

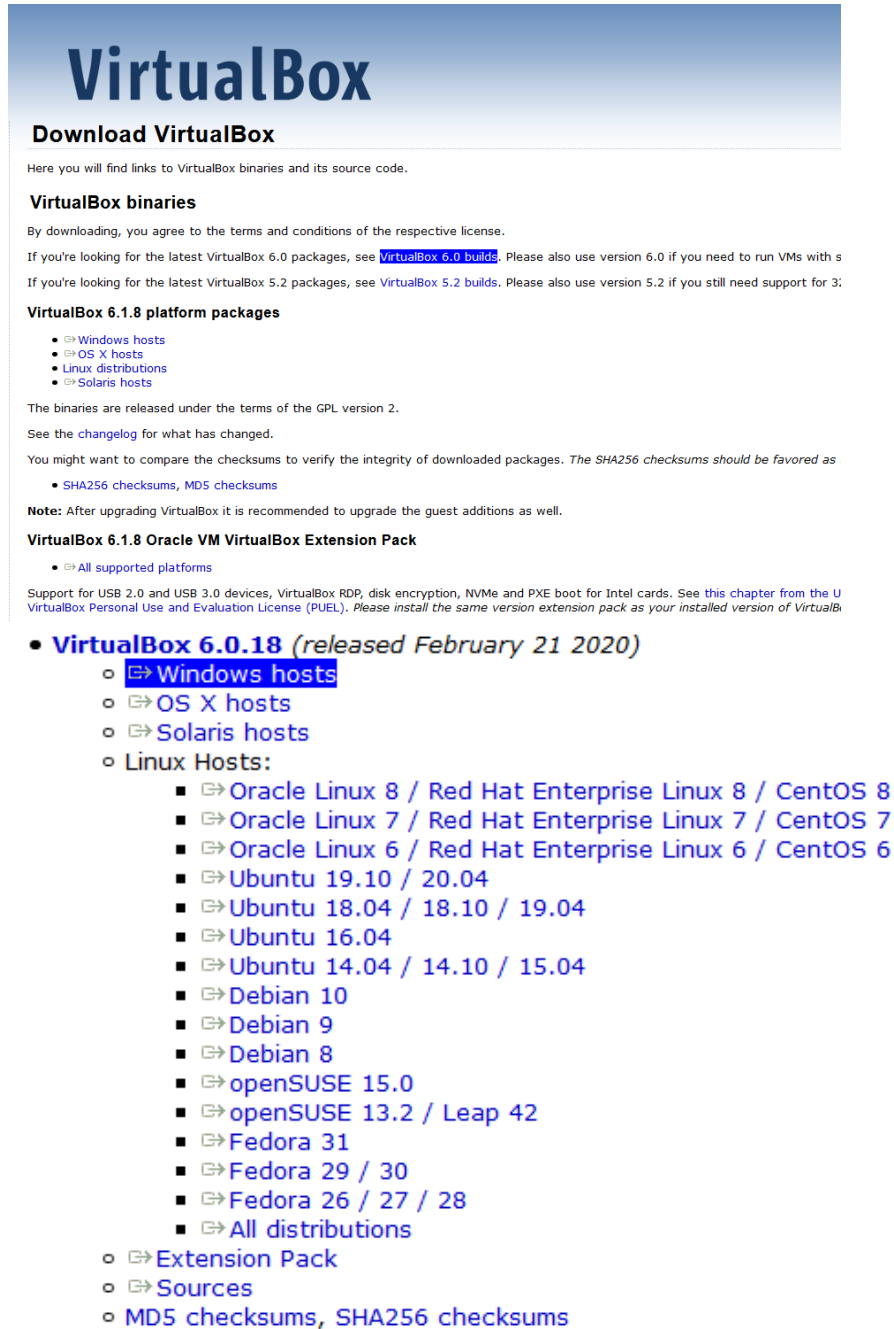
EXERCISE 1

Content

VirtualBox Download and Configuration.....	3
Ubuntu 20.04 Installation on VirtualBox.....	9
Setting Guest Additions for Sharing Folders.....	24
Adding Shared Folder.....	27
Ping between Guest and Host.....	31

VirtualBox Download and Configuration

1. Go to <https://www.virtualbox.org/wiki/Downloads>
 - a. click on “VirtualBox 6.0 builds”.
 - b. For this case I choose 6.0.18 version - Windows hosts.



The screenshot shows the 'VirtualBox' website's download section. It features a blue header with the 'VirtualBox' logo. Below the header, there's a section titled 'Download VirtualBox' with a sub-header 'VirtualBox binaries'. The page contains several paragraphs of text, including a disclaimer about the license and links to download packages for different operating systems (Windows, OS X, Linux, Solaris). A 'Note' section mentions upgrading guest additions. The 'VirtualBox 6.1.8 Oracle VM VirtualBox Extension Pack' section is also visible. The main focus is on the 'VirtualBox 6.0.18 (released February 21 2020)' section, which lists various operating systems and distributions supported by this version, including Oracle Linux, Red Hat Enterprise Linux, CentOS, Ubuntu, Debian, openSUSE, Fedora, and others. The list is organized into a tree structure with expandable/collapsible icons.

VirtualBox

Download VirtualBox

Here you will find links to VirtualBox binaries and its source code.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

If you're looking for the latest VirtualBox 6.0 packages, see [VirtualBox 6.0 builds](#). Please also use version 6.0 if you need to run VMs with s

If you're looking for the latest VirtualBox 5.2 packages, see [VirtualBox 5.2 builds](#). Please also use version 5.2 if you still need support for 3:

VirtualBox 6.1.8 platform packages

- [Windows hosts](#)
- [OS X hosts](#)
- [Linux distributions](#)
- [Solaris hosts](#)

The binaries are released under the terms of the GPL version 2.

See the [changelog](#) for what has changed.

You might want to compare the checksums to verify the integrity of downloaded packages. *The SHA256 checksums should be favored as*

- [SHA256 checksums](#), [MD5 checksums](#)

Note: After upgrading VirtualBox it is recommended to upgrade the guest additions as well.

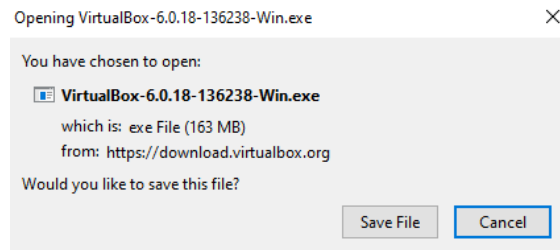
VirtualBox 6.1.8 Oracle VM VirtualBox Extension Pack

- [All supported platforms](#)

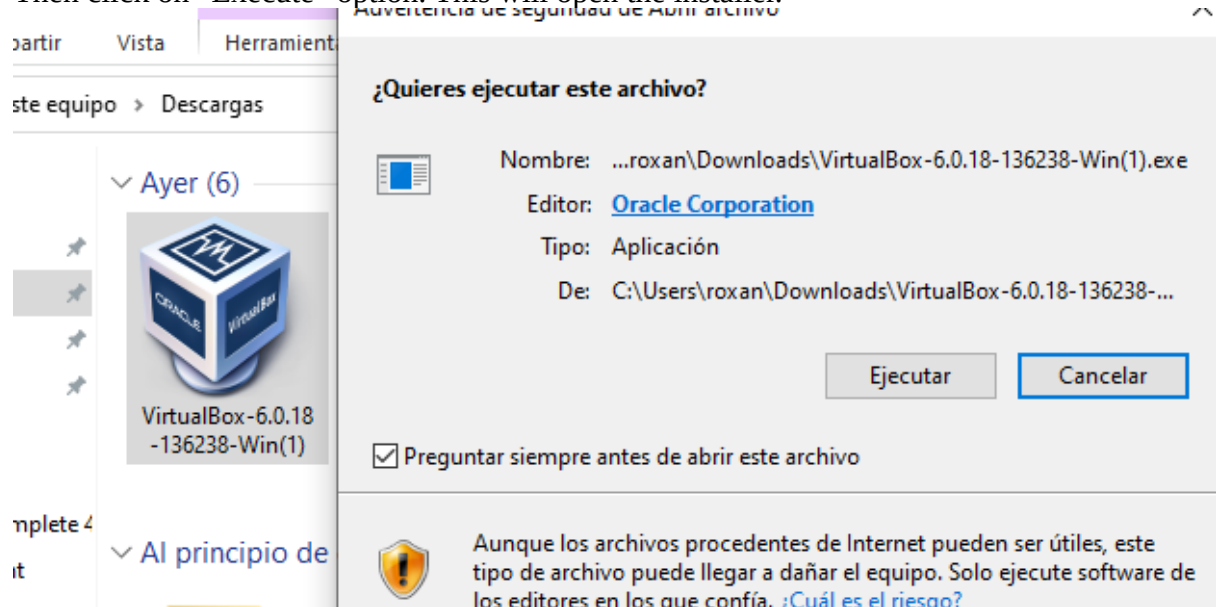
Support for USB 2.0 and USB 3.0 devices, VirtualBox RDP, disk encryption, NVMe and PXE boot for Intel cards. See [this chapter from the U VirtualBox Personal Use and Evaluation License \(PUEL\)](#). Please install the same version extension pack as your installed version of VirtualB.

- **VirtualBox 6.0.18 (released February 21 2020)**
 - [Windows hosts](#)
 - [OS X hosts](#)
 - [Solaris hosts](#)
 - **Linux Hosts:**
 - [Oracle Linux 8 / Red Hat Enterprise Linux 8 / CentOS 8](#)
 - [Oracle Linux 7 / Red Hat Enterprise Linux 7 / CentOS 7](#)
 - [Oracle Linux 6 / Red Hat Enterprise Linux 6 / CentOS 6](#)
 - [Ubuntu 19.10 / 20.04](#)
 - [Ubuntu 18.04 / 18.10 / 19.04](#)
 - [Ubuntu 16.04](#)
 - [Ubuntu 14.04 / 14.10 / 15.04](#)
 - [Debian 10](#)
 - [Debian 9](#)
 - [Debian 8](#)
 - [openSUSE 15.0](#)
 - [openSUSE 13.2 / Leap 42](#)
 - [Fedora 31](#)
 - [Fedora 29 / 30](#)
 - [Fedora 26 / 27 / 28](#)
 - [All distributions](#)
 - [Extension Pack](#)
 - [Sources](#)
 - [MD5 checksums](#), [SHA256 checksums](#)

- c. Once “Windows hosts” clicked a download window will appear, then Save File.



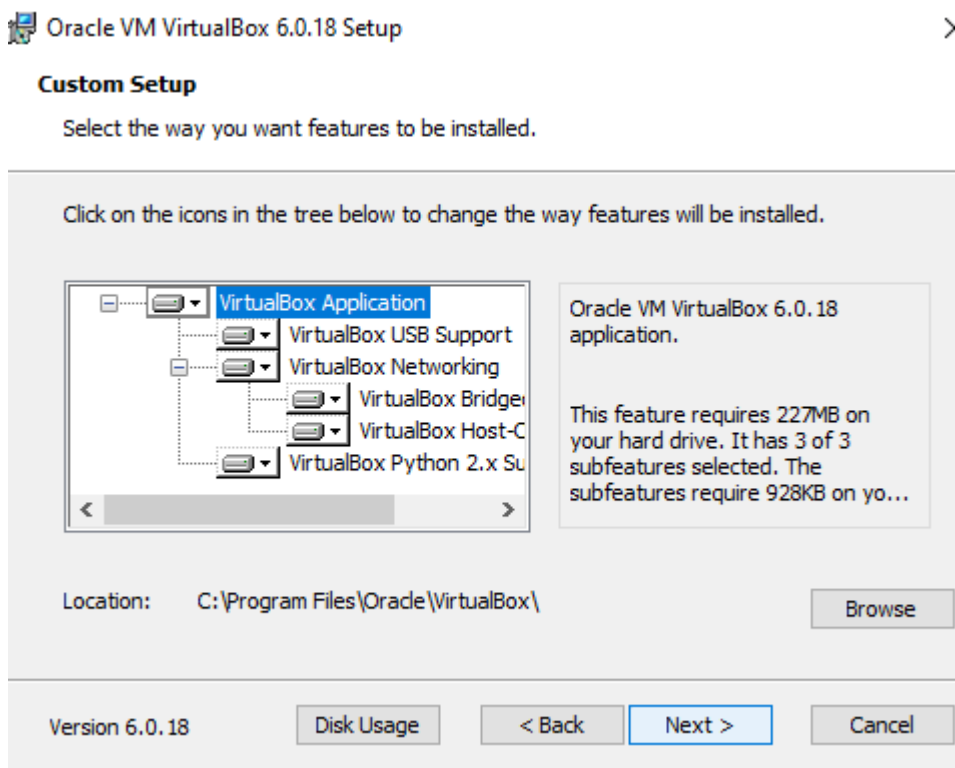
2. Go to Downloads folder (or where VirtualBox was downloaded) and open downloaded file. Then click on “Execute” option. This will open the installer.



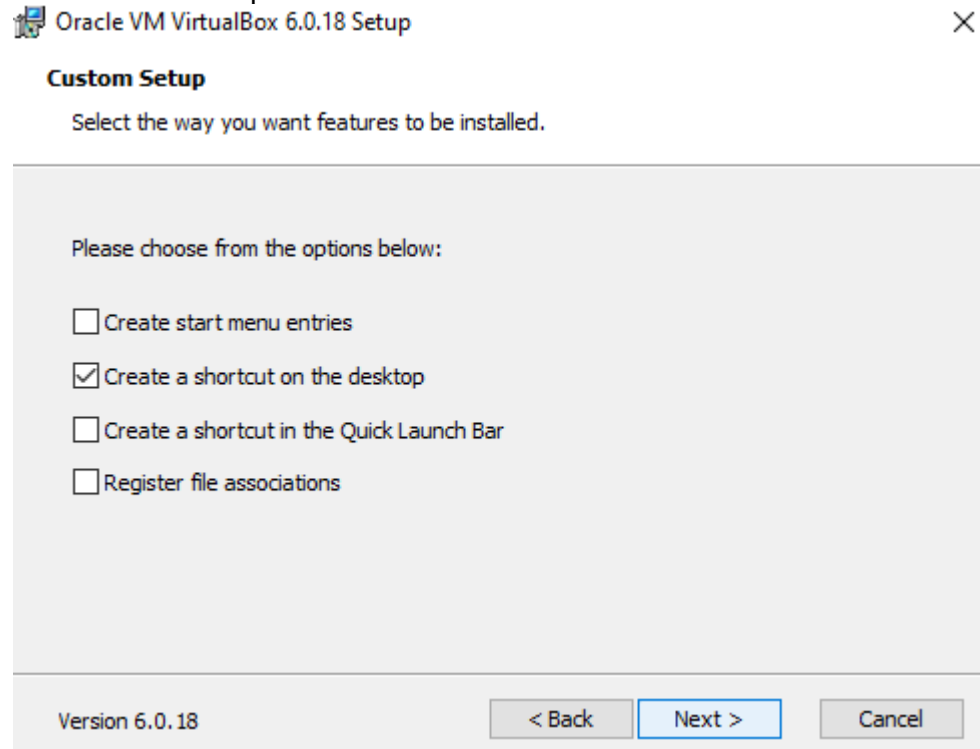
3. Click on “Next”.



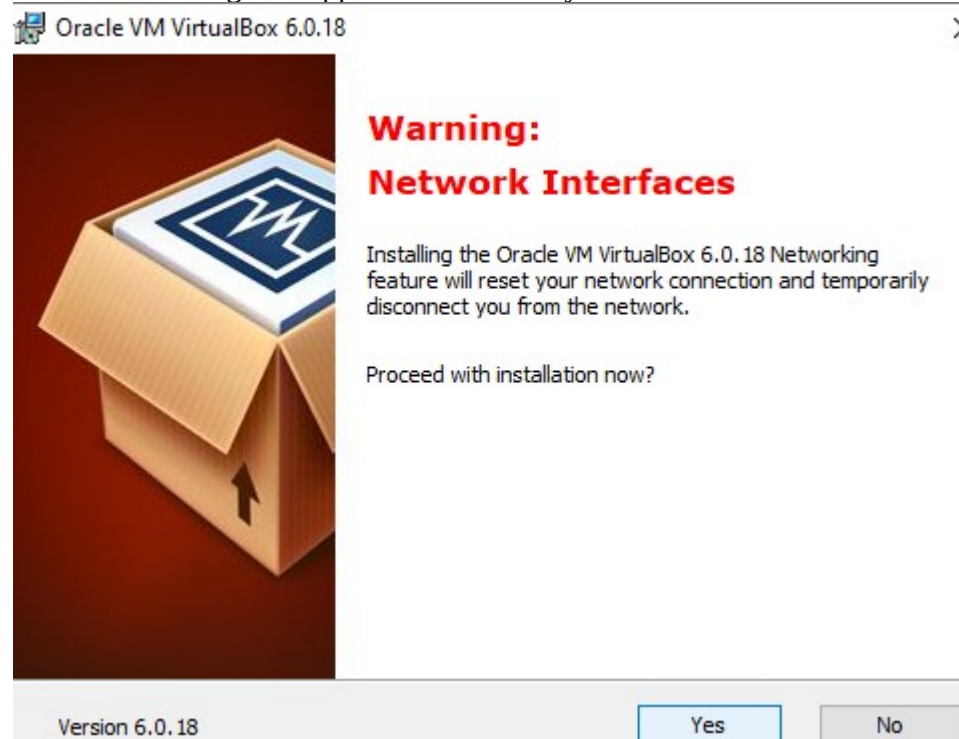
4. Custom installation. I choose default. Then click “Next”.



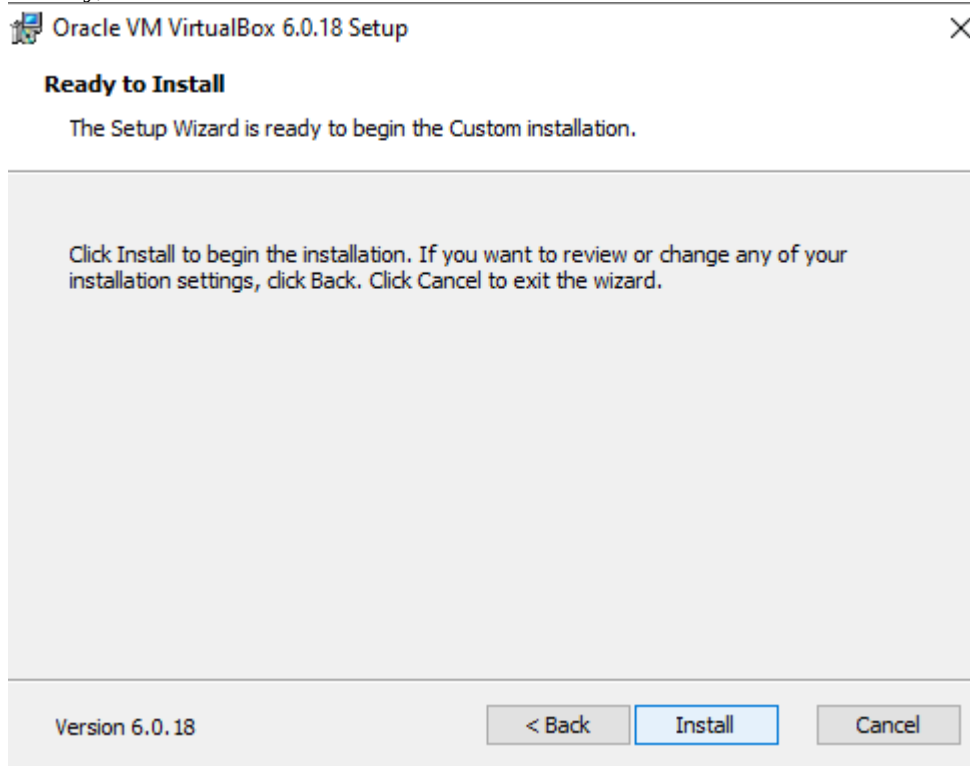
5. Select installation preferences and click “Next”.



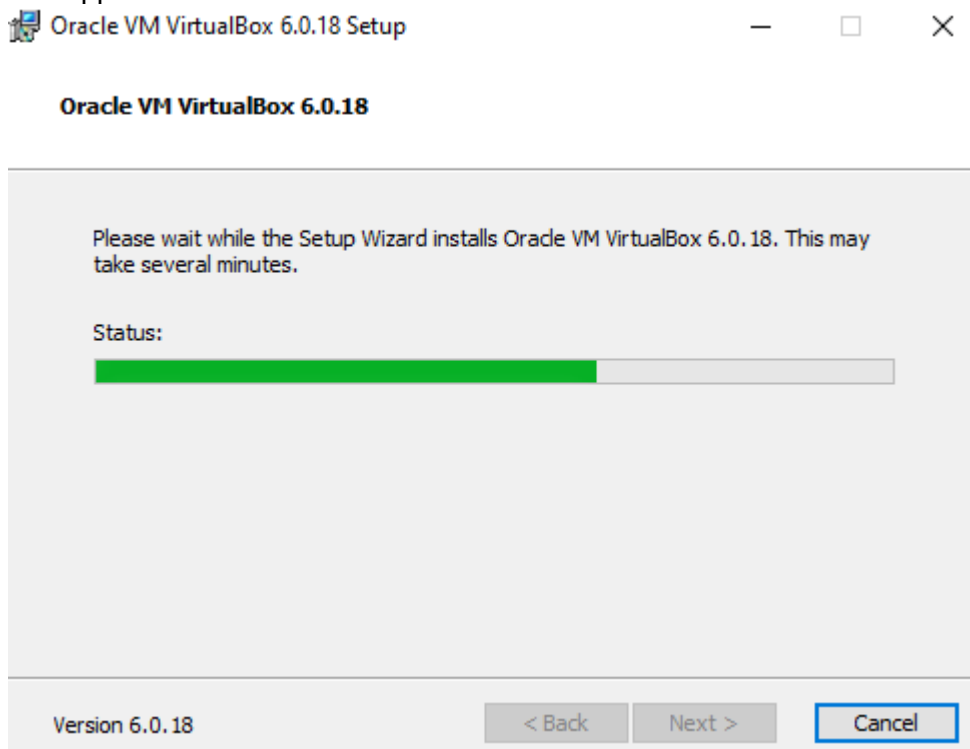
6. Network Warning will appear. It's necessary click “Yes” to continue.



7. Finally, click on “Install”.



8. Installation process will begin, and then a window informing installation has been completed will appear. Click “Finish”.





Oracle VM VirtualBox 6.0.18 installation is complete.

Click the Finish button to exit the Setup Wizard.

☒ Start Oracle VM VirtualBox 6.0.18 after installation

Version 6.0.18

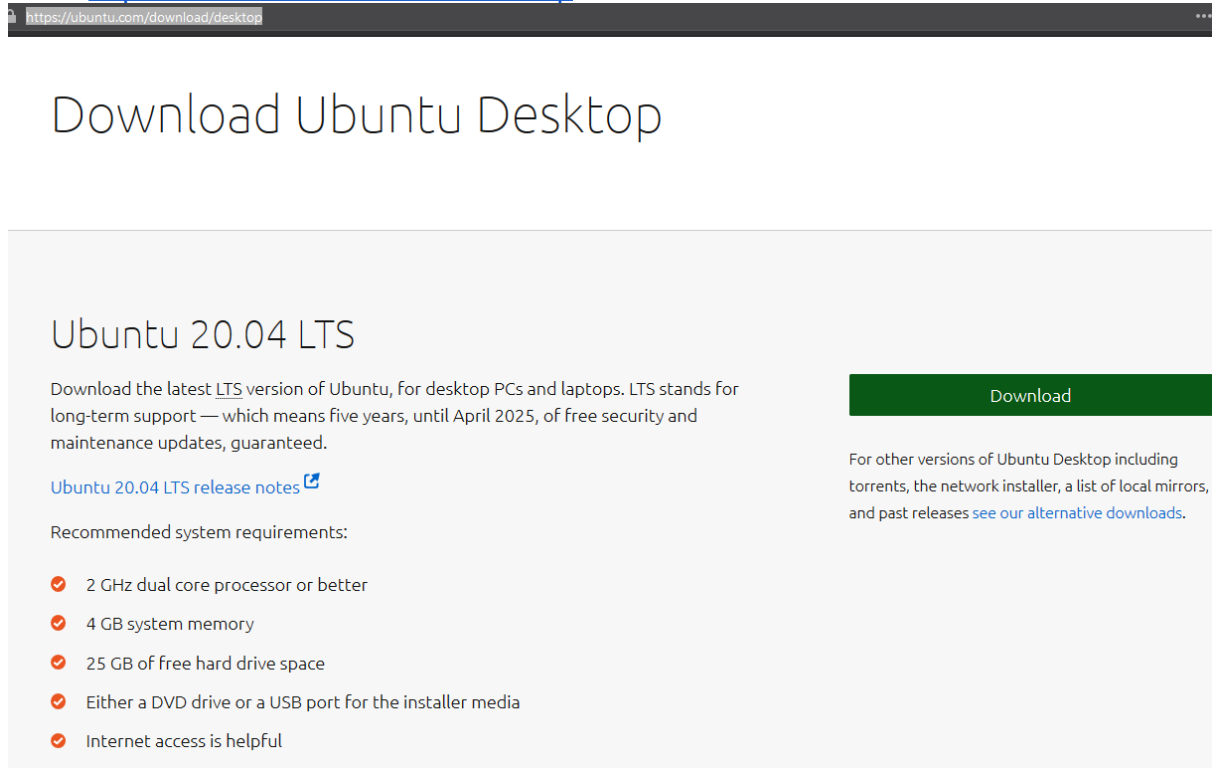
< Back

Finish

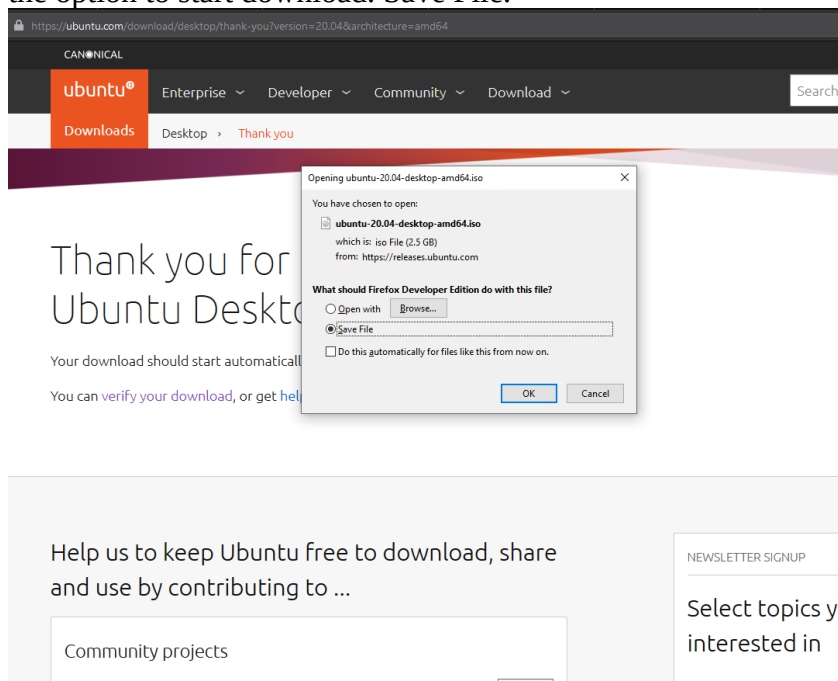
Cancel

Ubuntu 20.04 Installation on VirtualBox

1. Go to <https://ubuntu.com/download/desktop> and click on “Download”.



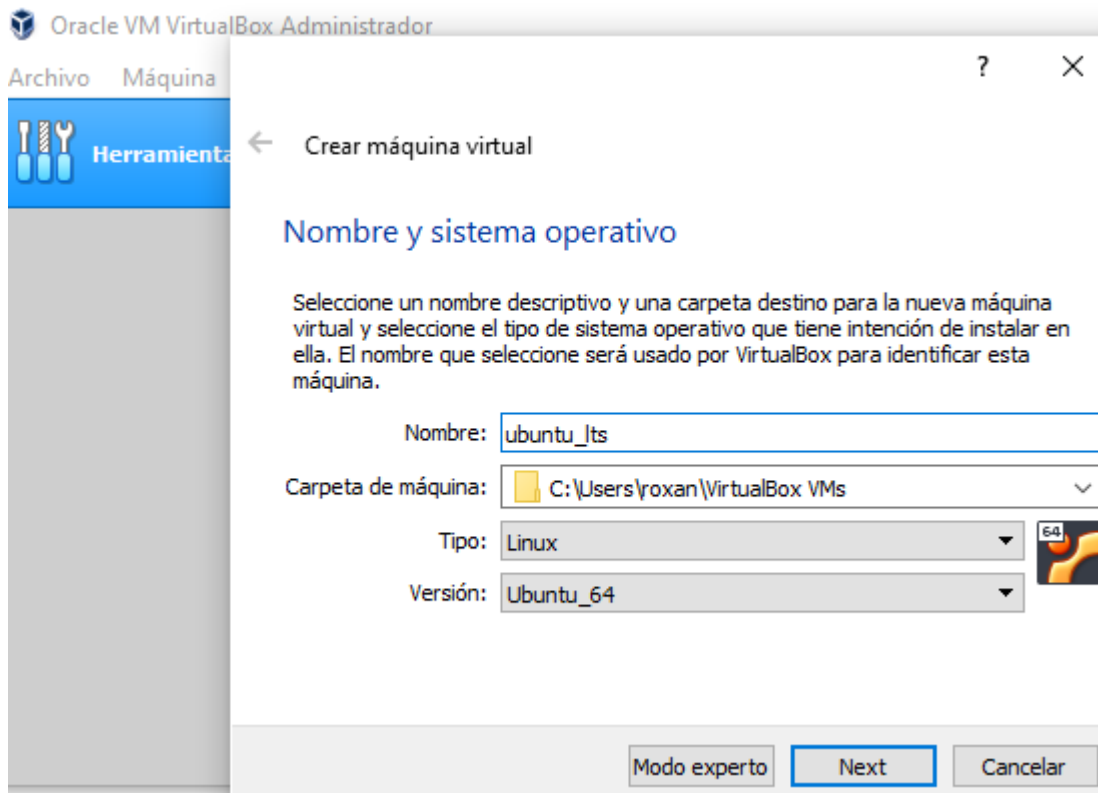
2. This will lead to a file to be downloaded. It has to start download automatically, if not click on the option to start download. Save File.



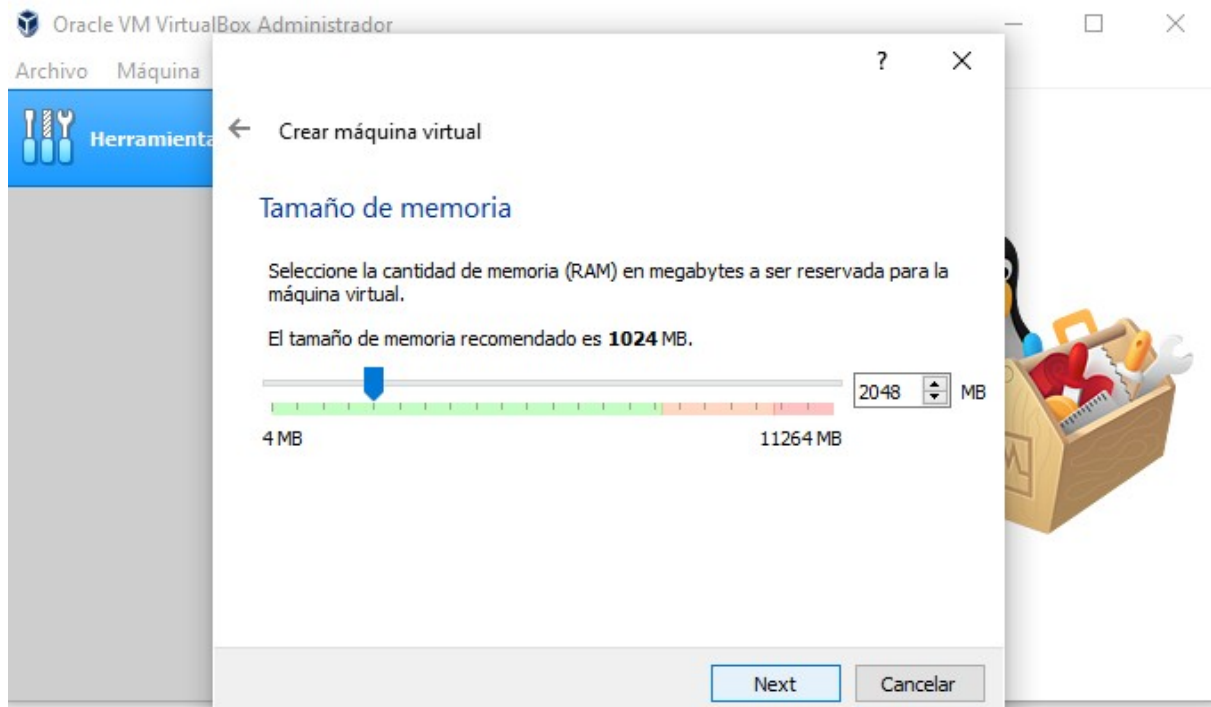
3. Open Virtual Box. Click on “Machine”, and select “New”. Or directly press Ctrl+N.



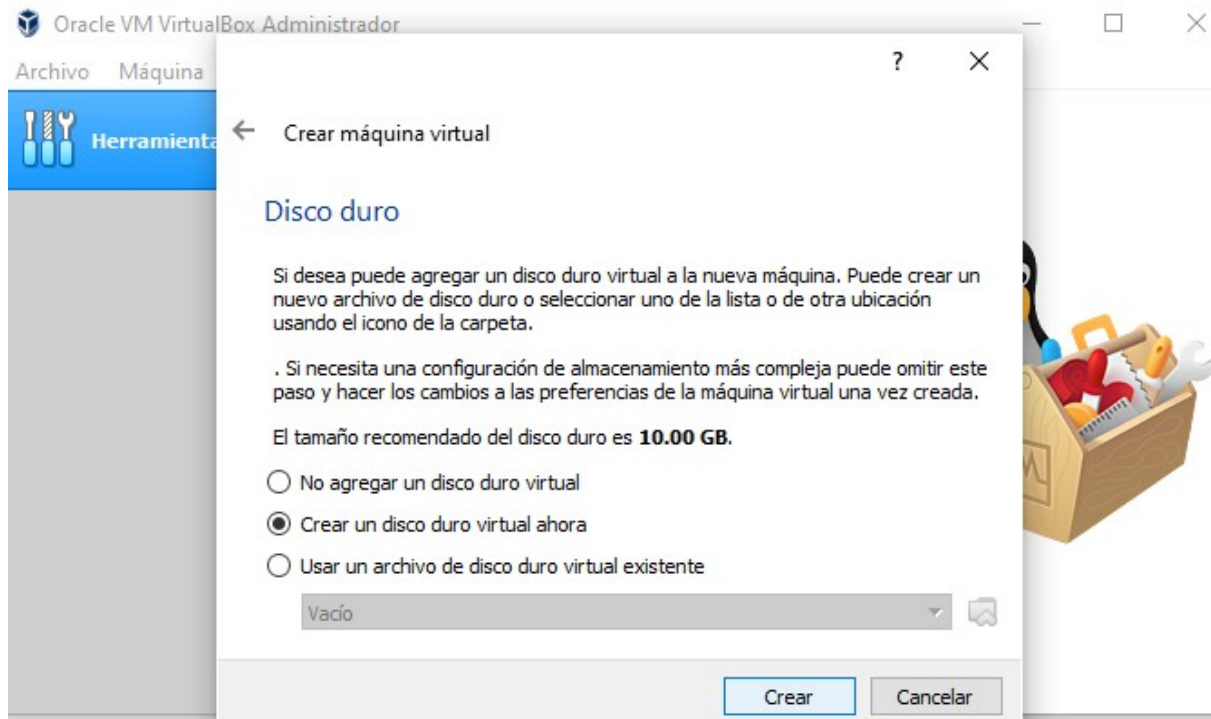
4. Type virtual machine’s name, choose location, OS Type and version. Once I typed “ubuntu_lts”, VirtualBox automatically gave me type and version. Click “Next”.



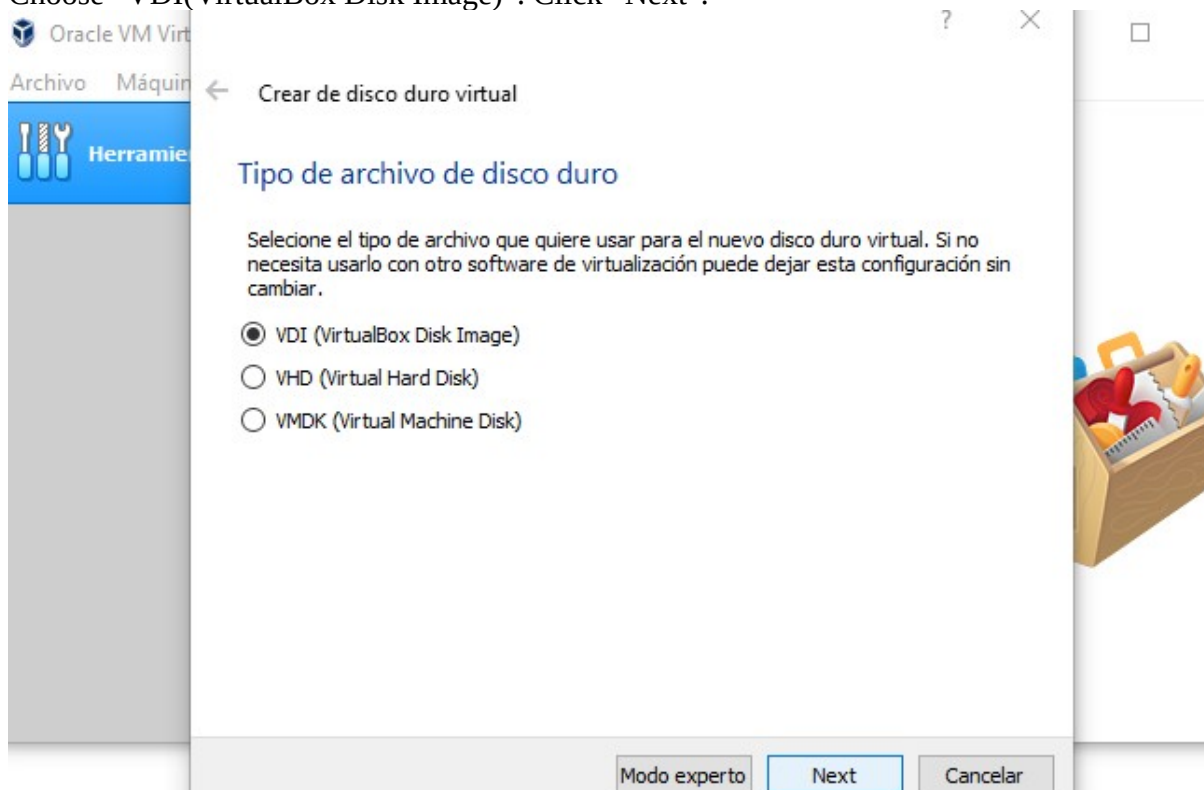
5. Set memory size (for Ubuntu Desktop 20.04 it should be at least 2048 MB). Click “Next”.



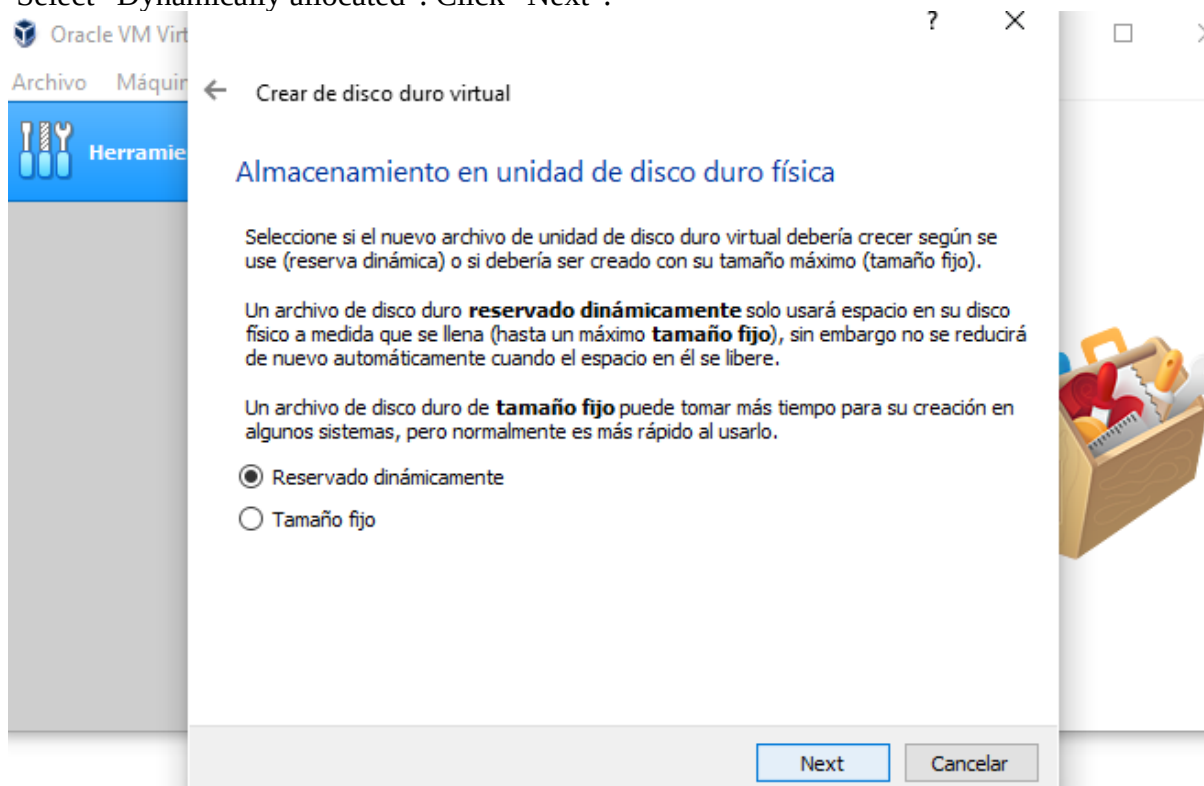
6. Choose “Create a virtual hard disk now”. Click on “Create”.



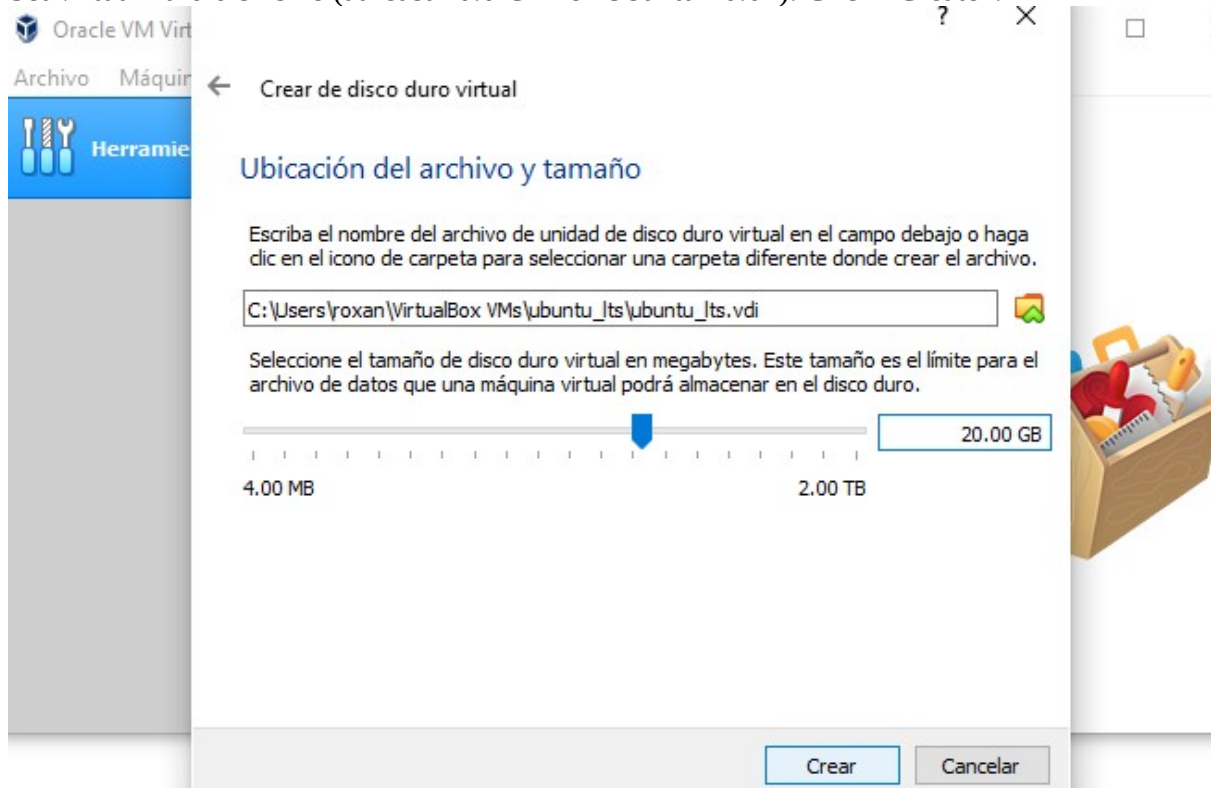
7. Choose “VDI(VirtualBox Disk Image)”. Click “Next”.



8. Select “Dynamically allocated”. Click “Next”.



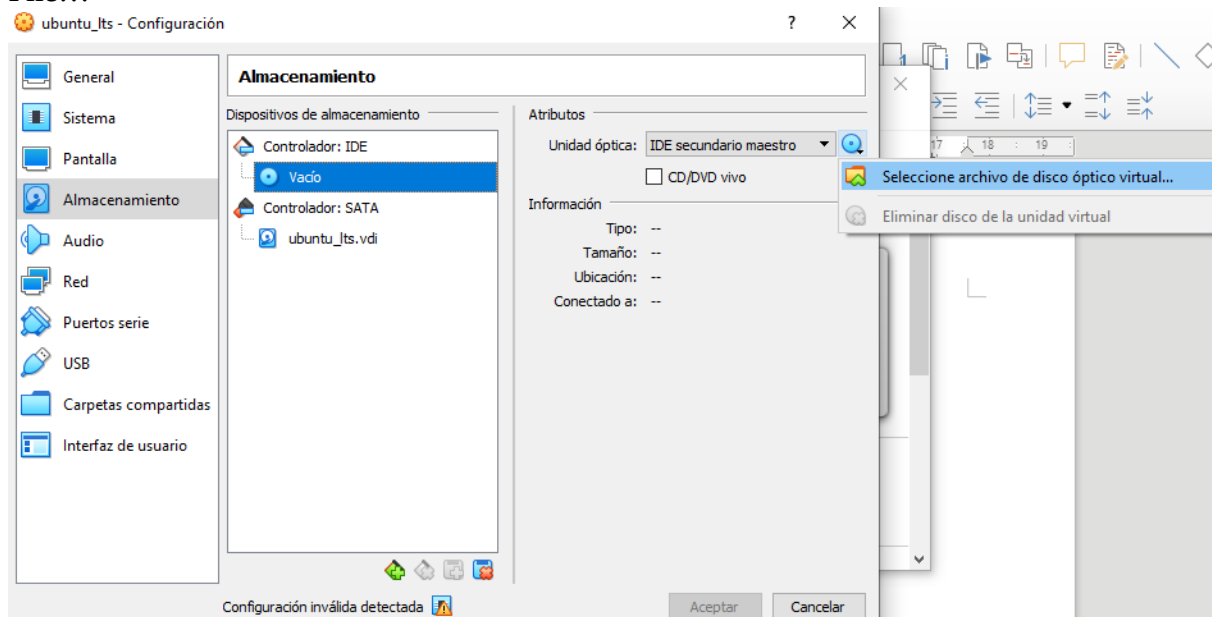
9. Set virtual hard disk size (at least 20.0 GB for Ubuntu 20.04). Click “Create”.



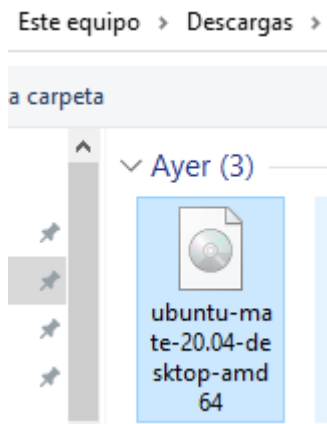
10. This will return us to “main” VirtualBox. Select the virtual machine and click on “Settings.”

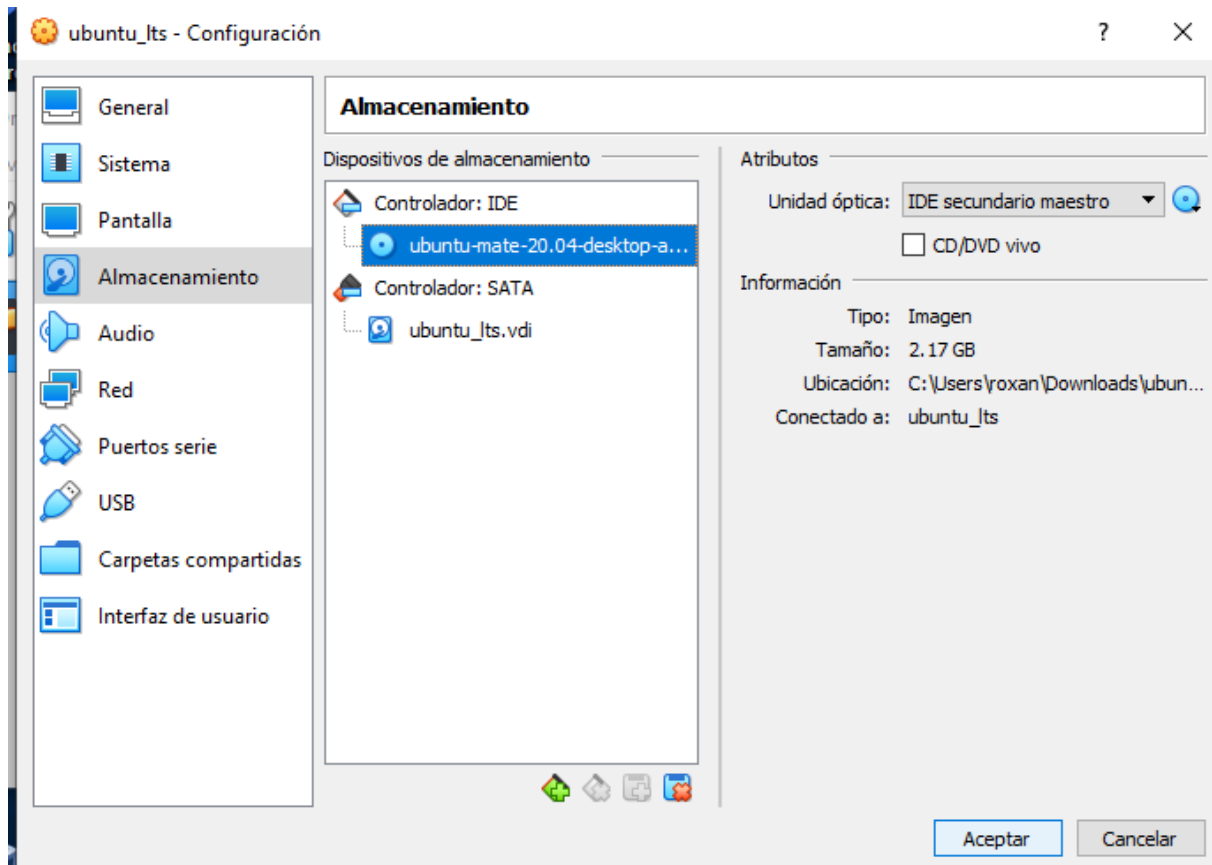


11. Now click on “Storage”. Choose “Empty” controller and look for “Choose Virtual Optical Disk File...”



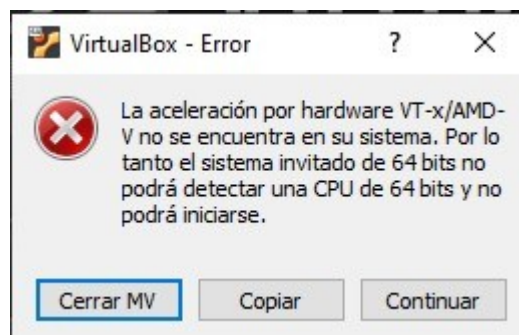
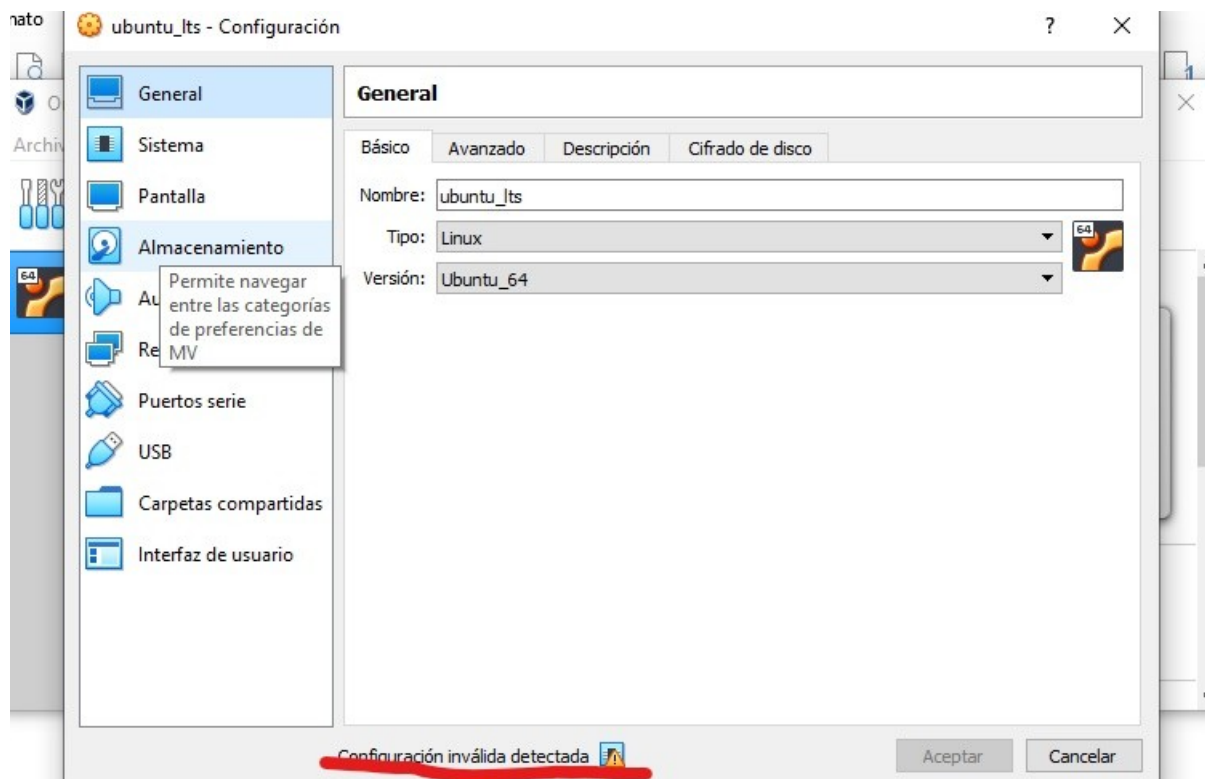
12. Open the Ubuntu Desktop ISO. And click on “Accept”.



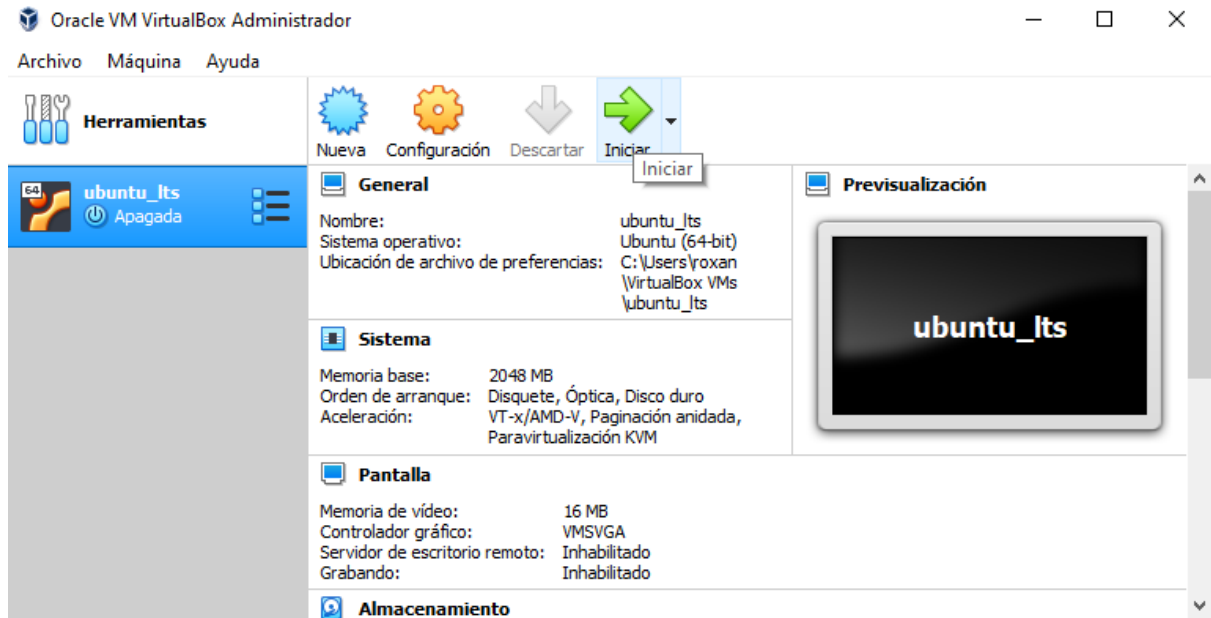


NOTE: It might happen that one of these error appears. If so it means Virtualization is not available and BIOS change has to be done. Following this link instructions, problem will be solved.

https://support.bluestacks.com/hc/en-us/articles/115003174386-How-can-I-enable-virtualization-VT-on-my-PC-?flash_digest=3bc1a112ea56fcd696dc2abf845388e6ba0dcb2b#%E2%80%9C%E2%80%9D



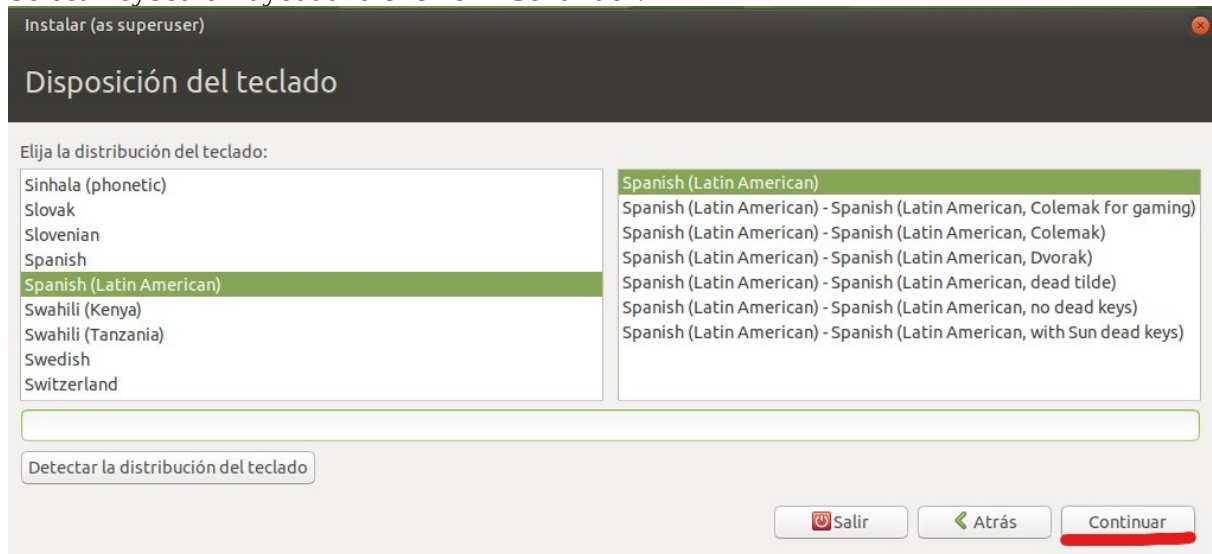
13. Now select virtual machine and click on “Start”.



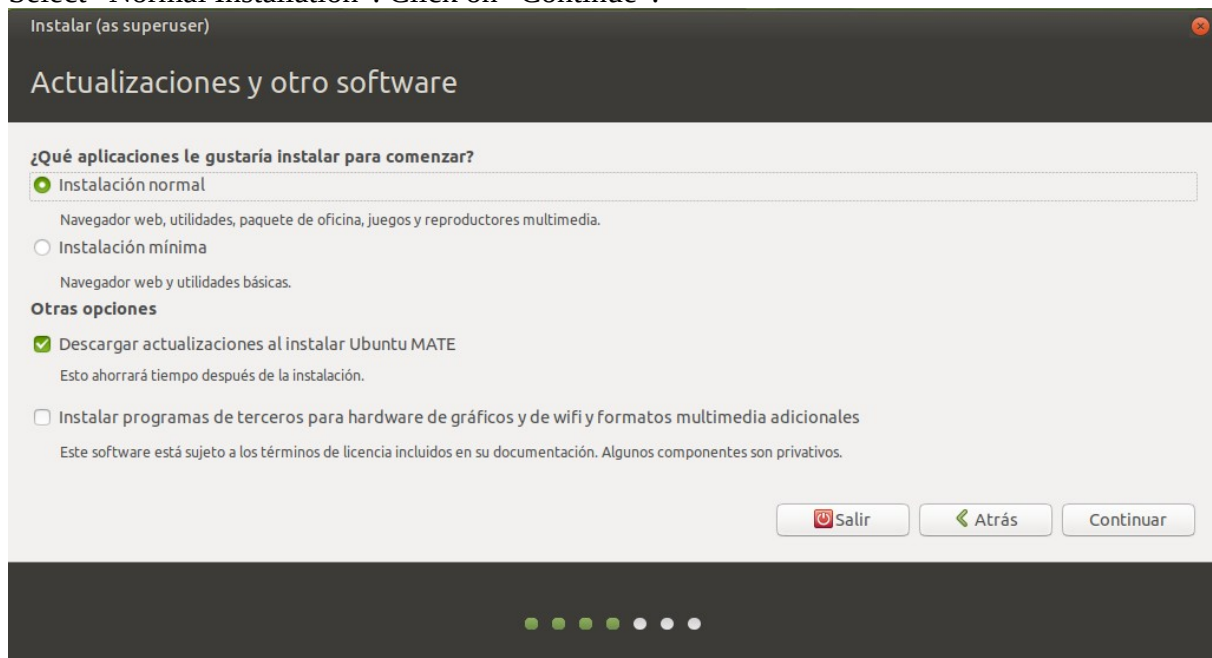
14. Ubuntu Installer should start. Choose main language and click on “Install Ubuntu”.



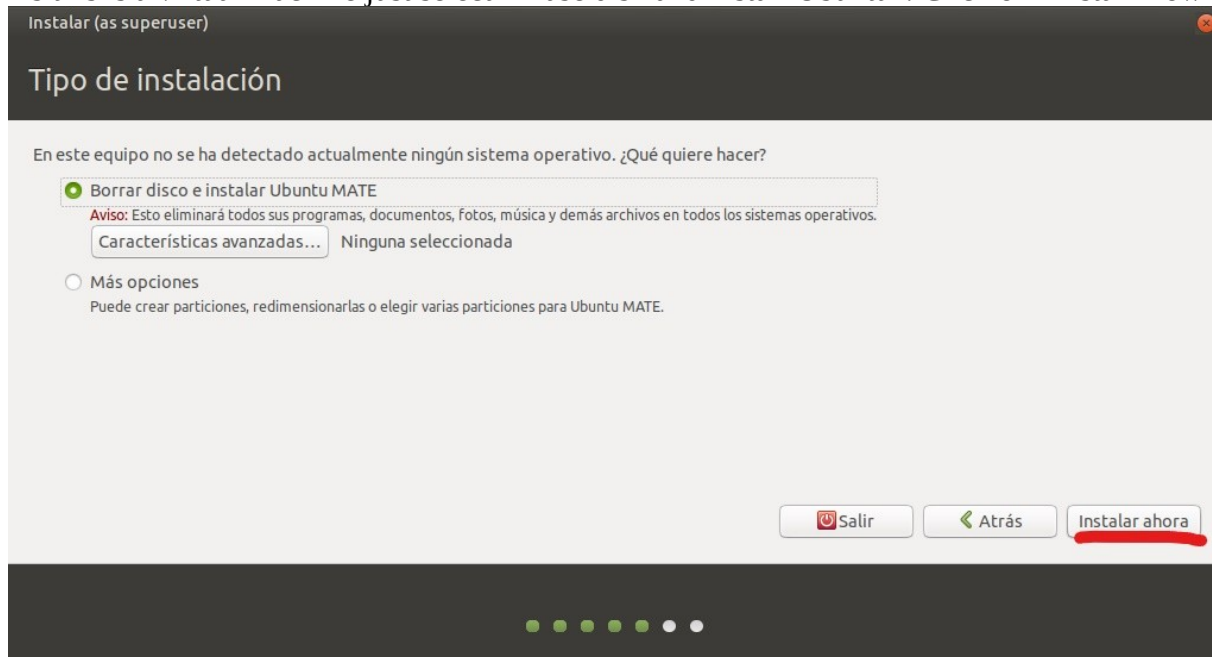
15. Select Keyboard Layout and click on “Continue”.



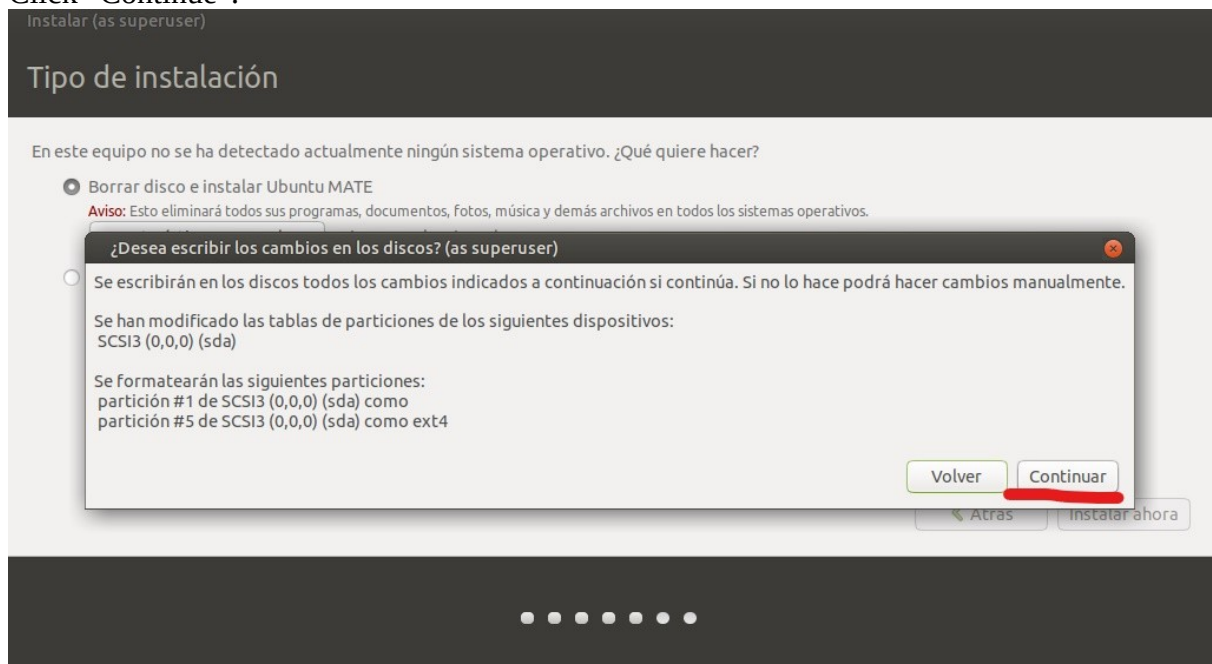
16. Select “Normal Installation”. Click on “Continue”.



17. As this is a virtual machine just select “Erase disk and install Ubuntu”. Click on “Install Now”.




18. Click “Continue”.



19. Select Time Zone and click “Continue”.

Instalar (as superuser)

¿Dónde se encuentra?



Guadalajara

[← Atrás](#) [Continuar](#)

Progress indicator: 7 dots, 6th dot is active.

20. Type required information and click “Continue”.

Instalar (as superuser)

¿Quién es usted?

Su nombre: ✓

El nombre de su equipo: ✓
El nombre que utiliza al comunicarse con otros equipos.

Elija un nombre de usuario: ✓

Elija una contraseña: **Contraseña débil**

Confirme su contraseña: ✓

☐ Iniciar sesión automáticamente

☒ Solicitar mi contraseña para iniciar sesión

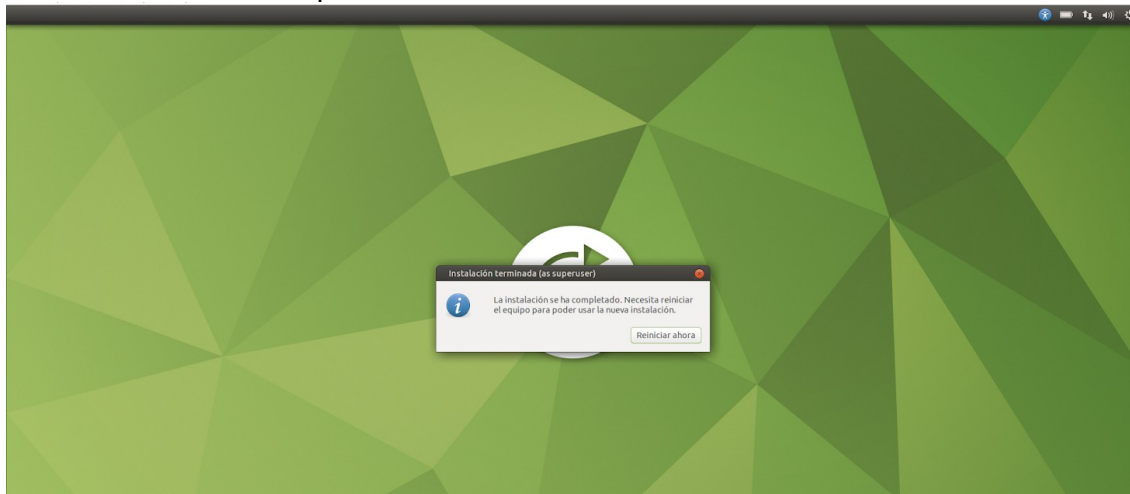
[← Atrás](#) [Continuar](#)

Progress indicator: 7 dots, 6th dot is active.

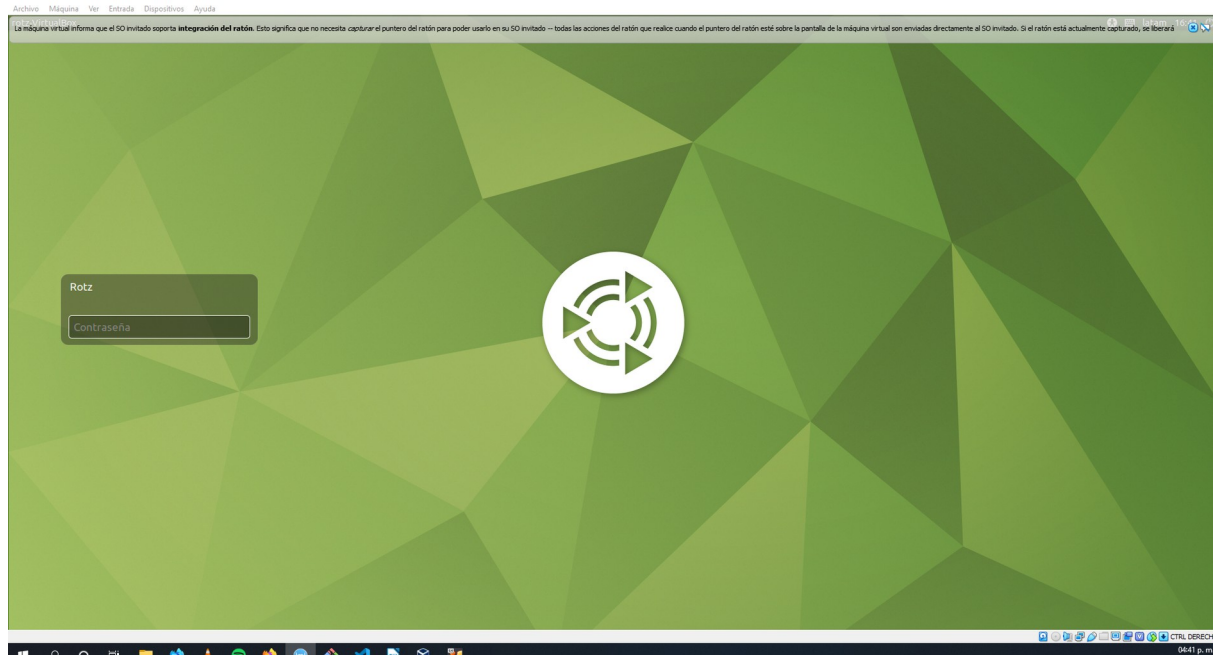
21. Necessary files will be copied and installed.



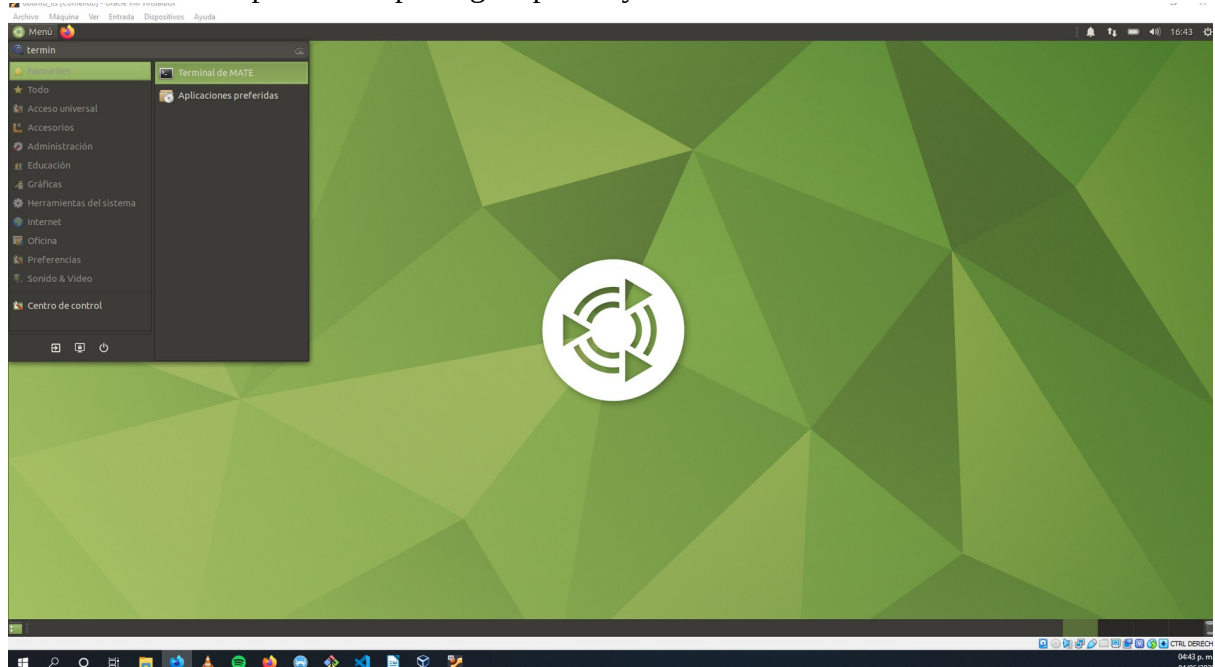
22. Once installation is completed. Restart the Virtual Machine



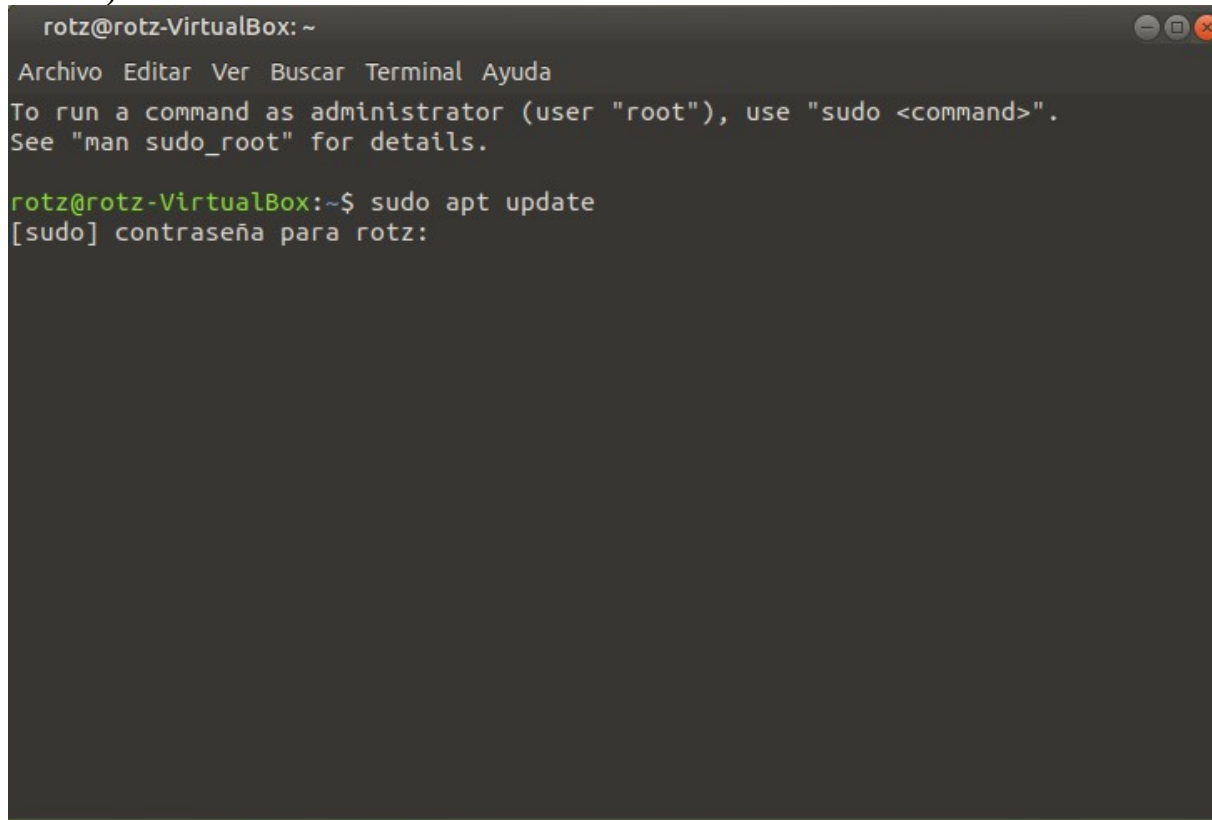
23. Ubuntu log in will appear. Enter password.



24. Go to terminal to update APT package repository.

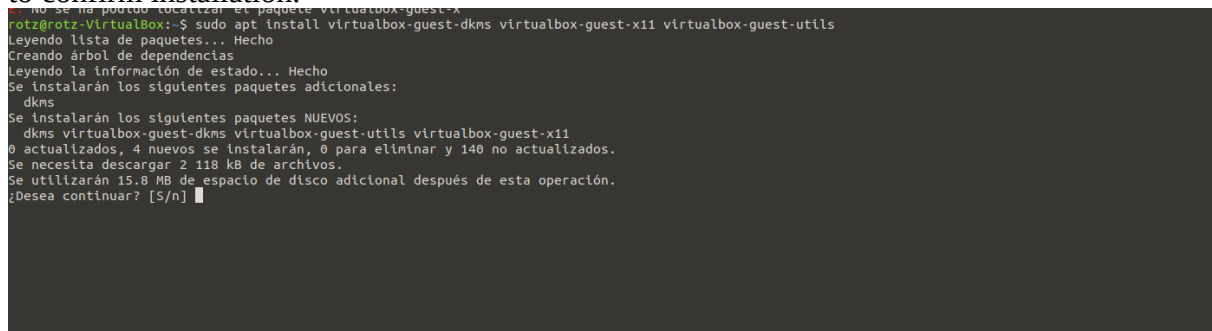


25. Type “sudo apt update”. This action will require password, type it (characters won’t be showed).

A terminal window titled 'rotz@rotz-VirtualBox: ~' with a menu bar containing 'Archivo', 'Editar', 'Ver', 'Buscar', 'Terminal', and 'Ayuda'. The window displays the command 'sudo apt update' and the prompt '[sudo] contraseña para rotz:'.

```
rotz@rotz-VirtualBox: ~  
Archivo  Editar  Ver  Buscar  Terminal  Ayuda  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
rotz@rotz-VirtualBox:~$ sudo apt update  
[sudo] contraseña para rotz:
```

26. Install Guest Additions with following command “sudo apt install virtualbox-guest-dkms virtualbox-guest-x11 virtualbox-guest-utils”. Then type “Y” or “S” (depends on the language) to confirm installation.

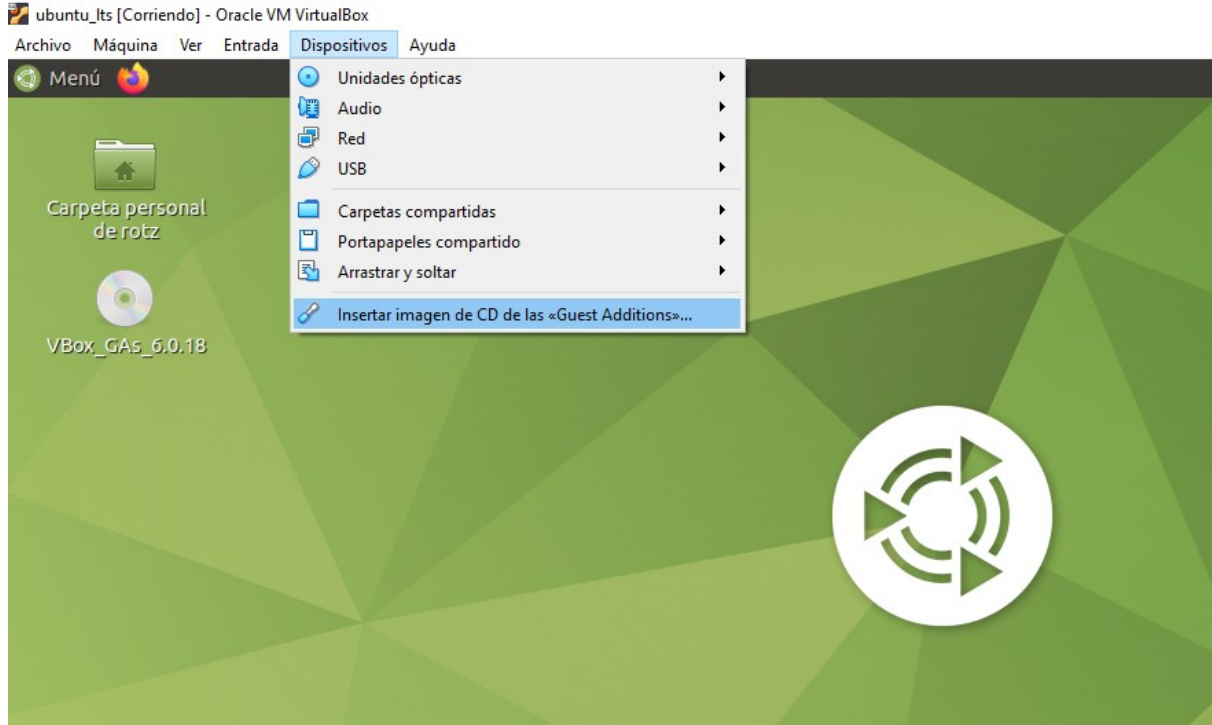
A terminal window showing the output of the command 'sudo apt install virtualbox-guest-dkms virtualbox-guest-x11 virtualbox-guest-utils'. The output includes package lists, dependency resolution, and a confirmation prompt '¿Desea continuar? [S/n]'.

```
rotz@rotz-VirtualBox:~$ sudo apt install virtualbox-guest-dkms virtualbox-guest-x11 virtualbox-guest-utils  
Leyendo lista de paquetes... Hecho  
Creando árbol de dependencias  
Leyendo la información de estado... Hecho  
Se instalarán los siguientes paquetes adicionales:  
  dkms  
Se instalarán los siguientes paquetes NUEVOS:  
  dkms virtualbox-guest-dkms virtualbox-guest-utils virtualbox-guest-x11  
0 actualizados, 4 nuevos se instalarán, 0 para eliminar y 140 no actualizados.  
Se necesita descargar 2.118 kB de archivos.  
Se utilizarán 15.8 MB de espacio de disco adicional después de esta operación.  
¿Desea continuar? [S/n]
```

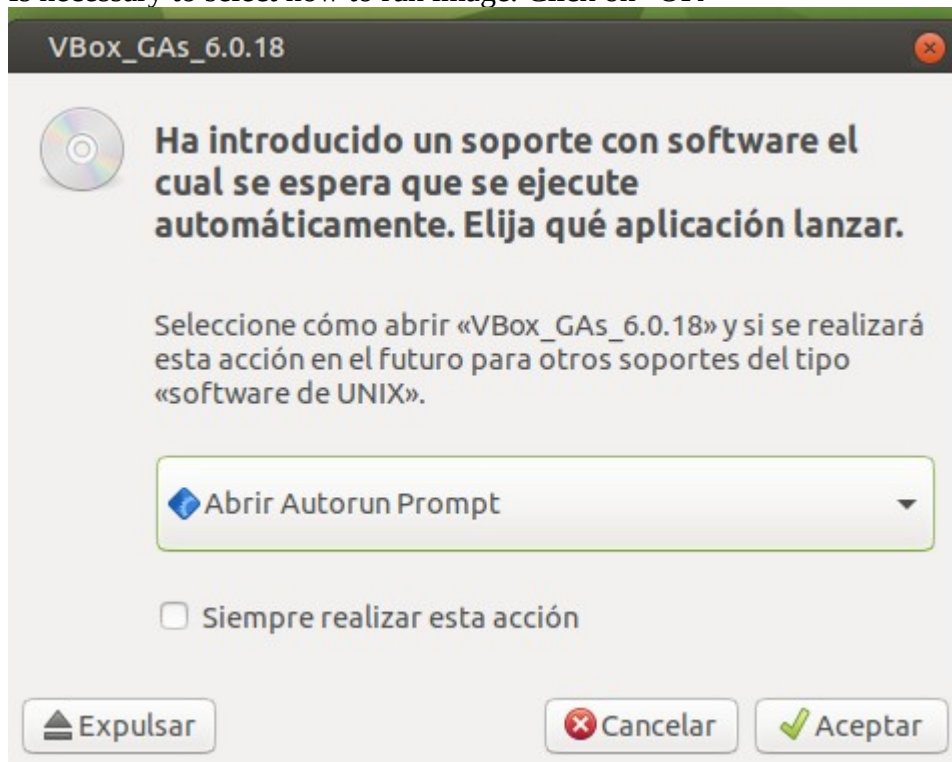
27. This installation allows to resize the Virtual Machine freely and display size would automatically adjust itself and also Guest Additions are designed to be installed *inside* a virtual machine after the guest operating system has been installed. They consist of device drivers and system applications that optimize the guest operating system for better performance and usability.

Setting Guest Additions for Sharing Folders

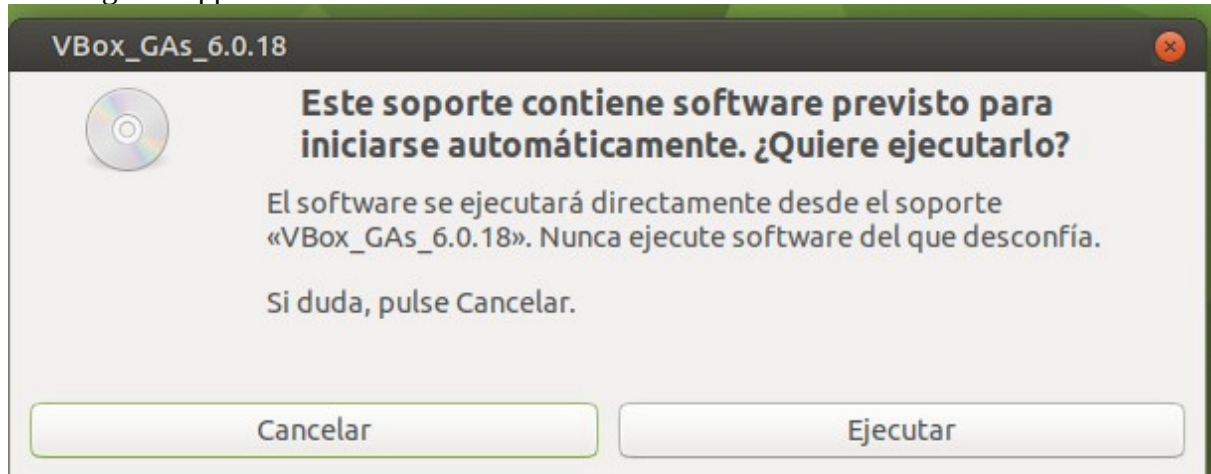
1. Go to Devices on virtual machine and click on “Guest Additions CD Image”.



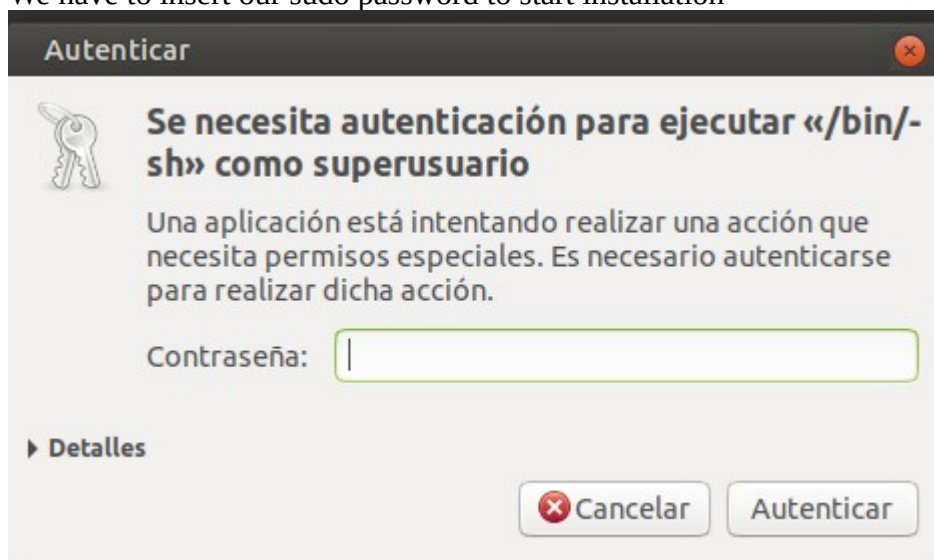
2. Is necessary to select how to run image. Click on “OK”



- Warning will appear. Click on “Execute”.



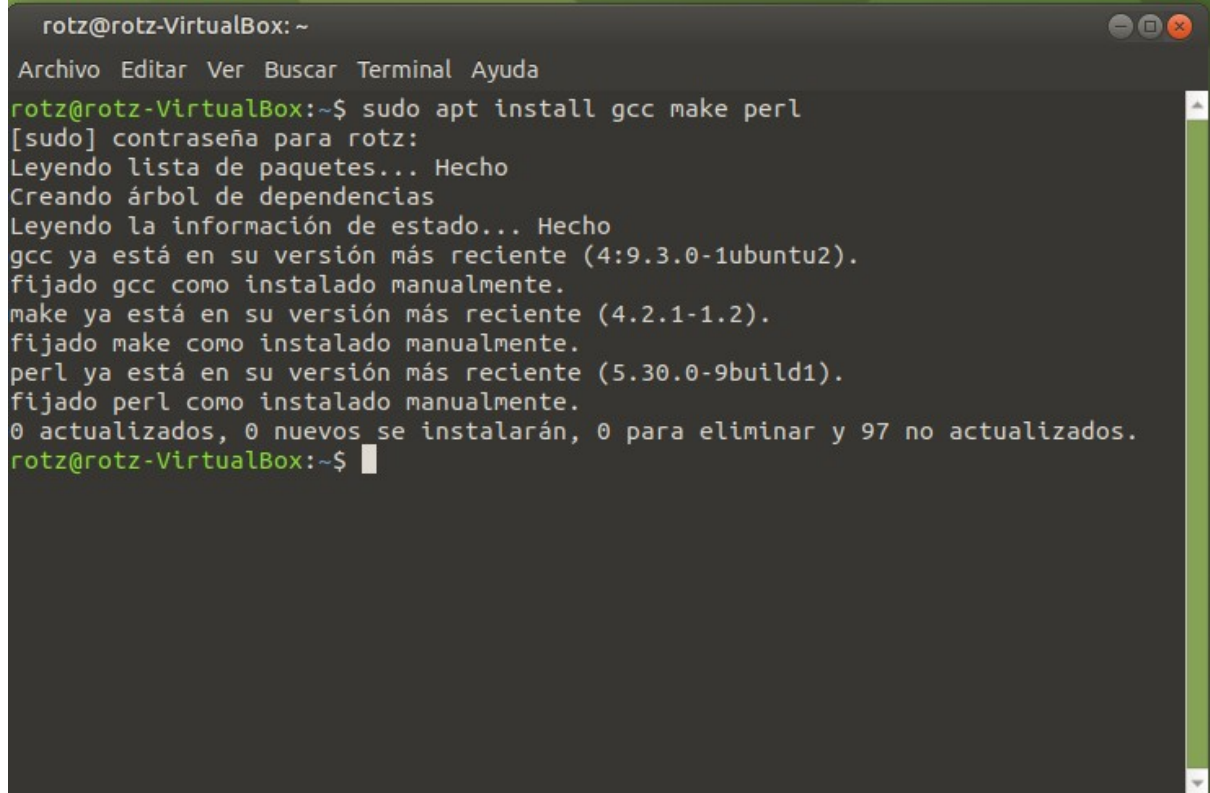
- We have to insert our sudo password to start installation



- As we made a previous Guest Additions Installation, it will appear a message type “S” or “Y”, depending on system language.

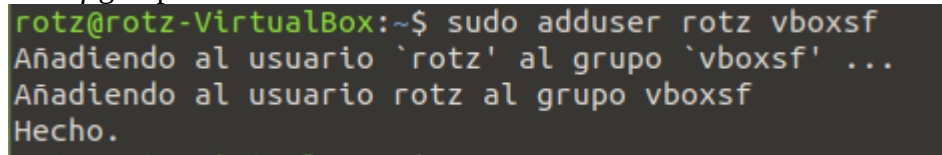
```
Copying additional installer modules ...
Installing additional modules ...
VirtualBox Guest Additions: Starting.
VirtualBox Guest Additions: Building the VirtualBox Guest Additions kernel
modules. This may take a while.
VirtualBox Guest Additions: To build modules for other installed kernels, run
VirtualBox Guest Additions: /sbin/rcvboxadd quicksetup <version>
VirtualBox Guest Additions: or
VirtualBox Guest Additions: /sbin/rcvboxadd quicksetup all
VirtualBox Guest Additions: Building the modules for kernel 5.4.0-33-generic.
update-initramfs: Generating /boot/initrd.img-5.4.0-33-generic
VirtualBox Guest Additions: Running kernel modules will not be replaced until
the system is restarted
Press Return to close this window...
```

6. Close terminal and reboot Ubuntu. Is necessary to ensure Guest Addition has all the necessary base packages (gcc, make and perl). Install them by terminal “sudo apt install gcc make perl”. Enter password.

A terminal window titled 'rotz@rotz-VirtualBox: ~' with a menu bar containing 'Archivo', 'Editar', 'Ver', 'Buscar', 'Terminal', and 'Ayuda'. The terminal shows the command 'sudo apt install gcc make perl' being executed. The output indicates that gcc, make, and perl are already installed at their latest versions and are being fixed as manually installed. The summary shows 0 packages to be updated, 0 new packages to be installed, 0 to be removed, and 97 not to be updated. The prompt returns to 'rotz@rotz-VirtualBox:~\$'.

```
rotz@rotz-VirtualBox: ~
Archivo Editar Ver Buscar Terminal Ayuda
rotz@rotz-VirtualBox:~$ sudo apt install gcc make perl
[sudo] contraseña para rotz:
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias
Leyendo la información de estado... Hecho
gcc ya está en su versión más reciente (4:9.3.0-1ubuntu2).
fijado gcc como instalado manualmente.
make ya está en su versión más reciente (4.2.1-1.2).
fijado make como instalado manualmente.
perl ya está en su versión más reciente (5.30.0-9build1).
fijado perl como instalado manualmente.
0 actualizados, 0 nuevos se instalarán, 0 para eliminar y 97 no actualizados.
rotz@rotz-VirtualBox:~$
```

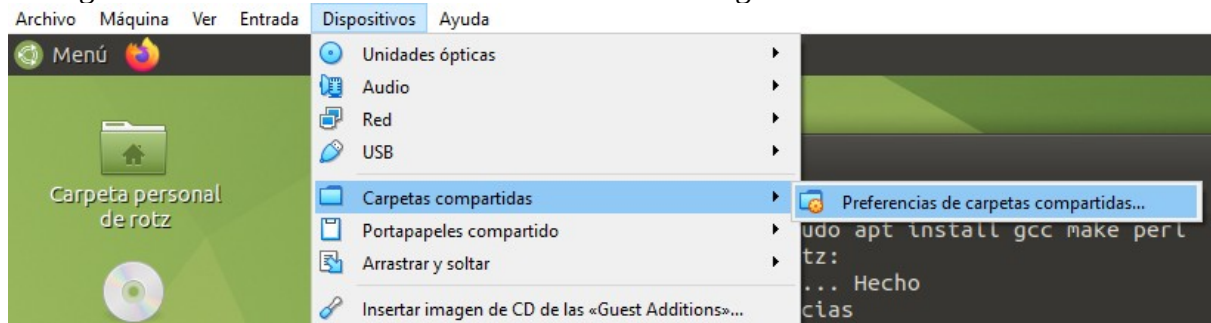
7. Files shared by VirtualBox can only be access by members of *vboxsf* group created by the earlier by the *autorun.sh* script. To make them accessible account needs to be a member of the *vboxsf* group. Run “sudo add user <username> vboxsf”.

A terminal window showing the command 'sudo adduser rotz vboxsf' being executed. The output shows the user 'rotz' being added to the 'vboxsf' group, with confirmation messages in Spanish: 'Añadiendo al usuario `rotz` al grupo `vboxsf` ...', 'Añadiendo al usuario rotz al grupo vboxsf', and 'Hecho.'.

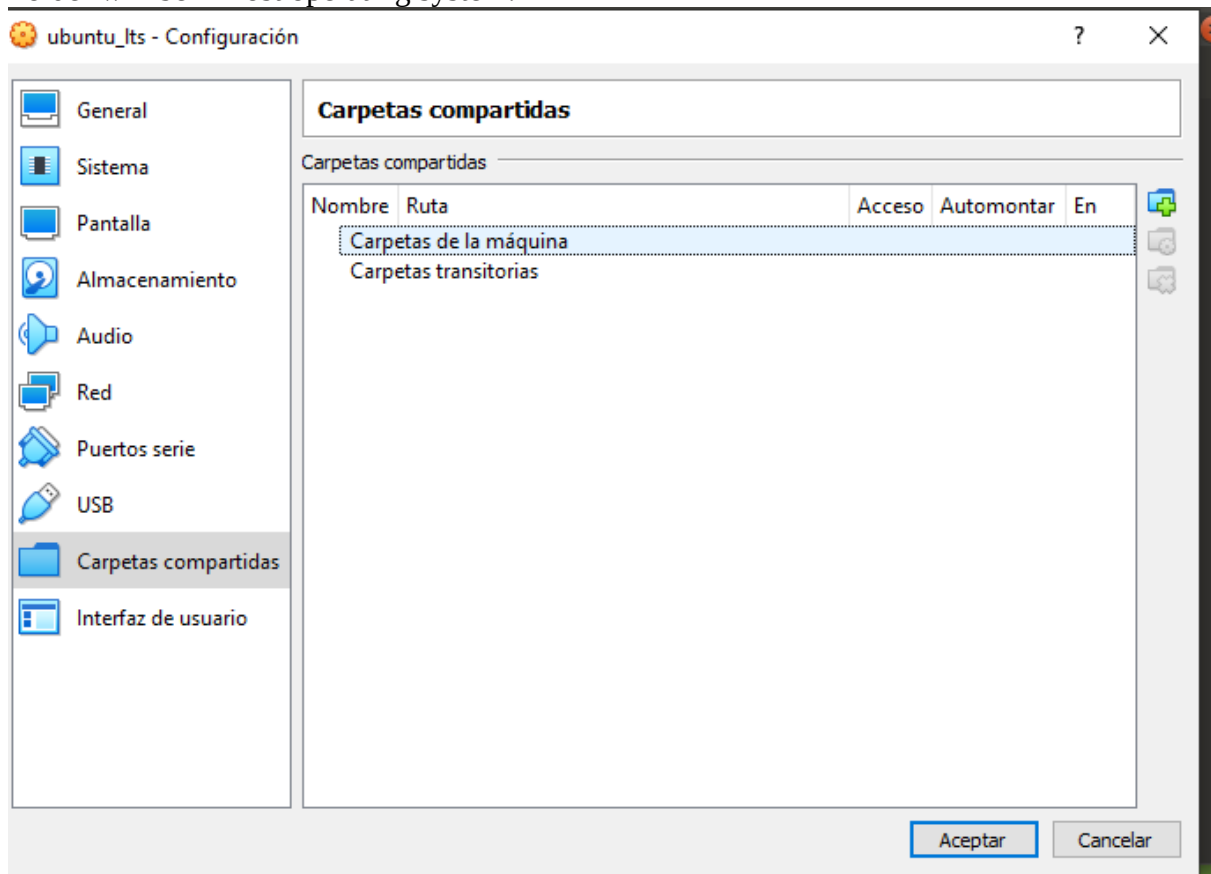
```
rotz@rotz-VirtualBox:~$ sudo adduser rotz vboxsf
Añadiendo al usuario `rotz` al grupo `vboxsf` ...
Añadiendo al usuario rotz al grupo vboxsf
Hecho.
```

Adding Shared Folder

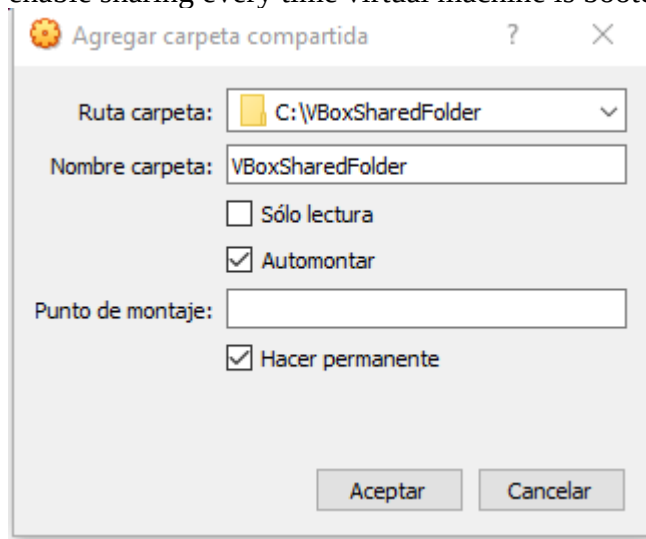
1. Now go to Devices-Shared Folder - Shared Folder Settings



2. Following window will appear, click on first folder icon (on the right) to define where Shared Folder will be in host operating system.



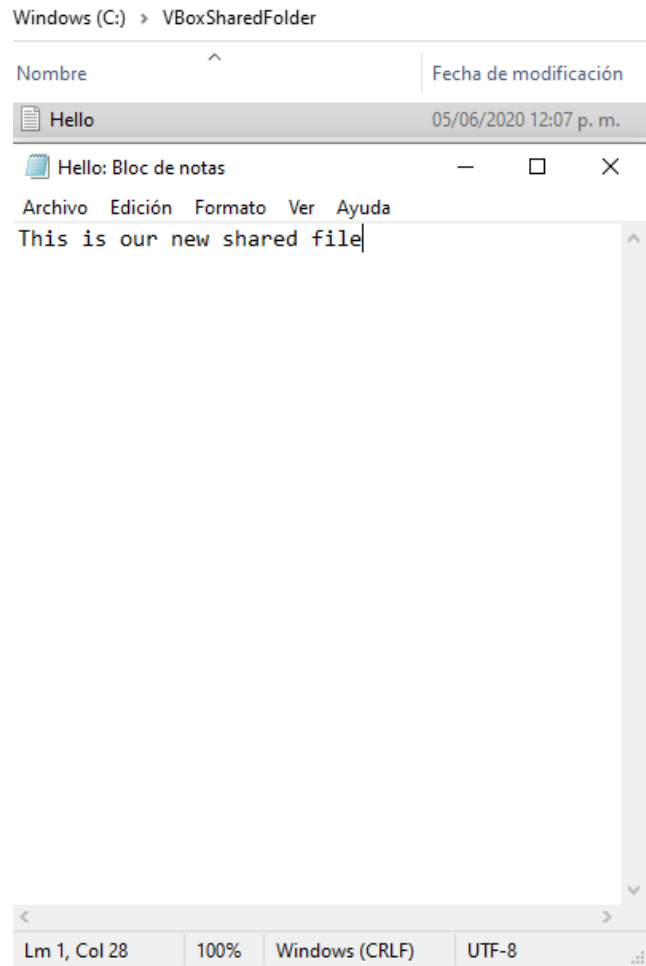
3. For this case. I created a folder named “VboxSharedFolder” in C: drive. And selected “automount” for folder to be mounted without manual intervention and “make permanent” to enable sharing every time virtual machine is booted.



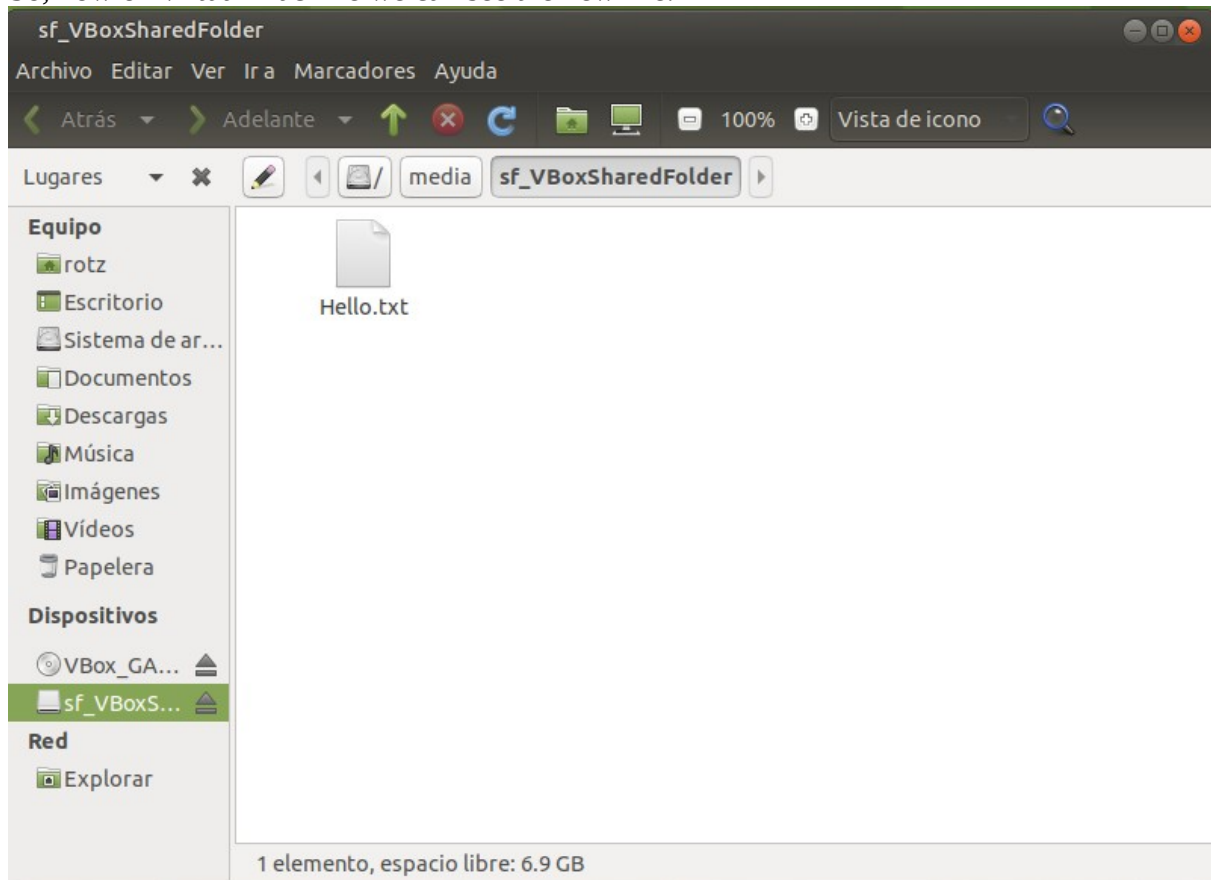
4. Rebooting virtual machine is necessary so changes would show up as a Shared Folder on our User's desktop (or at `/media/<sf_VBoxShare>`)



5. To test if folders can share files I created a new file called Hello.txt on host side.



6. So, now on virtual machine we can see the new file.



Ping between Guest and Host

1. Ping was succesfull at firts attemp.
 - a. I opened cmd on Host Machine and type ipconfig. It gave me host IP (192.168.100.97) and guest IP (192.168.56.1).

```
Adaptador de LAN inalámbrica Wi-Fi:

    Sufijo DNS específico para la conexión. . . :
    Vínculo: dirección IPv6 local. . . : fe80::4ce1:1df7:9d69:9168%6
    Dirección IPv4. . . . . : 192.168.100.97
    Máscara de subred . . . . . : 255.255.255.0
    Puerta de enlace predeterminada . . . . . : fe80::1%6
                                                192.168.100.1

Adaptador de Ethernet VirtualBox Host-Only Network:

    Sufijo DNS específico para la conexión. . . :
    Vínculo: dirección IPv6 local. . . : fe80::8dc6:2eb8:a789:ceed%14
    Dirección IPv4. . . . . : 192.168.56.1
    Máscara de subred . . . . . : 255.255.255.0
    Puerta de enlace predeterminada . . . . . :
```

- b. I made a ping to guest ip through CMD

```
C:\WINDOWS\system32\cmd.exe

C:\Users\roxan>ping 192.168.56.1

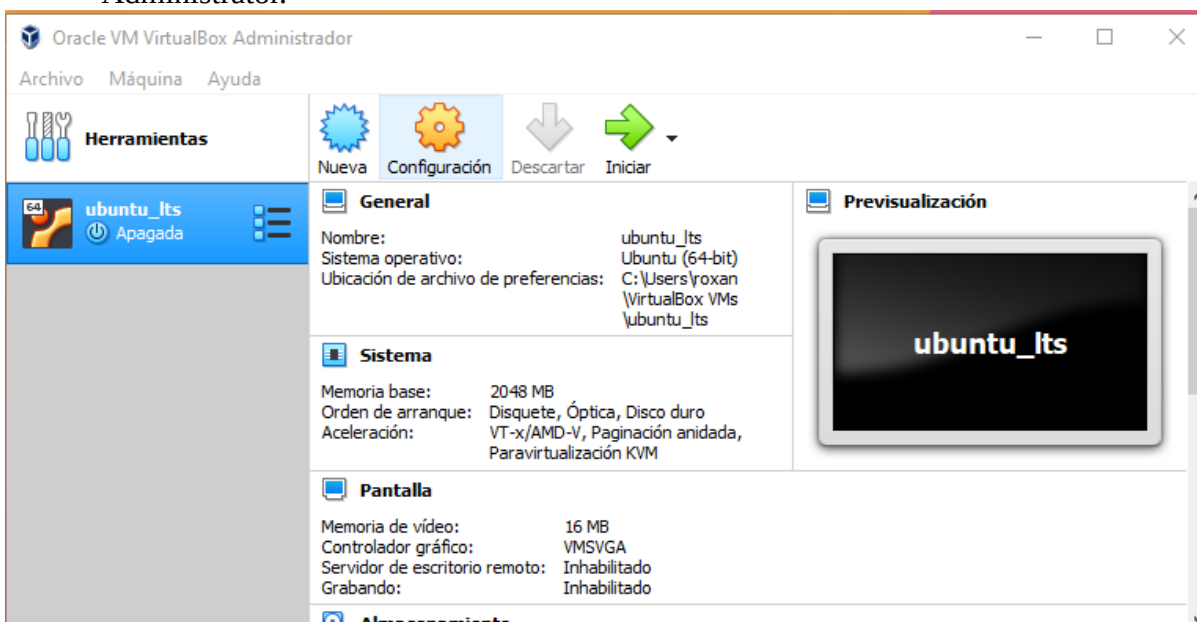
Haciendo ping a 192.168.56.1 con 32 bytes de datos:
Respuesta desde 192.168.56.1: bytes=32 tiempo<1m TTL=128
Respuesta desde 192.168.56.1: bytes=32 tiempo<1m TTL=128
Respuesta desde 192.168.56.1: bytes=32 tiempo<1m TTL=128
Respuesta desde 192.168.56.1: bytes=32 tiempo<1m TTL=128

Estadísticas de ping para 192.168.56.1:
    Paquetes: enviados = 4, recibidos = 4, perdidos = 0
    (0% perdidos),
    Tiempos aproximados de ida y vuelta en milisegundos:
    Mínimo = 0ms, Máximo = 0ms, Media = 0ms
```

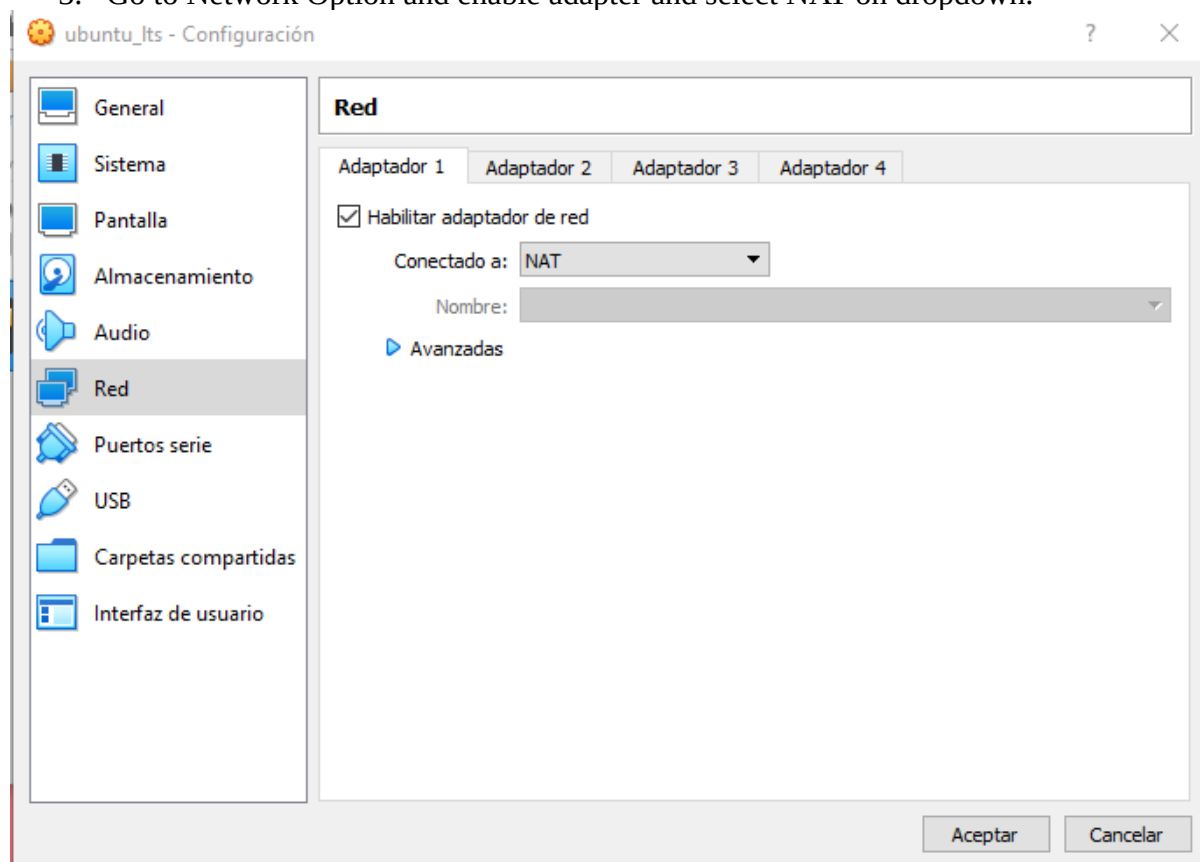
c. Then a ping to host machine through Terminal

```
rotz@rotz-VirtualBox: ~  
Archivo Editar Ver Buscar Terminal Ayuda  
rotz@rotz-VirtualBox:~$ ping 192.168.100.97  
PING 192.168.100.97 (192.168.100.97) 56(84) bytes of data.  
64 bytes from 192.168.100.97: icmp_seq=1 ttl=127 time=0.845 ms  
64 bytes from 192.168.100.97: icmp_seq=2 ttl=127 time=0.815 ms  
64 bytes from 192.168.100.97: icmp_seq=3 ttl=127 time=0.670 ms  
64 bytes from 192.168.100.97: icmp_seq=4 ttl=127 time=0.678 ms  
64 bytes from 192.168.100.97: icmp_seq=5 ttl=127 time=0.571 ms  
64 bytes from 192.168.100.97: icmp_seq=6 ttl=127 time=0.645 ms  
64 bytes from 192.168.100.97: icmp_seq=7 ttl=127 time=0.666 ms  
64 bytes from 192.168.100.97: icmp_seq=8 ttl=127 time=0.650 ms  
64 bytes from 192.168.100.97: icmp_seq=9 ttl=127 time=0.854 ms  
64 bytes from 192.168.100.97: icmp_seq=10 ttl=127 time=0.982 ms  
64 bytes from 192.168.100.97: icmp_seq=11 ttl=127 time=0.706 ms  
64 bytes from 192.168.100.97: icmp_seq=12 ttl=127 time=0.802 ms  
64 bytes from 192.168.100.97: icmp_seq=13 ttl=127 time=0.676 ms  
64 bytes from 192.168.100.97: icmp_seq=14 ttl=127 time=0.648 ms
```

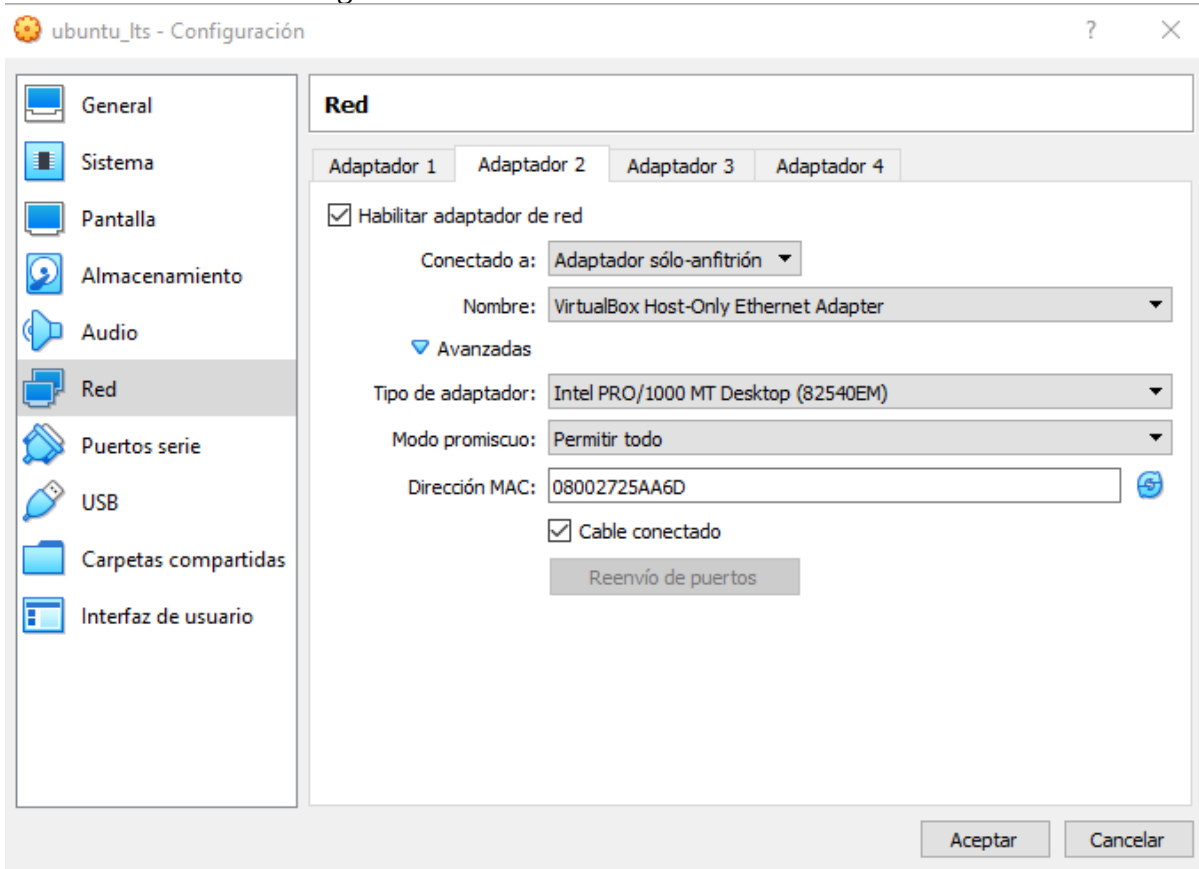
2. But, for learning purposes I find how to set network through VirtualBox setting 2 network adapters. For this: virtual machine should be shutted down first. Go to Settings on VirtualBox Administrator.



3. Go to Network Option and enable adapter and select NAT on dropdown.



4. Now open Adapter 2 TAB.
 - a. Enable adapter and select “host-Only Adapter”
 - b. Name: “VirtualBox Host-only Ethernet Adapter”
 - c. Click “Extended”
 - d. Adapter Type: “Intel PRO/1000 MT Desktop...”
 - e. Modus: “Allow all”
 - f. Save settings.



5. Start virtual machine and enter ifconfig on Terminal. By now ip address is 192.168.56.101
NOTE: I needed to install net-tools first by “sudo apt install net-tools”. Is necessary give our password

```
rotz@rotz-VirtualBox: ~  
Archivo Editar Ver Buscar Terminal Ayuda  
rotz@rotz-VirtualBox:~$ ifconfig  
  
No se ha encontrado la orden «ifconfig», pero se puede instalar con:  
sudo apt install net-tools
```

```

rotz@rotz-VirtualBox:~$ sudo apt install net-tools
[sudo] contraseña para rotz:
Lo sentimos, vuelva a intentarlo.
[sudo] contraseña para rotz:
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias
Leyendo la información de estado... Hecho
Se instalarán los siguientes paquetes NUEVOS:
  net-tools
0 actualizados, 1 nuevos se instalarán, 0 para eliminar y 97 no actualizados.
Se necesita descargar 196 kB de archivos.
Se utilizarán 864 kB de espacio de disco adicional después de esta operación.
Des:1 http://mx.archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-1ubuntu1_amd64.deb ...
Descargados 196 kB en 1s (134 kB/s)
Seleccionando el paquete net-tools previamente no seleccionado.
(Leyendo la base de datos ... 255565 ficheros o directorios instalados actualmente.)
Preparando para desempaquetar .../net-tools_1.60+git20180626.aebd88e-1ubuntu1_amd64.deb ...
Desempaquetando net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Configurando net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Procesando disparadores para man-db (2.9.1-1) ...
enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 192.168.56.101  netmask 255.255.255.0  broadcast 192.168.56.255
    inet6 fe80::2775:d020:c292:db97  prefixlen 64  scopeid 0x20<link>
    ether 08:00:27:25:aa:6d  txqueuelen 1000  (Ethernet)
    RX packets 15  bytes 2274 (2.2 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 36  bytes 4996 (4.9 KB)
    TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

```

6. Now for testing. On host machine open cmd and ping virtual machine ip address. “ip config 192.168.56.101”

```

C:\Users\roxan>ping 192.168.56.101

Haciendo ping a 192.168.56.101 con 32 bytes de datos:
Respuesta desde 192.168.56.101: bytes=32 tiempo<1m TTL=64
Respuesta desde 192.168.56.101: bytes=32 tiempo<1m TTL=64
Respuesta desde 192.168.56.101: bytes=32 tiempo<1m TTL=64
Respuesta desde 192.168.56.101: bytes=32 tiempo<1m TTL=64

Estadísticas de ping para 192.168.56.101:
    Paquetes: enviados = 4, recibidos = 4, perdidos = 0
    (0% perdidos),
    Tiempos aproximados de ida y vuelta en milisegundos:
    Mínimo = 0ms, Máximo = 0ms, Media = 0ms

```

7. Now type “ipconfig” on host machine CMD to know ip address and be able to ping from virtual machine. 192.168.100.97

```
Adaptador de LAN inalámbrica Wi-Fi:

    Sufijo DNS específico para la conexión. . . :
    Vínculo: dirección IPv6 local. . . : fe80::4ce1:1df7:9d69:9168%6
    Dirección IPv4. . . . . : 192.168.100.97
    Máscara de subred . . . . . : 255.255.255.0
    Puerta de enlace predeterminada . . . . . : fe80::1%6
                                                192.168.100.1
```

8. Now on virtual machine type “ping 192.168.100.97”

```
rotz@rotz-VirtualBox:~$ ping 192.168.100.97
PING 192.168.100.97 (192.168.100.97) 56(84) bytes of data.
64 bytes from 192.168.100.97: icmp_seq=1 ttl=127 time=0.624 ms
64 bytes from 192.168.100.97: icmp_seq=2 ttl=127 time=0.635 ms
64 bytes from 192.168.100.97: icmp_seq=3 ttl=127 time=0.509 ms
64 bytes from 192.168.100.97: icmp_seq=4 ttl=127 time=0.648 ms
64 bytes from 192.168.100.97: icmp_seq=5 ttl=127 time=0.625 ms
64 bytes from 192.168.100.97: icmp_seq=6 ttl=127 time=0.584 ms
```