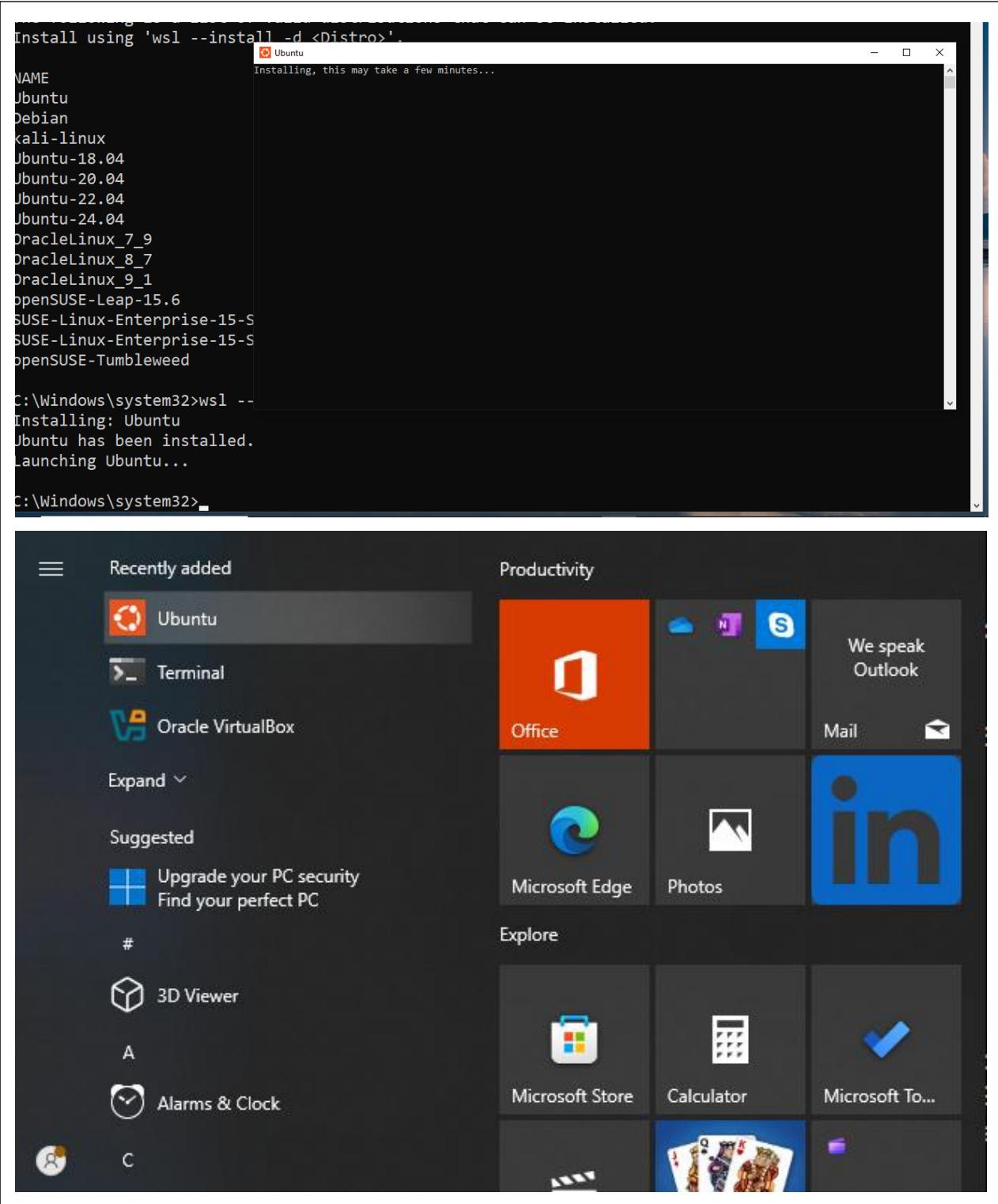
NEXUS INSTITUTE OF  
TECHNOLOGY –  
NIT ACADEMY

**DOCUMENT NO:**

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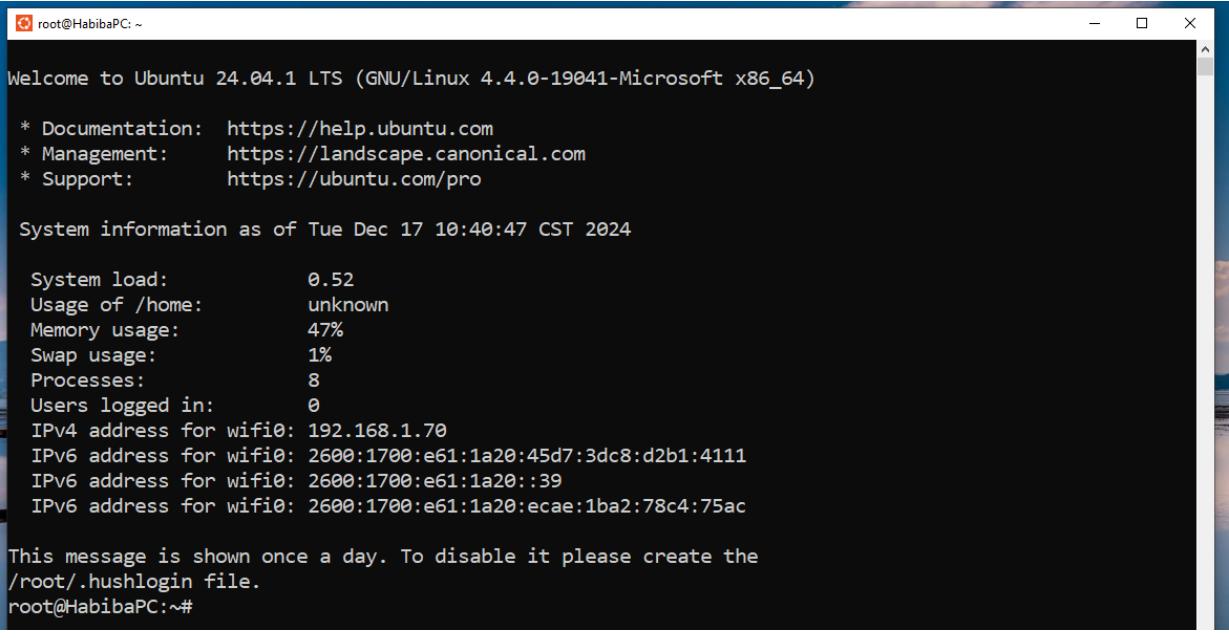
**REVISION:**

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- Once installation is done, search Ubuntu, and you should be able to see the Ubuntu App installed, launch it to start the WSL



```

root@HabibaPC: ~
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 4.4.0-19041-Microsoft x86_64)

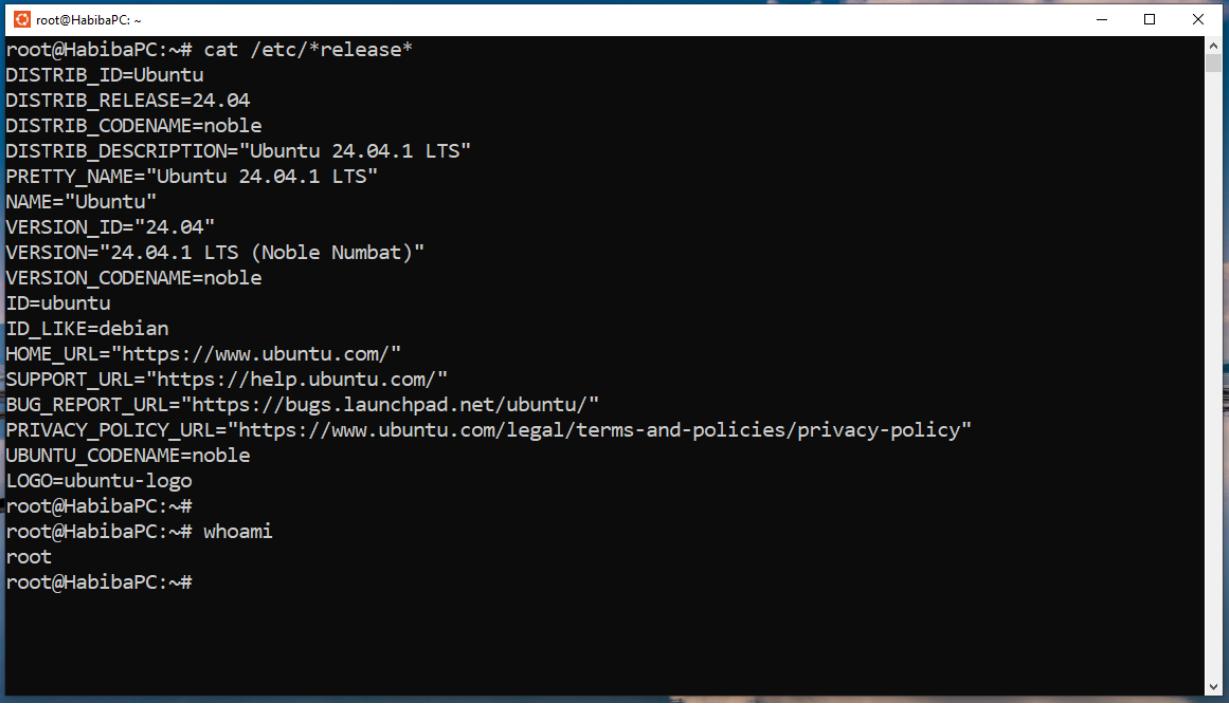
 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Tue Dec 17 10:40:47 CST 2024

System load:          0.52
Usage of /home:       unknown
Memory usage:         47%
Swap usage:           1%
Processes:            8
Users logged in:     0
IPv4 address for wifi0: 192.168.1.70
IPv6 address for wifi0: 2600:1700:e61:1a20:45d7:3dc8:d2b1:4111
IPv6 address for wifi0: 2600:1700:e61:1a20::39
IPv6 address for wifi0: 2600:1700:e61:1a20:ecae:1ba2:78c4:75ac

This message is shown once a day. To disable it please create the
/root/.hushlogin file.
root@HabibaPC:~#

```



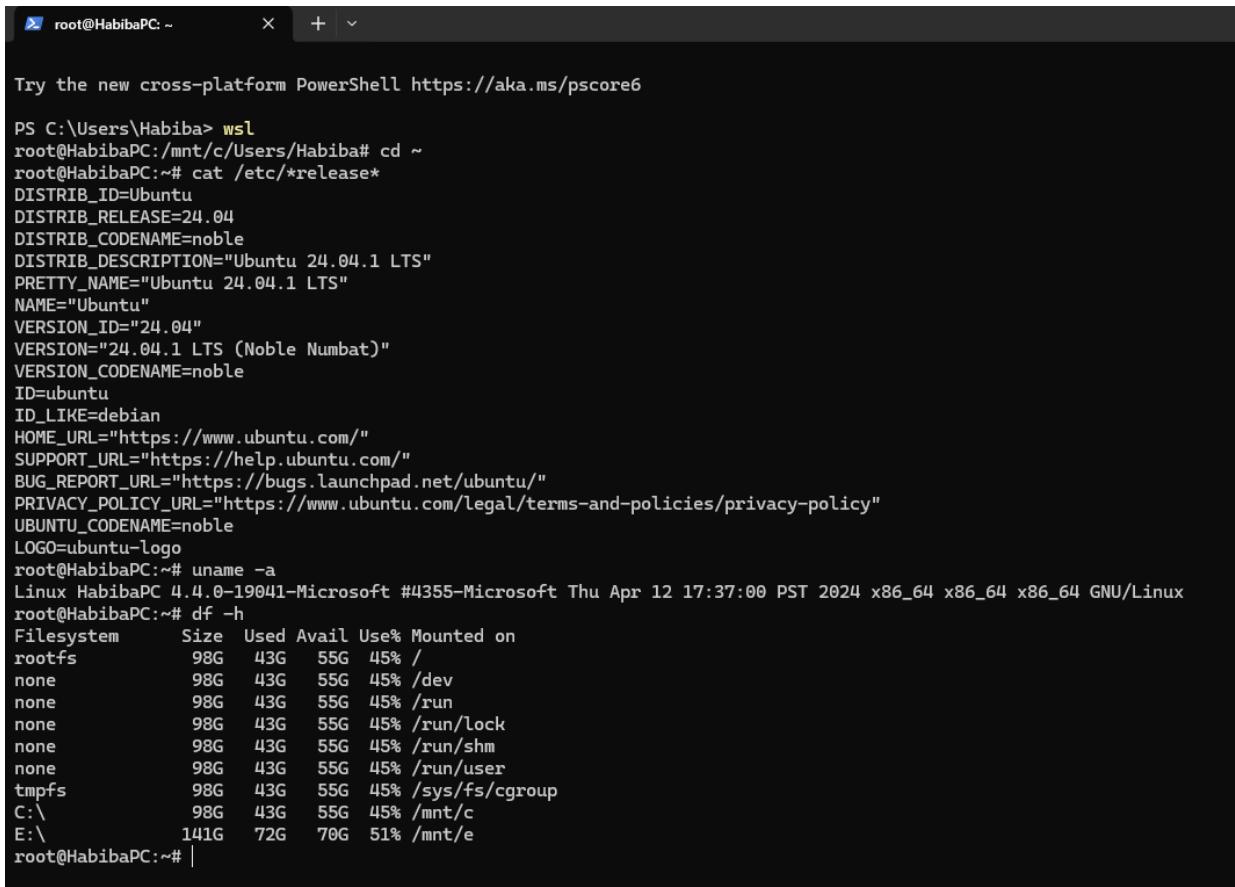
```

root@HabibaPC:~# cat /etc/*release*
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=24.04
DISTRIB_CODENAME=noble
DISTRIB_DESCRIPTION="Ubuntu 24.04.1 LTS"
PRETTY_NAME="Ubuntu 24.04.1 LTS"
NAME="Ubuntu"
VERSION_ID="24.04"
VERSION="24.04.1 LTS (Noble Numbat)"
VERSION_CODENAME=noble
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=noble
LOGO=ubuntu-logo
root@HabibaPC:~#
root@HabibaPC:~# whoami
root
root@HabibaPC:~#

```

<b>DOCUMENT TITLE:</b> VIRTUAL MACHINE (VM) PROVISIONING & CONFIGURATION	<b>INSTITUTE:</b> NEXUS INSTITUTE OF TECHNOLOGY – NIT ACADEMY
<b>DOCUMENT NO:</b> VM-PRO-NIT-0001	<b>REVISION:</b> R1

- Open Windows Terminal, and type `wsl ~` can be used to start the user's home directory



```

root@HabibaPC: ~      x  +  v

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Habiba> wsl
root@HabibaPC:/mnt/c/Users/Habiba# cd ~
root@HabibaPC:~# cat /etc/*release*
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=24.04
DISTRIB_CODENAME=noble
DISTRIB_DESCRIPTION="Ubuntu 24.04.1 LTS"
PRETTY_NAME="Ubuntu 24.04.1 LTS"
NAME="Ubuntu"
VERSION_ID="24.04"
VERSION="24.04.1 LTS (Noble Numbat)"
VERSION_CODENAME=noble
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=noble
LOGO=ubuntu-logo
root@HabibaPC:~# uname -a
Linux HabibaPC 4.4.0-19041-Microsoft #4355-Microsoft Thu Apr 12 17:37:00 PST 2024 x86_64 x86_64 x86_64 GNU/Linux
root@HabibaPC:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
rootfs        98G   43G   55G  45% /
none          98G   43G   55G  45% /dev
none          98G   43G   55G  45% /run
none          98G   43G   55G  45% /run/lock
none          98G   43G   55G  45% /run/shm
none          98G   43G   55G  45% /run/user
tmpfs         98G   43G   55G  45% /sys/fs/cgroup
C:\
E:\
E:\           141G   72G   70G  51% /mnt/e
root@HabibaPC:~# |

```

- [Basic commands for WSL](#)

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### 6.3 DAUL BOOT SETUP

A dual boot setup allows you to run multiple operating systems on a single computer.

NOTE: Can be challenging and scary if you don't know much about computer hardware, preparing bootable USB drive, and partitioning hard disk, might lose your important data if no backup is done before attempting a dual boot setup.

There are tons of information online, you can give it a try

## 7.0 TRY TO INSTALL OTHER LINUX DISTROS

### 7.1 TRY TO INSTALL UBUNTU