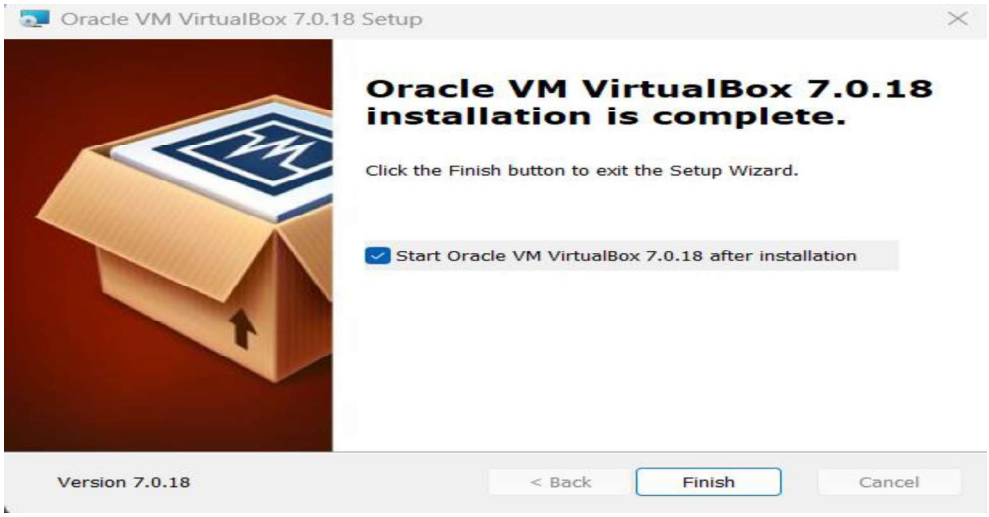
Click on Next to proceed installation.



Click on Finish to complete installation.

Download Guest OS for Oracle VM

There are lots of websites from where you can download ISO image of Guest OS to run inside Oracle VM, for example.

https://www.linux.org/pages/download/

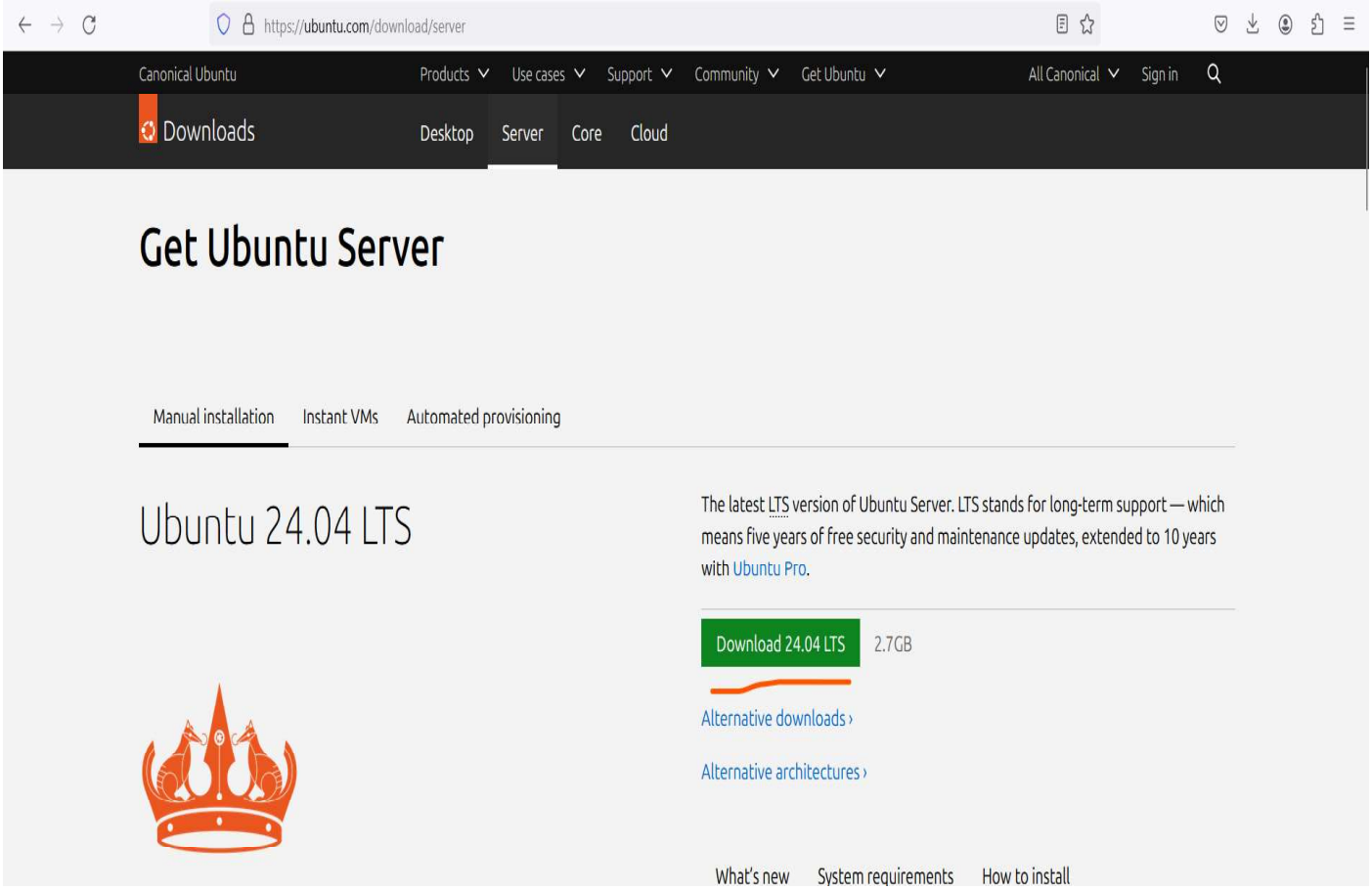
https://www.linuxlookup.com/linux_iso

https://ubuntu.com/download/desktop

https://ubuntu.com/download/server

https://yum.oracle.com/oracle-linux-isos.html

For our demo, we are downloading Linux OS Ubuntu Server 24.04 LTS from - https://ubuntu.com/download/server

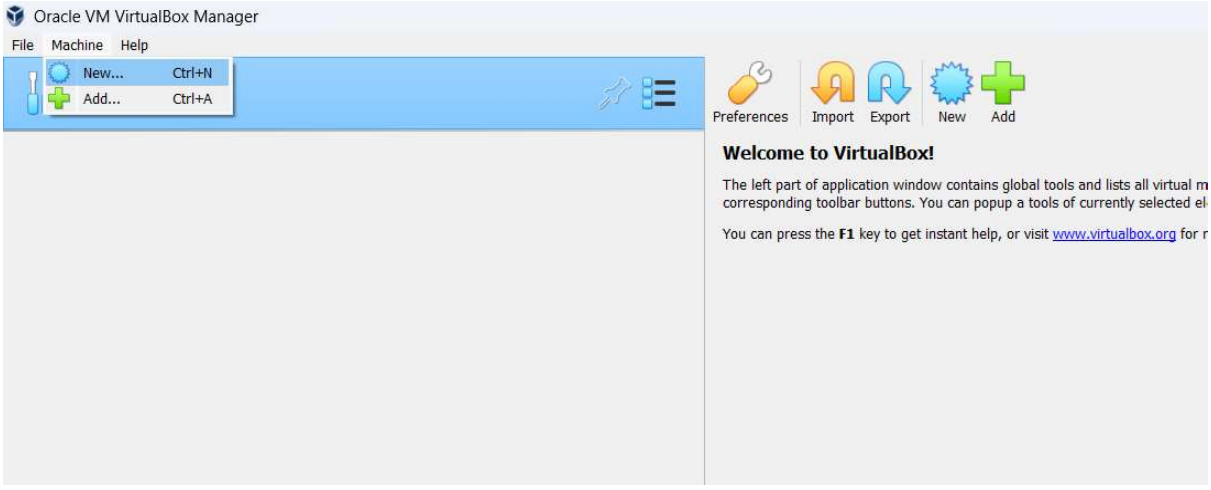


Click on Download to proceed.

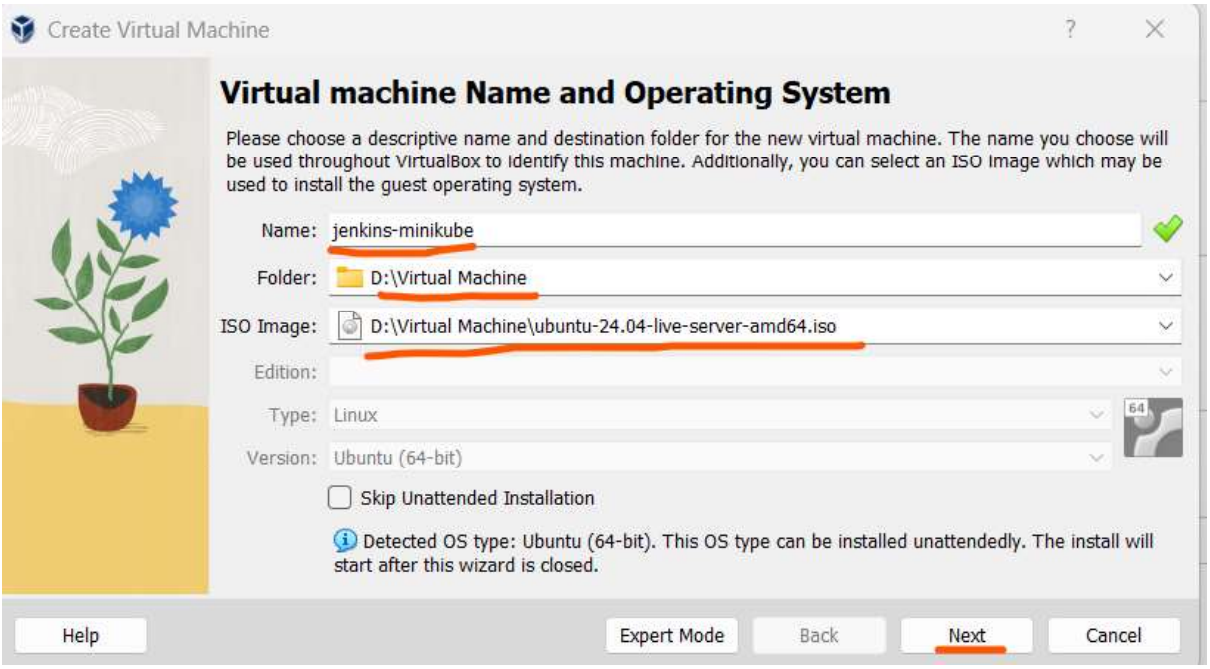
Note: For your lab, you do not need to download this Ubuntu ISO on every machine separately. Just download once and then copy to all the machines.

Create VM inside Oracle VirtualBox

Open Oracle VirtualBox and click on “Machine” menu → New…

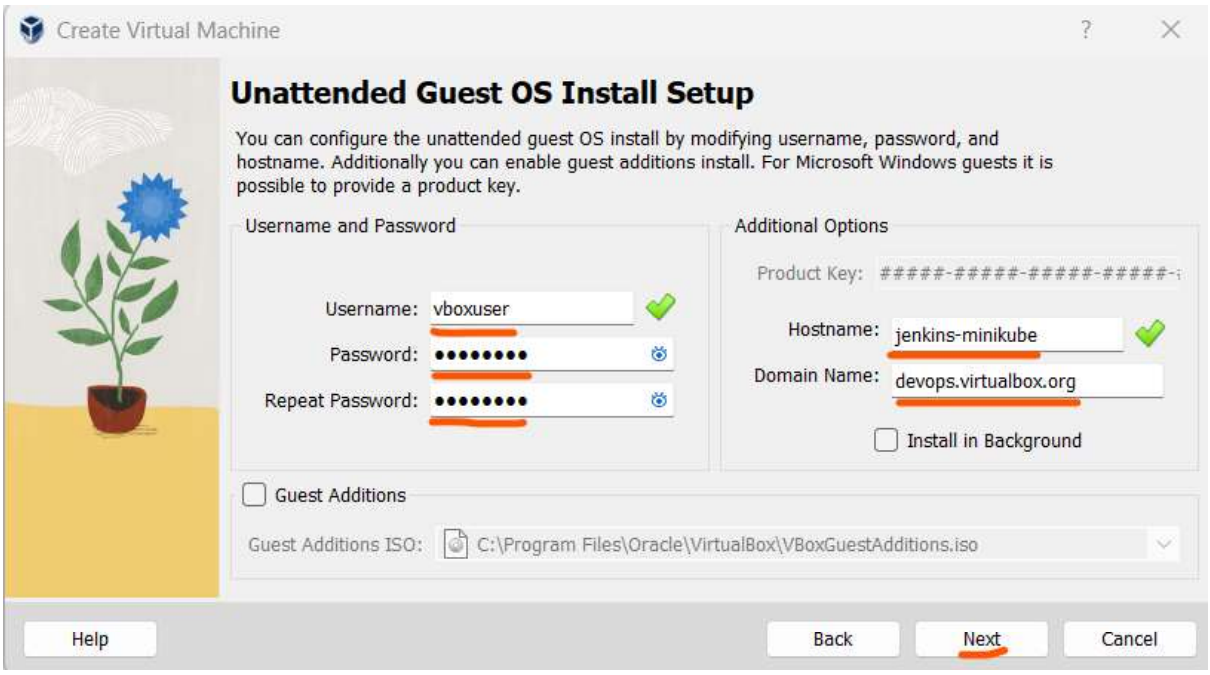


Put machine name of choice. I have given – jenkins-minikube and the folder location in your local machine where the Virtual machine including the disks would be created and location of Ubuntu ISO image which you have downloaded.

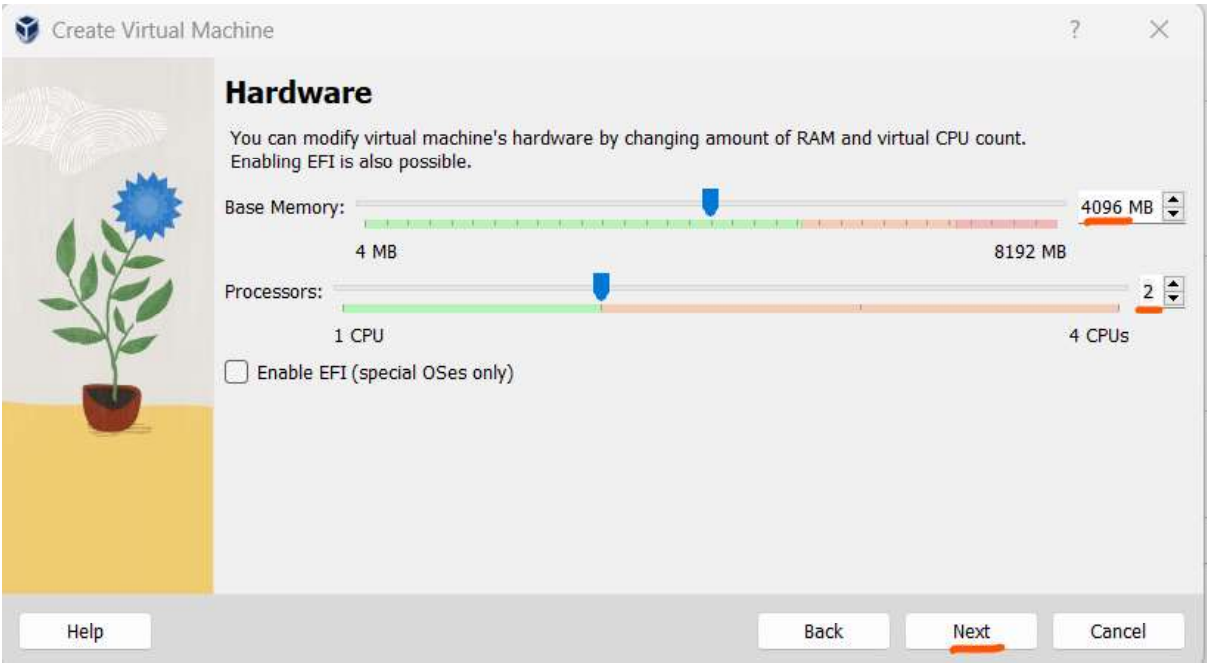


Click Next to proceed.

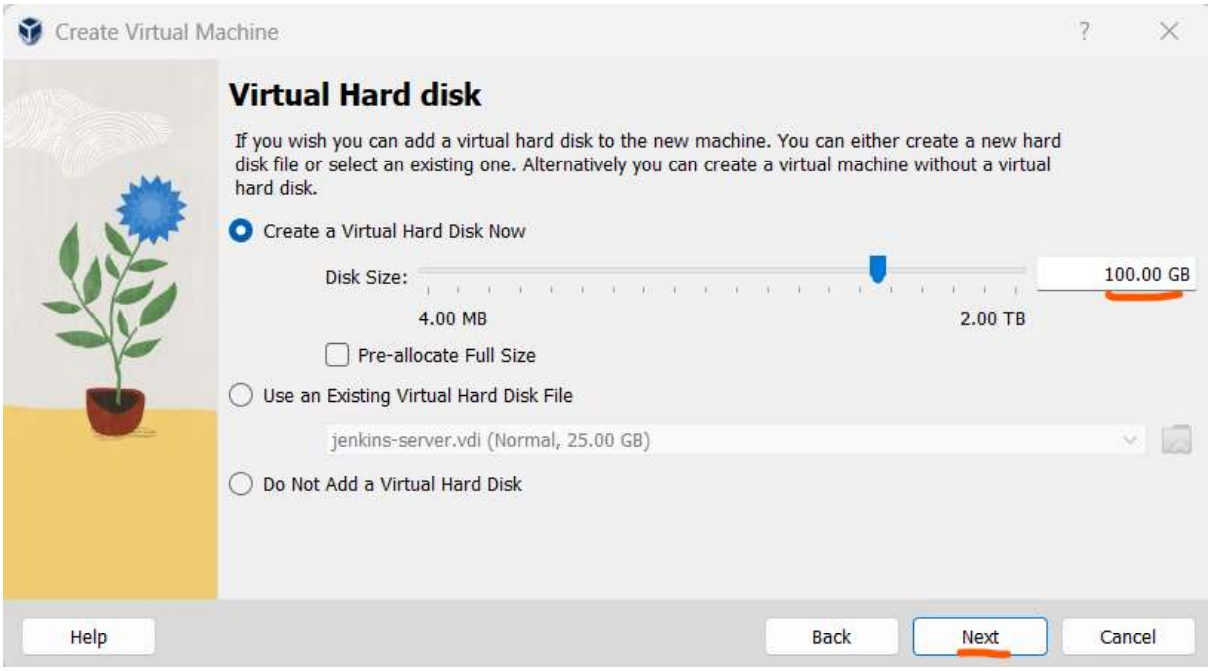
In the next screen, put Ubuntu username of your choice followed by password and confirmation of this new password. Also, put a hostname of this ubuntu guest OS and domain name. For this example, I have given domain name as “devops-virtualbox.org”.



Now set the hardware i.e. memory & CPU for this new Ubuntu guest OS. I would recommend you to set Base Memory = 4096 MB and Processors = 2

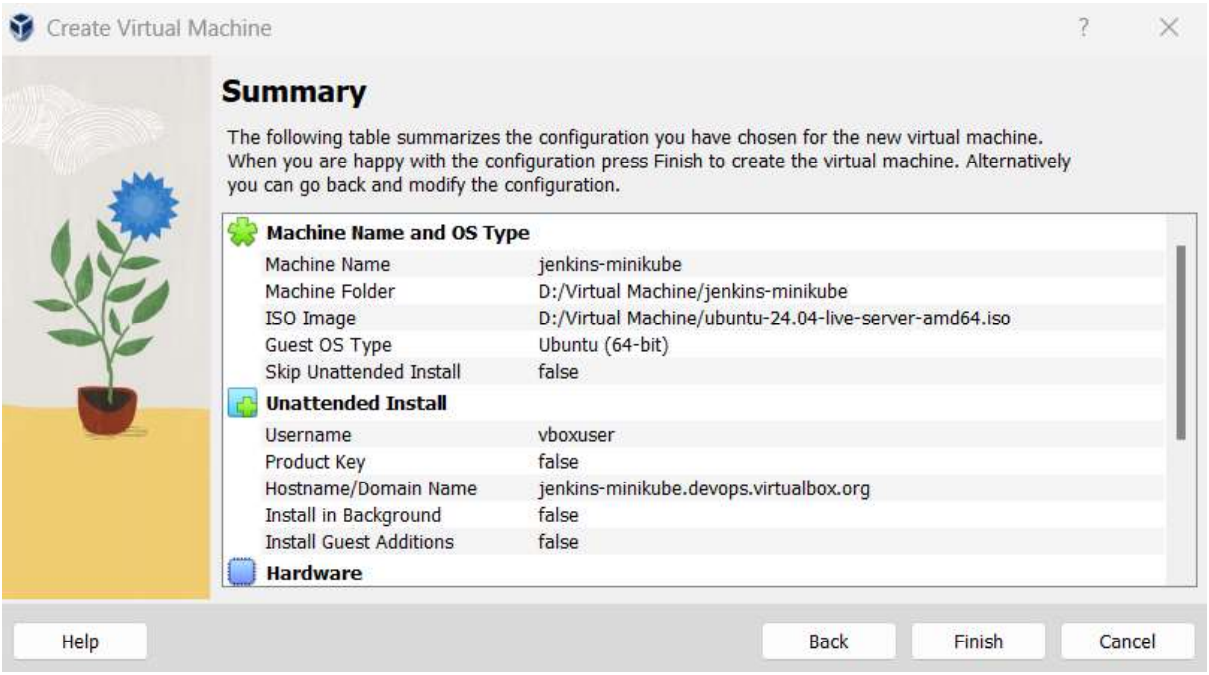


Click Next to proceed.



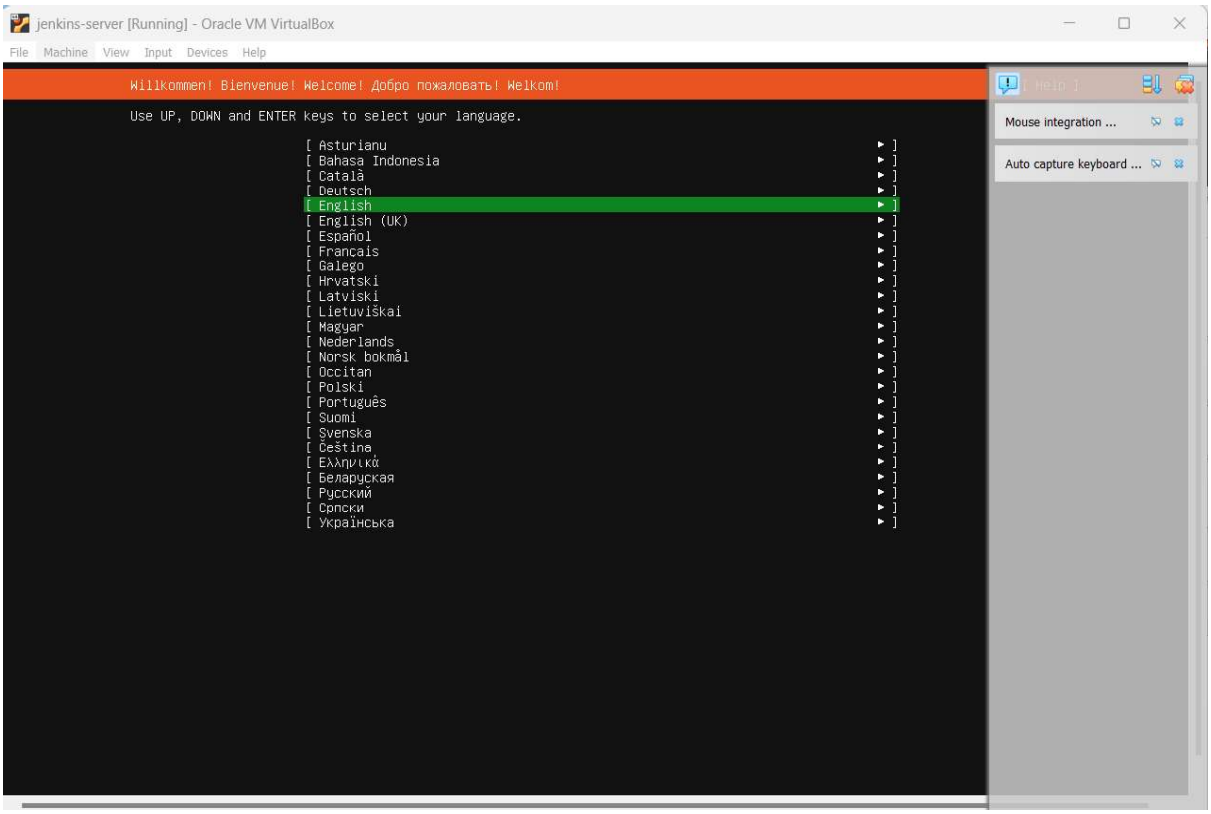
Set the virtual hard disk for this Ubuntu guest OS. I would recommend to have atleast 100 GB.

Click Next to proceed.

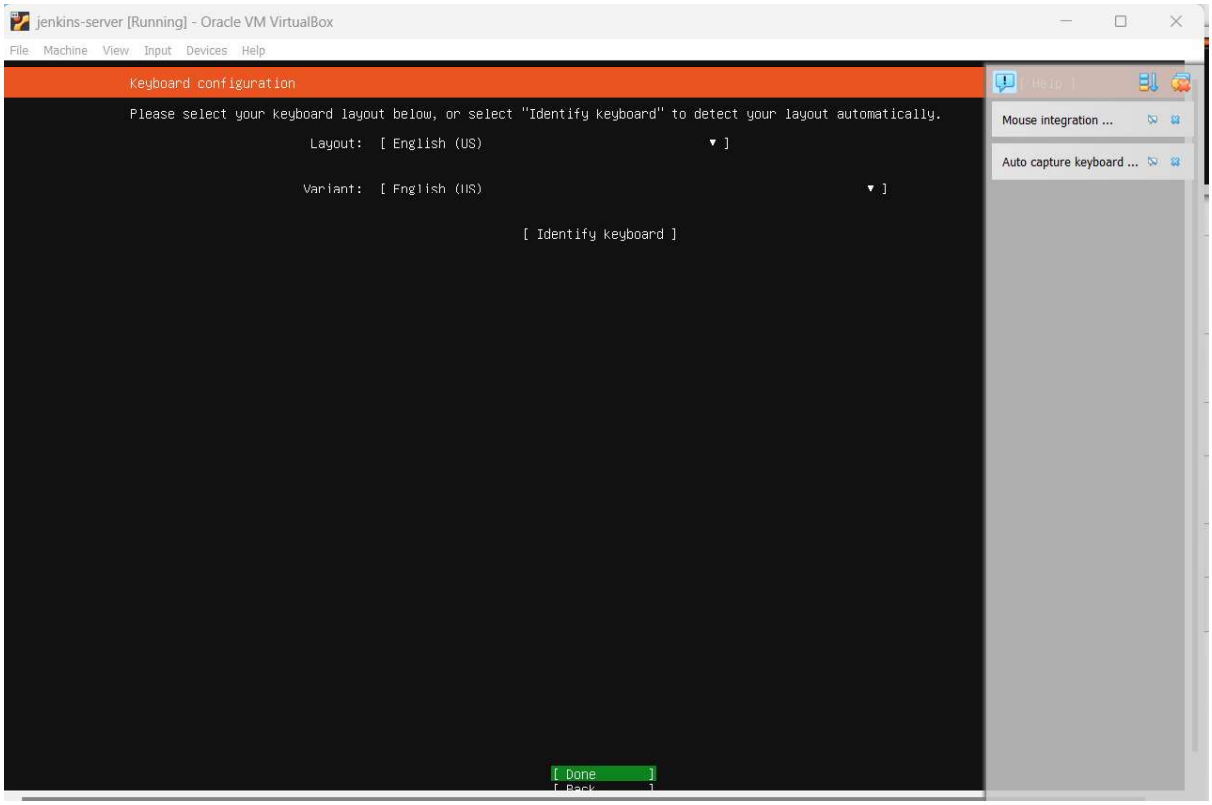


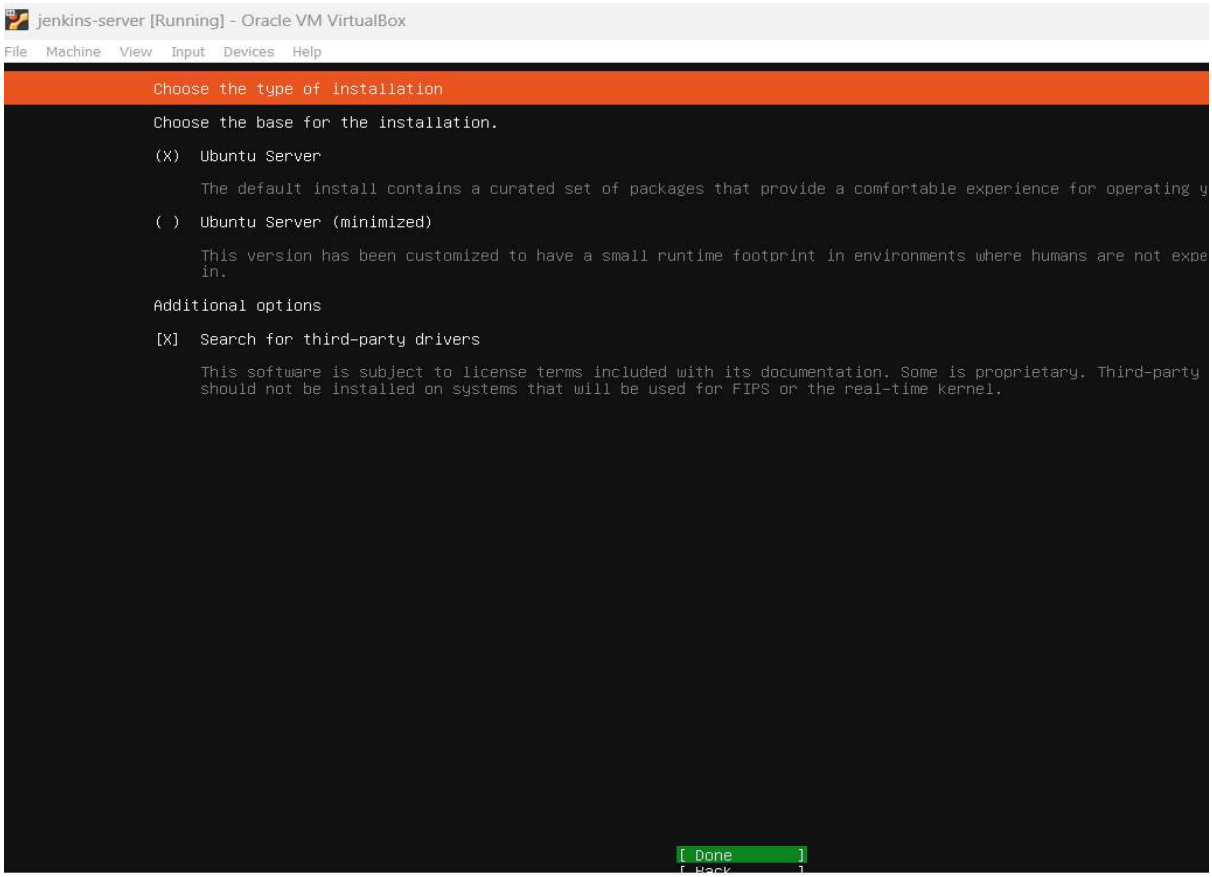
In the Summary page, just verity the settings you have set and click on Finish. It would then ask you for few preferences.

Select (or keep as it is if already selected) English as language and press enter to go to next screen.

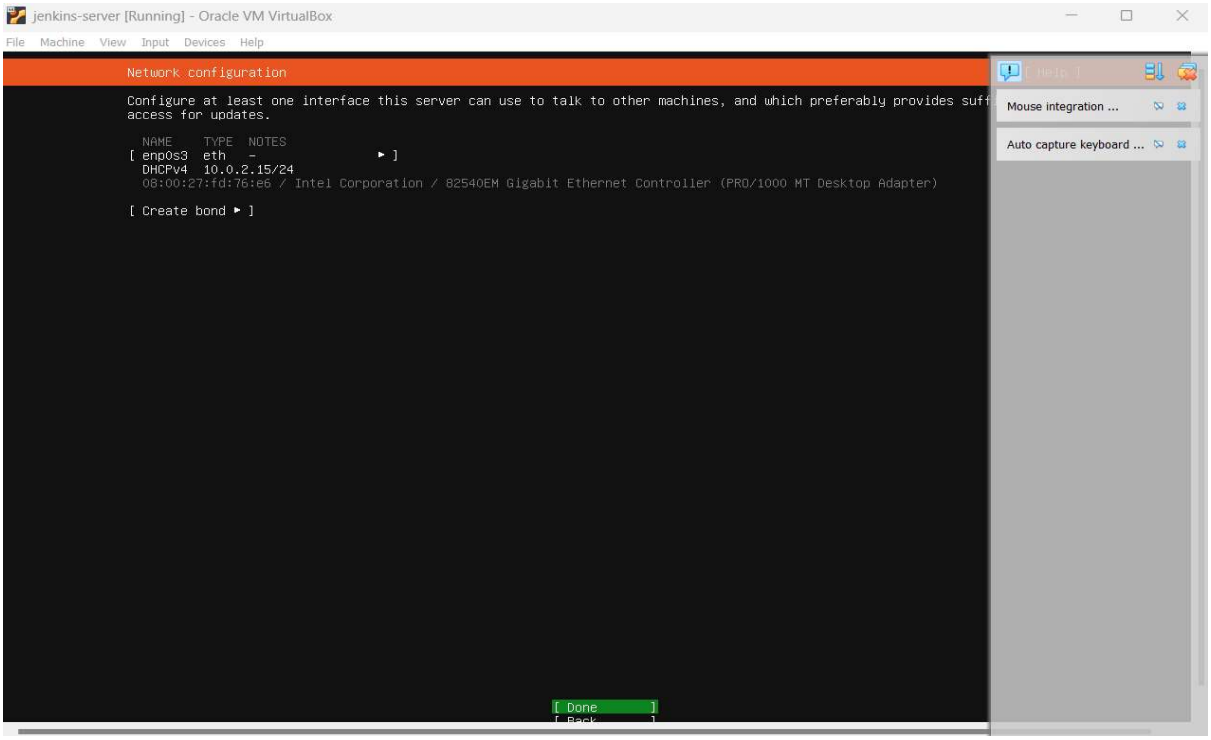


Leave the default keyboard layout and variant as it is and press enter to go to next.

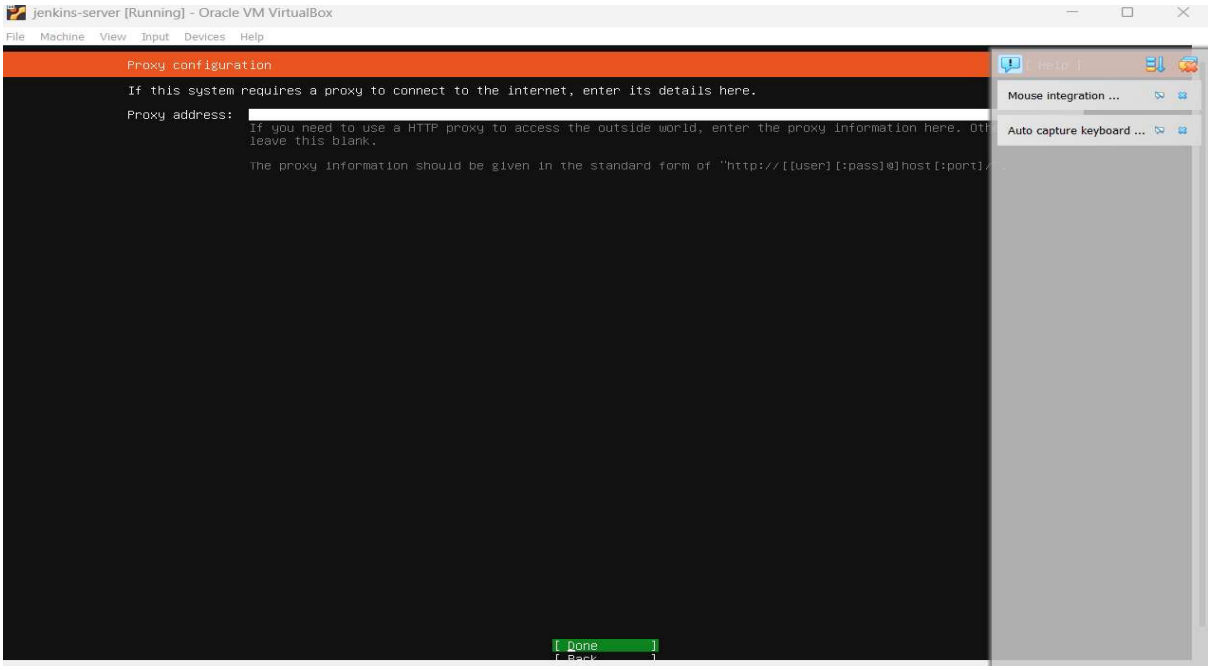




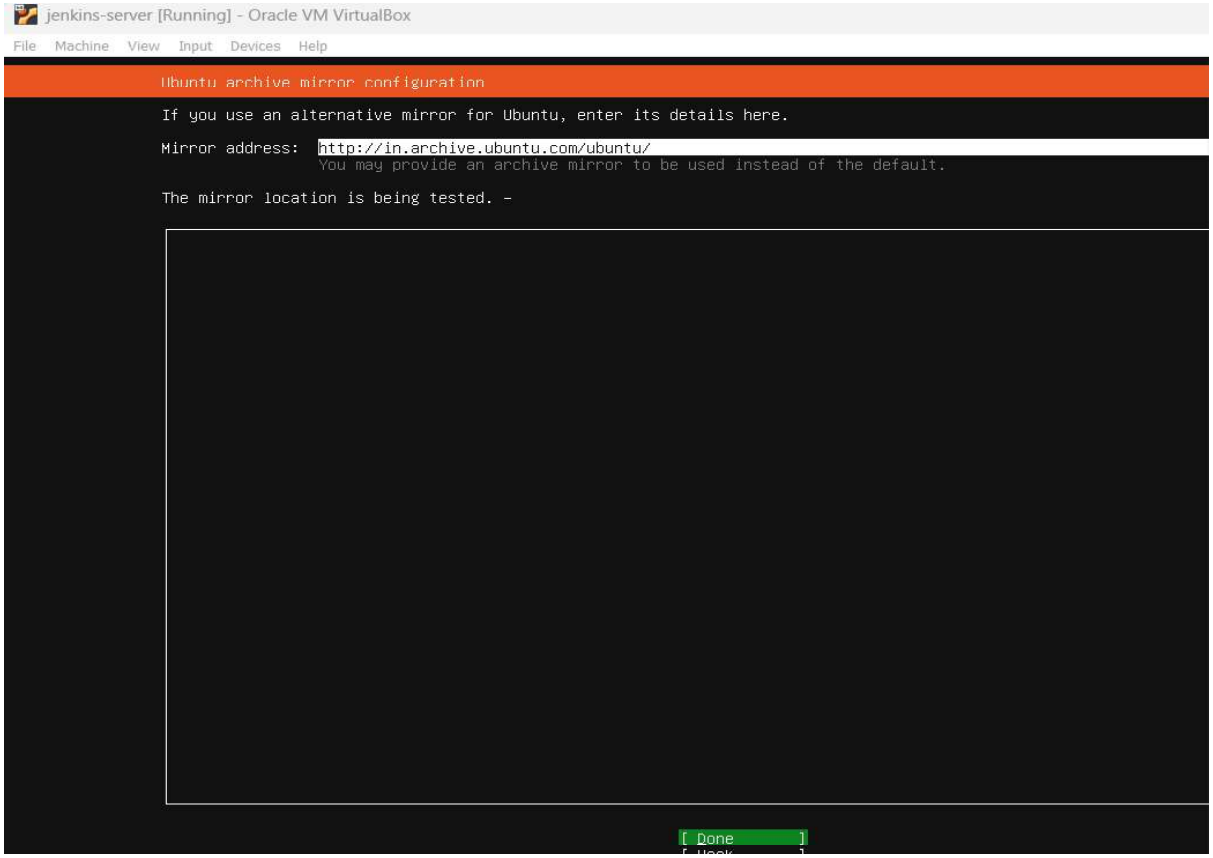
Select (or leave it if already selected) “Ubuntu Server” and press enter on “Done” to proceed.



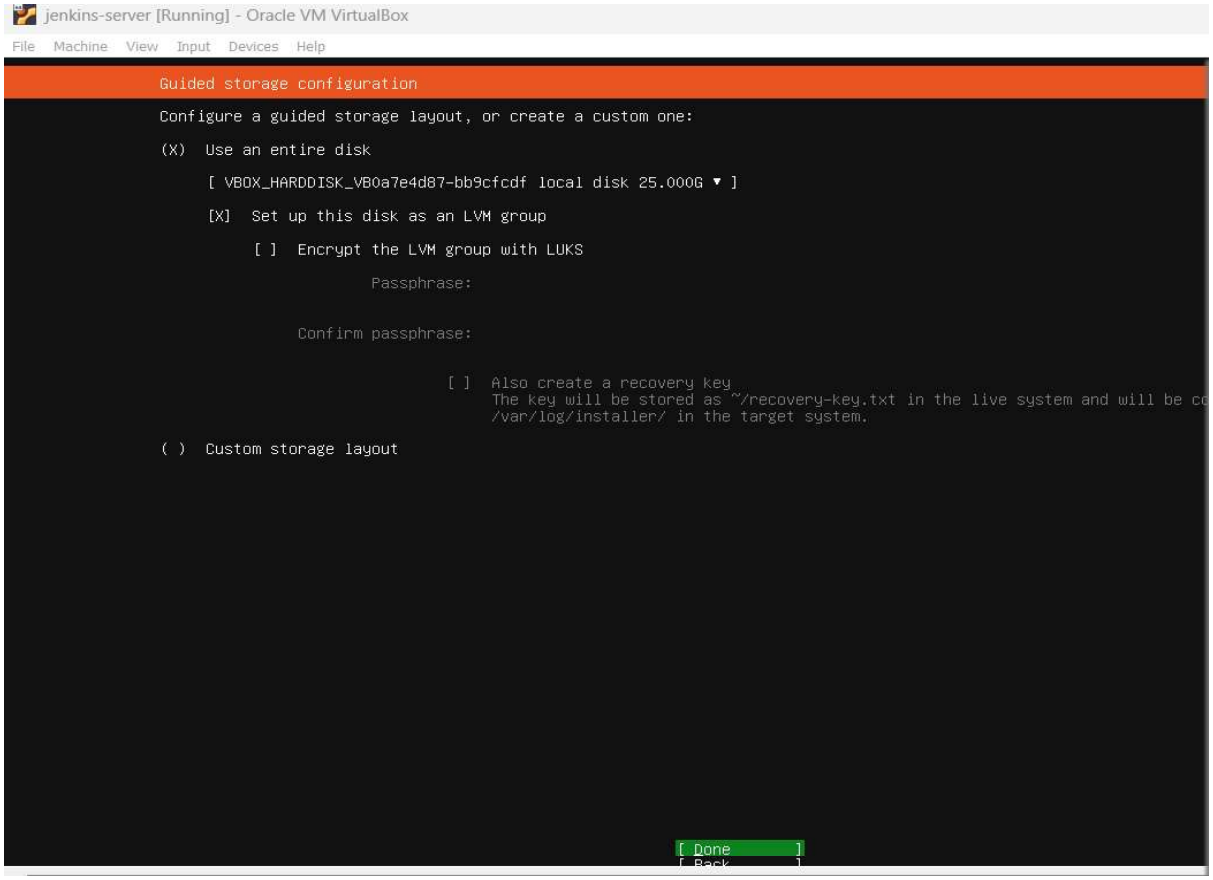
Leave the default network configuration and press enter on “Done” to proceed.



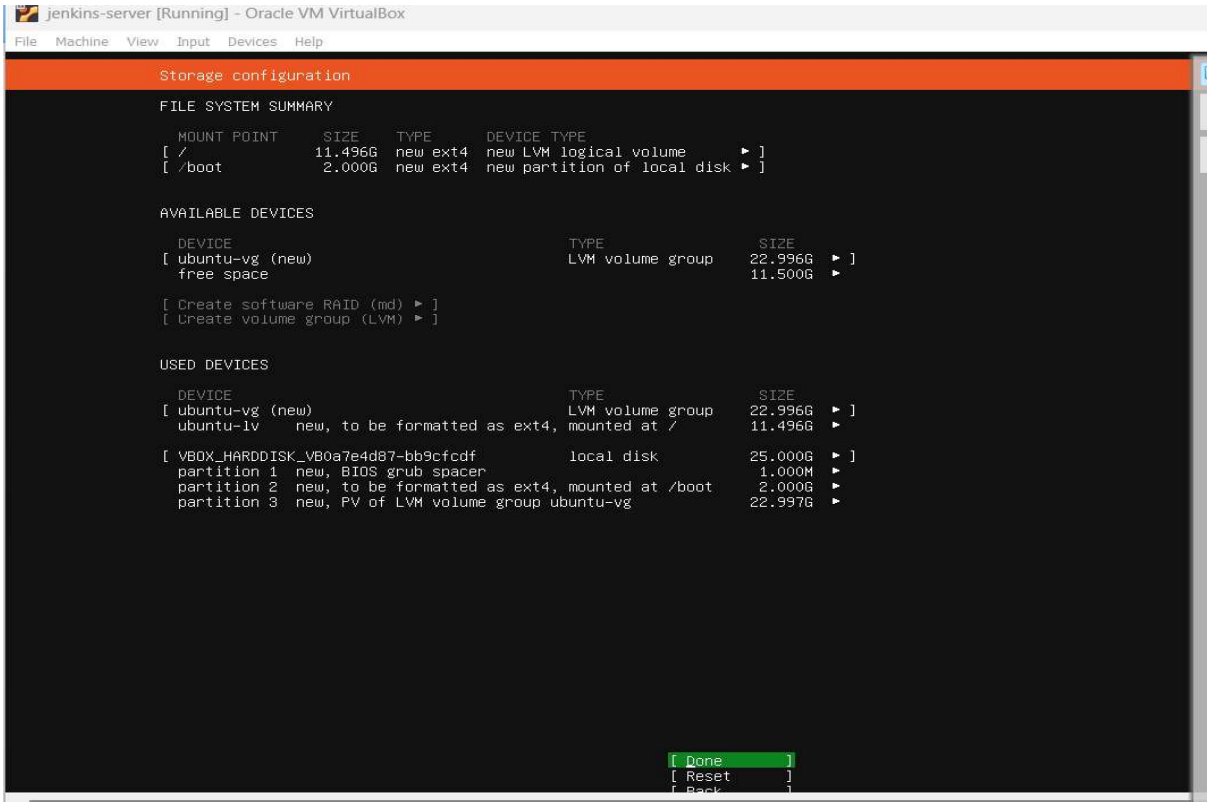
Leave the default Proxy configuration and press enter on “Done” to proceed.



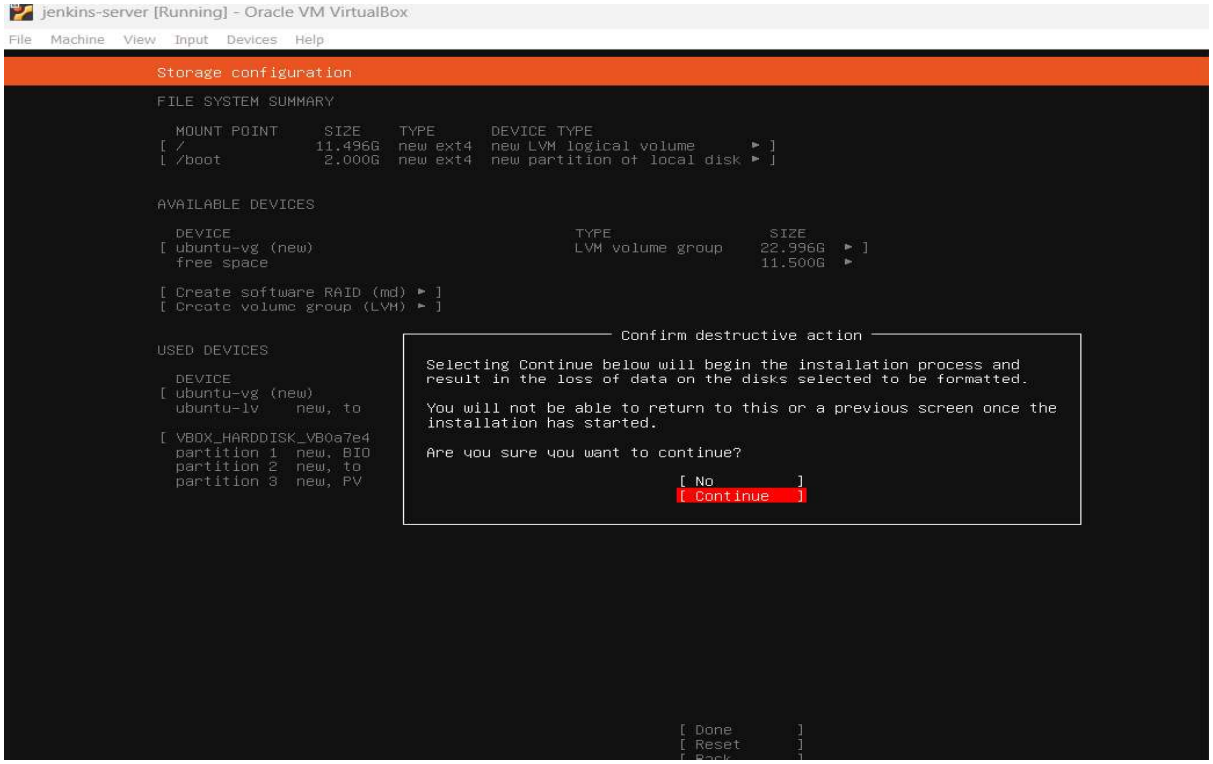
Leave the default Ubuntu archive mirror configuration and press enter on “Done” to proceed.



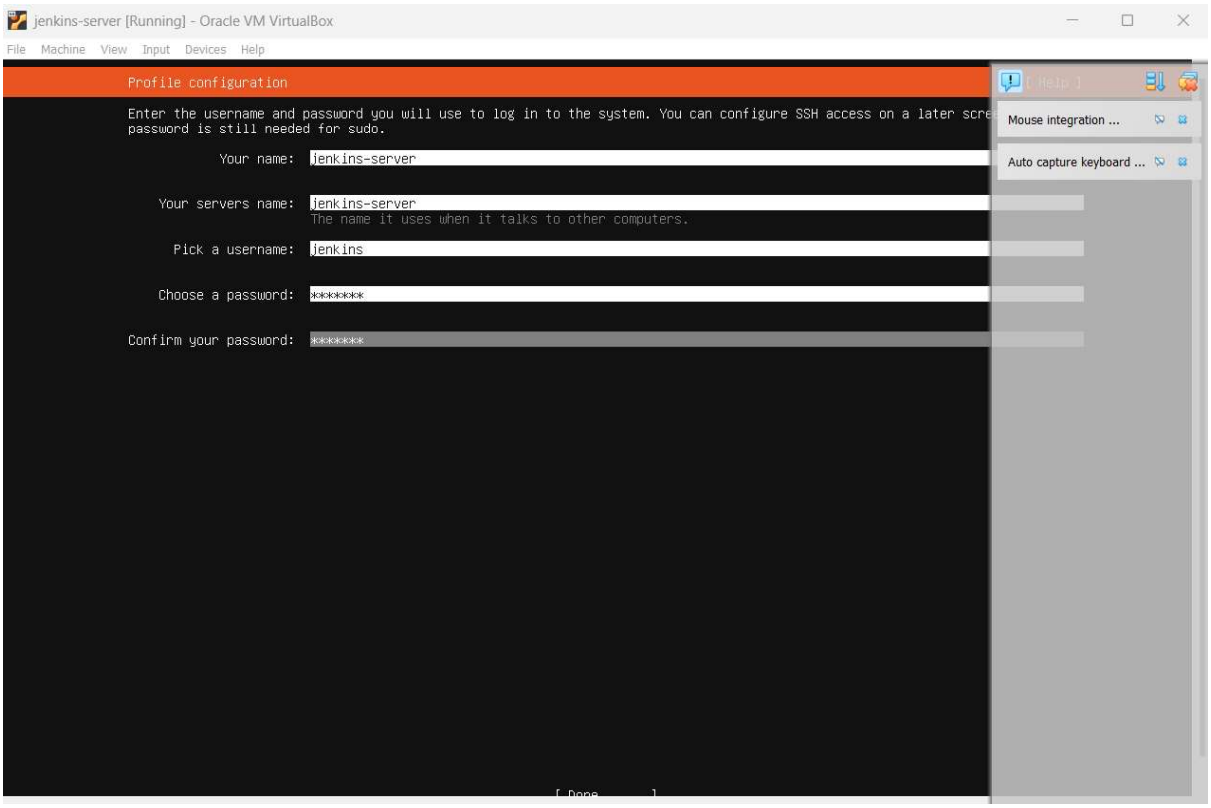
Leave the default storage configuration and press enter on “Done” to proceed.



Leave the default Storage configuration and press enter on “Done” to proceed.

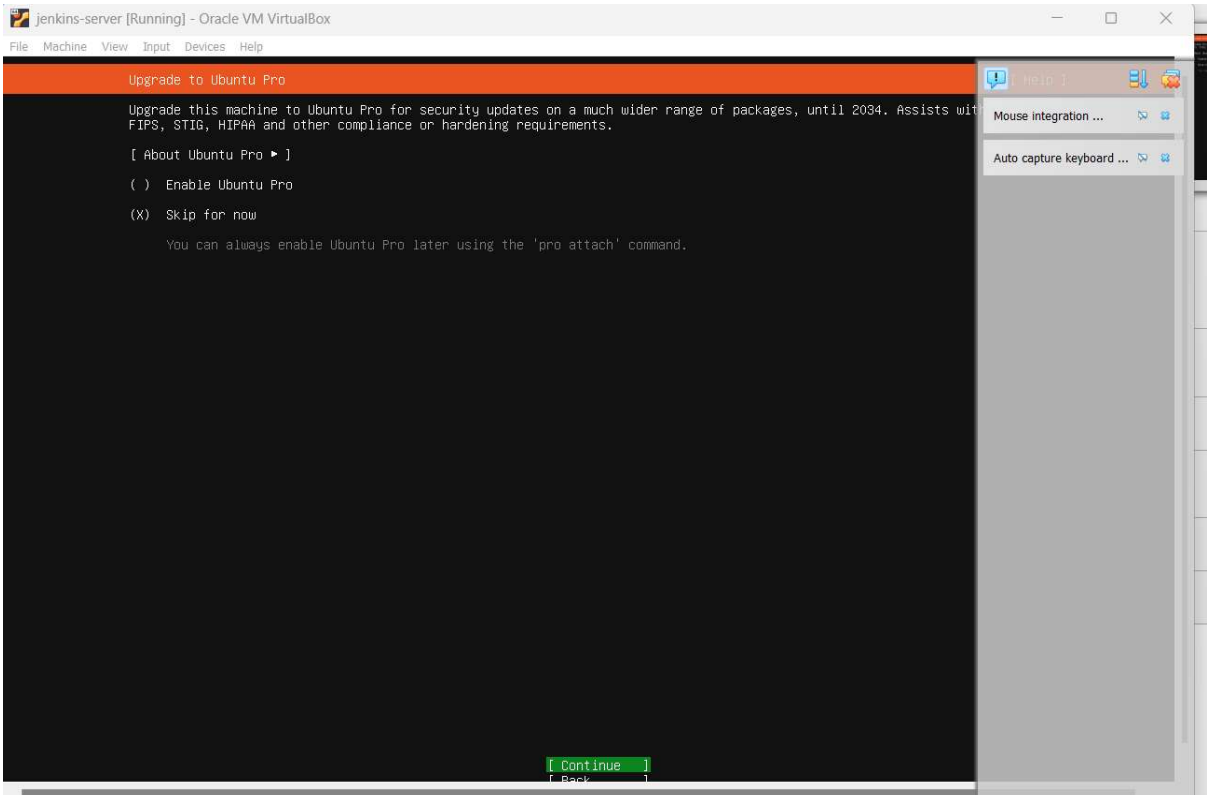


Click on Continue.

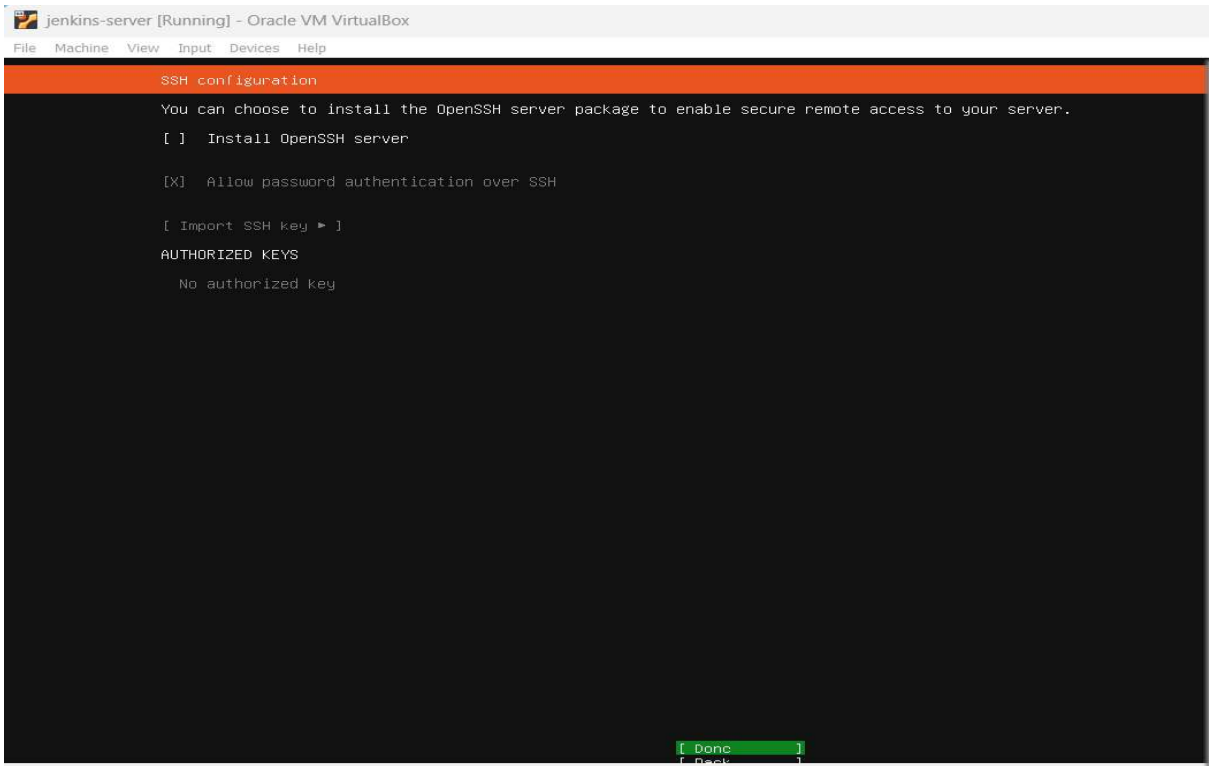


Put your name (any name), your server's name (I have put jenkins-minikube-server), give a username (I have put devops) and password.

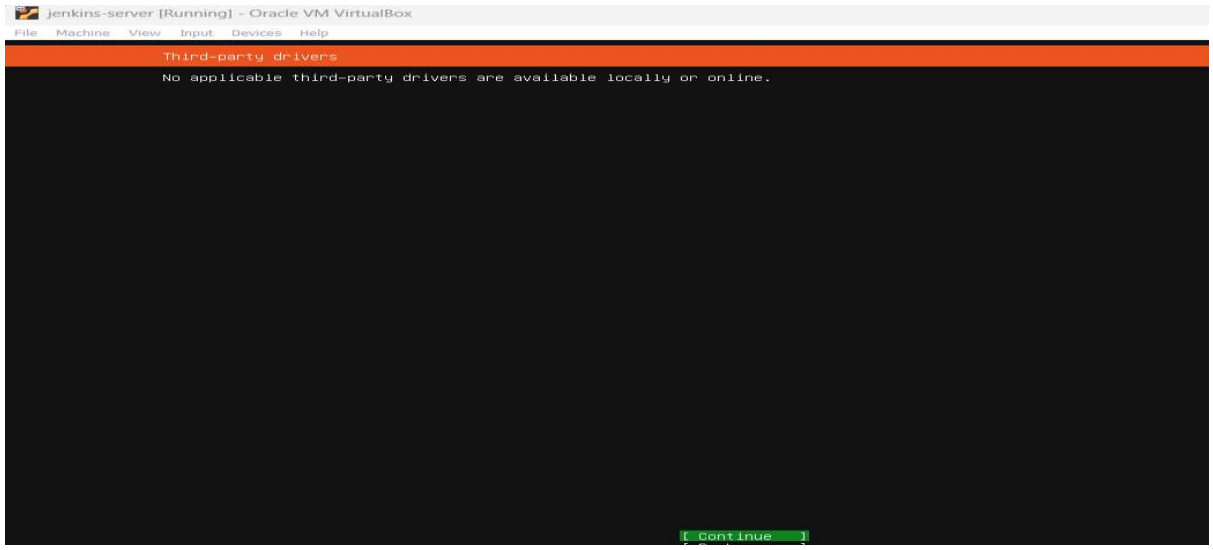
Press enter on "Done" to proceed.



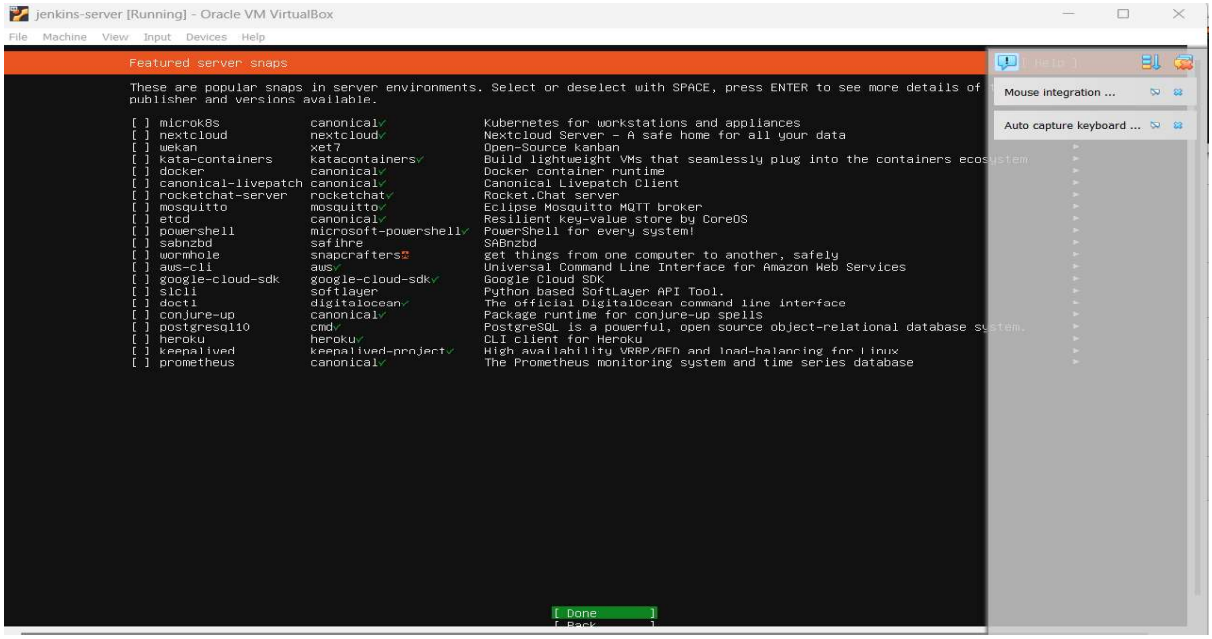
Select skip for now and press enter on “Continue” to proceed.



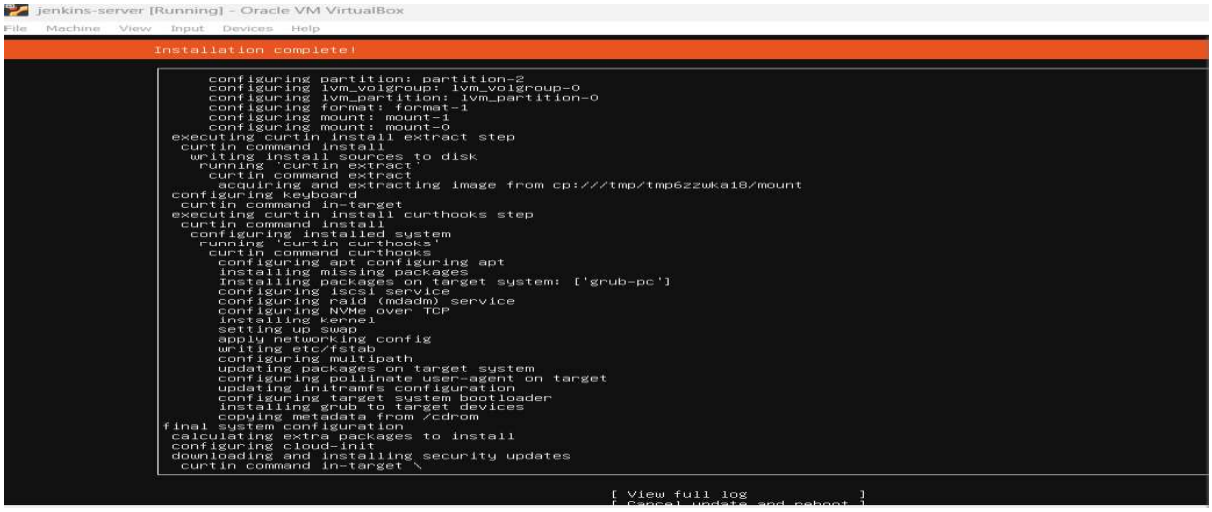
Leave the default option as black and press enter on “Done” to proceed.

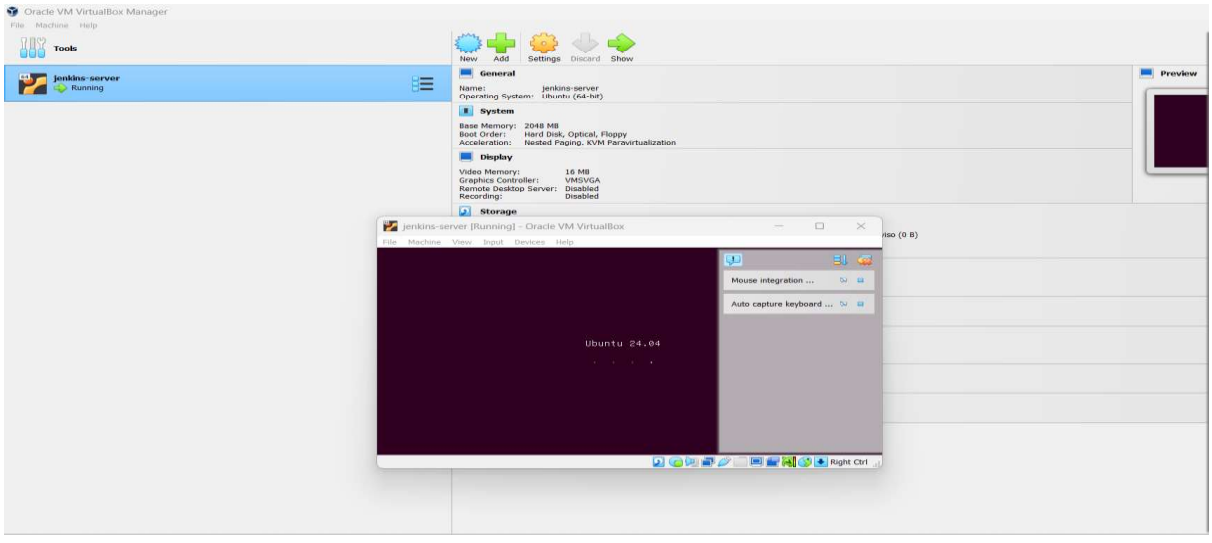


Leave the default option and press enter on “Continue” to proceed.



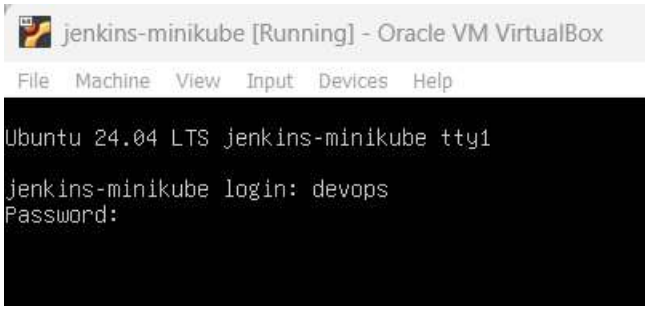
Leave all fields blank and press enter on “Done” to proceed.

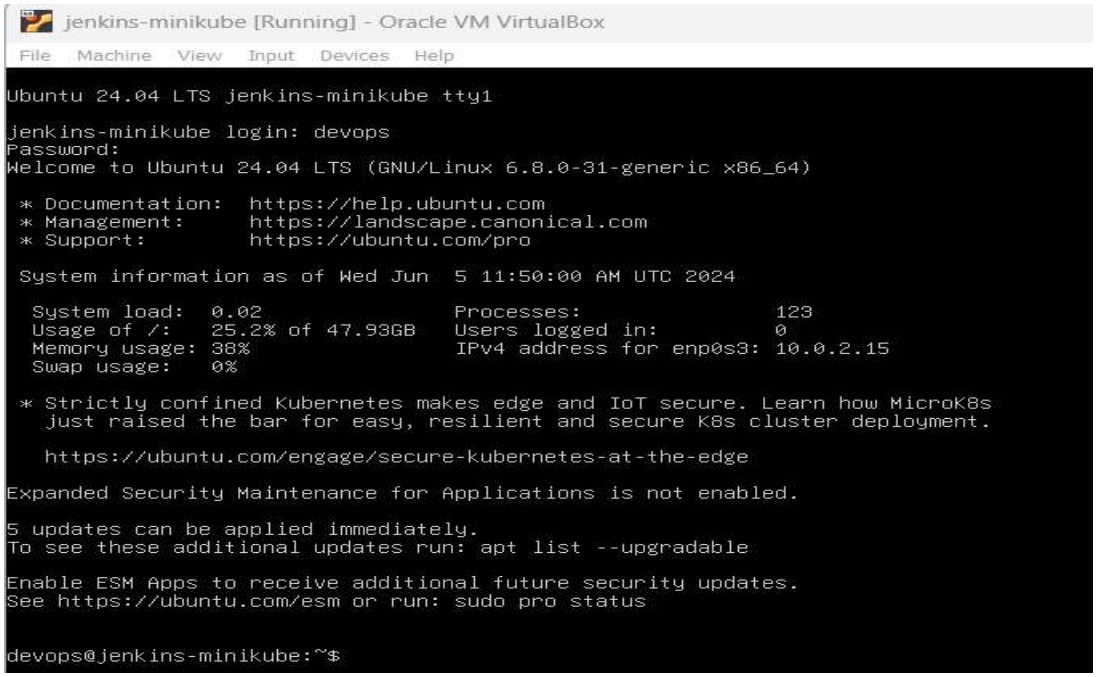




When you see installation complete, reboot the server.

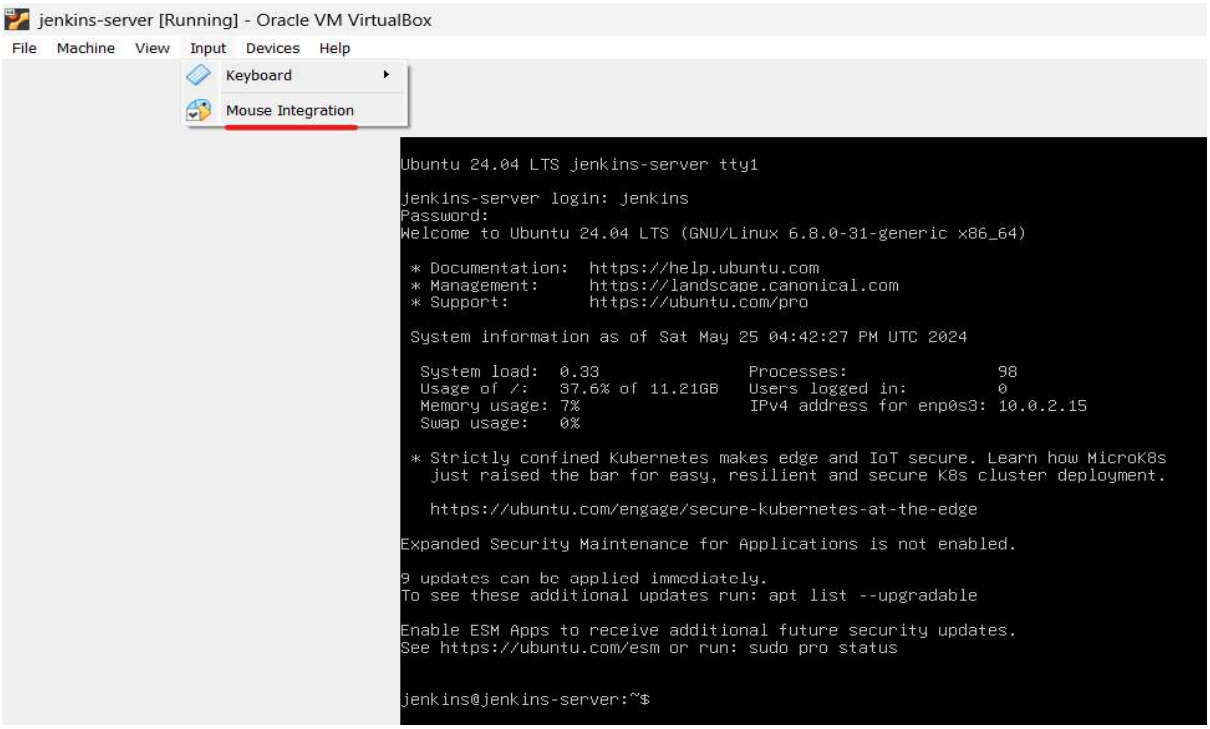
After reboot, try login to this server using the credential you had created after installation.

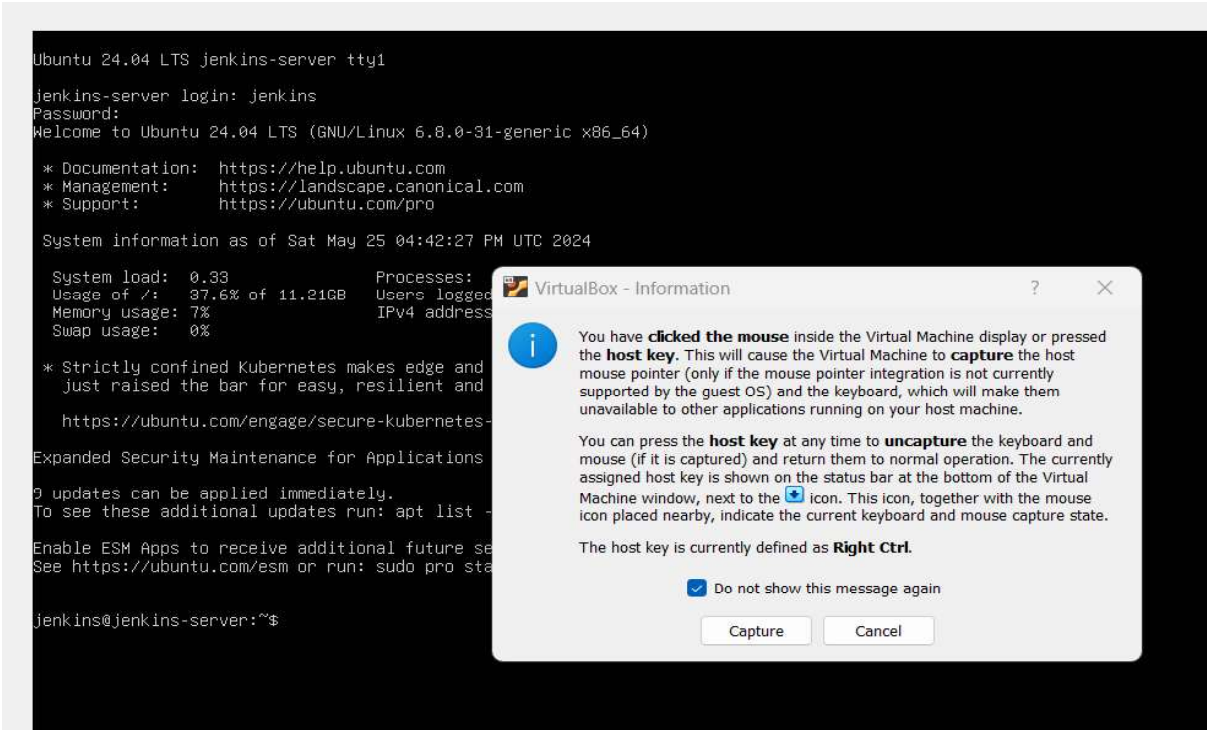




VirtualBox mouse integration

Mouse integration allows the mouse to flow smoothly from guest (Ubuntu) back to the host (Windows) without doing anything special.





To come out the mouse cursor from guest (Ubuntu) back to the host (Windows), press CTRL from right hand side of keyboard.

Enable copy/paste from host to guest OS in VirtualBox

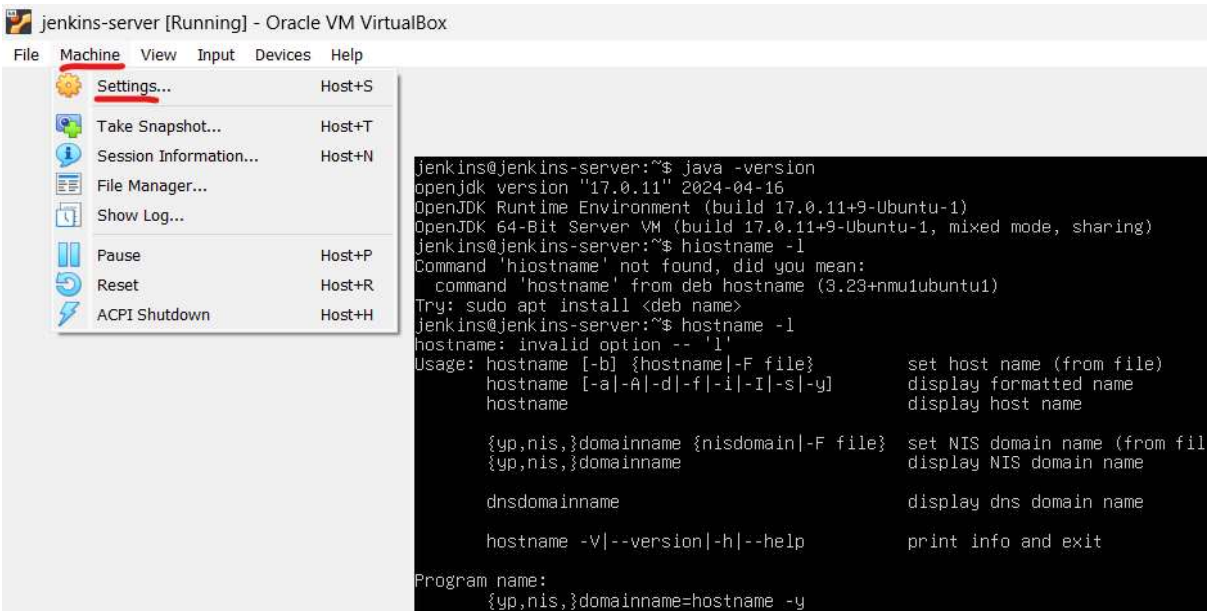
Occasionally, there is a requirement to transfer files or text from our host machine to the Virtual Machine (VM) running inside VirtualBox. This can be accomplished effortlessly by following the steps provided below:

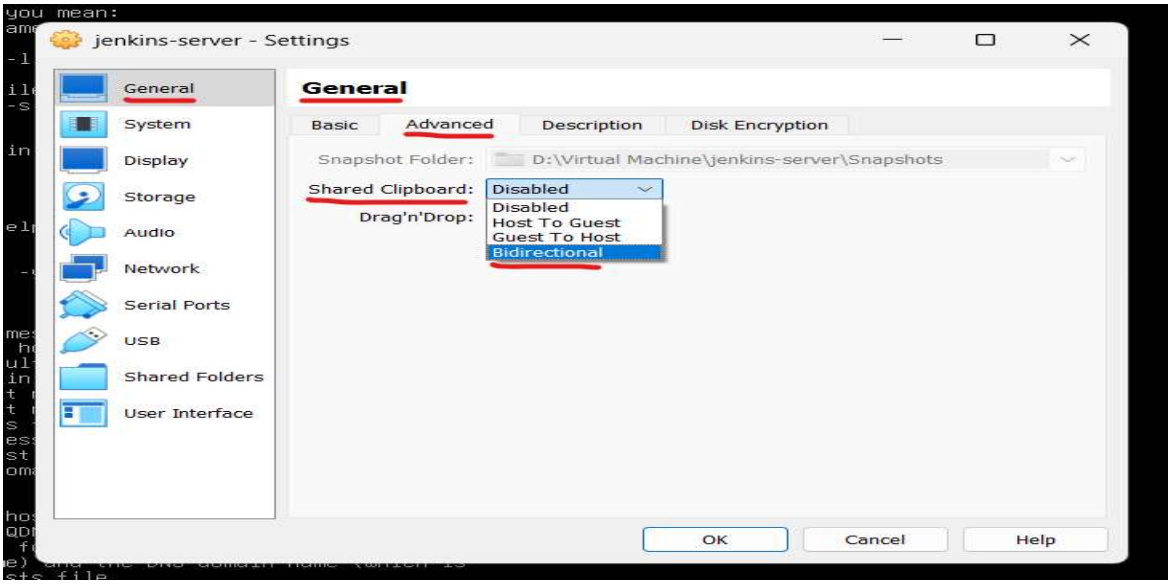
1. Launch VirtualBox.

2. Access the settings of the VM by navigating to the General section and selecting the Advanced tab.

3. Within the Advanced tab, you will find a setting to enable the “shared clipboard.” It offers three options: disabled, host to guest, and bidirectional. Opt for the bidirectional option.

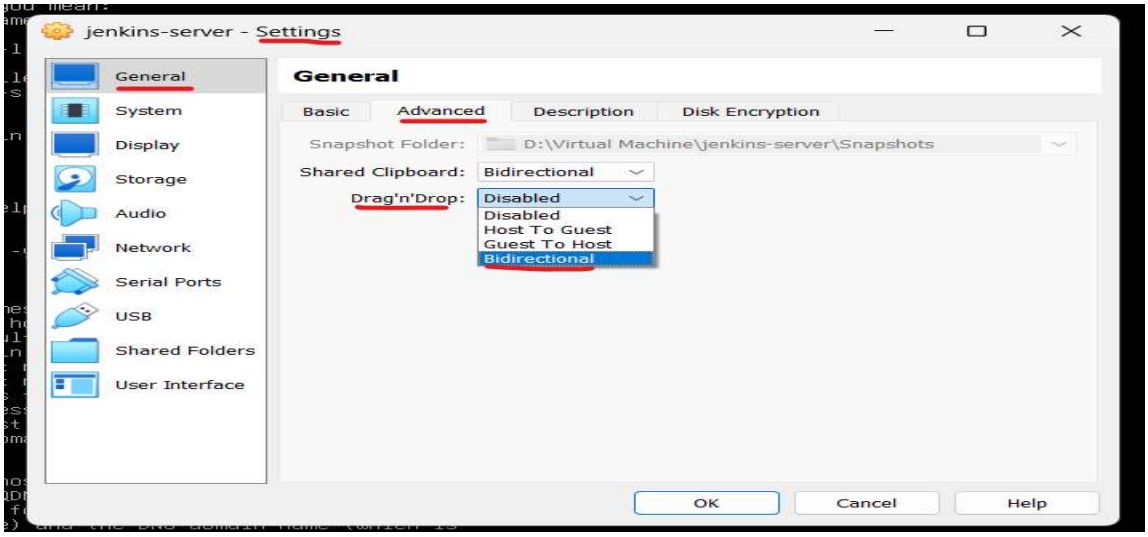
Attached below is a screenshot depicting the aforementioned setting.





Enable Drag and Drop (between host and guest OS)

Oracle VM VirtualBox enables you to drag and drop content from the host to the guest, and vice versa. For this to work the latest version of the Guest Additions must be installed on the guest.



Note: There might be problem is with the virtualbox-guest-x11 package missing.

From the Ubuntu Server command prompt,

Execute the below commands:

sudo apt-get update

sudo apt-get install virtualbox-guest-x11

If it asks you about keeping a file or installing the new one, select the new one.

sudo VBoxClient --clipboard

This should enable clipboard sharing.

```
jenkins@jenkins-server:~$ sudo apt-get update
[sudo] password for jenkins:
Hit:1 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu noble InRelease
Get:3 http://in.archive.ubuntu.com/ubuntu noble-updates InRelease [89.7 kB]
Hit:4 http://in.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:5 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [77.1 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [35.6 kB]
Fetched 202 kB in 3s (65.8 kB/s)
Reading package lists... Done
jenkins@jenkins-server:~$ sudo apt-get install virtualbox-guest-x11
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  cpp cpp-13 cpp-13-x86-64-linux-gnu cpp-x86-64-linux-gnu gcc-13-base libegl-mesa0 libegl1 libepoxy0 libfontenc1 libgbm1 libisl23 libmpc3 libnotify-bin
  libnotify4 libwayland-server0 libxcvt0 libxfont2 virtualbox-guest-utils x11-xkb-utils x11-xserver-utils xcvt xfonts-base xfonts-encodings xfonts-utils
  xserver-common xserver-xorg-core
Suggested packages:
  cpp-doc gcc-13-locales cpp-13-doc notification-daemon nickle cairo-5c xorg-docs-core xfs | xserver xfonts-100dpi | xfonts-75dpi xfonts-scalable
The following NEW packages will be installed:
  cpp cpp-13 cpp-13-x86-64-linux-gnu cpp-x86-64-linux-gnu gcc-13-base libegl-mesa0 libegl1 libepoxy0 libfontenc1 libgbm1 libisl23 libmpc3 libnotify-bin
  libnotify4 libwayland-server0 libxcvt0 libxfont2 virtualbox-guest-utils virtualbox-guest-x11 x11-xkb-utils x11-xserver-utils xcvt xfonts-base
  xfonts-encodings xfonts-utils xserver-common xserver-xorg-core
0 upgraded, 27 newly installed, 0 to remove and 10 not upgraded.
Need to get 21.8 MB of archives.
After this operation, 57.0 MB of additional disk space will be used.
Do you want to continue? [Y/n] _
```

How to SSH Into a VirtualBox Ubuntu Server

Installing SSH on the Virtual Machine

On the virtual machine, **install SSH** using the command:

sudo apt install openssh-server

Your SSH server will start up automatically. You can **check its status** using the following command:

sudo systemctl status ssh:

Otherwise **start ssh** server using this command:

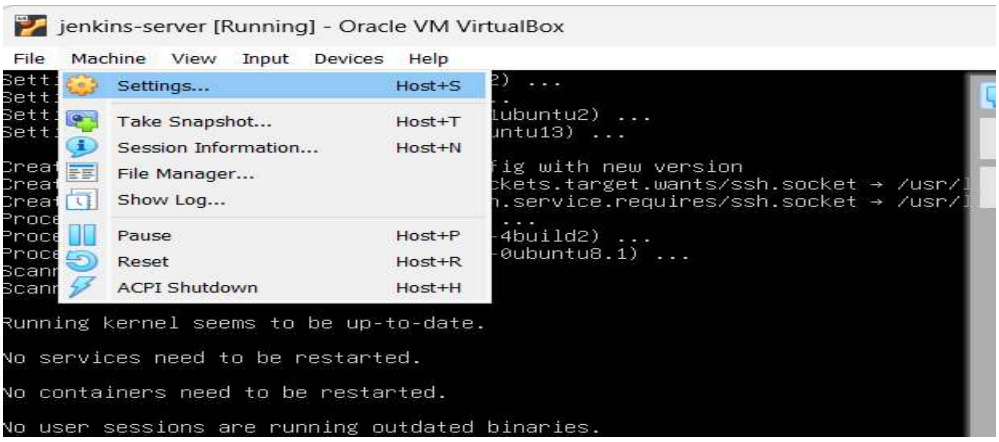
sudo systemctl start ssh

Now run this to get the **status of ssh** server:

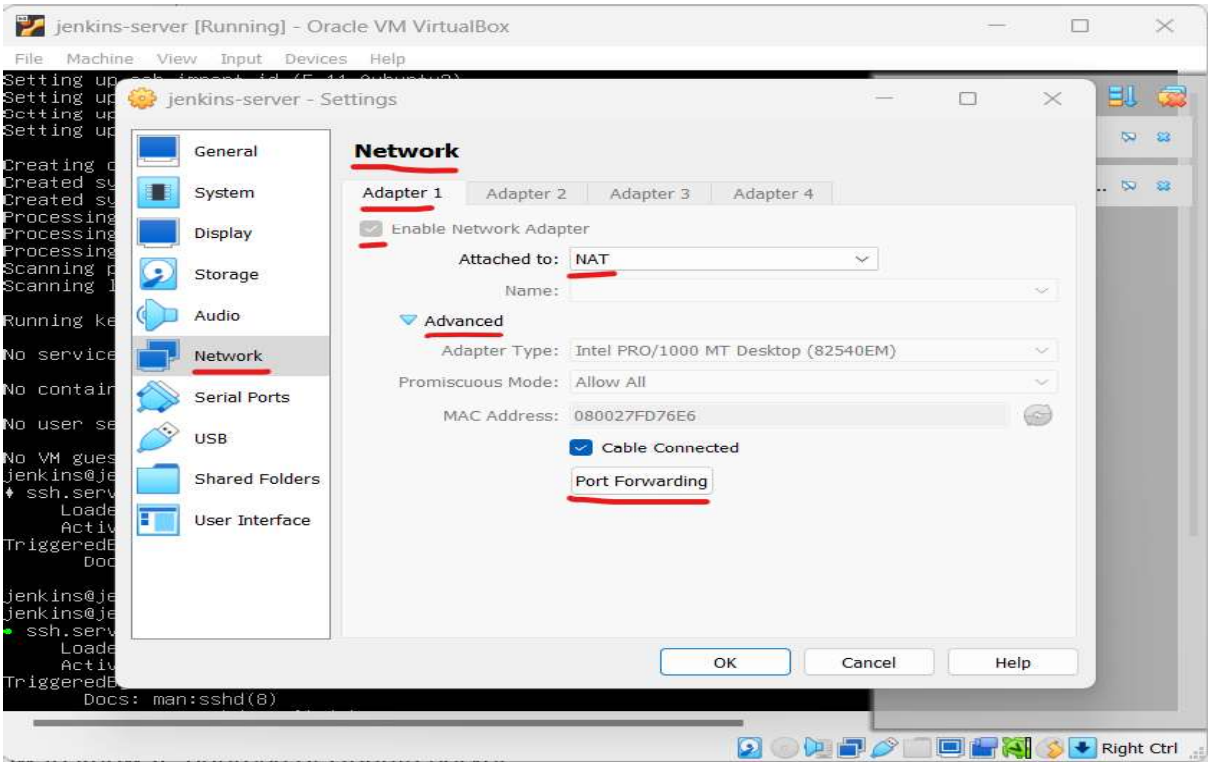
sudo systemctl status ssh

Enable port-forwarding

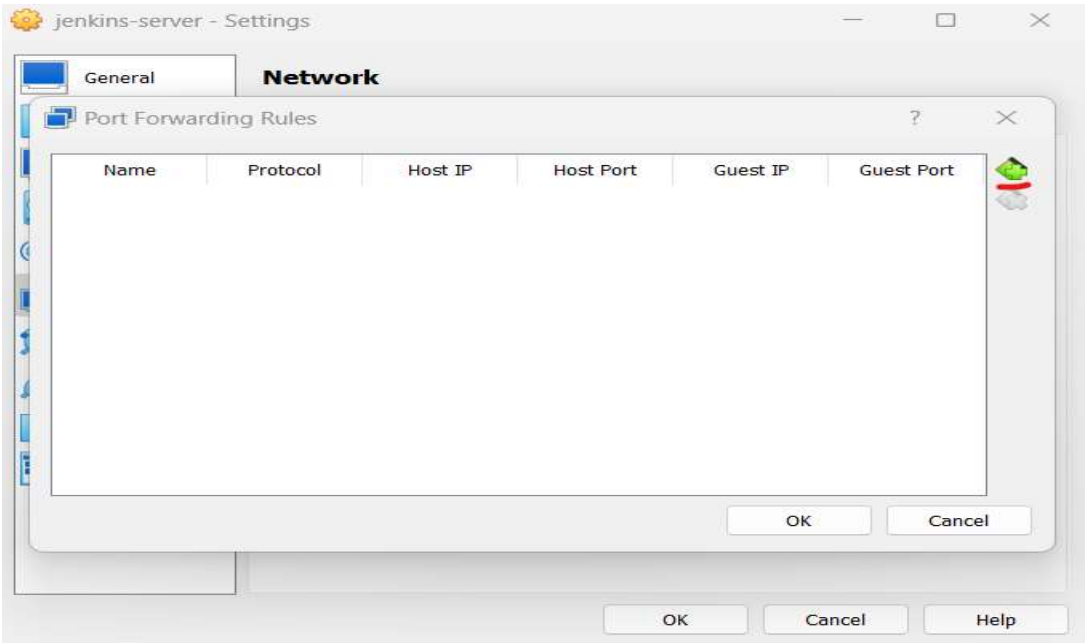
Open settings from guest OS → Machine → Settings…



Go to Network → Adapter 1 → Select NAT → Click on Advanced → Port Forwarding

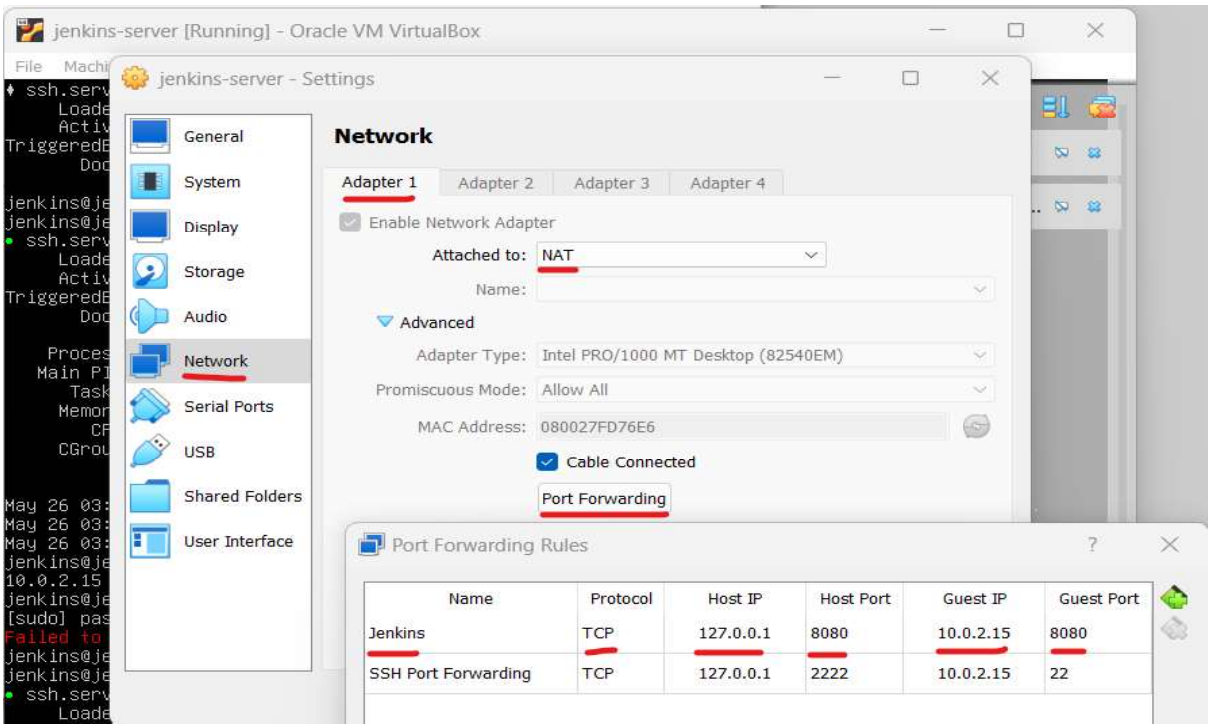


Click on Add sign as shown below:

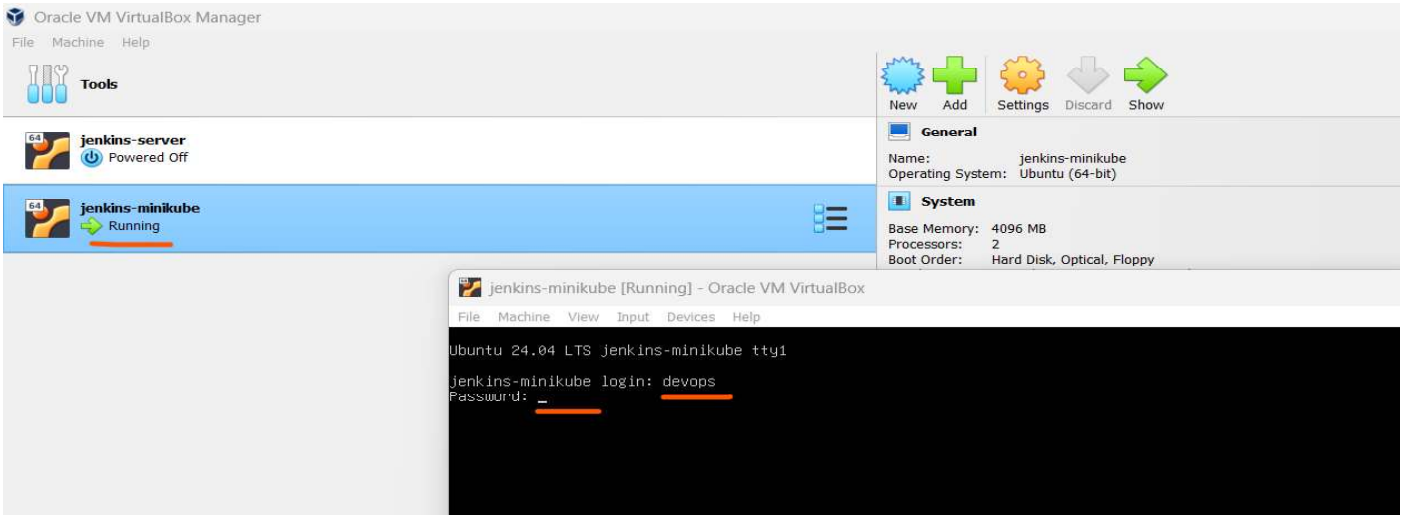


The real problem here is that the "Host IP" parameter in your VirtualBox's port forwarding rule only tells it to listen on 127.0.0.1 (loopback address). This means it will only accept connections made to 127.0.0.1

Make these entries like below:



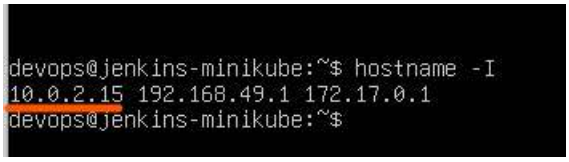
Please note that the Guest IP might be different for you. To know what is the IP address of your Ubuntu Guest OS, please go the Ubuntu terminal from VirtualBox, login to Ubuntu using the credential you had created after installation.



Login and run the below command to get IP address of your Ubuntu guest OS:

Hostname -I

(here ‘i' would be in UPPERCASE)



The IP address that starts with 10.0.X.X is what you should consider to put into NAT port forwarding.

Restart ssh server

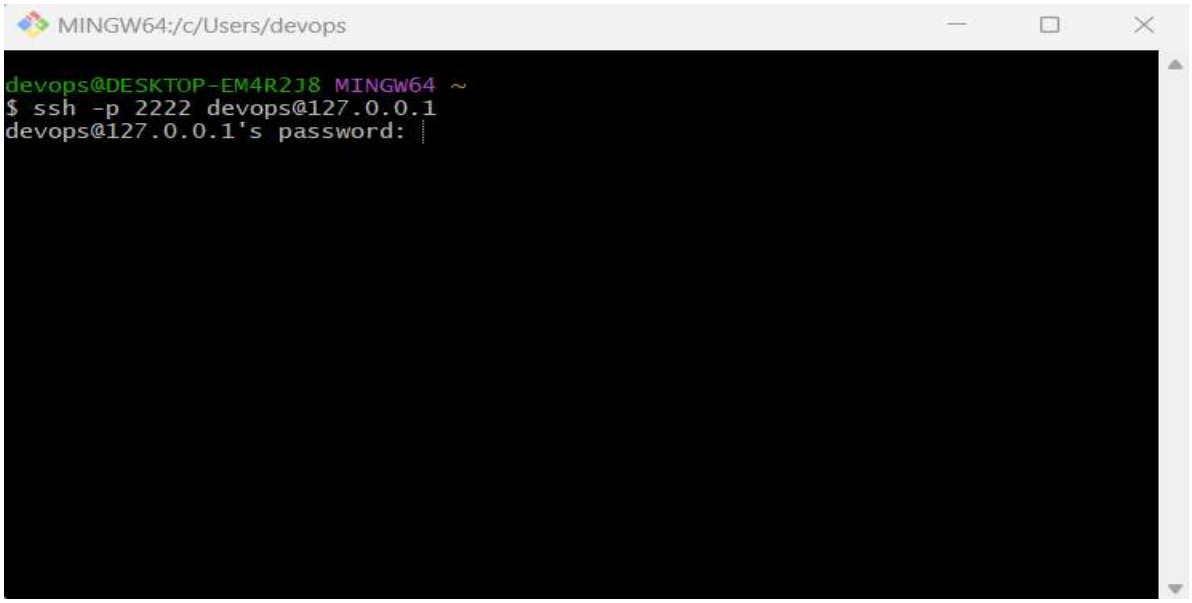
you might need to **restart ssh service** on VirtualBox for the changes to take effect.

sudo systemctl restart ssh

Start SSH Session (from Host Windows to Guest Ubuntu using Gitbash)

From the terminal in your main operating system, run the SSH command in the following format: ssh -p 2222 guest_os_username@127.0.0.1. For example:

ssh -p 2222 devops@127.0.0.1



Please note that 'jdevops', in this case, is the login username for the virtual machine. Finally, enter the password for the guest OS user when prompted to initialize the connection.

Now onwards, we will be using Gitbash to login to Ubuntu guest OS in VirtualBox from our Windows host machine.

Shutdown Ubuntu server

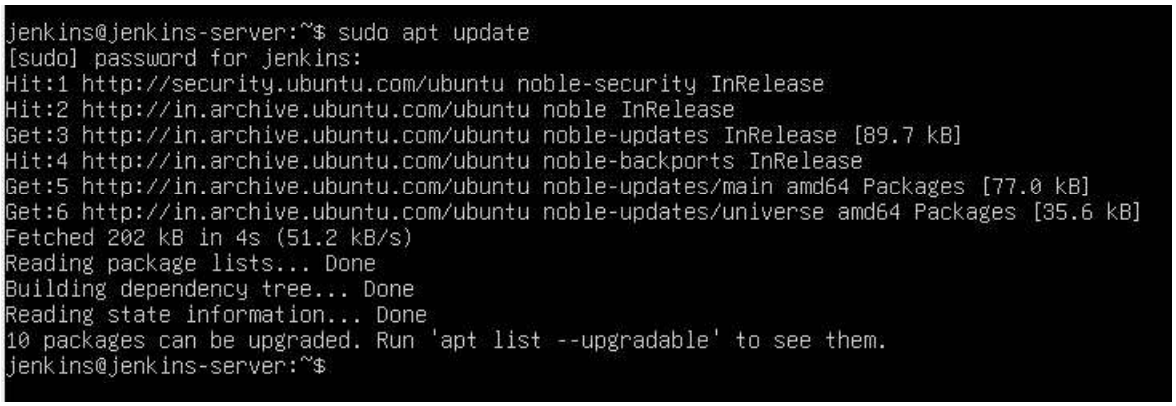
sudo poweroff

Restart Ubuntu server

sudo reboot

Installing update on Ubuntu server

Clear the console using the ”clear” command and update the system using “**sudo apt update**” command.



Installing Jenkins on Ubuntu server

Jenkins is a open-source automation server that lets you build, test and deploy your code. Now, we will see how to install Jenkins on the newly created Ubuntu server.

Install Java as Jenkins pre-requisite

Jenkins is a Java based application. So, Java is a pre-requisite. Install Java with the following command in Ubuntu server –

sudo apt update

sudo apt upgrade