ACTIVIDAD 3 - REDES

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OPTATIVA - 2º ASIR

Contenido

Parte 1 - Proyecto base (NAT por defecto)

1. Crea una máquina virtual a partir del box ubuntu/jammy64

En el vagrantfile ponemos:

config.vm.box = "ubuntu/jammy64"

```
  # boxes at https://vagrantcloud.com/sea
  config.vm.box = "ubuntu/jammy64"
```

No nos habíamos bajado el box. Se lo baja automáticamente cuando hacemos "**vagrant up**".

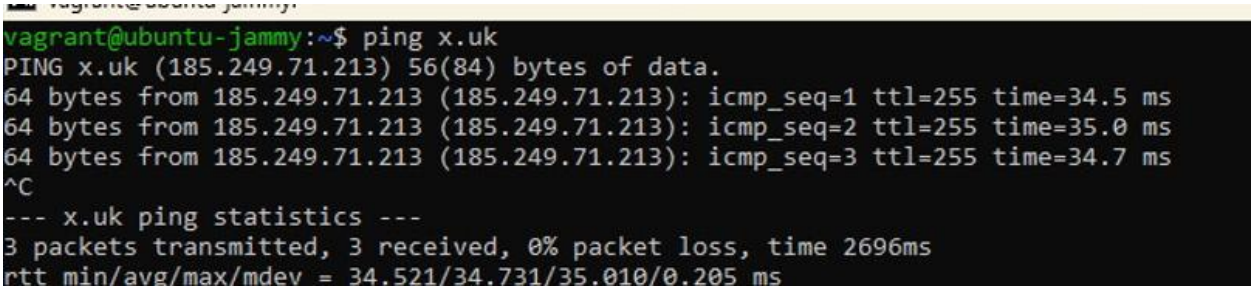
```
D:\Vagrant\actividad_3>vagrant up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Box 'ubuntu/jammy64' could not be found. Attempting to find and install...
    default: Box Provider: virtualbox
    default: Box Version: >= 0
==> default: Loading metadata for box 'ubuntu/jammy64'
    default: URL: https://vagrantcloud.com/api/v2/vagrant/ubuntu/jammy64
==> default: Adding box 'ubuntu/jammy64' (v20241002.0.0) for provider: virtualbox
    default: Downloading: https://vagrantcloud.com/ubuntu/boxes/jammy64/versions/20241002.0.0/providers/virtualbox/unknown/vagrant.box
    default:
==> default: Successfully added box 'ubuntu/jammy64' (v20241002.0.0) for 'virtualbox'!
==> default: Importing base box 'ubuntu/jammy64'...
==> default: Matching MAC address for NAT networking...
```

2. Visualiza las interfaces de red y las ips usadas.

```
vagrant@ubuntu-jammy:~$ 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: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 02:72:47:2f:ff:80 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 metric 100 brd 10.0.2.255 scope global dynamic enp0s3
       valid_lft 86182sec preferred_lft 86182sec
    inet6 fd00::72:47ff:fe2f:ff80/64 scope global dynamic mngtmpaddr noprefixroute
       valid_lft 86184sec preferred_lft 14184sec
    inet6 fe80::72:47ff:fe2f:ff80/64 scope link
       valid_lft forever preferred_lft forever
vagrant@ubuntu-jammy:~$
```

3. ¿Tienes acceso a internet?

Si.



Parte 2 - Red privada (Host-only)

1. Configura red privada con ip fija

modificamos el vagrantfile:

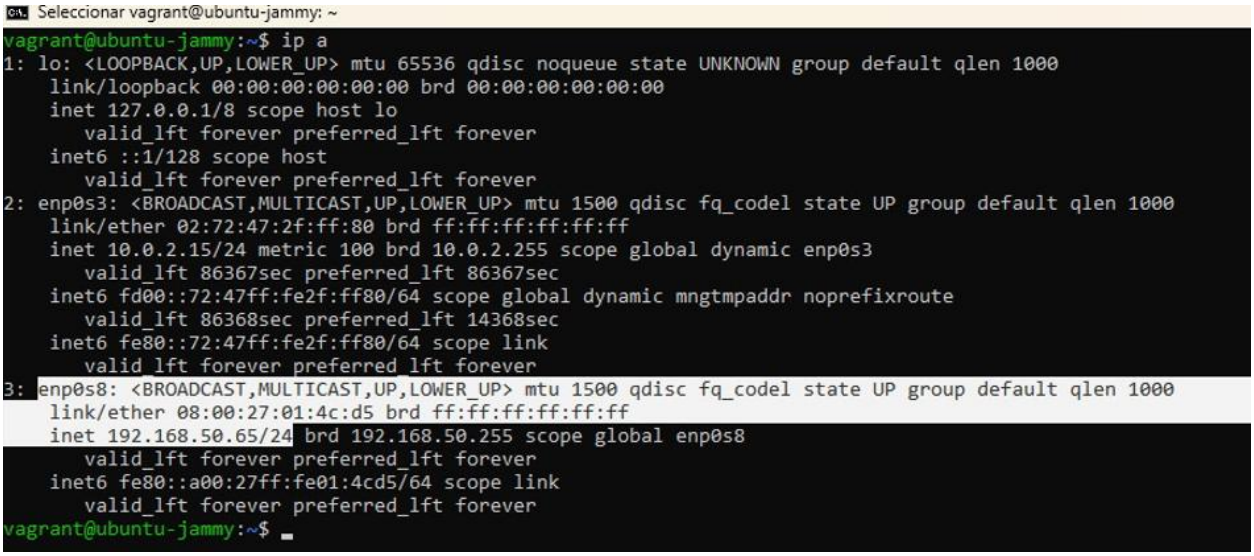
config.vm.network "private_network", ip: "192.168.50.65"

```
  # config.vm.network "private_network", ip: "192.168.33.10"
    config.vm.network "private_network", ip: "192.168.50.65"
```

2. Recarga la máquina virtual.

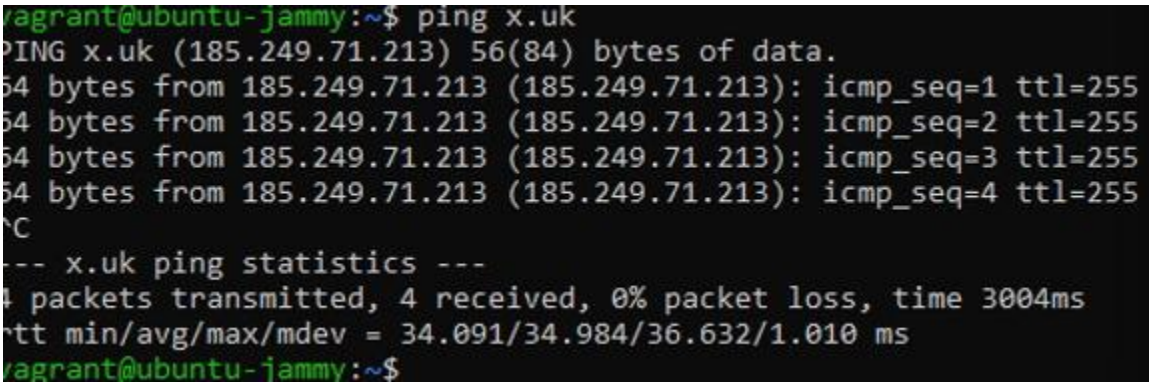
```
D:\Vagrant\actividad_3>vagrant reload
==> default: Checking if box 'ubuntu/jammy64' version '20241002.0.0' is up to date...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: hostonly
==> default: Forwarding ports...
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> 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
    default: Warning: Connection reset. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: The guest additions on this VM do not match the installed version of
    default: VirtualBox! In most cases this is fine, but in rare cases it can
    default: prevent things such as shared folders from working properly. If you see
    default: shared folder errors, please make sure the guest additions within the
    default: virtual machine match the version of VirtualBox you have installed on
    default: your host and reload your VM.
    default:
    default: Guest Additions Version: 6.0.0 r127566
    default: VirtualBox Version: 7.1
==> default: Configuring and enabling network interfaces...
==> default: Mounting shared folders...
    default: D:/Vagrant/actividad_3 => /vagrant
==> default: Machine already provisioned. Run `vagrant provision` or use the `--provision`
==> default: flag to force provisioning. Provisioners marked to run always will still run.
```

3. Visualiza las interfaces de red y las ips usadas.



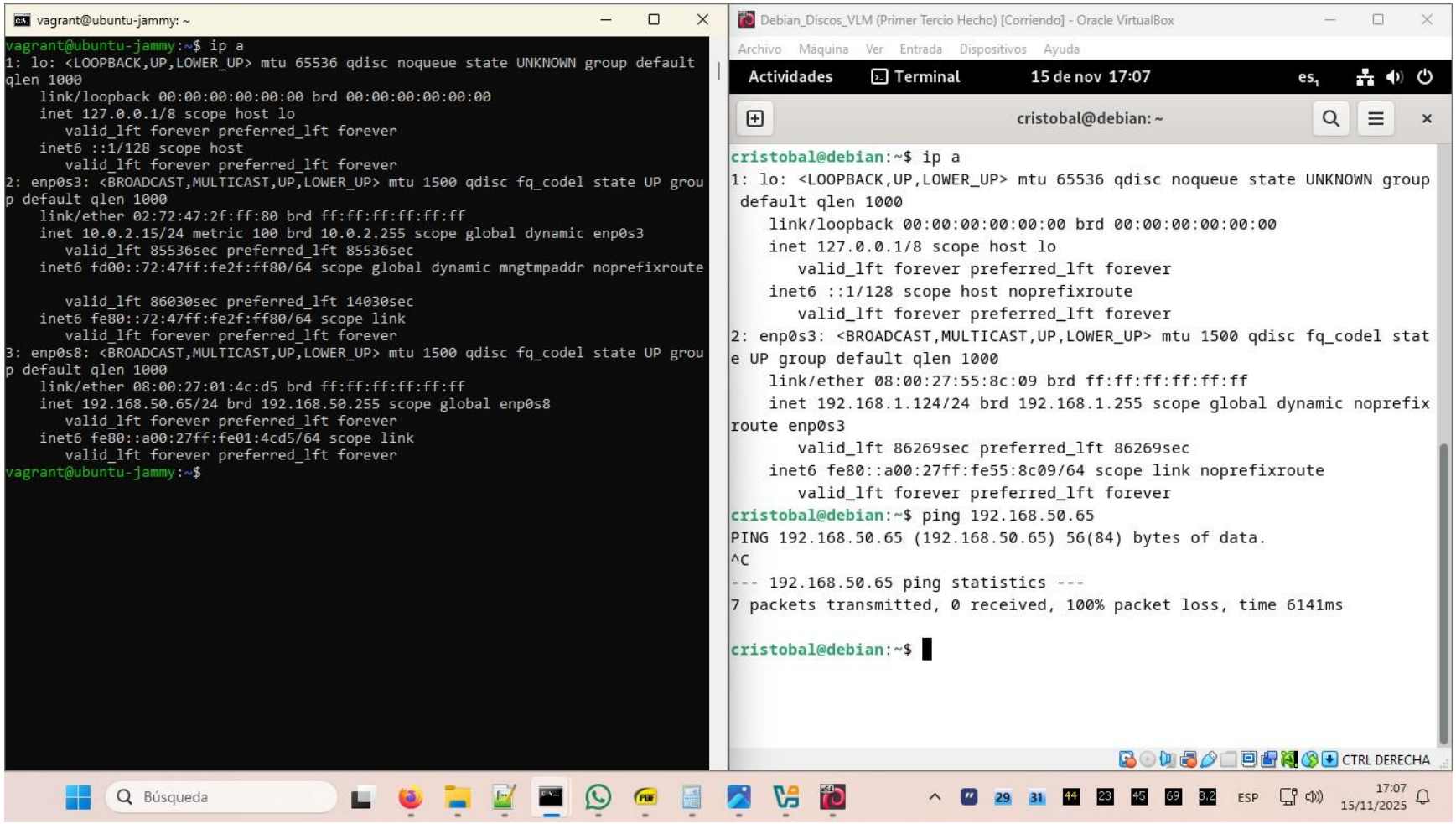
4. ¿Tienes acceso a internet?

Si. No de manera directa, pero lo tiene. Hay que tener en cuenta que la interfaz de la red NAT sigue activa.



5. ¿Puedes acceder a esta máquina virtual desde otro equipo?

No, probado con otra VM en modo bridge en la misma red que el equipo host.



Parte 3 - Reenvío de puertos

1. Crea un aprovisionamiento instalando nginx

Vamos a hacerlo por el método del archivo, parace mas limpio:

Creamos archivo "install_nginx.sh" y metemos:

#!/bin/bash
echo "Instalando Nginx..."
sudo apt update
sudo apt install -y nginx
sudo systemctl start nginx
sudo systemctl enable nginx
echo "He instalado nginx, como mola."

```
#!/bin/bash
echo "Instalando Nginx..."
sudo apt update
sudo apt install -y nginx
sudo systemctl start nginx
sudo systemctl enable nginx
echo "He instalado nginx, como mola."
```

Modificamos el vagrantfile
config.vm.provision "shell", path: "install_nginx.sh"

```
  config.vm.provision "shell", path: "install_nginx.sh"
end
```

Hacemos un “vagrant provision”.

```
D:\Vagrant\actividad_3>vagrant provision
==> default: Running provisioner: shell...
    default: Running: C:/Users/CRISTO~1/AppData/Local/Temp/vagrant-shell20251115-10996-bpu4nk.sh
    default: Instalando Nginx...
    default:
    default: WARNING: apt does not have a stable CLI interface. Use with caution in scripts.
    default:
    default: Get:1 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
    default: Hit:2 http://archive.ubuntu.com/ubuntu jammy InRelease
    default: Get:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
    default:
    default: No VM guests are running outdated hypervisor (qemu) binaries on
    default: Synchronizing state of nginx.service with SysV service script wi
    default: Executing: /lib/systemd/systemd-sysv-install enable nginx
    default: He instalado nginx, como mola.
```

2. Mapea el puerto host y guest

config.vm.network "forwarded_port", guest: 80, host: 8080

```
# NOTE: This will enable public access to the opened port
  config.vm.network "forwarded_port", guest: 80, host: 8080
```

Hacemos un "**vagrant reload**".

```
D:\Vagrant\actividad_3>vagrant reload
==> default: Attempting graceful shutdown of VM...
==> default: Checking if box 'ubuntu/jammy64' version '20241002.0.0' is up to date...
==> default: Clearing any previously set forwarded ports...
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: hostonly
==> default: Forwarding ports...
    default: 80 (guest) => 8080 (host) (adapter 1)
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> 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
    default: Warning: Connection reset. Retrying...
    default: Warning: Connection aborted. Retrying...
    default: Warning: Connection reset. Retrying...
==> default: Machine booted and ready!
==> default: Checking for guest additions in VM...
    default: The guest additions on this VM do not match the installed version of
    default: VirtualBox! In most cases this is fine, but in rare cases it can
    default: prevent things such as shared folders from working properly. If you see
    default: shared folder errors, please make sure the guest additions within the
    default: virtual machine match the version of VirtualBox you have installed on
    default: your host and reload your VM.
    default:
    default: Guest Additions Version: 6.0.0 r127566
    default: VirtualBox Version: 7.1
==> default: Configuring and enabling network interfaces...
==> default: Mounting shared folders...
    default: D:/Vagrant/actividad_3 => /vagrant
==> default: Machine already provisioned. Run `vagrant provision` or use the `--provision`
==> default: flag to force provisioning. Provisioners marked to run always will still run.
```

3. Desde el host accede a la web

Funciona.

4. Provocad una colisión cambiando host: 8080 a host: 80.

```
# NOTE: This will enable public access to the opened port
config.vm.network "forwarded_port", guest: 80, host: 80
```

Hacemos “vagrant reload”.

¿Qué avisa Vagrant?

Nos dice que estamos intentado usar un puerto por debajo del 1024, y esos están reservados para procesos privilegiados (del administrador).

==> default: You are trying to forward to privileged ports (ports <= 1024). Most
==> default: operating systems restrict this to only privileged process (typically
==> default: processes running as an administrative user). This is a warning in case
==> default: the port forwarding doesn't work. If any problems occur, please try a
==> default: port higher than 1024.

```
==> default: Clearing any previously set network interfaces...
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: hostonly
==> default: You are trying to forward to privileged ports (ports <= 1024). Most
==> default: operating systems restrict this to only privileged process (typically
==> default: processes running as an administrative user). This is a warning in case
==> default: the port forwarding doesn't work. If any problems occur, please try a
==> default: port higher than 1024.
==> default: Forwarding ports...
    default: 80 (guest) => 80 (host) (adapter 1)
    default: 22 (guest) => 2222 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
```

Activad auto_correct y anotad el nuevo puerto.

config.vm.network "forwarded_port", guest: 80, host: 80, auto_correct: true

```
# NOTE: This will enable public access to the opened port
  config.vm.network "forwarded_port", guest: 80, host: 80, auto_correct: true
```

Me redirige el puerto al 2201

NOTA: He tenido que poner un servicio en el puerto 80, porque automáticamente no me lo redirige si está libre.

```
=> default: Checking if box 'ubuntu/jammy64' version '20241002.0.0' is up to date...
=> default: Clearing any previously set forwarded ports...
=> default: Fixed port collision for 80 => 80. Now on port 2201.
=> default: Clearing any previously set network interfaces...
=> default: Preparing network interfaces based on configuration...
   default: Adapter 1: nat
   default: Adapter 2: hostonly
=> default: Forwarding ports...
   default: 80 (guest) => 2201 (host) (adapter 1)
   default: 22 (guest) => 2222 (host) (adapter 1)
=> default: Running 'pre-boot' VM customizations...
=> 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
```

Parte 4 - Red pública (bridged)

1. Añadir adaptador puente para que la VM sea un “equipo más” en la LAN del aula

Modificamos vagrantfile

config.vm.network "public_network"

```
  # your network.
    config.vm.network "public_network"
```

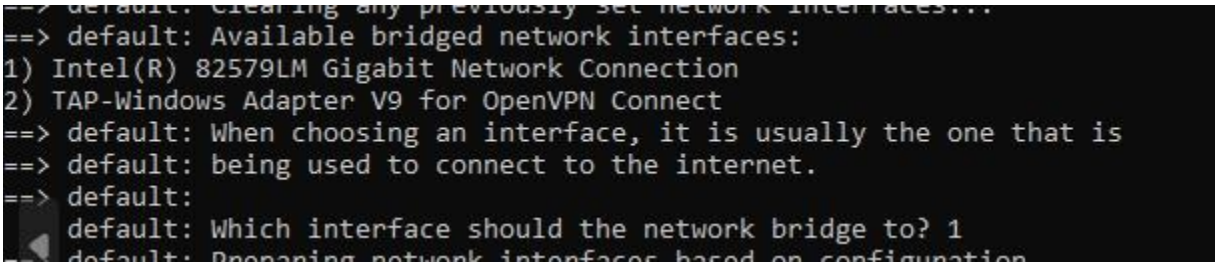
2. Recarga la máquina virtual.

No nos deja porque tenemos una configuración de interfaces de red muy loca.

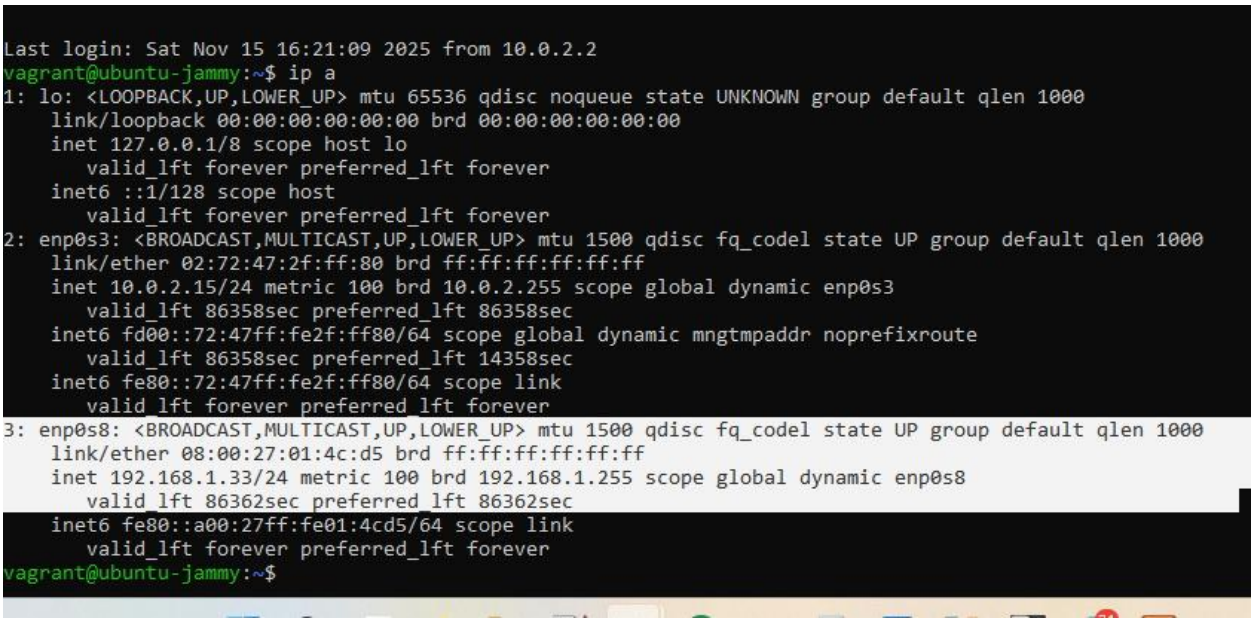
```
D:\Vagrant\actividad_3>vagrant reload
==> default: Checking if box 'ubuntu/jammy64' version '20241002.0.0' is up to date...
==> default: Fixed port collision for 80 => 80. Now on port 2202.
==> default: Fixed port collision for 22 => 2222. Now on port 2203.
==> default: Clearing any previously set network interfaces...
==> default: Available bridged network interfaces:
1) Intel(R) 82579LM Gigabit Network Connection
2) TAP-Windows Adapter V9 for OpenVPN Connect
==> default: When choosing an interface, it is usually the one that is
==> default: being used to connect to the internet.
==> default:
    default: Which interface should the network bridge to? 1
==> default: Preparing network interfaces based on configuration...
    default: Adapter 1: nat
    default: Adapter 2: hostonly
    default: Adapter 3: bridged
==> default: Forwarding ports...
    default: 80 (guest) => 2202 (host) (adapter 1)
    default: 22 (guest) => 2203 (host) (adapter 1)
==> default: Running 'pre-boot' VM customizations...
==> default: Booting VM...
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2203
    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.

D:\Vagrant\actividad_3>
```

Hacemos una limpieza y dejamos solo la configuración necesaria para esta parte de la actividad. Es decir, solo: **config.vm.network "public_network"**

Si en nuestro host tenemos más de una interfaz de red nos pedirá que elijamos una:

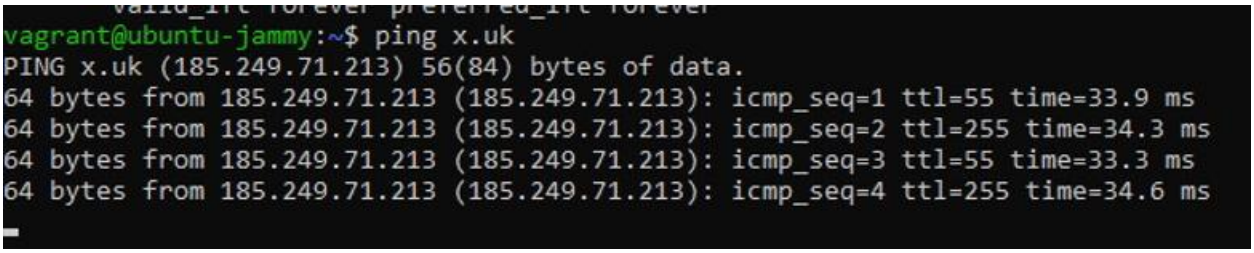


3. Visualiza las interfaces de red y las ips usadas.



4. ¿Tienes acceso a internet?

Tengo acceso a Internet.



5. ¿Puedes acceder a esta máquina virtual desde otro equipo?

Si, tengo acceso. Soy capaz de hacer ping, pero hay algún problema en la configuración de SSH que no me permite iniciar sesión.