

EJERCICIO

Presenta la documentación que explique, detalladamente, la instalación y configuración de un Servidor DHCP con las siguientes características:

Servirá direcciones IP del dominio "asisomos.net".

Este dominio tendrá direcciones dentro del rango 172.16.0.0/16.

Direcciones especiales:

Puerta de enlace: 172.16.0.1/16


Servidores DNS: 192.168.8.1 y 192.168.8.2

Se asignarán direcciones del rango 172.16.0.10 a la 172.16.0.100

La máquina de nombre "superstation", con MAC 00:05:5D:4D:08:11, recibirá siempre la dirección 172.16.0.25/16.

Podrías hacer un resumen de todo con capturas de procesos lo hago con máquina virtual virtualbox detalle todos los procesos que hacer que hacer

SERVIDOR



Crear máquina virtual

Nombre y sistema operativo

Nombre:

Carpeta:

Imagen ISO:

Edición:

Tipo:

Subtype:

Versión:

☒ Omitir instalación desatendida

> Instalación desatendida

> Hardware

> Disco duro

Ayuda

Anterior

Terminar

Cancelar

Oracle VirtualBox Administrador

Archivo Máquina Ayuda

Herramientas

Ubuntu Server

Apagada

Nueva

Añadir

Configuración

Descartar

Iniciar

General

Nombre:

Sistema operativo:

Sistema

Memoria base:

Orden de arranque:

Aceleración:

Pantalla

Memoria de vídeo:

Controlador gráfico:

Servidor de escritorio remoto:

Grabación:

Almacenamiento

Controlador:

Dispositivo IDE secundario 0:

Controlador:

Puerto SATA 0:

Audio

Controlador de anfitrión:

Controlador:

Red

Adaptador 1:

USB

Controlador USB:

Filtros de dispositivos:

Carpetas compartidas

Descripción

GNU GRUB version 2.06

*Try or Install Ubuntu Server
Ubuntu Server with the HWE kernel
Test memory

Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the commands
before booting or 'c' for a command-line.
The highlighted entry will be executed automatically in 22s.

Willkommen! Bienvenue! Welcome! Добро пожаловать! Welkom!

[Help]

Use UP, DOWN and ENTER keys to select your language.

[Asturianu	▶]
[Bahasa Indonesia	▶]
[Català	▶]
[Deutsch	▶]
[English	▶]
[English (UK)	▶]
[Español	▶]
[Français	▶]
[Galego	▶]
[Hrvatski	▶]
[Latviski	▶]
[Lietuviškai	▶]
[Magyar	▶]
[Nederlands	▶]
[Norsk bokmål	▶]
[Occitan	▶]
[Polski	▶]
[Português	▶]
[Suomi	▶]
[Svenska	▶]
[Čeština	▶]
[Ελληνικά	▶]
[Беларуская	▶]
[Русский	▶]
[Српски	▶]
[Українська	▶]

Configuración del teclado

[Help]

Seleccione a continuación la disposición del teclado o elija «Identificar teclado» para detectarla automáticamente.

Disposición: [Spanish ▼]

Variant: [Spanish ▼]

[Identificar teclado]

[Hecho]
[Atrás]

Choose the type of installation

[Help]

Choose the base for the installation.

☒ Ubuntu Server

The default install contains a curated set of packages that provide a comfortable experience for operating your server.

☐ Ubuntu Server (minimized)

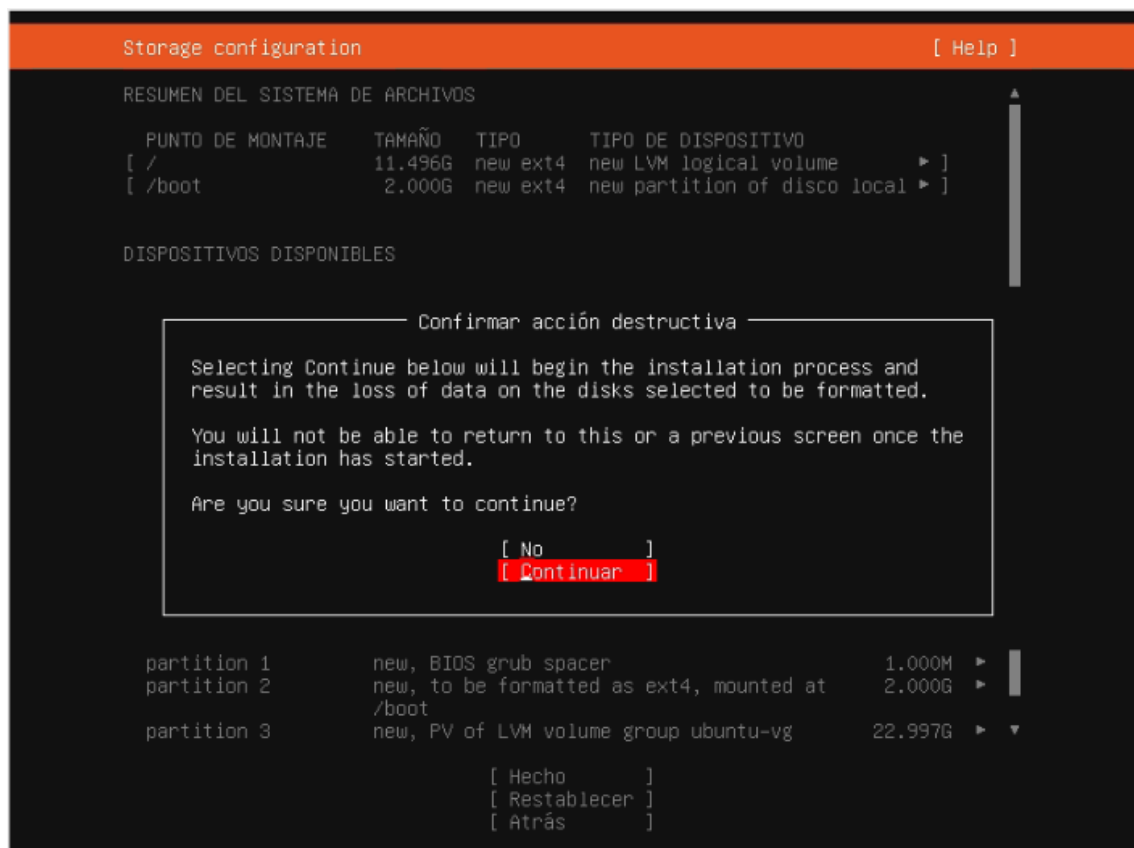
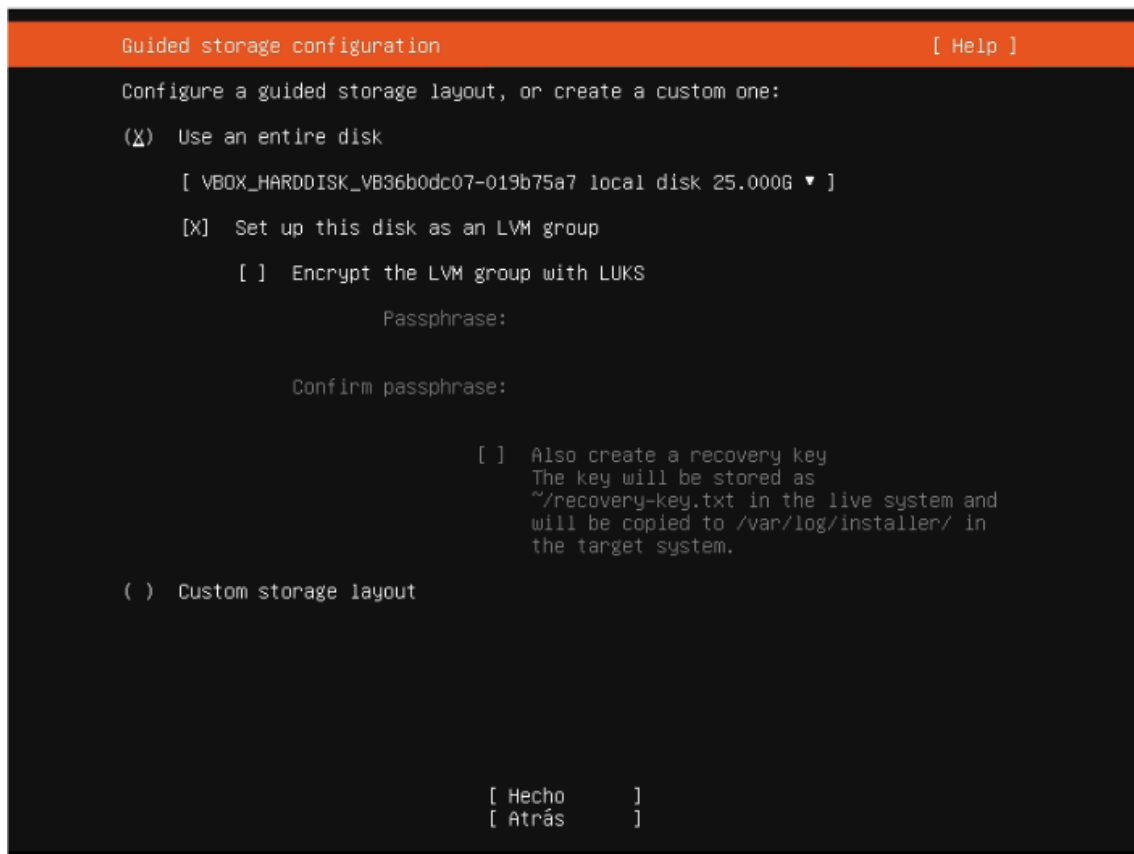
This version has been customized to have a small runtime footprint in environments where humans are not expected to log in.

Additional options

☐ Search for third-party drivers

This software is subject to license terms included with its documentation. Some is proprietary. Third-party drivers should not be installed on systems that will be used for FIPS or the real-time kernel.

[Hecho]
[Atrás]



Profile configuration

[Help]

Enter the username and password you will use to log in to the system. You can configure SSH access on a later screen, but a password is still needed for sudo.

Su nombre:

Your servers name:
The name it uses when it talks to other computers.

Elija un nombre de usuario:

Elija una contraseña:

Confirme la contraseña:

[Hecho]

Instalando el sistema

[Help]

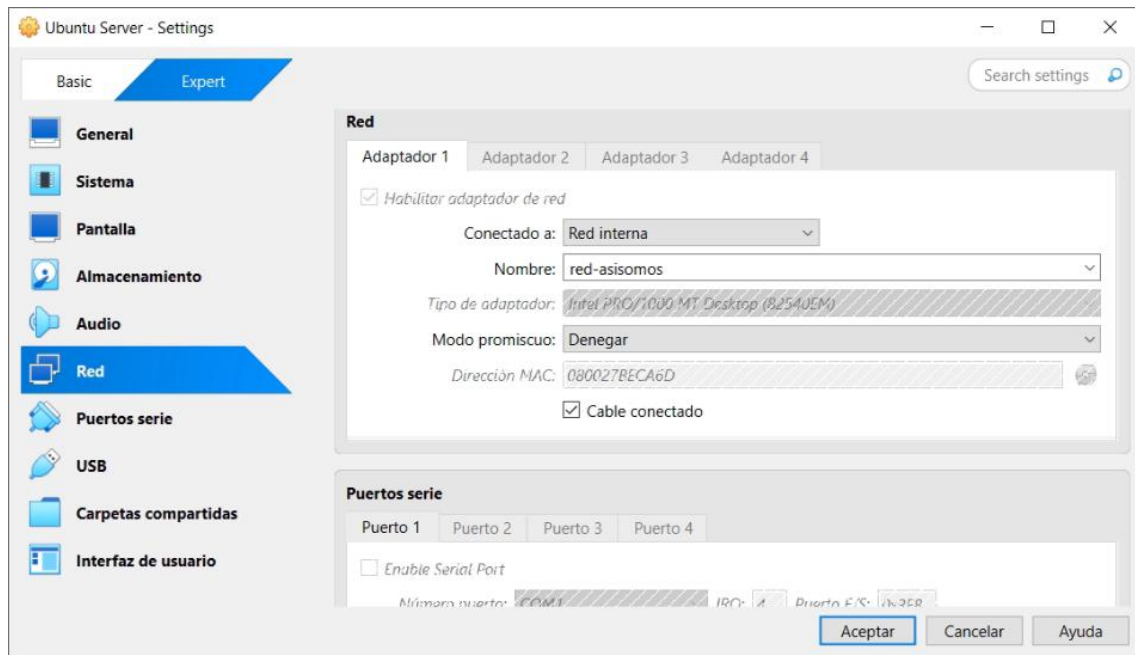
```
configuring partition: partition-0
configuring partition: partition-1
configuring format: format-0
configuring partition: partition-2
configuring lvm_volgroup: lvm_volgroup-0
configuring lvm_partition: lvm_partition-0
configuring format: format-1
configuring mount: mount-1
configuring mount: mount-0
executing curtin install extract step
curtin command install
writing install sources to disk
running 'curtin extract'
curtin command extract
acquiring and extracting image from cp:///tmp/tmpex11ssqp/mount
configuring keyboard
curtin command in-target
executing curtin install curthooks step
curtin command install
configuring installed system
running 'curtin curthooks'
curtin command curthooks
configuring apt configuring apt
installing missing packages
Installing packages on target system: ['grub-pc']
configuring iscsi service
configuring raid (mdadm) service
configuring NVMe over TCP
installing kernel |
```

[View full log]

INSTALAMOS VirtualBox Extension Pack

SIRVE PARA EXTENDER ALGUNAS FUNCIONALIDADES QUE POR DEFECTO, VIRTUALBOX NO TRAE.

CAMBIO LA INTERFAZ DE RED



CUANDO INICIA

```
Starting Set console font and keymap...
Starting Create final runtime dir for shutdown pivot root...
Starting Tell Plymouth To Write Out Runtime Data...
Starting Set Up Additional Binary Formats...
Starting Create Volatile Files and Directories...
Starting Uncomplicated firewall...
[ OK ] Finished Set console font and keymap.
[ OK ] Finished Create final runtime dir for shutdown pivot root.
[ OK ] Finished Tell Plymouth To Write Out Runtime Data.
[ OK ] Finished Uncomplicated firewall.
[ OK ] Finished Create Volatile Files and Directories.
Mounting Arbitrary Executable File Formats File System...
Starting Network Time Synchronization...
Starting Record System Boot/Shutdown in UTMP...
[ OK ] Mounted Arbitrary Executable File Formats File System.
[ OK ] Finished Set Up Additional Binary Formats.
[ OK ] Reached target Sound Card.
[ OK ] Finished Record System Boot/Shutdown in UTMP.
[ OK ] Finished Load AppArmor profiles.
Starting Load AppArmor profiles managed internally by snapd...
Starting Cloud-init: Local Stage (pre-network)...
[ OK ] Started Network Time Synchronization.
[ OK ] Reached target System Time Set.
[ OK ] Finished Load AppArmor profiles managed internally by snapd.
[ 5.620780] cloud-init[622]: Cloud-init v. 25.1.4-0ubuntu0~22.04.1 running 'init-local' at Mon, 7 Nov 2025 16:15:43 +0000. Up 5.59 seconds.
[ OK ] Finished Cloud-init: Local Stage (pre-network).
[ OK ] Reached target Preparation for Network.
Starting Network Configuration...
[ OK ] Started Network Configuration.
Starting Wait for Network to be Configured...
Starting Network Name Resolution...
[ OK ] Started Network Name Resolution.
[ OK ] Reached target Network.
[ OK ] Reached target Host and Network Name Lookups.
[*] A start job is running for Wait for Network to be Configured (1min 36s / no limit)
```

SE ESPERA 120 SEGUNDOS PARA QUE SE CANCELE EL PROCESO.

```
Hint: Num Lock on
alumno login: alumno
Password:
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 5.15.0-161-generic x86_64)

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

System information as of Mon Nov 17 16:17:57 UTC 2025

   System load: 0.21           Memory usage: 10%   Processes:      106
   Usage of /:  45.4% of 11.21GB Swap usage:   0%   Users logged in: 0

El mantenimiento de seguridad expandido para Applications está desactivado

Se pueden aplicar 57 actualizaciones de forma inmediata.
Para ver estas actualizaciones adicionales, ejecute: apt list --upgradable

Active ESM Apps para recibir futuras actualizaciones de seguridad adicionales.
Vea https://ubuntu.com/esm o ejecute «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.

alumno@alumno:~$ _
```

```
alumno@alumno:~$ sudo nano /etc/netplan/50-cloud-init.yaml
```

ARCHIVO POR DEFECTO:

```
GNU nano 6.2 /etc/netplan/50-cloud-init.yaml
# This file is generated from information provided by the datasource.  Changes
# to it will not persist across an instance reboot.  To disable cloud-init's
# network configuration capabilities, write a file
# /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following:
# network: {config: disabled}
network:
  ethernets:
    enp0s3:
      dhcp4: true
  version: 2

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^N Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo
```

```
GNU nano 6.2 /etc/netplan/50-cloud-init.yaml *
# This file is generated from information provided by the datasource.  Changes
# to it will not persist across an instance reboot.  To disable cloud-init's
# network configuration capabilities, write a file
# /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following:
# network: {config: disabled}
network:
  ethernets:
    enp0s3:
      dhcp4: false
      addresses:
        - 172.16.0.2/16
      gateway4: 172.16.0.1_
  version: 2

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^N Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo
```

CTRL+O Para guardar el archivo.

```
alumno@alumno:~$ sudo netplan apply
```

APLICAMOS LAS CONFIGURACIONES DE RED.

```
alumno@alumno:~$ sudo netplan apply
** (generate:1559): WARNING **: 16:24:28.768: `gateway4` has been deprecated, use default routes instead.
See the 'Default routes' section of the documentation for more details.
WARNING:root:Cannot call Open vSwitch: ovssdb-server.service is not running.
** (process:1557): WARNING **: 16:24:29.191: `gateway4` has been deprecated, use default routes instead.
See the 'Default routes' section of the documentation for more details.
** (process:1557): WARNING **: 16:24:29.302: `gateway4` has been deprecated, use default routes instead.
See the 'Default routes' section of the documentation for more details.
** (process:1557): WARNING **: 16:24:29.302: `gateway4` has been deprecated, use default routes instead.
See the 'Default routes' section of the documentation for more details.
```

Ejemplo de warning.

```
GNU nano 6.2 /etc/netplan/50-cloud-init.yaml
# This file is generated from information provided by the datasource.  Changes
# to it will not persist across an instance reboot.  To disable cloud-init's
# network configuration capabilities, write a file
# /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following:
# network: {config: disabled}
network:
  ethernets:
    enp0s3:
      dhcp4: false
      addresses:
        - 172.16.0.2/16
      routes:
        - to: default
          via: 172.16.0.1_
  version: 2

[ Wrote 15 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo
```

```
GNU nano 6.2 /etc/netplan/50-cloud-init.yaml
# This file is generated from information provided by the datasource.  Changes
# to it will not persist across an instance reboot.  To disable cloud-init's
# network configuration capabilities, write a file
# /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following:
# network: {config: disabled}
network:
  ethernets:
    enp0s3:
      dhcp4: false
      addresses:
        - 172.16.0.2/16
      routes:
        - to: default
          via: 172.16.0.1
      nameservers:
        addresses: [192.168.8.1, 192.168.8.2]
  version: 2

[ Wrote 17 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_/ Go To Line  M-E Redo
```

COMPROBAR MI IP

```
alumno@alumno:~$ 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 08:00:27:be:ca:6d brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.2/16 brd 172.16.255.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:febe:ca6d/64 scope link
        valid_lft forever preferred_lft forever
```

PROCESO PARA INSTALAR EL PAQUETE DHCP

```
alumno@alumno:~$ sudo apt install isc-dhcp-server
```

EDITAMOS ARCHIVO DE CONFIGURACIÓN.

```
alumno@alumno:~$ sudo nano /etc/default/isc-dhcp-server
```

Se indica que la interfacesv4, que es el que recibirá las peticiones es enp0s3, que en este caso es la interfaz de red.

Se puede ver en ip a

```

alumno@alumno:~$ 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 08:00:27:be:ca:6d brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.2/16 brd 172.16.255.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:febe:ca6d/64 scope link
        valid_lft forever preferred_lft forever

```

```

GNU nano 6.2 /etc/default/isc-dhcp-server
# Defaults for isc-dhcp-server (sourced by /etc/init.d/isc-dhcp-server)

# Path to dhcpd's config file (default: /etc/dhcp/dhcpd.conf).
#DHCPDv4_CONF=/etc/dhcp/dhcpd.conf
#DHCPDv6_CONF=/etc/dhcp/dhcpd6.conf

# Path to dhcpd's PID file (default: /var/run/dhcpd.pid).
#DHCPDv4_PID=/var/run/dhcpd.pid
#DHCPDv6_PID=/var/run/dhcpd6.pid

# Additional options to start dhcpd with.
# Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""

# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
# Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACESv4="enp0s3"
INTERFACESv6=""

[ Wrote 18 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^N Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo

```

SE HACE COPIA DE SEGURIDAD DEL ARCHIVO ORIGINAL DE CONFIGURACIÓN DE DHCP.

```

alumno@alumno:~$ sudo mv /etc/dhcp/dhcpd.conf /etc/dhcp/dhcpd.conf.backup

```

```

alumno@alumno:~$ cd /etc/dhcp/
alumno@alumno:/etc/dhcp$ ls
ddns-keys  dhclient-enter-hooks.d  dhclient.conf  dhcpd6.conf
debug      dhclient-exit-hooks.d  dhcpd.conf.backup

```

EDITAMOS ARCHIVO DE CONFIGURACIÓN

```

alumno@alumno:/etc/dhcp$ sudo nano /etc/dhcp/dhcpd.conf_

```

CREAMOS UNA COPIA

```

alumno@alumno:/etc/dhcp$ sudo cp dhcpd.conf.backup dhcpd.conf

```

```
GNU nano 6.2 dhcdd.conf
# configuration file instead of this file.
#
# option definitions common to all supported networks...
option domain-name "asisomos.net";
option domain-name-servers 192.168.8.1, 192.168.8.2;

default-lease-time 600;
max-lease-time 7200;

# The ddns-updates-style parameter controls whether or not the server will
# attempt to do a DNS update when a lease is confirmed. We default to the
# behavior of the version 2 packages ('none', since DHCP v2 didn't
# have support for DDNS.)
ddns-update-style none;

# If this DHCP server is the official DHCP server for the local
# network, the authoritative directive should be uncommented.
authoritative;

# Use this to send dhcp log messages to a different log file (you also
# have to hack syslog.conf to complete the redirection).
#log-facility local7;

# No service will be given on this subnet, but declaring it helps the
# DHCP server to understand the network topology.

#subnet 10.152.187.0 netmask 255.255.255.0 {
#}

# This is a very basic subnet declaration.

#subnet 10.254.239.0 netmask 255.255.255.224 {
[ Wrote 111 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File  ^N Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo
```

```
# A slightly different configuration for an internal subnet.
subnet 172.16.0.0 netmask 255.255.0.0 {
    range 172.16.0.10 172.16.0.100;
    option routers 172.16.0.1;
    option broadcast-address 172.16.255.255;
}

# Hosts which require special configuration options can be listed in
# host statements.  If no address is specified, the address will be
# allocated dynamically (if possible), but the host-specific information
# will still come from the host declaration.

host superstation {
    hardware ethernet 00:05:5D:4D:08:11;
    fixed-address 172.16.0.25;
}
```

```
alumno@alumno:/etc/dhcp$ sudo systemctl restart isc-dhcp-server
```

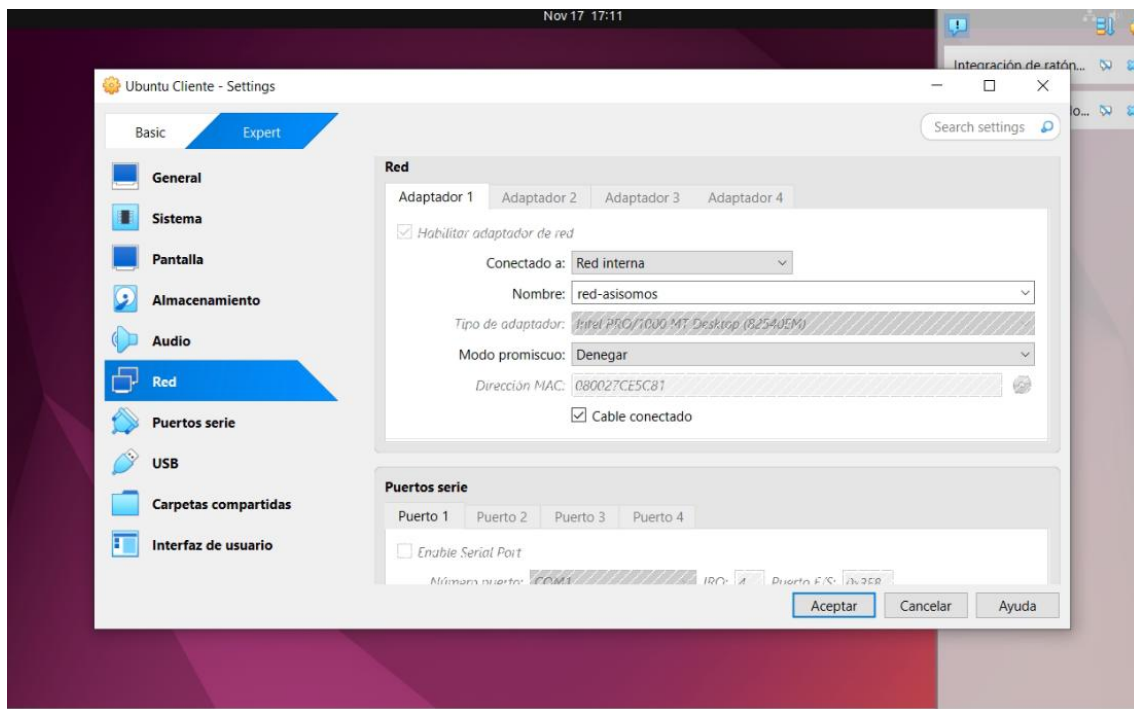
```

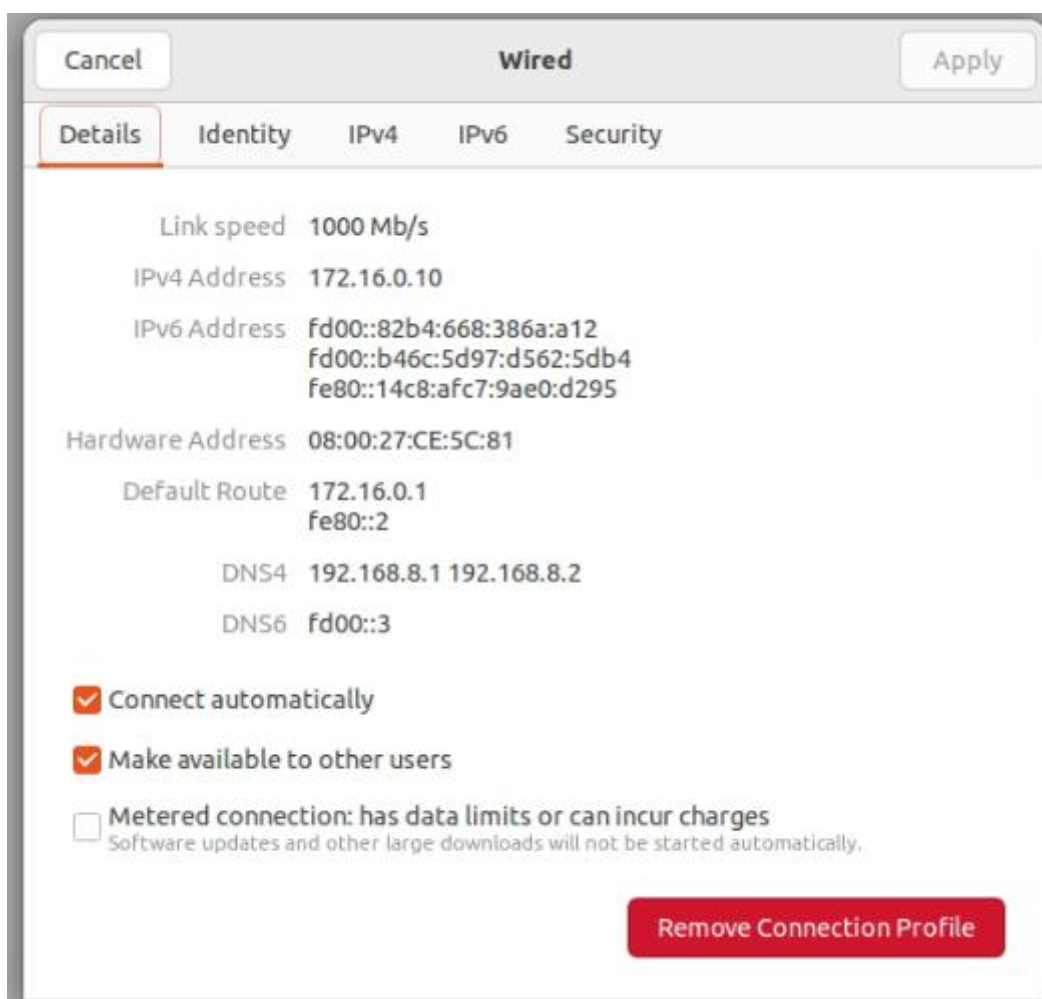
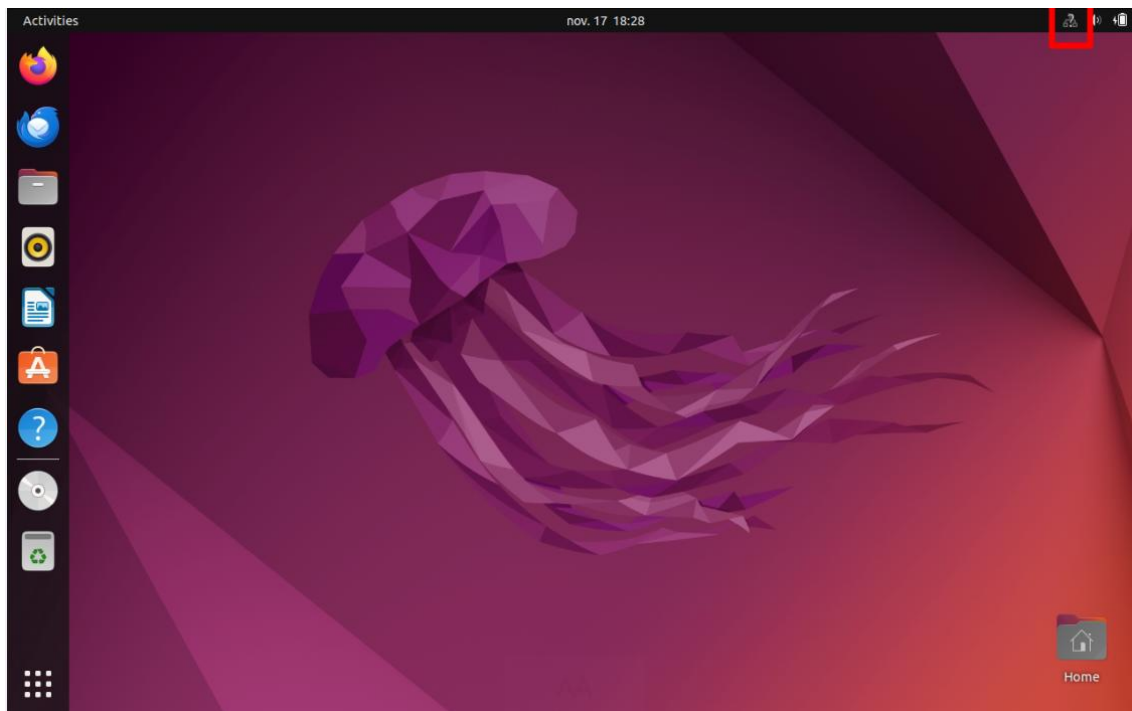
alumno@alumno:/etc/dhcp$ sudo systemctl status isc-dhcp-server
● isc-dhcp-server.service - ISC DHCP IPv4 server
   Loaded: loaded (/lib/systemd/system/isc-dhcp-server.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2025-11-17 16:58:00 UTC; 1min 29s ago
     Docs: man:dhcpd(8)
    Main PID: 2837 (dhcpd)
      Tasks: 4 (limit: 2220)
    Memory: 4.8M
       CPU: 9ms
    CGroup: /system.slice/isc-dhcp-server.service
            └─2837 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dh

Nov 17 16:58:00 alumno dhcpd[2837]: Wrote 0 deleted host decls to leases file.
Nov 17 16:58:00 alumno dhcpd[2837]: Wrote 0 new dynamic host decls to leases file.
Nov 17 16:58:00 alumno dhcpd[2837]: Wrote 0 leases to leases file.
Nov 17 16:58:00 alumno dhcpd[2837]: Listening on LPF/enp0s3/08:00:27:be:ca:6d/172.16.0.0/16
Nov 17 16:58:00 alumno sh[2837]: Listening on LPF/enp0s3/08:00:27:be:ca:6d/172.16.0.0/16
Nov 17 16:58:00 alumno dhcpd[2837]: Sending on LPF/enp0s3/08:00:27:be:ca:6d/172.16.0.0/16
Nov 17 16:58:00 alumno sh[2837]: Sending on LPF/enp0s3/08:00:27:be:ca:6d/172.16.0.0/16
Nov 17 16:58:00 alumno dhcpd[2837]: Sending on Socket/fallback/fallback-net
Nov 17 16:58:00 alumno sh[2837]: Sending on Socket/fallback/fallback-net
Nov 17 16:58:00 alumno dhcpd[2837]: Server starting service.
lines 1-21/21 (END)

```

CLIENTE





SE HACE LA PRUEBA CON DOS TAREJTAS DE RED PARA VER QUE EL DCHP ASIGNA CORRECTAMENTE.

Cancel

Wired

Apply

Details

Identity

IPv4

IPv6

Security

Link speed

1000 Mb/s

IPv4 Address

172.16.0.11

IPv6 Address

fe80::b92a:4718:7268:913e

Hardware Address

08:00:27:2D:95:A9

Default Route

172.16.0.1

DNS

192.168.8.1 192.168.8.2

☒ Connect automatically

☒ Make available to other users

☐ Metered connection: has data limits or can incur charges

Software updates and other large downloads will not be started automatically.

Remove Connection Profile