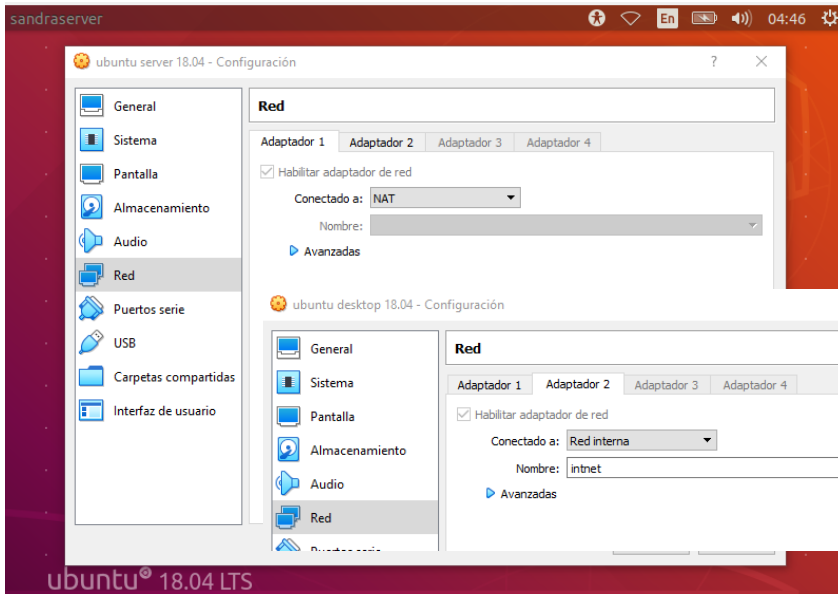


UF1 Administració avançada de sistemes operatius

1. Configuració Xarxa A3 - Autenticació

1. Configuració Xarxa A3

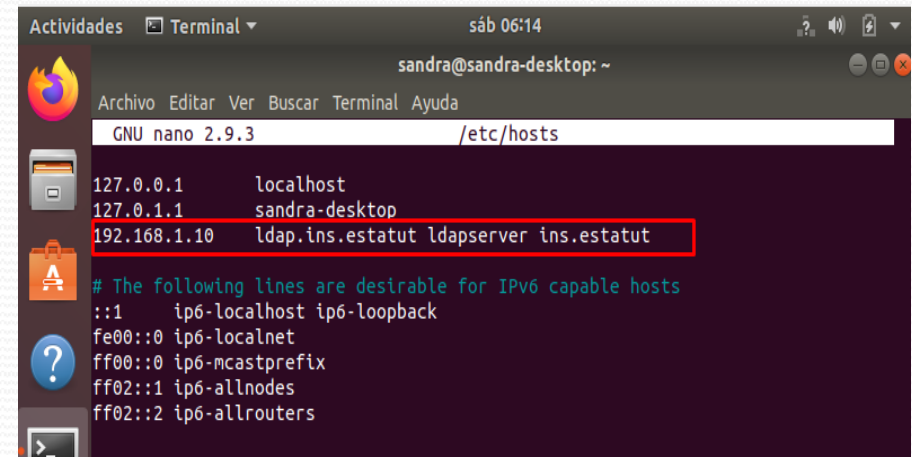
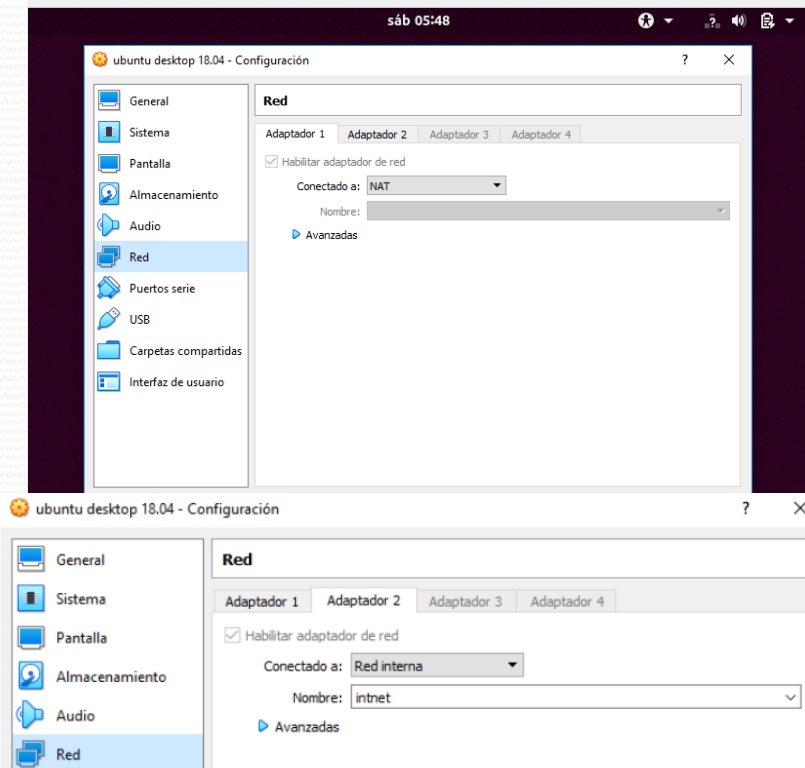
- Hem de tindre dues màquines virtuals amb 2 adaptadors de xarxa: Nat i Xarxa interna.
- A les dues hem de tenir el fitxer /etc/hosts amb l'adreça IP del servidor LDAP (en el meu cas 192.168.1.10):
 - Servidor



```
root@sandraserver: ~  
GNU nano 2.9.3 /etc/hosts  
127.0.0.1 localhost  
127.0.1.1 sandraserver  
192.168.1.10 ldap.ins.estatut ldapserver ins.estatut  
  
# The following lines are desirable for IPv6 capable hosts  
::1 ip6-localhost ip6-loopback  
fe00::0 ip6-localnet  
ff00::0 ip6-mcastprefix  
ff02::1 ip6-allnodes  
ff02::2 ip6-allrouters
```

1. Configuració Xarxa A3

● Client:



1. Configuració Xarxa A3

- En comptes dels fitxers d'interfaces, Ubuntu 18.04 ofereix “*netplan*” per configurar la xarxa, què es configura automàticament en funció de cloud-init.
- Per veure quins adaptadors de xarxa tenim hem d'executar la comanda “*ifconfig -a*” al terminal.
- Una vegada “localitzats” els adaptadors els hem de configurar als fitxers:
/etc/cloud/cloud.cfg.d/50-curtin-networking.cfg
/etc/netplan/50-cloud-init.yaml

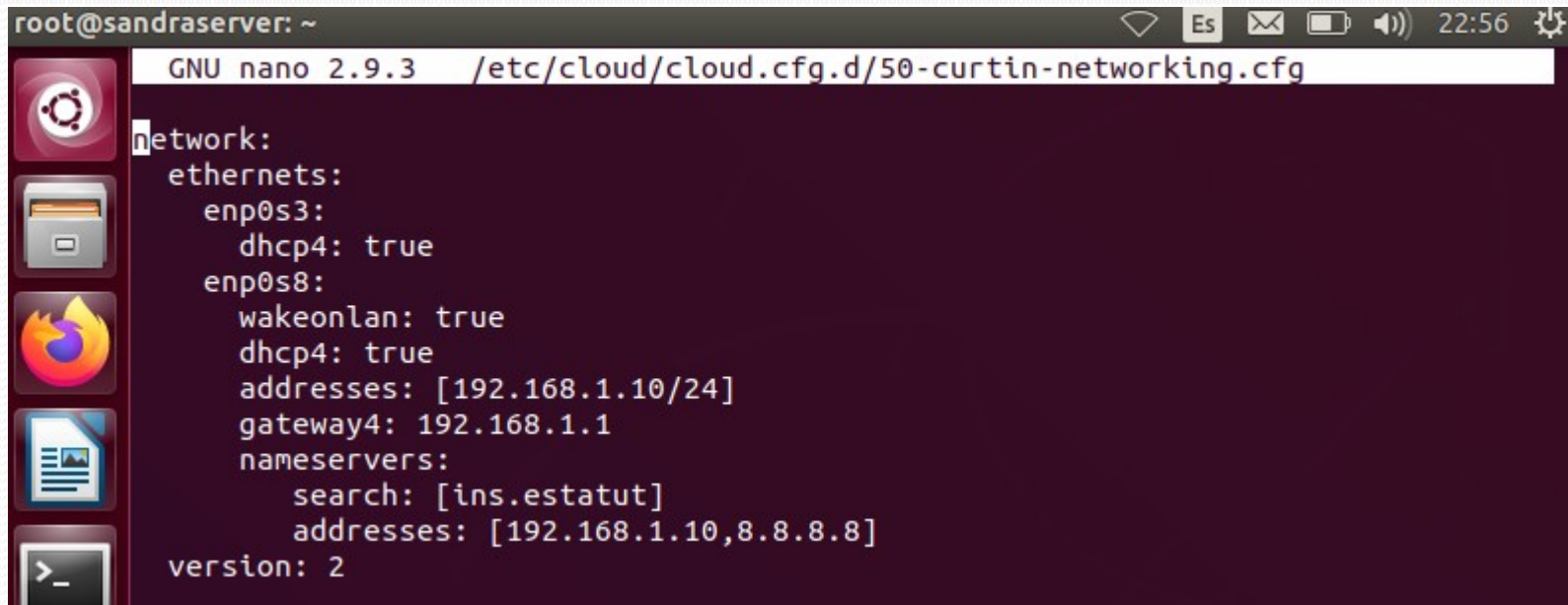
1. Configuració Xarxa A3

- Adaptadors:

```
root@sandraserver: ~  
sandra@sandraserver:~$ sudo -i  
[sudo] password for sandra:  
root@sandraserver:~# ifconfig -a → Aquesta per internet  
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255  
    inet6 fe80::a00:27ff:fe53:4cdd prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:53:4c:dd txqueuelen 1000 (Ethernet)  
    RX packets 2  bytes 1180 (1.1 KB)  
    RX errors 0  dropped 0  overruns 0  frame 0  
    TX packets 65  bytes 7750 (7.7 KB)  
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0  
enp0s8: → Aquesta per la xarxa interna. Definim IP fixa  
    flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.1.10 netmask 255.255.255.0 broadcast 192.168.1.255  
    inet6 fe80::a00:27ff:fe63:b8a0 prefixlen 64 scopeid 0x20<link>  
    ether 08:00:27:63:b8:a0 txqueuelen 1000 (Ethernet)  
    RX packets 29  bytes 2468 (2.4 KB)  
    RX errors 0  dropped 0  overruns 0  frame 0  
    TX packets 709  bytes 45863 (45.8 KB)  
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
    inet 127.0.0.1 netmask 255.0.0.0  
    inet6 ::1 prefixlen 128 scopeid 0x10<host>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 5015  bytes 418862 (418.8 KB)  
    RX errors 0  dropped 0  overruns 0  frame 0  
    TX packets 5015  bytes 418862 (418.8 KB)  
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0  
root@sandraserver:~#
```

1. Configuració Xarxa A3

- Al servidor, hem de configurar el fitxer `/etc/cloud/cloud.cfg.d/custom-networking.cfg` amb les dades del nostre servidor:



The screenshot shows a terminal window on a server. The prompt is `root@sandraserver: ~`. The terminal title bar indicates the editor is `GNU nano 2.9.3` editing `/etc/cloud/cloud.cfg.d/50-curtin-networking.cfg`. The file content is as follows:

```
network:
  ethernet:
    enp0s3:
      dhcp4: true
    enp0s8:
      wakeonlan: true
      dhcp4: true
      addresses: [192.168.1.10/24]
      gateway4: 192.168.1.1
      nameservers:
        search: [ins.estatut]
        addresses: [192.168.1.10,8.8.8.8]
  version: 2
```

The terminal window includes a sidebar with icons for a terminal, file manager, Firefox, and a document. The top status bar shows system icons for network, battery, and time (22:56).

1. Configuració Xarxa A3

- També hem de configurar el fitxer `/etc/netplan/50-cloud-init.yaml`

```
root@sandraserver: ~  
GNU nano 2.9.3 /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.  
# 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:  
  renderer: networkd  
  ethernets:  
    enp0s3:  
      dhcp4: true  
    enp0s8:  
      addresses: [192.168.1.10/24]  
      gateway4: 192.168.1.1  
      nameservers:  
        search: [ins.estatut]  
        addresses: [192.168.1.10,8.8.8.8]  
  version: 2
```

1. Configuració Xarxa A3

- Una vegada desat els canvis, executem “*cloud-init clean -r*” per fer-los efectiu i reiniciar el servidor amb els canvis.

```
root@sandraserver: ~  
root@sandraserver:~# cloud-init clean -r
```

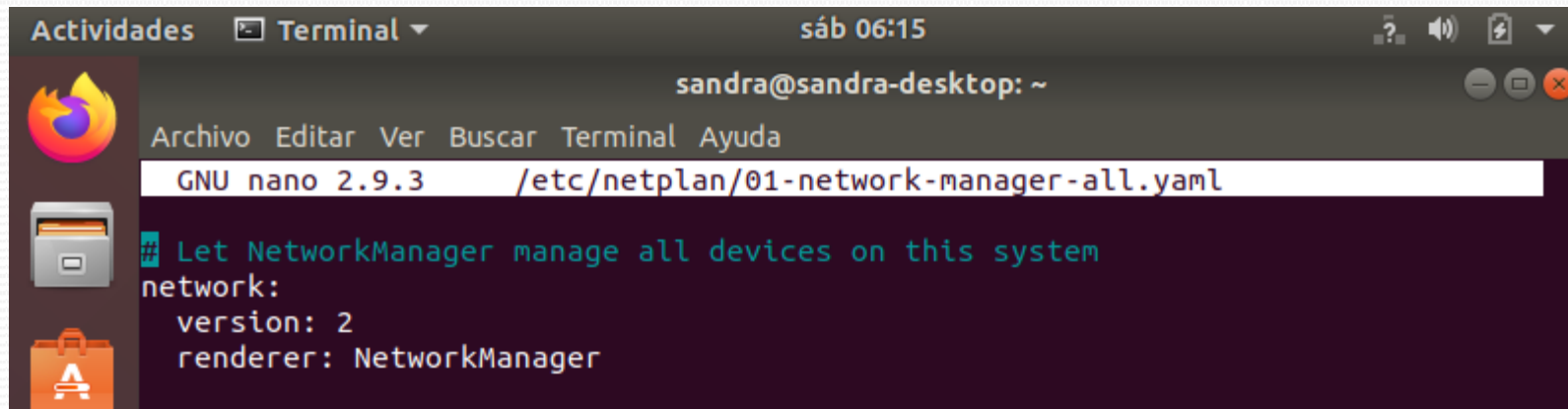
- I ho comprovarem amb “*systemd-resolve --status*”

```
>_ root@sandraserver:~# systemd-resolve --status  
  
Link 3 (enp0s8)  
  Current Scopes: DNS  
  LLMNR setting: yes  
  MulticastDNS setting: no  
  DNSSEC setting: no  
  DNSSEC supported: no  
  DNS Servers: 192.168.1.10  
               8.8.8.8  
  DNS Domain: ins.estatut  
  
Link 2 (enp0s3)  
  Current Scopes: DNS  
  LLMNR setting: yes  
  MulticastDNS setting: no  
  DNSSEC setting: no  
  DNSSEC supported: no  
  DNS Servers: 192.168.0.1  
lines 17-46/46 (END)
```

1. Configuració Xarxa A3

- **Al Client:**

- Comprovem també la configuració del fitxer de netplan. Fixeu-vos què, en aquest cas, només ens hem d'assegurar que el “renderer” sigui “NetworkManager”. Això és perquè li estem dient què ha de ser el gestor de xarxa qui apliqui la configuració.



```
Actividades Terminal ▼ sáb 06:15
sandra@sandra-desktop: ~
GNU nano 2.9.3 /etc/netplan/01-network-manager-all.yaml
# Let NetworkManager manage all devices on this system
network:
  version: 2
  renderer: NetworkManager
```

- Per fer la nostra configuració, ho farem mitjançant l'interfície gràfica.

1. Configuració Xarxa A3



1. Configuració Xarxa A3

- Clickant la roda, accedim al menú de configuració. Per la NAT ho deixem en automàtic perquè es connecti a Internet:

The screenshot shows a network configuration window titled 'Cableada'. At the top, there are three buttons: 'Cancelar' (grey), 'Cableada' (black), and 'Aplicar' (green). Below these are five tabs: 'Detalles', 'Identidad', 'IPv4' (which is selected and highlighted with a red box), 'IPv6', and 'Seguridad'. The main content area is for IPv4 configuration. It has a section 'Método IPv4' with three options: 'Automático (DHCP)' (selected with a red radio button), 'Manual', and 'Sólo enlace local'. Below this is a 'DNS' section with a label 'Automático' and a toggle switch that is currently turned on (orange). At the bottom, there is a text input field for 'Direcciones IP separadas por comas'.

1. Configuració Xarxa A3

● Per la xarxa interna. Hem d'anar a la pestanya d'IPv4. I en finalitzar els canvis, clicar “Aplicar”:

The screenshot shows the 'Cableada' (Cabled) network configuration window. At the top, there are buttons for 'Cancelar' (Cancel), 'Cableada', and 'Aplicar' (Apply). Below these are tabs for 'Detalles', 'Identidad', 'IPv4', 'IPv6', and 'Seguridad'. The 'IPv4' tab is selected and highlighted with a red box. The 'Método IPv4' (IPv4 Method) section has three options: 'Automático (DHCP)', 'Manual' (selected with a red dot), and 'Sólo enlace local'. There is also an option for 'Desactivar'. The 'Direcciones' (Addresses) section contains a table with columns for 'Dirección', 'Máscara de red', and 'Puerta de enlace'. The first row shows '192.168.1.11', '255.255.255.0', and '192.168.1.1'. The second row is empty. Below the table is a 'DNS' section with a toggle switch set to 'Automático' and a text field containing '192.168.1.10, 8.8.8.8'. There is also a label 'Direcciones IP separadas por comas'. The 'Rutas' (Routes) section has a toggle switch set to 'Automático' and a table with columns for 'Dirección', 'Máscara de red', 'Puerta de enlace', and 'Métrica'. The first row is empty.

Cancelar Cableada Aplicar

Detalles Identidad **IPv4** IPv6 Seguridad

Método IPv4

☐ Automático (DHCP) ☐ Sólo enlace local

☒ Manual ☐ Desactivar

Direcciones

Dirección	Máscara de red	Puerta de enlace
192.168.1.11	255.255.255.0	192.168.1.1

DNS Automático

192.168.1.10, 8.8.8.8

Direcciones IP separadas por comas

Rutas Automático

Dirección	Máscara de red	Puerta de enlace	Métrica

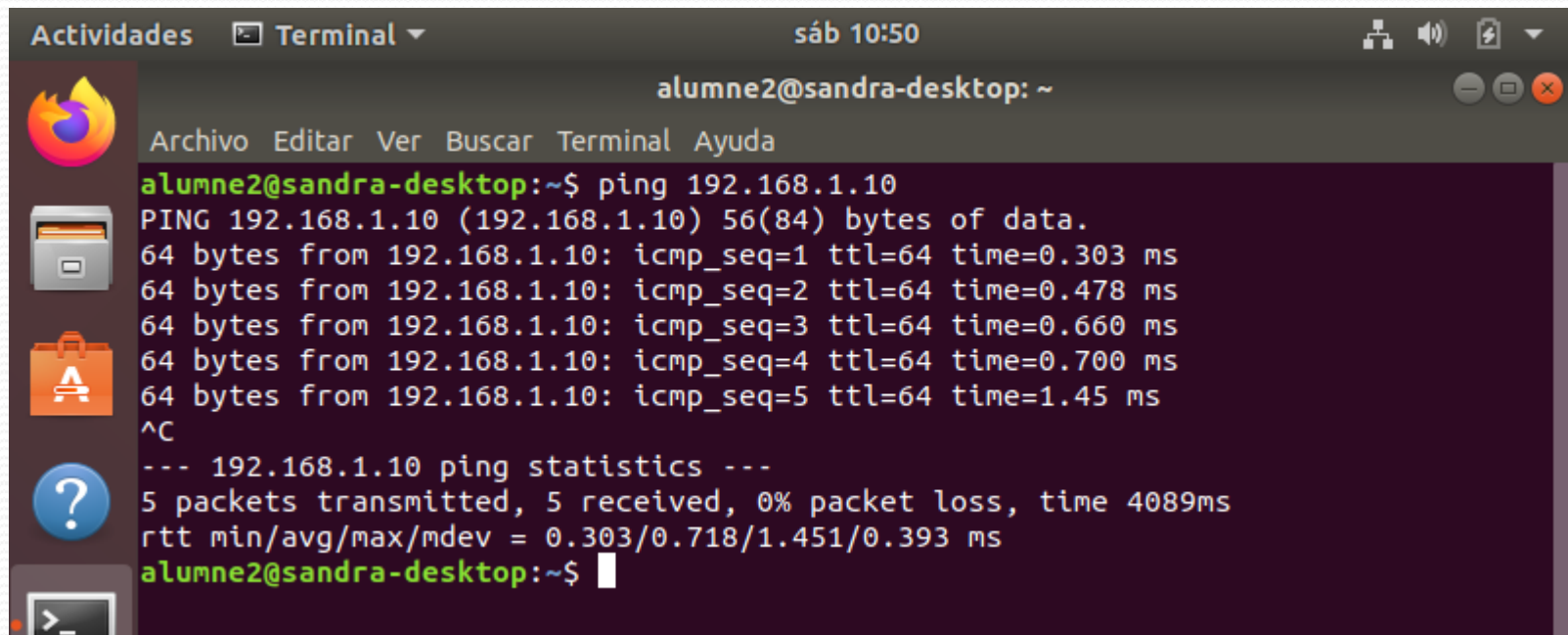
1. Configuració Xarxa A3

Ara podem fer ping del servidor al client: (de 192.168.1.10 a 192.168.1.11)

```
root@sandraserver: ~  
root@sandraserver:~# ping 192.168.1.10  
PING 192.168.1.10 (192.168.1.10) 56(84) bytes of data.  
64 bytes from 192.168.1.10: icmp_seq=1 ttl=64 time=0.021 ms  
64 bytes from 192.168.1.10: icmp_seq=2 ttl=64 time=0.039 ms  
64 bytes from 192.168.1.10: icmp_seq=3 ttl=64 time=0.069 ms  
64 bytes from 192.168.1.10: icmp_seq=4 ttl=64 time=0.036 ms  
^C  
--- 192.168.1.10 ping statistics ---  
4 packets transmitted, 4 received, 0% packet loss, time 3025ms  
rtt min/avg/max/mdev = 0.021/0.041/0.069/0.018 ms  
root@sandraserver:~# ping 192.168.1.11  
PING 192.168.1.11 (192.168.1.11) 56(84) bytes of data.  
64 bytes from 192.168.1.11: icmp_seq=1 ttl=64 time=0.278 ms  
64 bytes from 192.168.1.11: icmp_seq=2 ttl=64 time=0.322 ms  
64 bytes from 192.168.1.11: icmp_seq=3 ttl=64 time=1.12 ms  
64 bytes from 192.168.1.11: icmp_seq=4 ttl=64 time=0.286 ms  
64 bytes from 192.168.1.11: icmp_seq=5 ttl=64 time=0.673 ms  
64 bytes from 192.168.1.11: icmp_seq=6 ttl=64 time=0.466 ms  
64 bytes from 192.168.1.11: icmp_seq=7 ttl=64 time=0.352 ms  
64 bytes from 192.168.1.11: icmp_seq=8 ttl=64 time=0.451 ms  
64 bytes from 192.168.1.11: icmp_seq=9 ttl=64 time=0.452 ms  
64 bytes from 192.168.1.11: icmp_seq=10 ttl=64 time=0.442 ms  
^C  
--- 192.168.1.11 ping statistics ---  
10 packets transmitted, 10 received, 0% packet loss, time 9112ms  
rtt min/avg/max/mdev = 0.278/0.484/1.127/0.242 ms  
root@sandraserver:~#
```

1. Configuració Xarxa A3

I del client, al servidor (192.168.1.11 a 192.168.1.10):



The screenshot shows a terminal window titled "Terminal" with the user "alumne2@sandra-desktop". The terminal displays the execution of the command "ping 192.168.1.10". The output shows five successful ping requests with varying response times. After the pings, the user presses the Ctrl+C key (indicated by "^C"), which triggers the display of ping statistics. The statistics show that all 5 packets were transmitted and received successfully, with a 0% packet loss and an average round-trip time (rtt) of 0.718 ms.

```
Actividades Terminal sáb 10:50
alumne2@sandra-desktop: ~
Archivo Editar Ver Buscar Terminal Ayuda
alumne2@sandra-desktop:~$ ping 192.168.1.10
PING 192.168.1.10 (192.168.1.10) 56(84) bytes of data.
64 bytes from 192.168.1.10: icmp_seq=1 ttl=64 time=0.303 ms
64 bytes from 192.168.1.10: icmp_seq=2 ttl=64 time=0.478 ms
64 bytes from 192.168.1.10: icmp_seq=3 ttl=64 time=0.660 ms
64 bytes from 192.168.1.10: icmp_seq=4 ttl=64 time=0.700 ms
64 bytes from 192.168.1.10: icmp_seq=5 ttl=64 time=1.45 ms
^C
--- 192.168.1.10 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4089ms
rtt min/avg/max/mdev = 0.303/0.718/1.451/0.393 ms
alumne2@sandra-desktop:~$
```