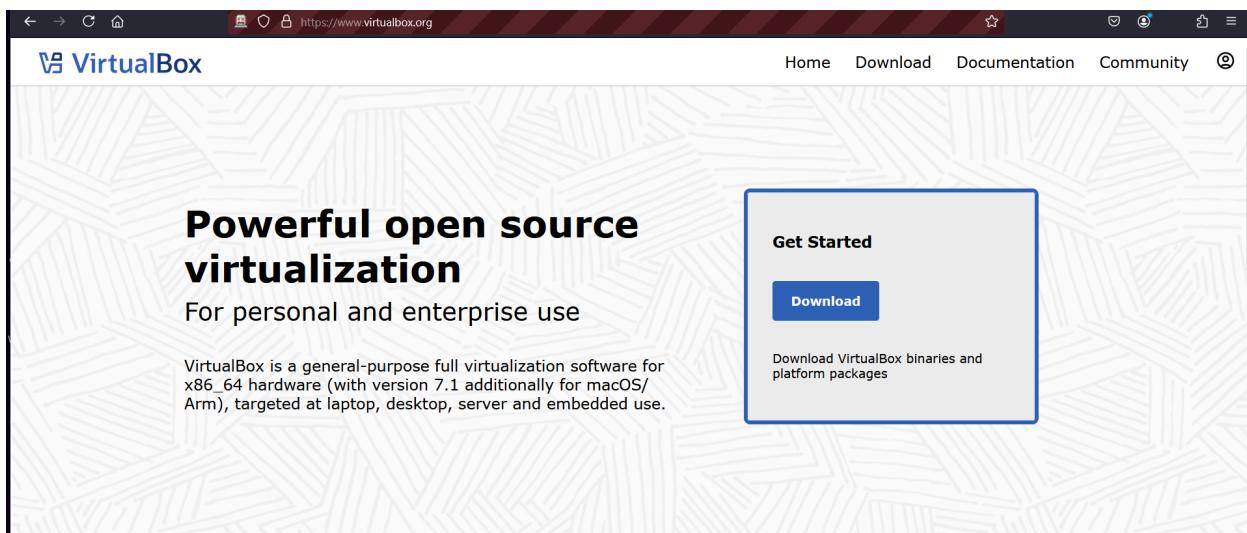


Alina Concepcion
Linux Administration
Fall 2024
Lab 1

Installing VirtualBox

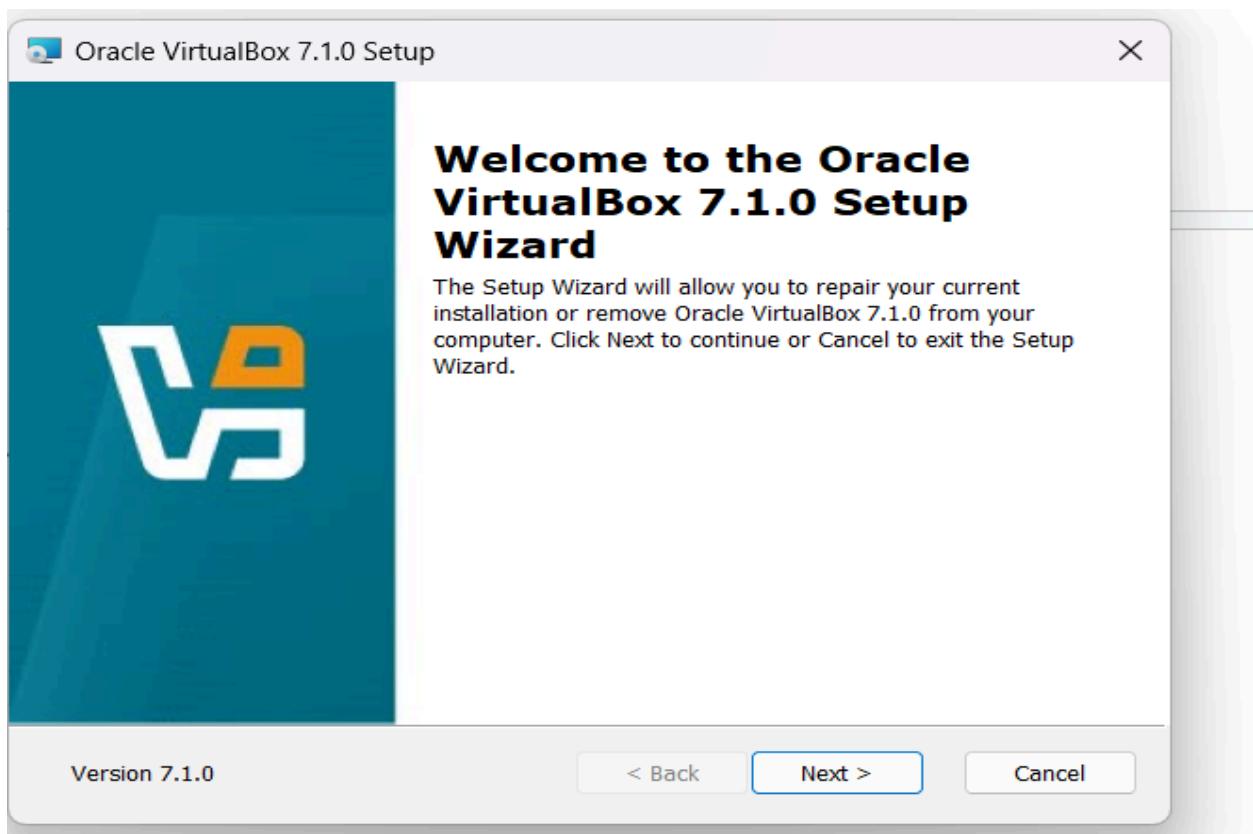
First, you need a host to use the multiple operating systems you plan to use. In this case we will use Oracle VirtualBox which can be downloaded here <https://www.virtualbox.org>. Click the “Download” tab.



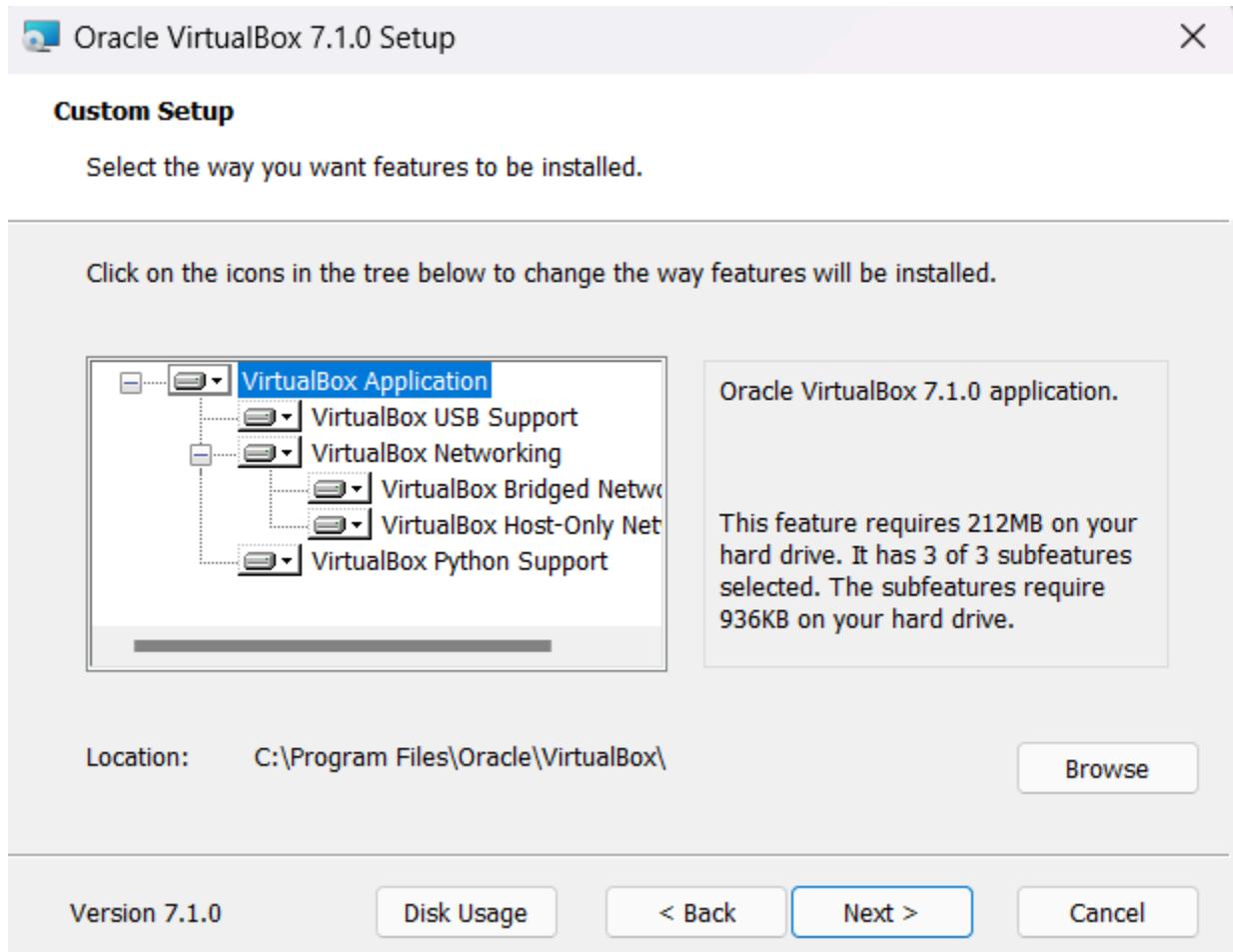
After clicking download you'll see options for VirtualBox Platform Packages and VirtualBox Extension Packs. Select the correct version for you, I will be selecting “Windows hosts” because I have a Windows machine.

This screenshot shows the "Download VirtualBox" page on the VirtualBox website. The main heading is "Download VirtualBox". Below it, a note states: "The VirtualBox Extension Pack is available for personal and educational use under the PUEL. The VirtualBox Extension Pack is also available under commercial or enterprise terms. By downloading, you agree to the terms and conditions of the respective license." Two main download sections are shown: "VirtualBox Platform Packages" and "VirtualBox Extension Pack". The "VirtualBox Platform Packages" section lists "Windows hosts", "macOS / Intel hosts", "macOS / Apple Silicon hosts", "Linux distributions", "Solaris hosts", and "Solaris 11 IPS hosts". It also includes a note: "Platform packages are released under the terms of the GPL version 3". The "VirtualBox Extension Pack" section contains a detailed "Personal Use and Educational License (PUEL)" text, a link to the "FAQ", and buttons for "All supported platforms", "PUEL License FAQ", "PUEL License Text", and "Accept and download". At the bottom, there are links for "VirtualBox SDK", "Source Code", and "Previous Releases".

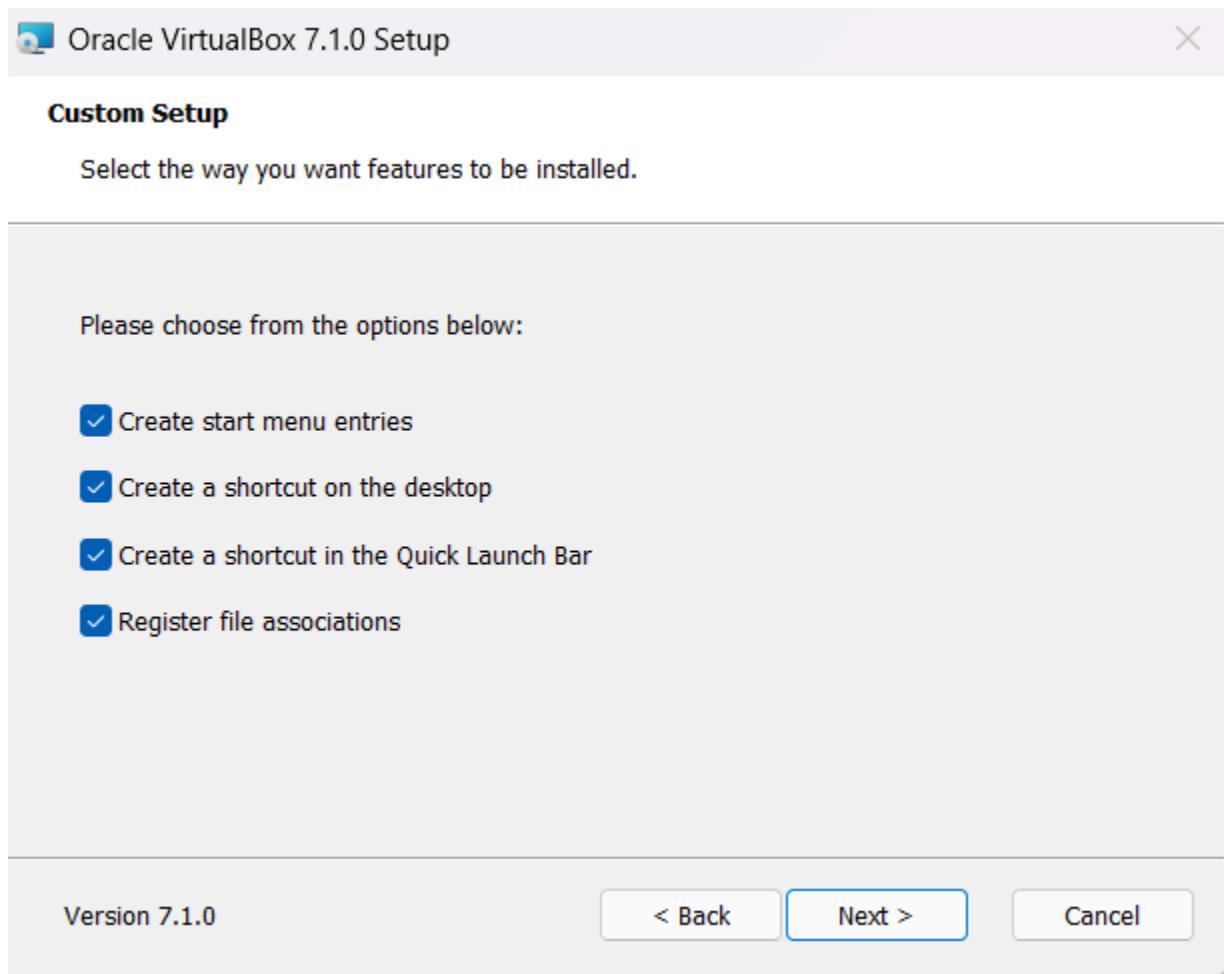
After clicking the appropriate host it will start to download, click the VirtualBox download and the setup wizard will appear. Click Next.



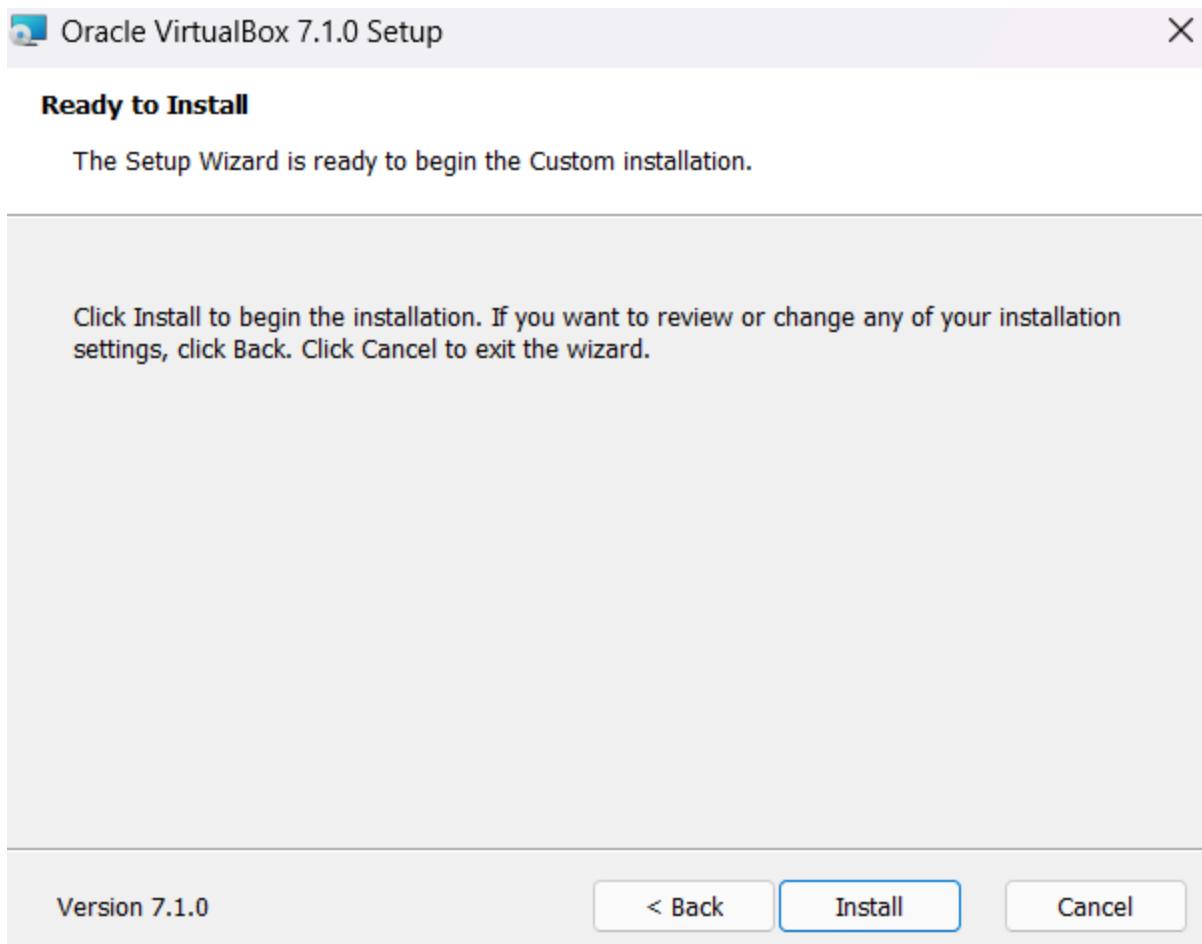
After clicking next, you will see these options to customize your VirtualBox, click Next.



After clicking next from the previous page, you will see more custom setup options. If you would like to create a shortcut on the desktop or would like any of these options check the box and when you're finished selecting your options click Next.



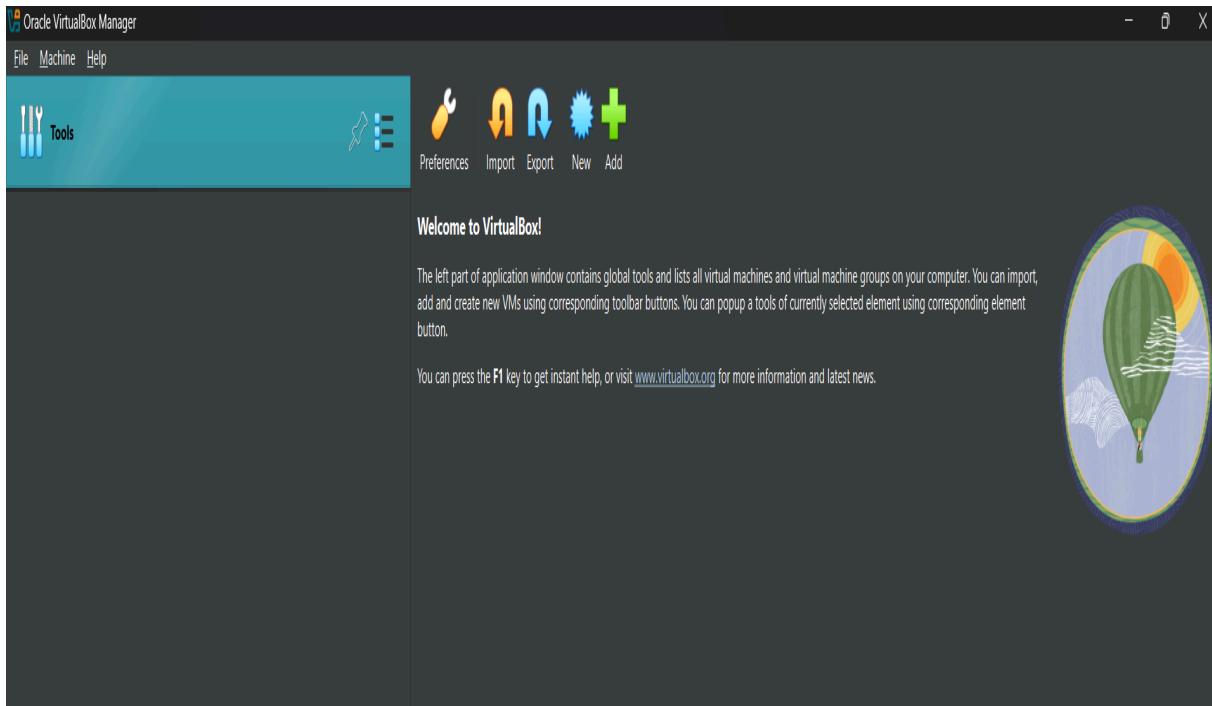
After clicking Next on the previous page, you will see the options to go back to review any of the customizations or to proceed with installing Virtualbox. Click “Install”.



After clicking “Install” on the previous page you will see this, click “Finish” to complete the installation.



After the installation is done, open Virtualbox. It will look like this.



Installing Ubuntu

After you've finished installing VirtualBox, now it is time to install Ubuntu.

To install Ubuntu, go to <https://ubuntu.com/>

A screenshot of the Canonical Ubuntu website. The header features the Canonical logo and navigation links for "Products", "Use cases", "Support", "Community", "Get Ubuntu", "All Canonical", "Sign in", and a search icon. The main content area has a dark background. A banner at the top left says "Data and AI Masters" and encourages users to join a free two-day online event from October 1-2. It includes "Enroll now" and "Learn more" buttons. To the right is a large image of a modern bridge with orange light trails. At the bottom, there's a news card with the headline "Canonical announces 12 year LTS for open source Docker images" and a subtext about getting a custom built container.

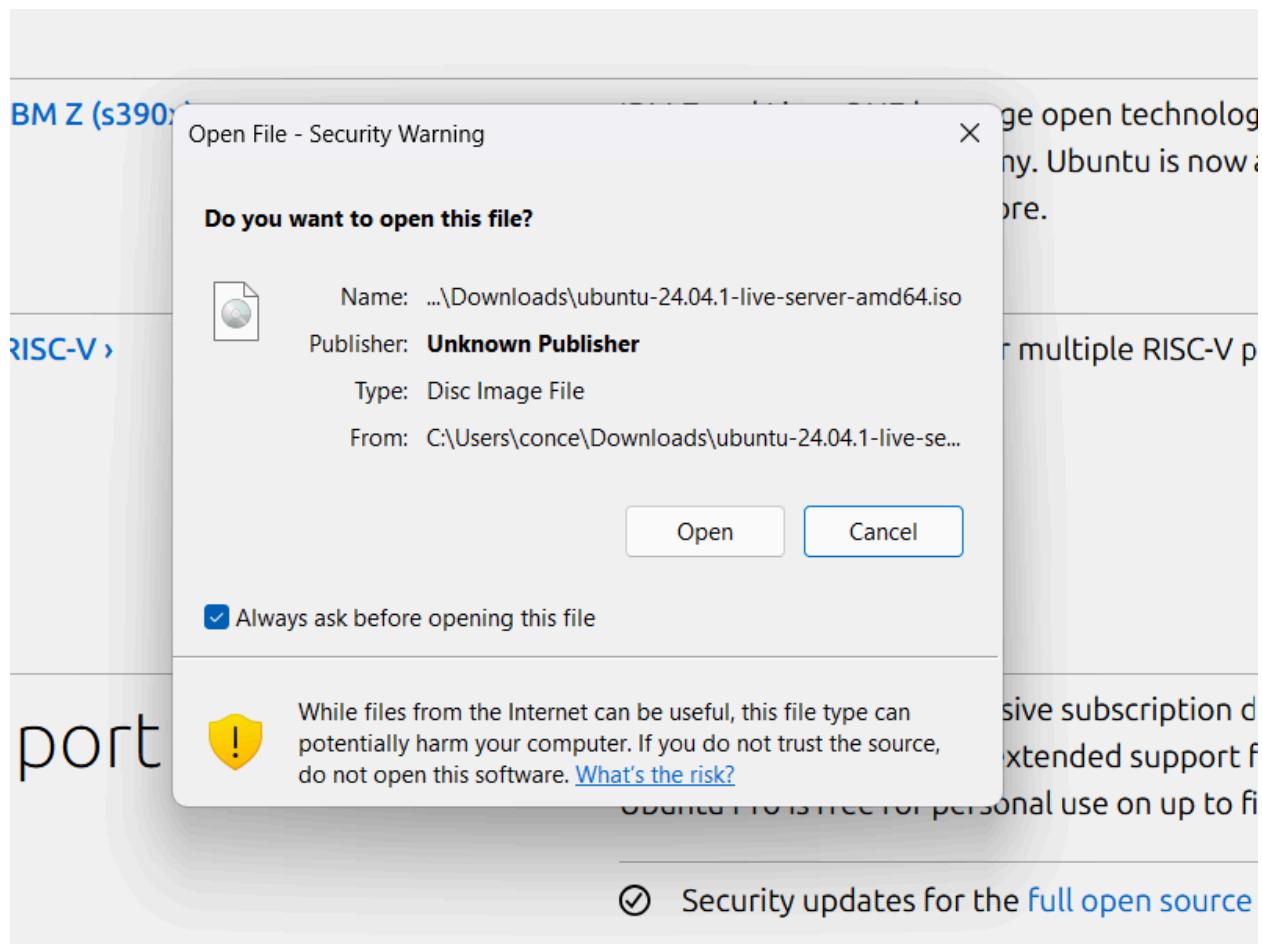
Next click the “Get Ubuntu” option and click “Download Ubuntu” from the dropdown options then click the “Get Ubuntu Server” option

The screenshot shows the Canonical Ubuntu website's navigation bar. The 'Get Ubuntu' button is highlighted with a dropdown menu open. The menu items include 'Ubuntu Server' (which is highlighted in green), 'Public clouds', 'Multipass', 'MAAS', and 'Certified hardware'. To the right of the menu, there is a 'QUICK LINKS' section with links to 'Server guide', 'Installation tutorial', 'ARM', 'IBM Power', 's390x', and 'RISC-V'.

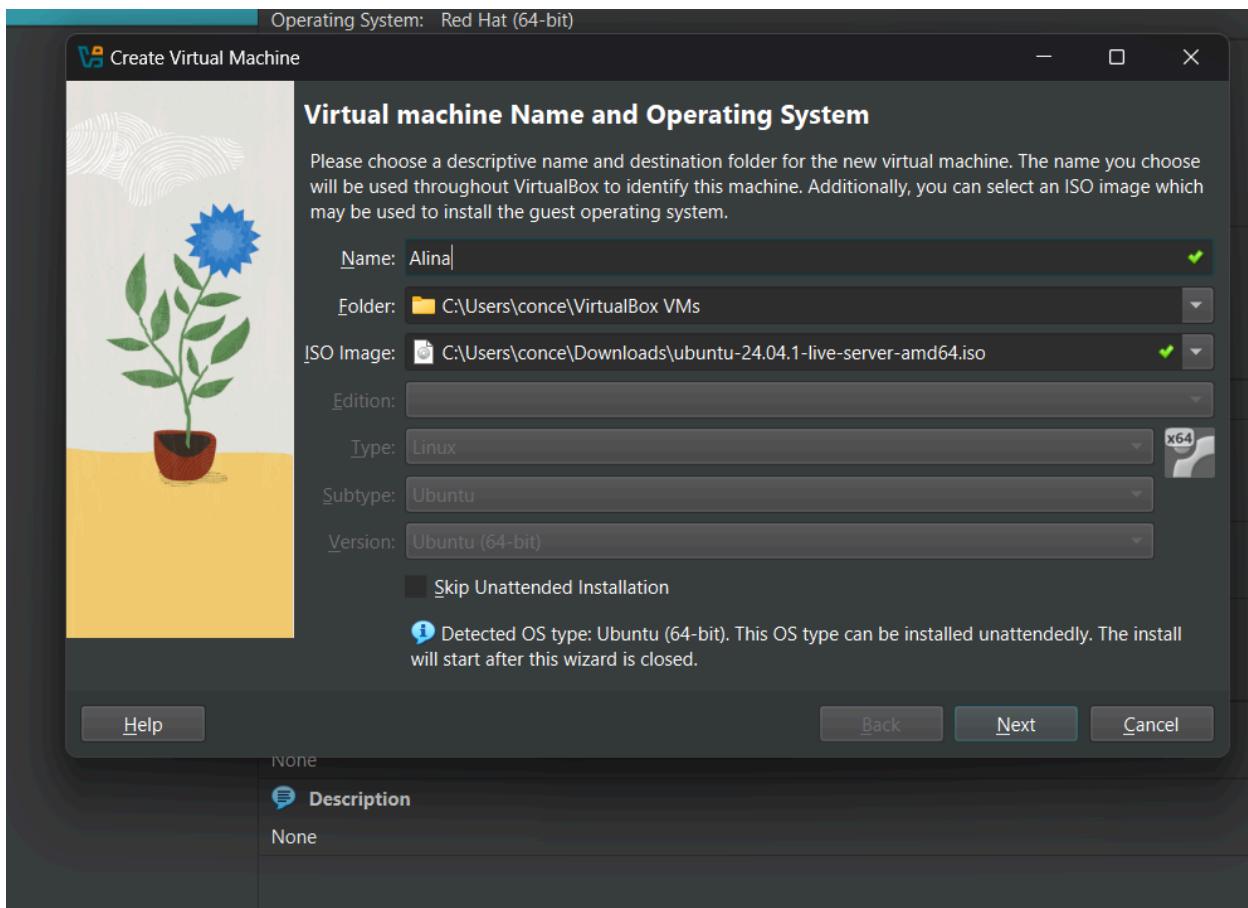
Now click “Download 24.04.1 LTS”. when it’s downloaded, open it.

The screenshot shows the Ubuntu 24.04.1 LTS download page. At the top, there are three installation options: 'Manual installation', 'Instant VMs', and 'Automated provisioning'. Below that, the title 'Ubuntu 24.04.1 LTS' is displayed. A descriptive text explains that this is the latest LTS version, providing five years of free security and maintenance updates, extended to 10 years with Ubuntu Pro. A prominent green button labeled 'Download 24.04.1 LTS' (2.6GB) is centered. Below the download button are links for 'Alternative downloads >' and 'Alternative architectures >'. At the bottom, there are links for 'What's new', 'System requirements', and 'How to install'. A note about BitTorrent is present, stating that it sometimes enables higher download speeds and more reliable downloads of large files, with a link to 'Torrent for 24.04.1 LTS'.

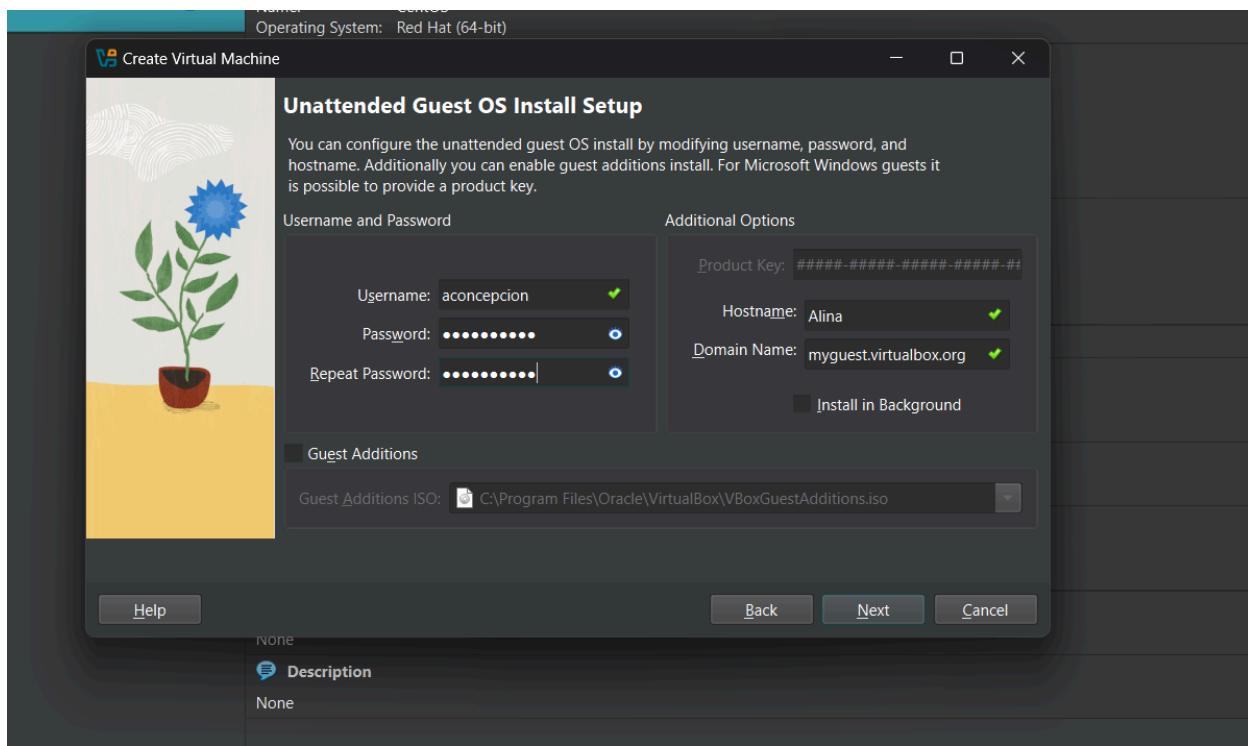
Click “Open”.



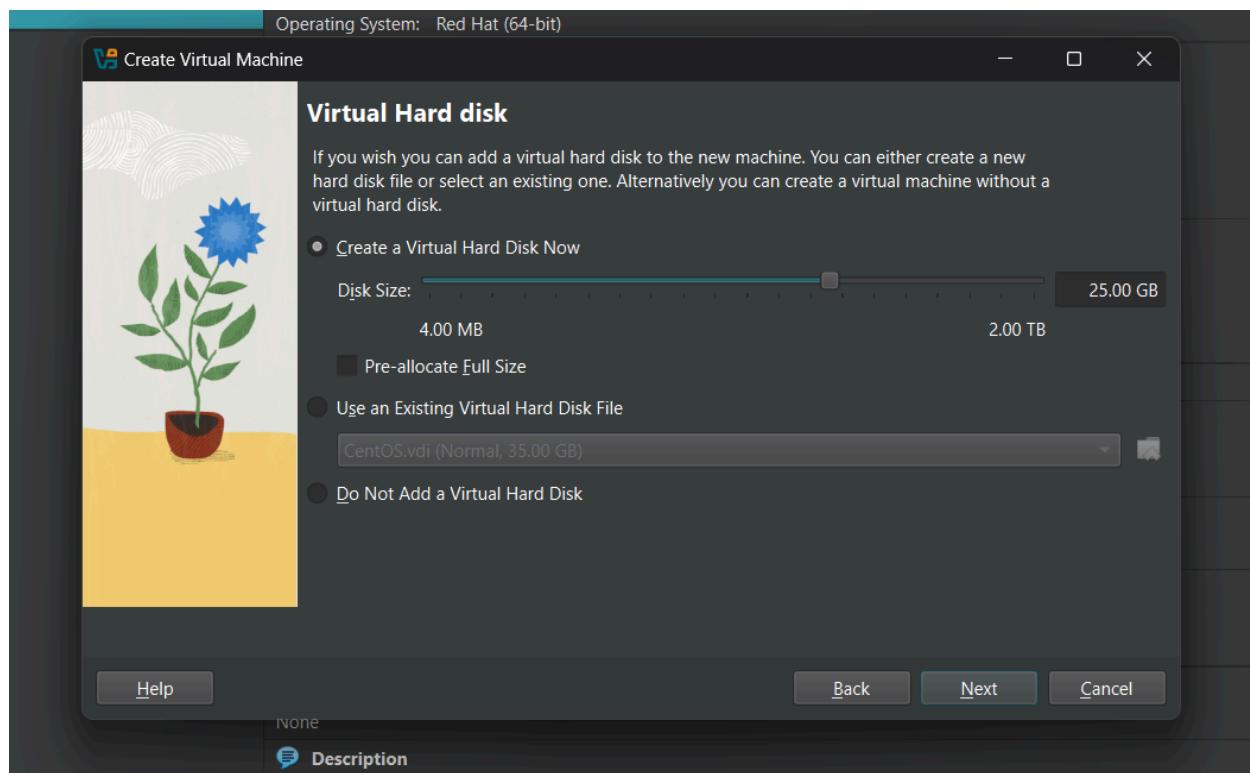
Next you're going to open VirtualBox and click "New" to put Ubuntu on virtualbox. (This will be the same process for CentOS). Next, put the name you would like to call the machine, select the folder to store it, then you must find the iso, which is the file that you downloaded (Ubuntu iso), click Next.



Then create the login credentials you want to use to log into Ubuntu, after clicking next you will be instructed to choose the hardware size which I left default for now.



Choose “Create a Virtual Hard Disk Now” then click “Next”. I didn’t modify the hardware, as it can be changed later. Hit “Next” again, then Ubuntu’s configurations will be installed and it will open the terminal.



It will look like this. If you want to test the internet connection, ping www.google.com

```
root@alina:~# ssh-ed25519 AAAAC3NzaC1E2D1lNTESAAAAnG0KkqSLLXhU1X0oX2++IDZ5GXkBzeyUx2Iy20f3es root@alina
ssh-rsa AAAQBlNzaC1yc2EAAQDQ0BQnB0nnByQCDRr2mUv42J2T0uzN+0P1omJD839jWuXH1gffbfYs7CGtagno9R2YUTHkbKMr4R+V1bThqkzDP4W70KGVRhmEfIxDBJ903KE//viDEdGteKMlbhnb1b1tUV1de4
xYF7s+LNplwsBhMRIn1zK0QFaTzNP2F8CJkUf3nhnEusLjWmC21V1dt6t9c,jhB1M2L26aQq+np5U3K0t-8-jrvux-BXG0b0ucR7gTH2BRYy3ezFg5LEobqixXn0Nuafk+*0U7t/SuiyMhBf4T1nDn-DCTG
pKOs6n-1Q21U1C0DJt0upJ-469t+p2A0s8DCLrB7MC11pNS-hCcDCUbhhHG8/0163+3LT9Mr3Kwuhh6jTXyAsTBga8+C9tzBD4Rea2rGayBxaUHlx,j069usqK2u71S2gza11bdUbB,jzUaKv4tsWtF9YqCKB
1Dp+32ILX9kQHfCz2EN+PDfWmIK7104T+Yu+GurZM6n4cSczeyuXe1TBG1paqJS03IMk- root@alina
-----END SSH HOST KEY REYS-----
[ 17.405907] cloud-init[10601]: Cloud-init v. 24.1.3-Ubuntu3.3 finished at Wed, 18 Sep 2024 16:12:00 +0000. Datasource DataSourceNone. Up 17.40 seconds
[ 17.408920] cloud-init[10601]: 2024-09-18 16:17:00.010 - cc_final_message.py(WARNING): Used fallback datasource
alina login: aconcepcion
Password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-45-generic x86_64)

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

System information as of Wed Sep 18 08:27:13 PM UTC 2024

System load:          0.0
Usage of /:           9.5% of 24.44GB
Memory usage:         9%
Swap usage:          0%
Processor:           91
User(s) logged in:   0
IPv4 address for enp0s3: 10.0.2.15
IPv6 address for enp0s3: fd00:a00:27ff:fe65:d101

Expanded Security Maintenance for Applications is not enabled.

21 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

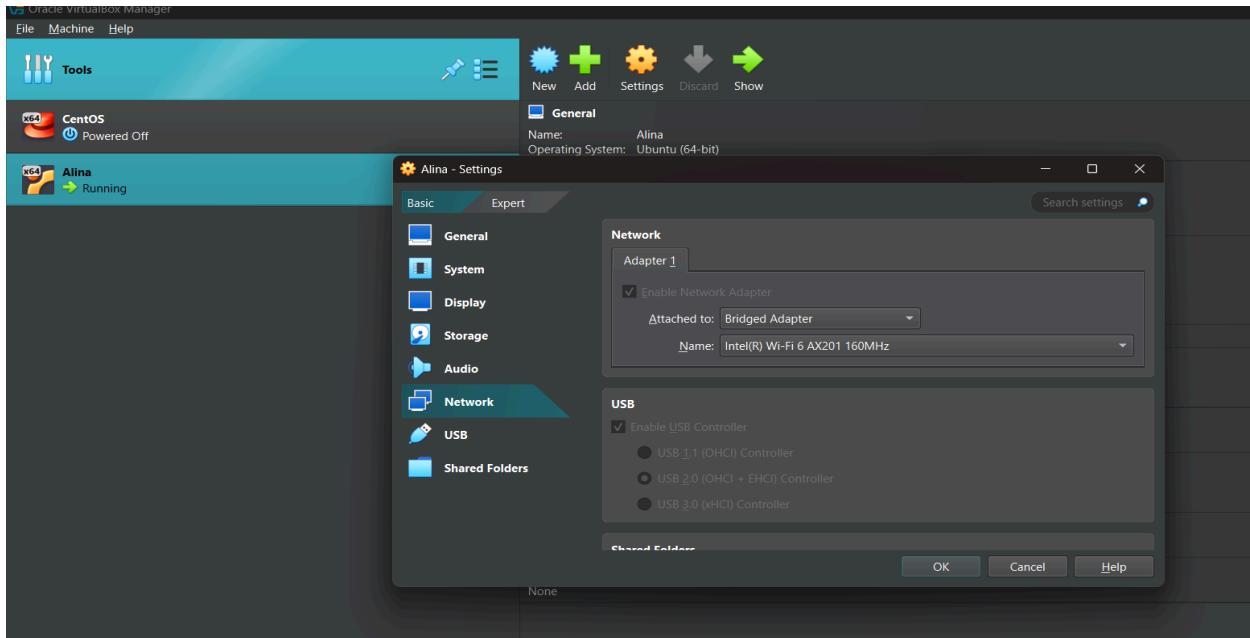
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

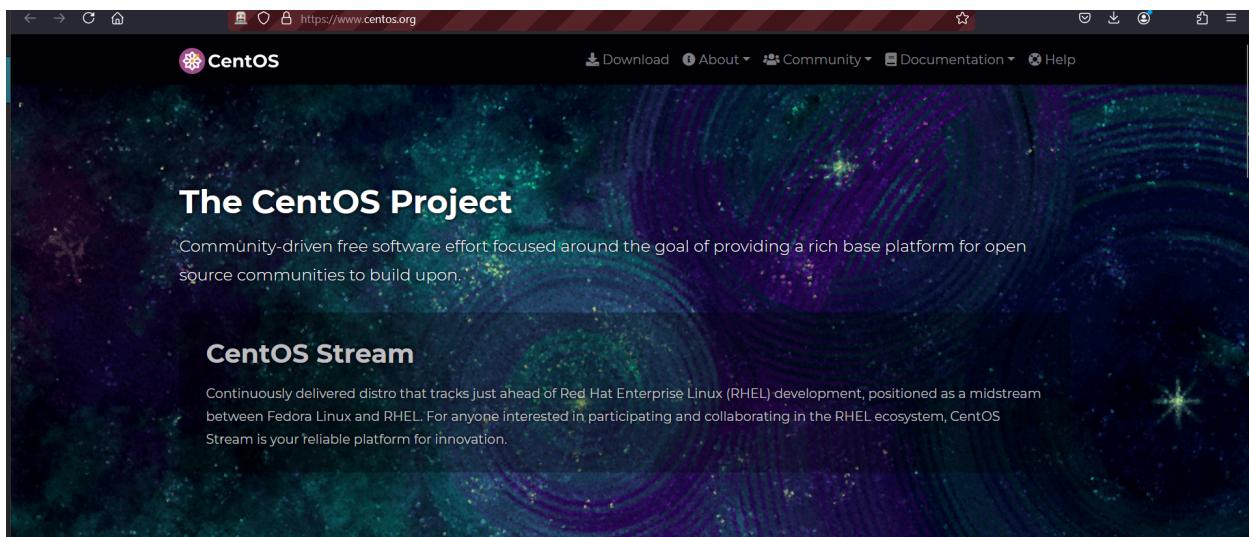
aconcepcion@alina:"$
```

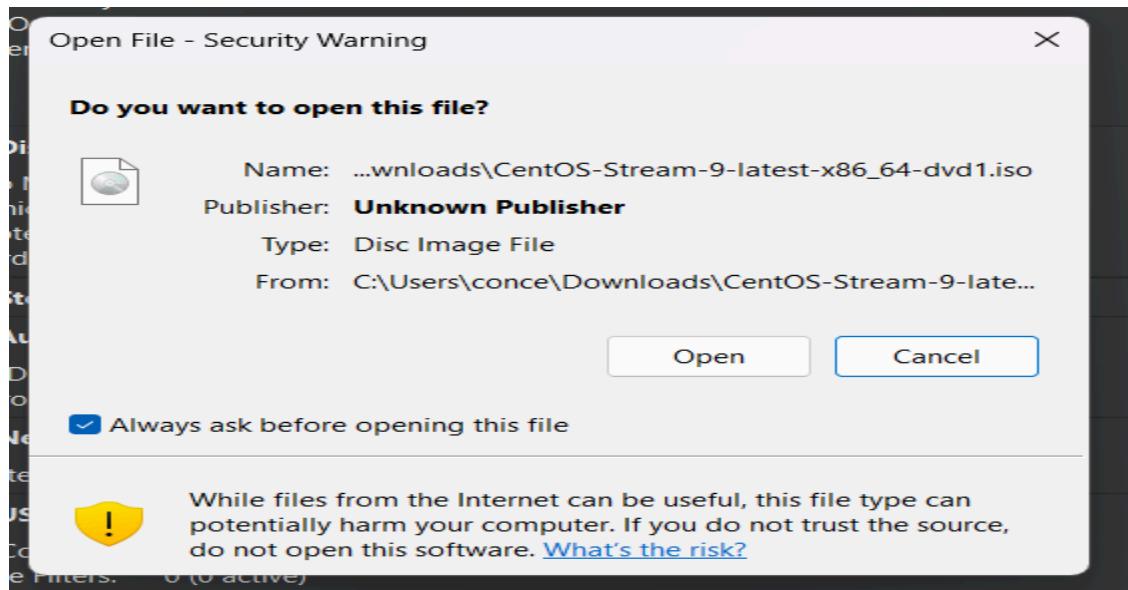
To share files, open VirtualBox ,choose the Ubuntu system and click settings and Network and change the option for Network Adapter 1 from NAT to Bridged Adapter then click “OK”



Installing CentOS

First you need to go to the CentOS download link <https://www.centos.org/download/> . Then you click the “Download” option



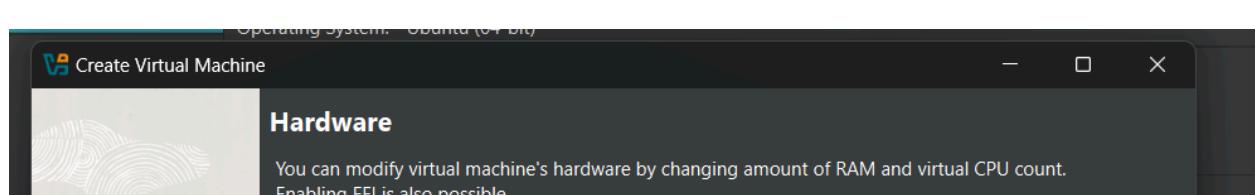


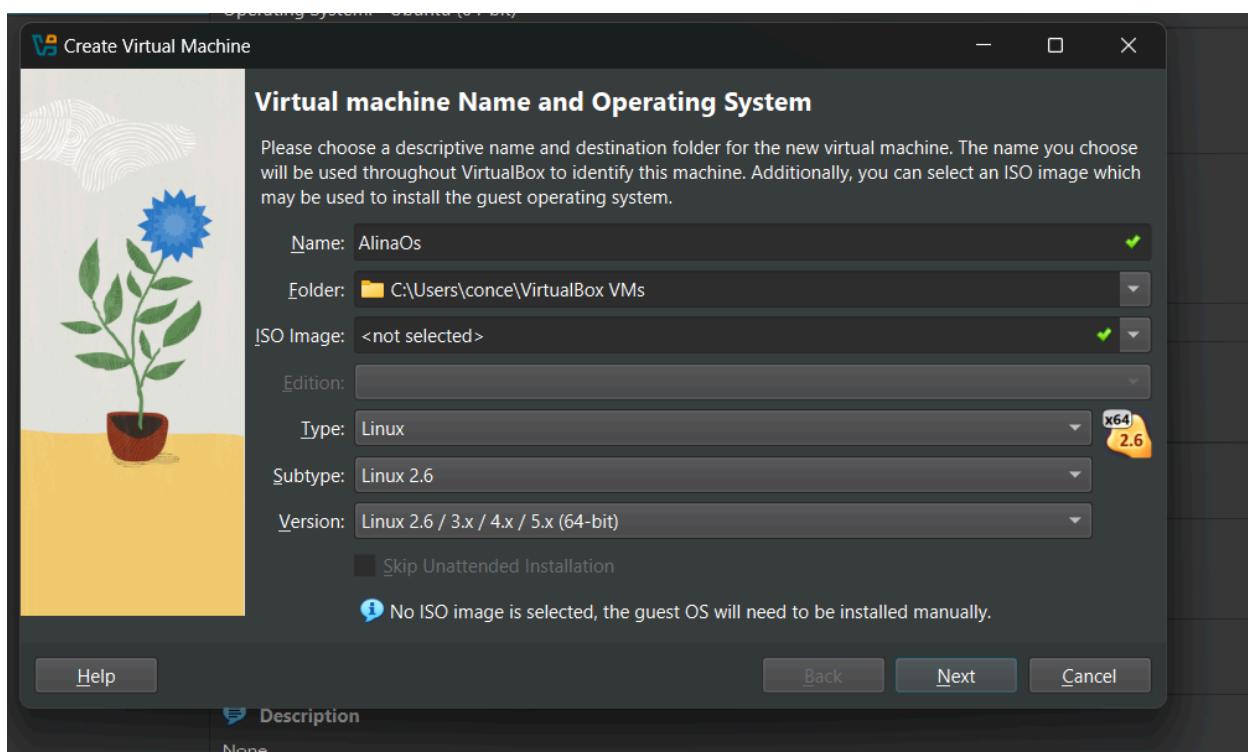
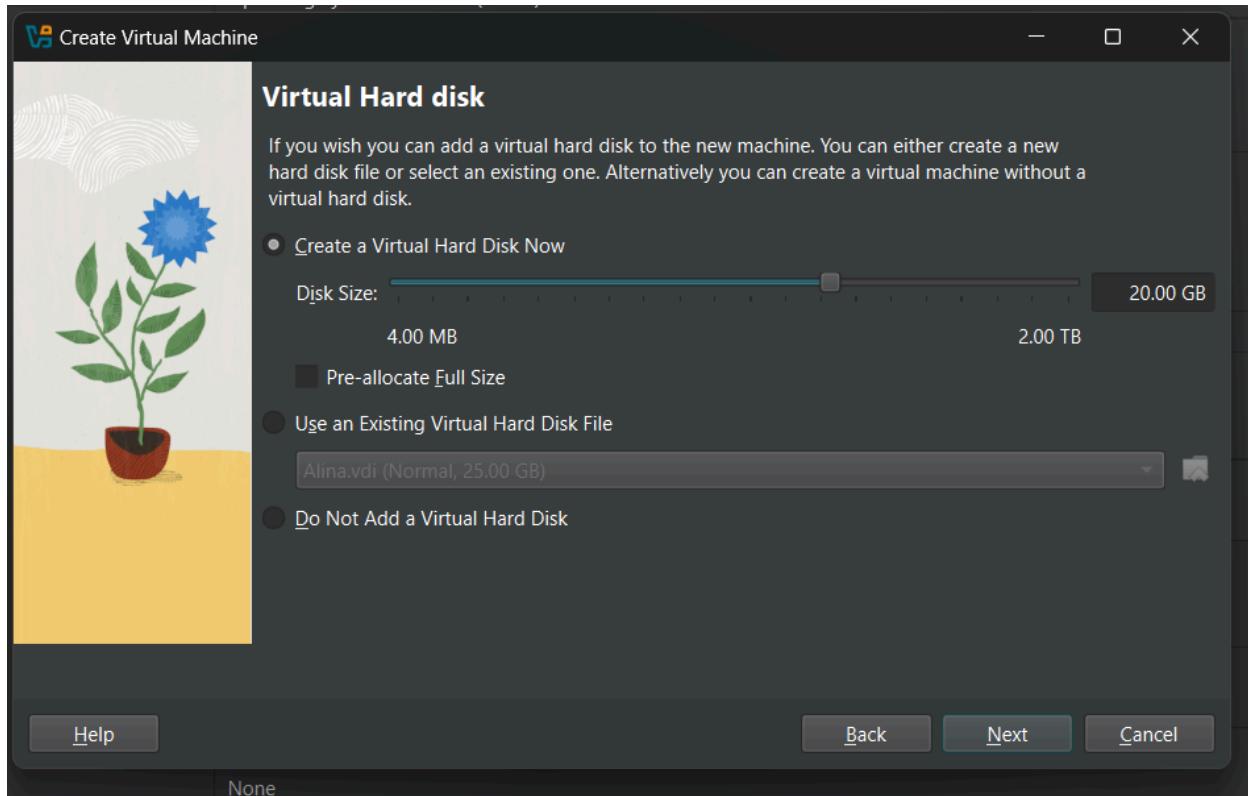
Next you click the x86_64 link to download CentOS.

Architectures	Packages	Others
x86_64	RPMs	Cloud Containers Vagrant
ARM64 (aarch64)	RPMs	Cloud Containers Vagrant
IBM Power (ppc64le)	RPMs	Cloud Containers Vagrant
IBM Z (s390x)	RPMs	Cloud Containers Vagrant

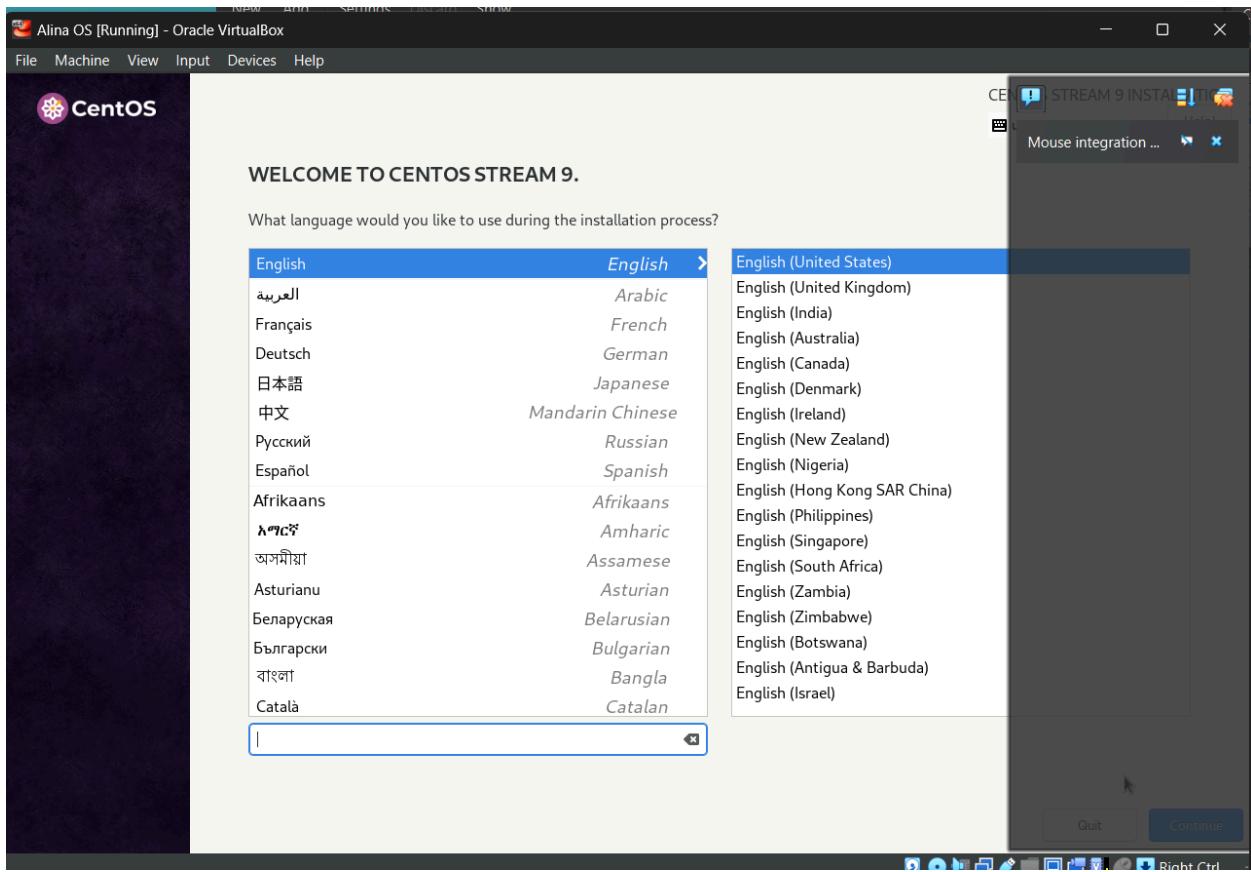
If this warning message appears click “Open”.

Open Virtualbox and click “New” then make the machine and go through the standard options

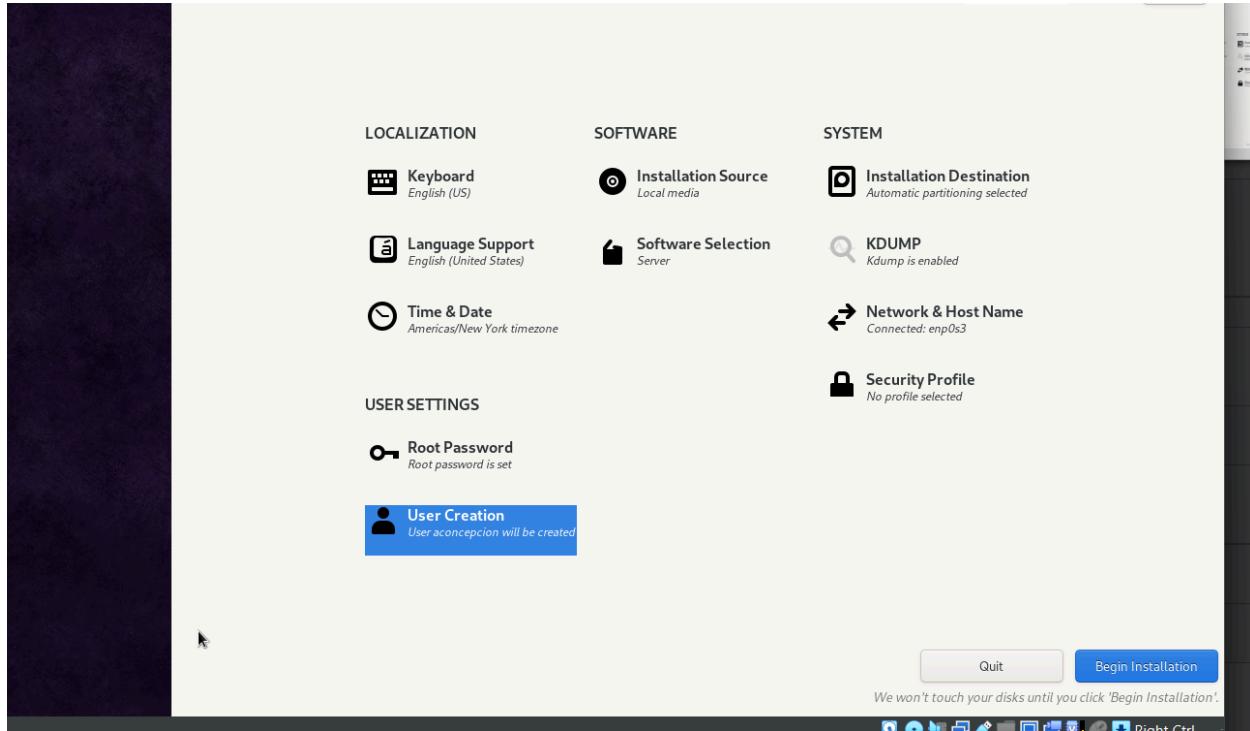




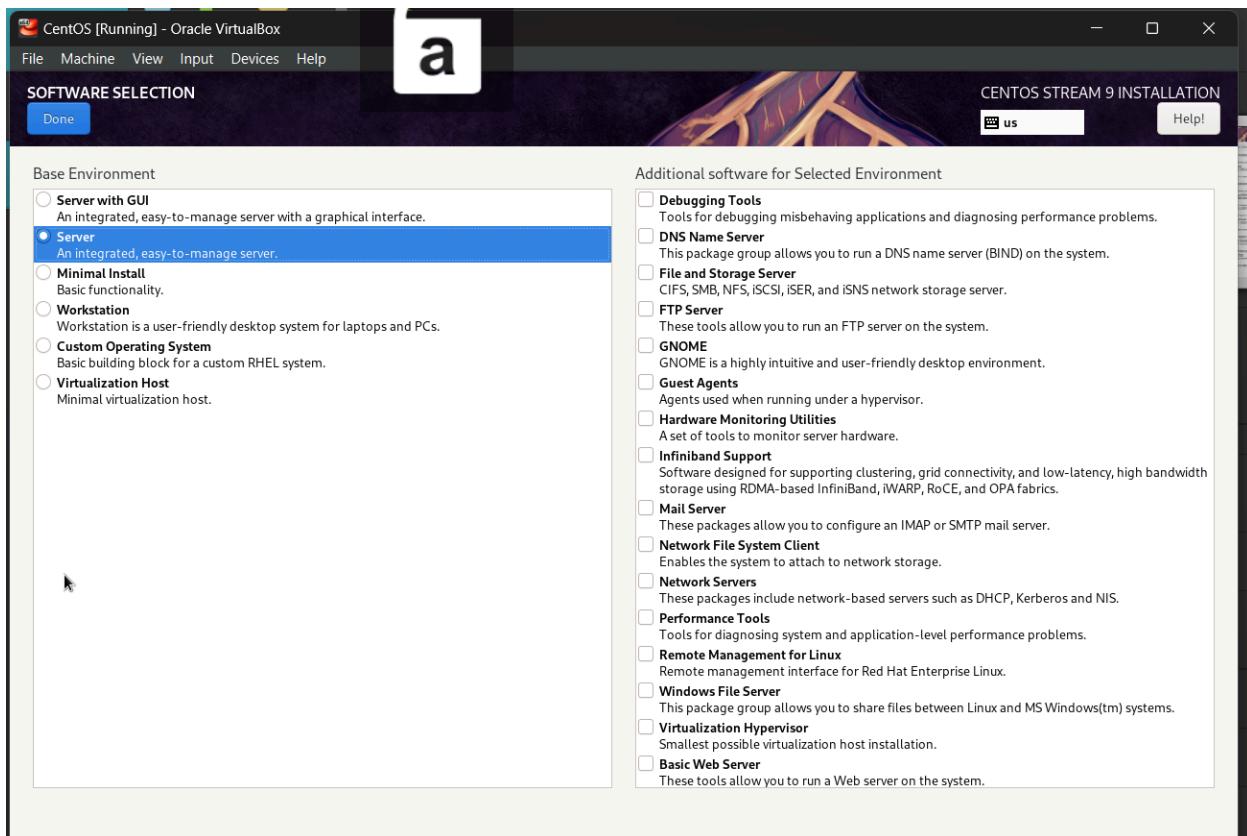
Select the language settings



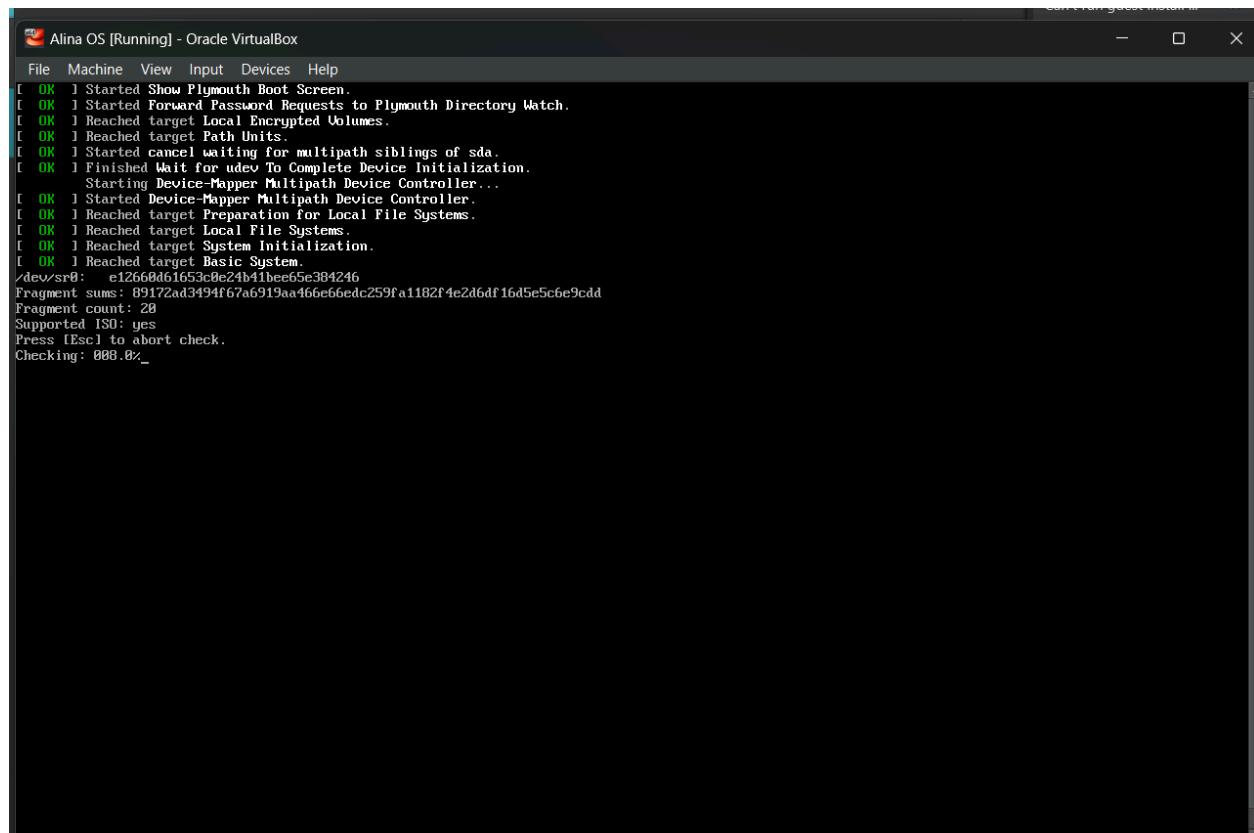
This is where you can customize CentOS, “Click Root password” to create a password to sign into root. Then “User Creation” and it will prompt you to put your Name, username you would like and a password. Click “Software selection”



Select “Server”, so it's the command line only. Also select Windows File Server if you would like to share files between Linux and Windows. Click Done, then Next.

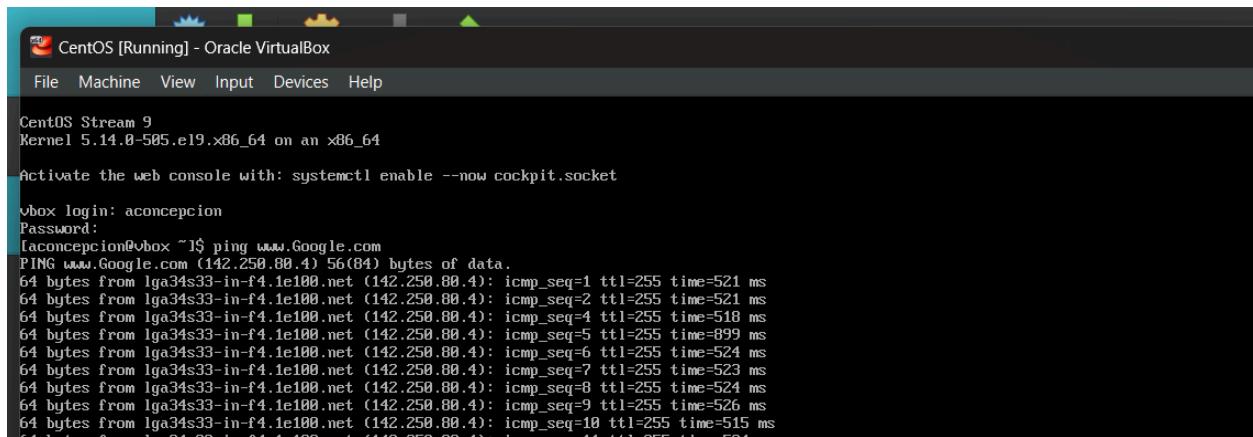


It will look like this when it boots up. Test the internet by pinging www.Google.com



```
[ OK ] Started Show Plymouth Boot Screen.
[ OK ] Started Forward Password Requests to Plymouth Directory Watch.
[ OK ] Reached target Local Encrypted Volumes.
[ OK ] Reached target Path Units.
[ OK ] Started cancel waiting for multipath siblings of sda.
[ OK ] Finished Wait for udev To Complete Device Initialization.
      Starting Device-Mapper Multipath Device Controller...
[ OK ] Started Device-Mapper Multipath Device Controller.
[ OK ] Reached target Preparation for Local File Systems.
[ OK ] Reached target Local File Systems.
[ OK ] Reached target System Initialization.
[ OK ] Reached target Basic System.
/dev/sr0: e12660d61653c0e24b41bee65e384246
Fragment sums: 89172ad3494f67a6919aa466e66edc259fa1182f4e2d6df16d5e5c6e9cdd
Fragment count: 28
Supported ISO: yes
Press [Esc] to abort check.
Checking: 000.0%
```

You are connected to the internet if you receive a response from Google, if you receive no response then you are not connected to the internet.



```
File Machine View Input Devices Help
CentOS Stream 9
Kernel 5.14.0-505.e19.x86_64 on an x86_64
Activate the web console with: systemctl enable --now cockpit.socket
vbox login: aconcepcion
Password:
aconcepcion@vbox ~]$ ping www.Google.com
PING www.Google.com (142.250.80.4) 56(84) bytes of data.
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=1 ttl=255 time=521 ms
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=2 ttl=255 time=521 ms
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=4 ttl=255 time=518 ms
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=5 ttl=255 time=899 ms
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=6 ttl=255 time=524 ms
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=7 ttl=255 time=523 ms
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=8 ttl=255 time=524 ms
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=9 ttl=255 time=526 ms
64 bytes from lga34s33-in-f4.1e100.net (142.250.80.4): icmp_seq=10 ttl=255 time=515 ms
```

Wanna Fileshare? Locate the IP address.

If you want to fileshare between your windows machine and your virtual machines (Ubuntu and CentOS), you must be able to find the IP addresses for each, so that they can be able to “find” each other and share files.

- To find the IP address on your windows machine, you must go to the command prompt, the command prompt is a very useful tool. With certain commands we can do certain things like run commands as admin, check battery health and find out the IP address to our host machine. We will be focusing on finding out the IP. After opening the command prompt, type ipconfig and it will display all of the ip address information. What we are looking for is the IPv4 address that is located under the wireless LAN adapter Wi-Fi section.

```
Windows Command Prompt
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\conce> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . : hsd1.ma.comcast.net

Ethernet adapter Ethernet 3:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::e726:6afa:6c69:c2ed%6
    IPv4 Address . . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 11:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

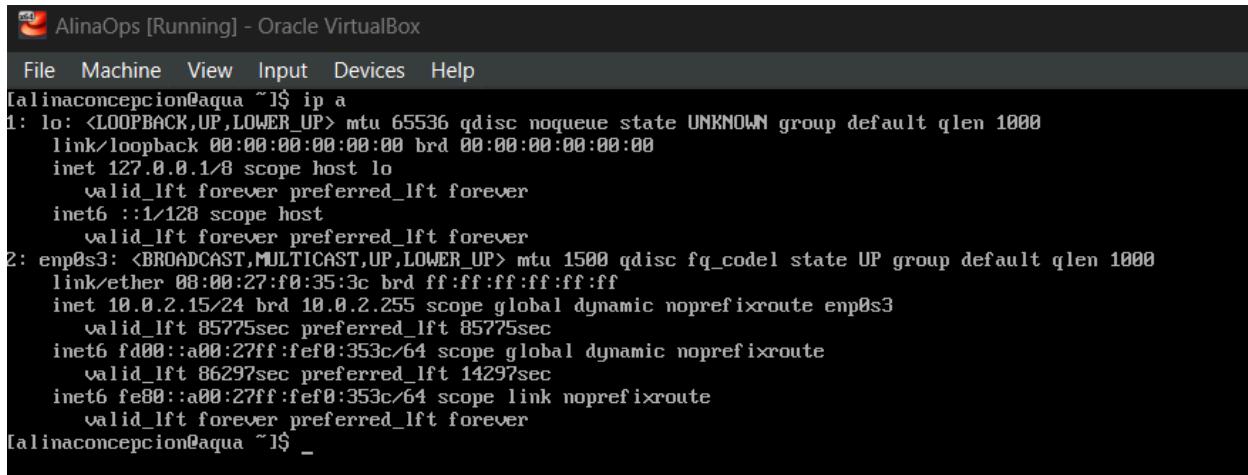
Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::7b21:fd25:b341:33ef%20
    IPv4 Address . . . . . : 10.5.36.43
    Subnet Mask . . . . . : 255.255.224.0
    Default Gateway . . . . . : 10.5.32.1

Ethernet adapter Bluetooth Network Connection:

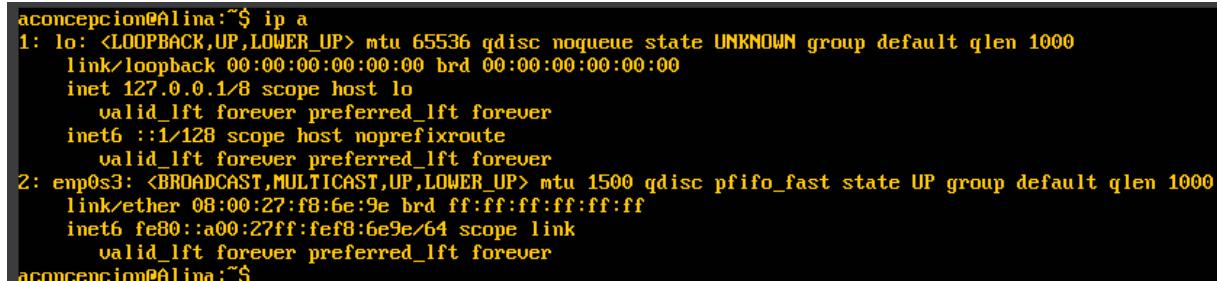
    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :
```

To locate the ip address on CentOS, sign into your machine and the command prompt will automatically appear, type ip a and the ip address information will appear. We are looking for the inet information under enp0s3.



```
File Machine View Input Devices Help
[alinaconcepcion@alina ~]$ 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
        inet6 ::1/128 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 08:00:27:f0:3c brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
        valid_lft 85775sec preferred_lft 85775sec
        inet6 fd00::a00:27ff:fe00:353c/64 scope global dynamic noprefixroute
            valid_lft 86297sec preferred_lft 14297sec
        inet6 fe80::a00:27ff:fe00:353c/64 scope link noprefixroute
            valid_lft forever preferred_lft forever
[alinaconcepcion@alina ~]$ _
```

To locate the ip address on Ubuntu , it is the same process, sign into the machine and type ip a an the ip address information will appear.



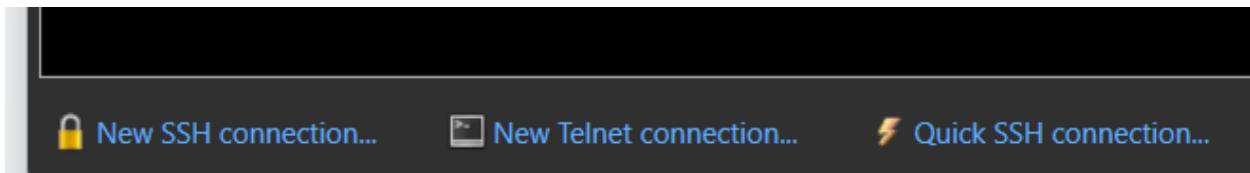
```
aconcepcion@Alina:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
        inet6 ::1/128 scope host noprefixroute
            valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:f8:6e:9e brd ff:ff:ff:ff:ff:ff
    inet6 fe80::a00:27ff:fe00:6e9e/64 scope link
        valid_lft forever preferred_lft forever
aconcepcion@Alina:~$
```

File Sharing using SmarTTY

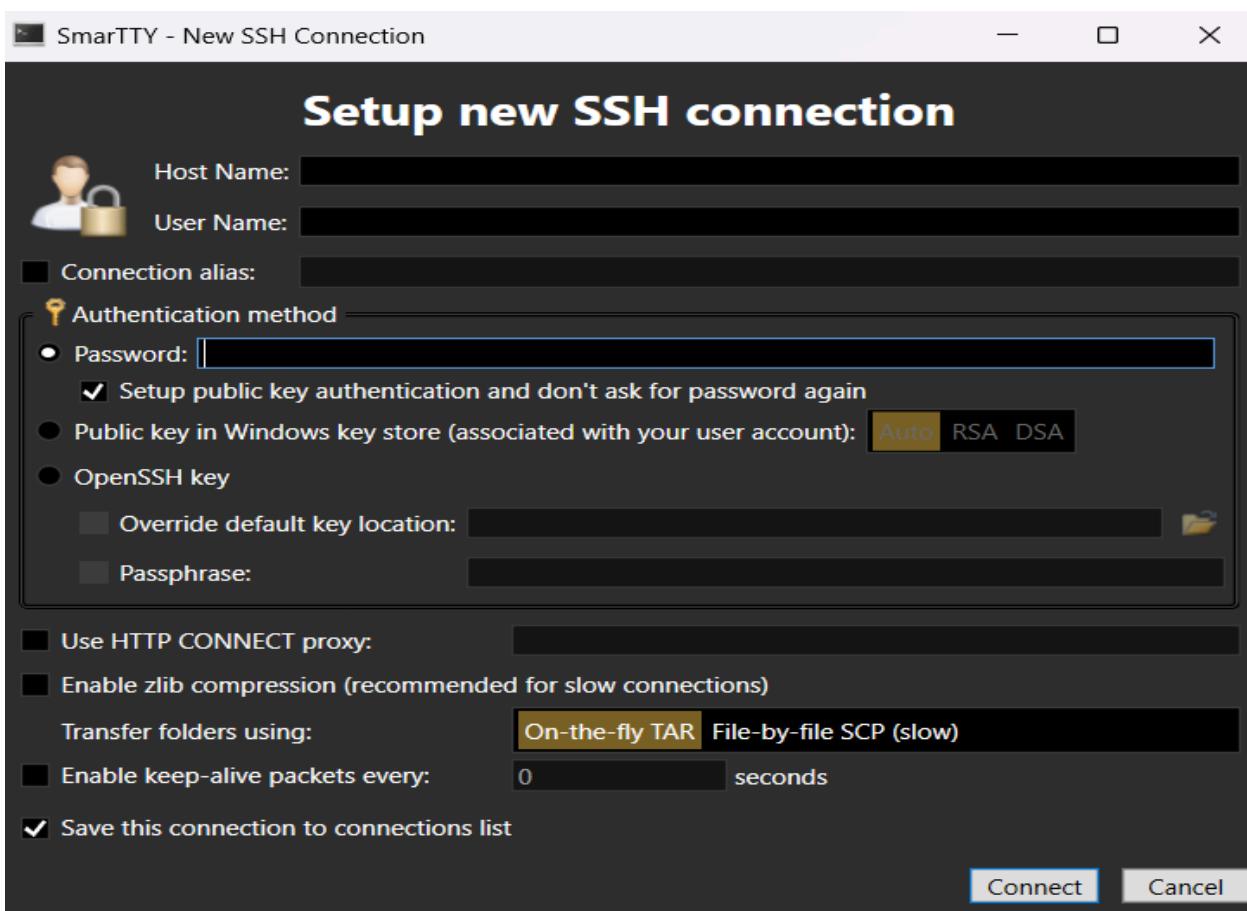
Go to <https://sysprogs.com/SmarTTY/download/> and click Download, after it downloads click to open and click “Next”. Everything else is left basic as there’s not any customizations that need to be set up during download.

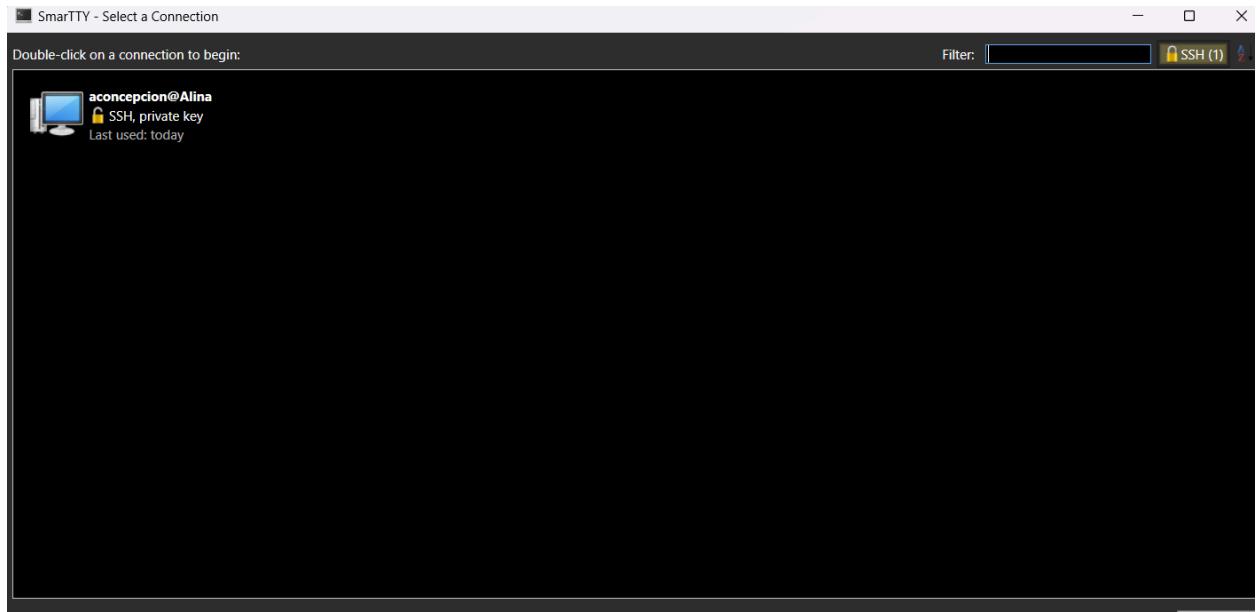


When the SmarTTY program opens, there are three choices to select, “New SSH connection” which I will show you how to do below, then there is “Quick SSH connection” which requires the machine name and password then there is “New Telnet connection” which you can connect to using the ip address.

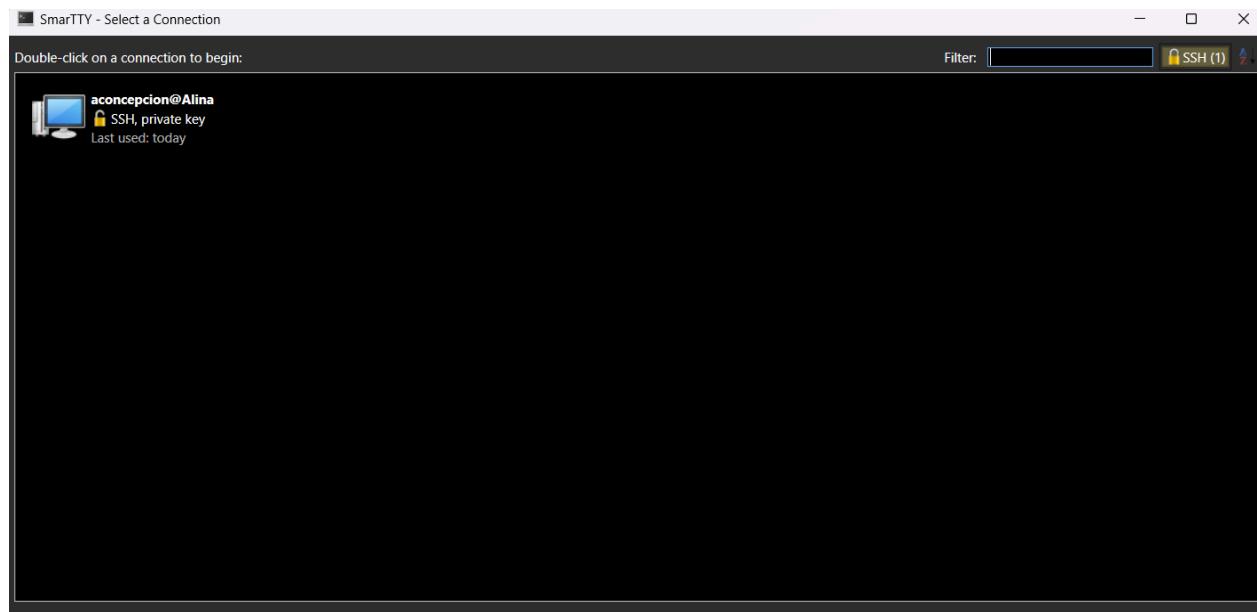


Click “New SSH connection”, then it will prompt you to fill out this section in order for your window’s machine to connect to linux/virtual machine. Fill out the Host Name, User Name, Password and select “Connect”

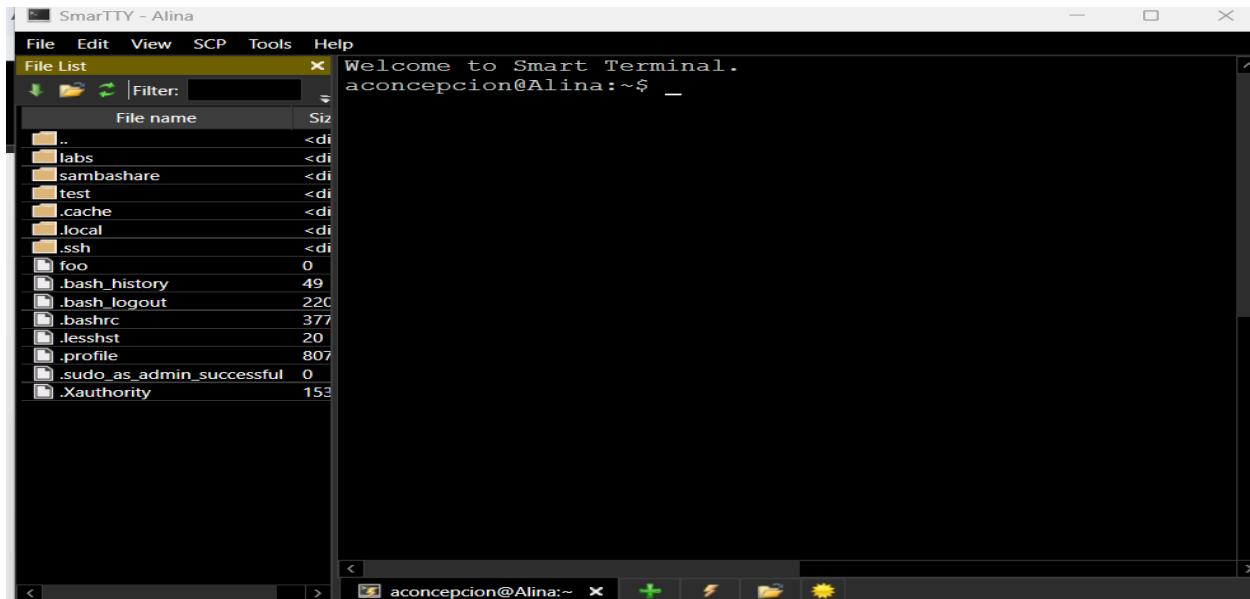




You will see it added to your connections list. Double click, make sure you have your virtual machine powered on too (Ubuntu or Centos).

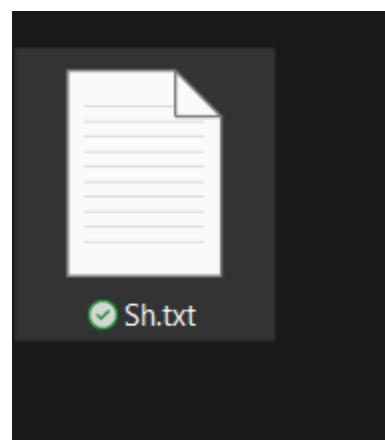


When SmarTTY is open it will display the files and directories in your virtual machine.

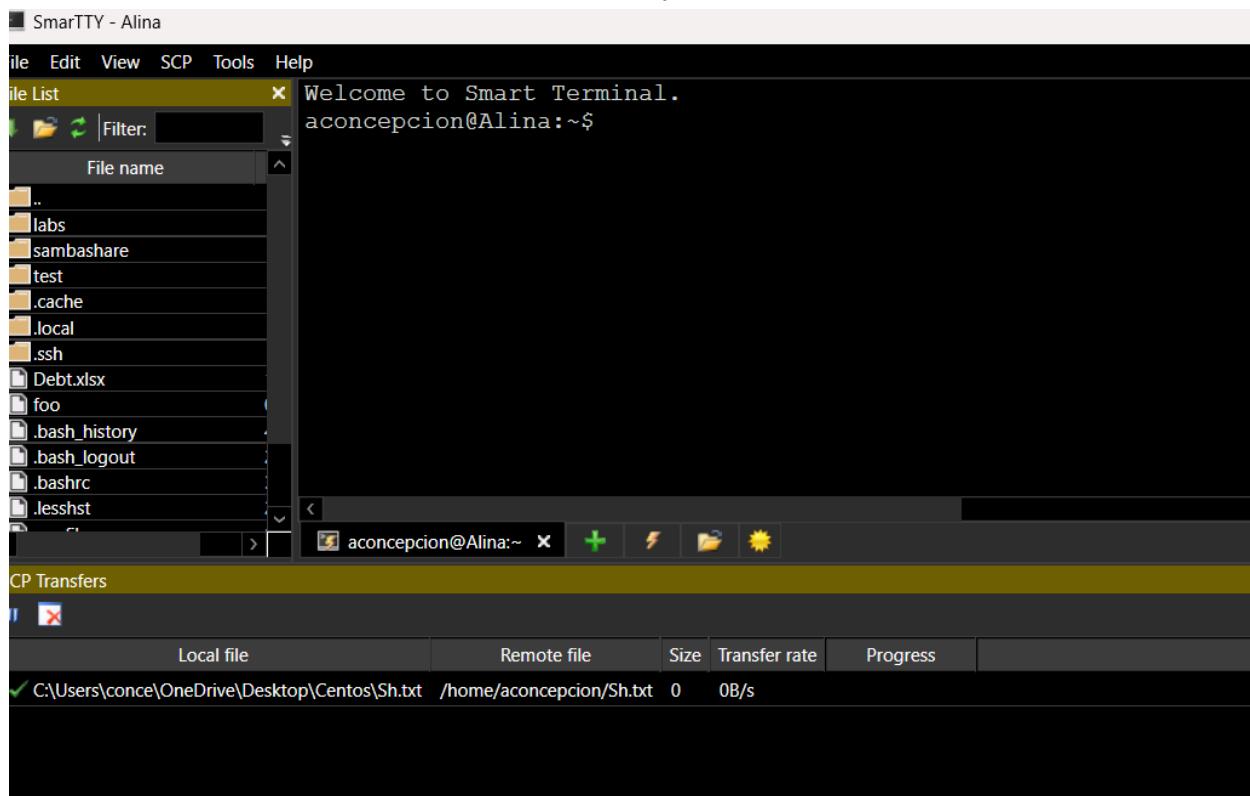


There are a few different ways to share files using SmarTTY, but the easiest way is to click "view" and from the drop down menu select "scp transfers" and locate the file you would like to transfer from your windows machine onto your virtual machine.

I created a random .txt file to transfer onto my virtual machine.



I opened the folder on my windows machine and dragged and placed it where it says “local file”.
Now it will appear in my virtual machine.



Here it is now in my virtual machine. I also tested it with other files and directories too.

```
aconcepcion@Alina:~$ ls
Debt.xlsx  foo  labs  sambashare  Sh.txt  test
aconcepcion@Alina:~$
```