

UF04 - Pràctica 01: Simulació avançada d'un CPD amb VirtualBox

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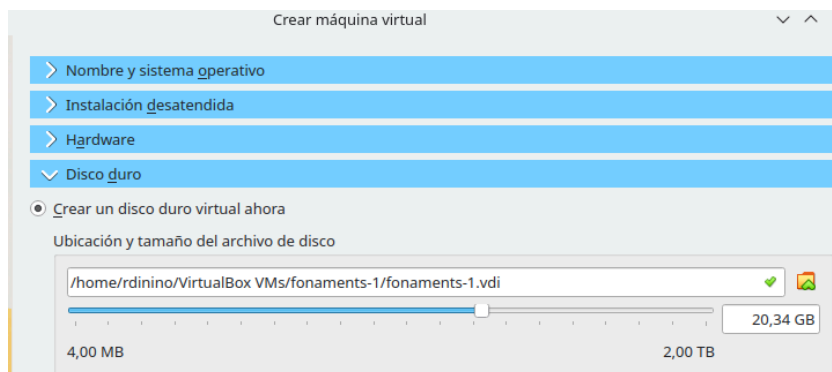
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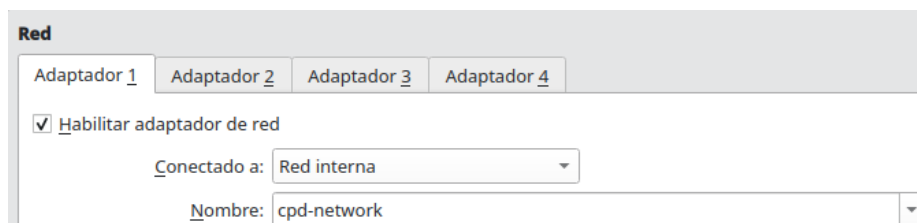
1. Configuració inicial de VirtualBox

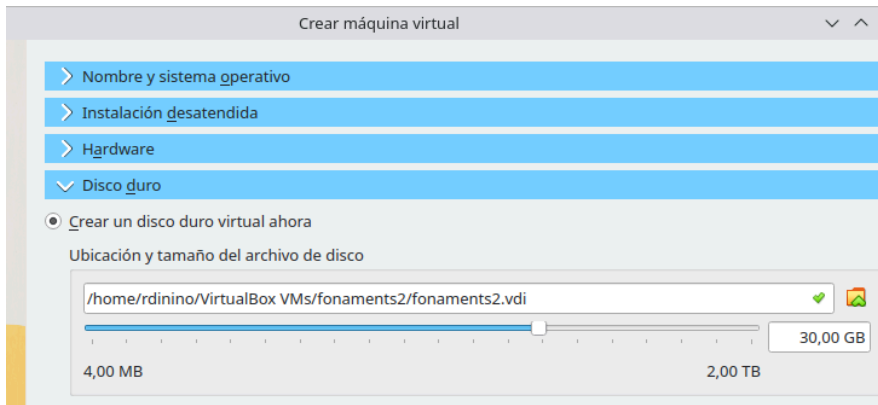
- ◆ Descarrega i prepara les imatges del sistema
- ◆ Instal·lació del sistema operatiu

Nom VM	CPU	RAM	Disc	Xarxa
nomcognom-cpd-mgmt	2 vCPU	2 GB	20 GB	Interna (CPD_Network)
nomcognom-cpd-storage	2 vCPU	2 GB	30 GB	Interna (CPD_Network)
nomcognom-cpd-monitor	2 vCPU	2 GB	20 GB	Interna (CPD_Network)

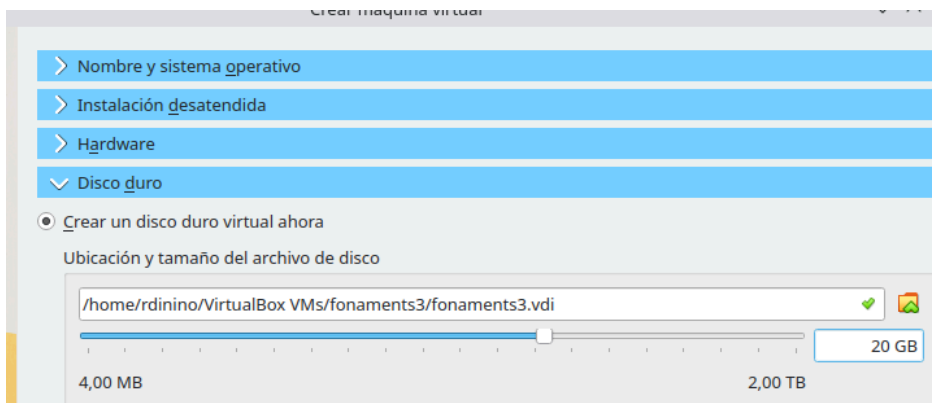
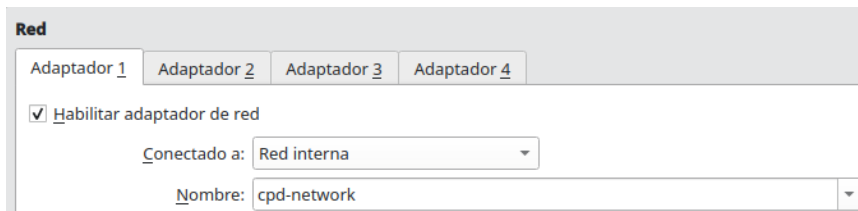


```
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$
```





```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$
```



2. Configuració de la xarxa interna i IP estàtiques

◆ Assignació d'IP estàtiques amb **netplan**

Cada màquina ha de tenir una adreça IP fixa. Configura **netplan** perquè cada servidor tingui la següent adreça:

Servidor	IP Assignada	Descripció
nomcognom-cpd-mgmt	192.168.1.10	Servidor de gestió
nomcognom-cpd-storage	192.168.1.20	Servidor d'emmagatzematge
nomcognom-cpd-monitor	192.168.1.30	Servidor de monitoratge

```
/etc/netplan/50-cloud-init.yaml
```

maquina 1

```
GNU nano 7.2 /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:
        - 192.168.1.10/24
  version: 2
```

```
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ sudo netplan apply
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$
```

```
valid_irt forever preferred_irt forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:a2:96:62 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.10/24 brd 192.168.1.255 scope global enp0s3
```

ping de maquina 1 a 3

```
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ ping 192.168.1.30
PING 192.168.1.30 (192.168.1.30) 56(84) bytes of data.
64 bytes from 192.168.1.30: icmp_seq=1 ttl=64 time=1.73 ms
^C
--- 192.168.1.30 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 1.732/1.732/1.732/0.000 ms
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$
```

maquina 2

```
GNU nano 7.2 /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:
        - 192.168.1.20/24
  version: 2
```

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo netplan apply
rosidinino-cpd-storage@rosidinino-cpd-storage:~$
```

```
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:5e:dc:22 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.20/24 brd 192.168.1.255 scope global enp0s3
```

Comprova la connexió entre servidors fent **ping** entre ells.

ping maquina 2 a la 1

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ 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=1.65 ms
^C
--- 192.168.1.10 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 1.650/1.650/1.650/0.000 ms
rosidinino-cpd-storage@rosidinino-cpd-storage:~$
```

maquina 3

```
GNU nano 7.2 /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:
        - 192.168.1.30/24

  version: 2
```

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo netplan apply
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

```
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:8d:f6:14 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.30/24 brd 192.168.1.255 scope global enp0s3
```

ping maquina 3 a 2

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ ping 192.168.1.20
PING 192.168.1.20 (192.168.1.20) 56(84) bytes of data.
64 bytes from 192.168.1.20: icmp_seq=1 ttl=64 time=2.07 ms
64 bytes from 192.168.1.20: icmp_seq=2 ttl=64 time=0.960 ms
^C
--- 192.168.1.20 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 0.960/1.514/2.069/0.554 ms
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

3. Configuració del servidor d'emmagatzematge (Samba)

◆ Instal·lació i configuració de Samba

A la màquina `nomcognom-cpd-storage`, instal·la i configura Samba per compartir fitxers entre servidors.

📌 Referència oficial sobre Samba:

🔗 <https://ubuntu.com/server/docs/samba-file-server>

Tasques a realitzar:

✅ Instal·lar el servei **Samba**.

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo apt install samba
```

✅ Crear el directori compartit `/srv/samba/nomcognom-share/` i establir els permisos adequats.

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo mkdir -p /srv/samba/rosidinino-share
```

✅ Configurar **smb.conf** per definir un recurs compartit amb permisos d'accés.

`sudo nano /etc/samba/smb.conf`

```
[rosidinino-share]
path = /srv/samba/rosidinino-share
read only = no
writable yes
valid users = rosi
```

✅ Crear un usuari de Samba (`smbpasswd -a usuari`) per accedir al recurs.

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo useradd rosi
```

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo passwd rosi
New password:
Retype new password:
passwd: password updated successfully
```



```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo smbpasswd -a rosi
New SMB password:
Retype new SMB password:
Added user rosi.
```

✓ Reiniciar el servei (`systemctl restart smbd`).

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo systemctl restart smbd
rosidinino-cpd-storage@rosidinino-cpd-storage:~$
```

✓ Comprovar l'accés des de les altres màquines.

han d'estar totes les màquines a red-interna

access maquina cpd-mgmt

```
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ smbclient //192.168.1.20/rosidinino-share -U rosi
Password for [WORKGROUP\rosi]:
Try "help" to get a list of possible commands.
smb: \> ls
.                D            0   Wed Feb 19 18:39:56 2025
..               D            0   Wed Feb 19 18:39:56 2025

14339080 blocks of size 1024. 7970076 blocks available
smb: \>
```

access maquina cpd-monitor

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ smbclient //192.168.1.20/rosidinino-share -U rosi
Password for [WORKGROUP\rosi]:
Try "help" to get a list of possible commands.
smb: \> ls
.                D            0   Wed Feb 19 18:39:56 2025
..               D            0   Wed Feb 19 18:39:56 2025

14339080 blocks of size 1024. 7970076 blocks available
smb: \>
```

4. Configuració del sistema de monitoratge (Zabbix Server)

◆ Instal·lació i configuració de Zabbix Server

A la màquina `nomcognom-cpd-monitor`, instal·la **Zabbix Server** i configura'l per monitoritzar l'entorn.

 **Documentació oficial de Zabbix Server:**

 <https://www.zabbix.com/documentation/current/manual/installation/install>

Tasques a realitzar:

✓ Instal·lar **Zabbix Server** i la seva base de dades.

`wget https://repo.zabbix.com/zabbix/7.2/release/ubuntu/pool/main/z/zabbix-release/zabbix-release_latest_7.2+ubuntu24.04_all.deb`

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ wget https://repo.zabbix.com/zabbix/7.2/release/ubuntu/pool/main/z/zabbix-release/zabbix-release_latest_7.2+ubuntu24.04_all.deb
--2025-02-19 19:15:41-- https://repo.zabbix.com/zabbix/7.2/release/ubuntu/pool/main/z/zabbix-release/zabbix-release_latest_7.2+ubuntu24.04_all.deb
Resolving repo.zabbix.com (repo.zabbix.com)... 178.128.6.101, 2604:a880:2:d0::2062:d001
Connecting to repo.zabbix.com (repo.zabbix.com)|178.128.6.101|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 7104 (6.9K) [application/octet-stream]
Saving to: 'zabbix-release_latest_7.2+ubuntu24.04_all.deb'

zabbix-release_latest_7.2+ubuntu24.04_a 100%[=====] 6,94K --KB/s in 0s

2025-02-19 19:15:42 (411 MB/s) - 'zabbix-release_latest_7.2+ubuntu24.04_all.deb' saved [7104/7104]

rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

`dpkg -i zabbix-release_latest_7.2+ubuntu24.04_all.deb`

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo dpkg -i zabbix-release_latest_7.2+ubuntu24.04_all.deb
(Leyendo la base de datos ... 81783 ficheros o directorios instalados actualmente.)
Preparando para desempaquetar zabbix-release_latest_7.2+ubuntu24.04_all.deb ...
Desempaquetando zabbix-release (1:7.2-1+ubuntu24.04) sobre (1:6.0-1+ubuntu20.04) ...
Configurando zabbix-release (1:7.2-1+ubuntu24.04) ...
Instalando una nueva versión del fichero de configuración /etc/apt/sources.list.d/zabbix.list ...
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

important actualitzar

`# apt install zabbix-server-mysql zabbix-frontend-php
zabbix-apache-conf zabbix-sql-scripts zabbix-agent`

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo apt install zabbix-server-mysql zabbix-frontend-php zabbix-apache-conf zabbix-sql-scripts zabbix-agent
```

si cal

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo systemctl restart mariadb
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo apt install mariadb-server mariadb-client -y
```

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo mysql_secure_installation
```

- ✓ Crear i configurar la base de dades (`mysql -u root -p`).

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 40
Server version: 10.11.8-MariaDB-0ubuntu0.24.04.1 Ubuntu 24.04

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> _
```

- ✓ Modificar la configuració del servidor per establir les credencials correctes.

```
MariaDB [(none)]> create database zabbix character set utf8mb4 collate utf8mb4_bin;
Query OK, 1 row affected (0,001 sec)

MariaDB [(none)]> create user zabbix@localhost identified by 'asix123';
Query OK, 0 rows affected (0,033 sec)

MariaDB [(none)]> grant all privileges on zabbix.* to zabbix@localhost;
Query OK, 0 rows affected (0,009 sec)

MariaDB [(none)]>
```

```
MariaDB [(none)]> set global log_bin_trust_function_creators = 1;
Query OK, 0 rows affected (0,000 sec)

MariaDB [(none)]> quit
Bye
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

tarda una mica

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ zcat /usr/share/zabbix/sql-scripts/mysql/server.sql.gz | mysql --default-character-set=utf8mb4 -uzabbix -p zabbix
Enter password:
```

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ mysql -uroot -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 50
Server version: 10.11.8-MariaDB-0ubuntu0.24.04.1 Ubuntu 24.04

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> set global log_bin_trust_function_creators = 0;
Query OK, 0 rows affected (0,000 sec)

MariaDB [(none)]>
```

```
/etc/zabbix/zabbix_server.conf
```

```
DBPassword=asix123
```

`systemctl restart zabbix-server zabbix-agent apache2`

`systemctl enable zabbix-server zabbix-agent apache2`

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo systemctl restart zabbix-server zabbix-agent apache2
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo systemctl enable zabbix-server zabbix-agent apache2
Synchronizing state of zabbix-server.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable zabbix-server
Synchronizing state of zabbix-agent.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable zabbix-agent
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
Created symlink /etc/systemd/system/multi-user.target.wants/zabbix-server.service → /usr/lib/systemd/system/zabbix-server.service.
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

✓ Reiniciar el servei i accedir a la interfície web (<http://192.168.1.30/zabbix>).



ZABBIX

Bienvenido
Comprobación de requisitos previos
Configurar la conexión de BD
Ajustes
Resumen de preinstalación
Instalar

Comprobación de requisitos previos

Soporte PHP de bases de datos	MySQL	OK
PHP bcmath	conectado	OK
PHP mbstring	conectado	OK
Opción PHP "mbstring.func_overload"	desconectado	desconectado OK
PHP sockets	conectado	OK
PHP gd	2.3.3	2.0 OK
Soporte de PHP gd PNG	conectado	OK
Soporte de PHP gd JPEG	conectado	OK
Soporte de PHP gd GIF	conectado	OK
Soporte de PHP gd FreeType	conectado	OK
PHP libxml	2.9.14	2.6.15 OK

Volver

Siguiente paso

ZABBIX

Bienvenido
Comprobación de requisitos previos
Configurar la conexión de BD
Ajustes
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Instalar

Configurar la conexión de BD

Por favor, cree la base de datos manualmente, y configure los parámetros para la conexión a esta base de datos. Pulse el botón "Siguiente paso" cuando termine.

Tipo de base de datos	MySQL
Servidor de base de datos	localhost
Puerto de la base de datos	0 0 - usar el puerto por defecto
Nombre de la base de datos	zabbix
Almacenar credenciales en	Texto sin formato HashiCorp Vault Bóveda CyberArk
Usuario	zabbix
Contraseña	*****

Base de datos TLS cifrado La conexión no se cifrará porque usa un archivo de socket (en Unix) o memoria compartida (Windows).

Volver

Siguiente paso

Configuració final

ZABBIX

Bienvenido
Comprobación de requisitos previos
Configurar la conexión de BD
Ajustes
Resumen de preinstalación
Instalar

Resumen de preinstalación

Por favor verifique los parámetros de configuración. Si todo está correcto, presione el botón "Siguiente paso" o el botón "Volver" para cambiar los parámetros de configuración.

Tipo de base de datos	MySQL
Servidor de base de datos	localhost
Puerto de la base de datos	por defecto
Nombre de la base de datos	zabbix
Usuario de base de datos	zabbix
Contraseña de la base de datos	*****
Base de datos TLS cifrado	false
Nombre del servidor Zabbix	zabbix-r

Volver

Siguiente paso

5. Configuració de seguretat i accés remot

♦ Firewall amb **ufw**

Implementa regles bàsiques de seguretat a cada servidor: el que farà es bloquejar tots els ports excepte el que actives manualment

`sudo ufw allow from 192.168.1.0/24 to any port 22`

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo ufw allow from 192.168.1.0/24 to any port 22
Rules updated
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo ufw allow from 192.168.1.0/24 to any port 22
[sudo] password for rosidinino-cpd-storage:
Rules updated
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ _
```

```
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ sudo ufw allow from 192.168.1.0/24 to any port 22
[sudo] password for rosidinino-cpd-mgmt:
Rules updated
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$
```

`sudo ufw allow from 192.168.1.30 to any port 10050`

```
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ sudo ufw allow from 192.168.1.30 to any port 10050
Rules updated
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ _
```

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo ufw allow from 192.168.1.30 to any port 10050
Rules updated
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ _
```

```
can't connect to host 192.168.1.30: port 10050 connection refused
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo ufw allow from 192.168.1.30 to any port 10050
Rule added
```

`sudo ufw enable`

```
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ sudo ufw enable
Firewall is active and enabled on system startup
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ _
```

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo ufw enable
Firewall is active and enabled on system startup
rosidinino-cpd-storage@rosidinino-cpd-storage:~$
```

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo ufw enable
Firewall is active and enabled on system startup
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ _
```

veure l'estat

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo ufw status
Status: active

To                Action            From
--                -
22                ALLOW             192.168.1.0/24
10050             ALLOW             192.168.1.30

rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo ufw enable
Firewall is active and enabled on system startup
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo ufw status
Status: active

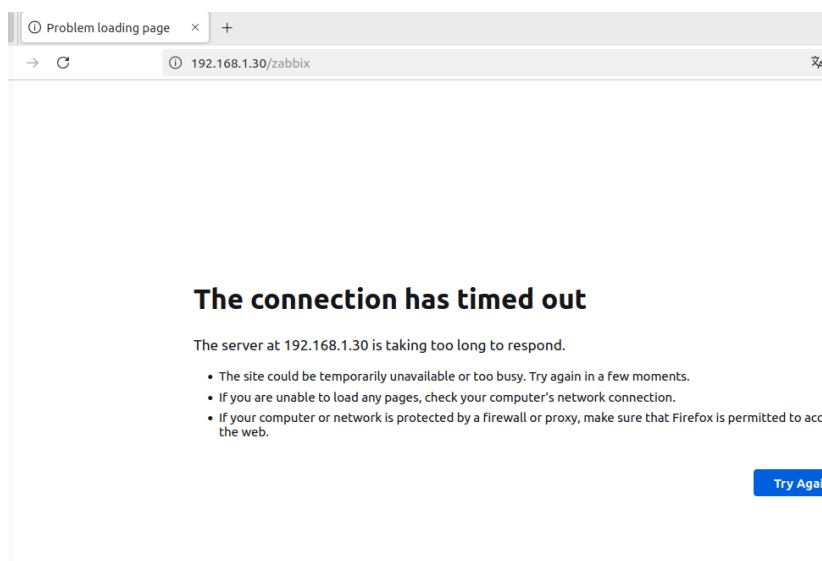
To                Action            From
--                -
22                ALLOW             192.168.1.0/24
10050             ALLOW             192.168.1.30
```

```
rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$ sudo ufw status
[sudo] password for rosidinino-cpd-mgmt:
Status: active

To                Action            From
--                -
22                ALLOW             192.168.1.0/24
10050             ALLOW             192.168.1.30

rosidinino-cpd-mgmt@rosidinino-cpd-mgmt:~$
```

si intenten entrar per exemple a zabbix no ens deixara perque el firewall esta funcionant em d'activar una altre regla al server de zabbix per que deixi



afegim el port 80 al server

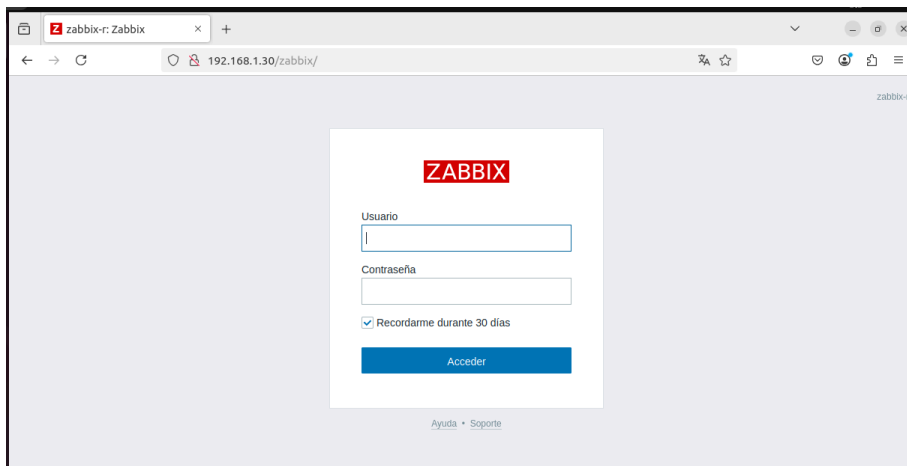
```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo ufw allow from 192.168.1.0/24 to any port 80
Rule added
```

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ sudo ufw status
Status: active
```

To	Action	From
--	----	----
22	ALLOW	192.168.1.0/24
10050	ALLOW	192.168.1.30
80	ALLOW	192.168.1.0/24

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$
```

ara si ens deixa entrar



i per que funcioni smbclient has d'anar al server i activar el port 139

```
rosidinino-cpd-storage@rosidinino-cpd-storage:~$ sudo ufw allow from 192.168.1.0/24 to any port 139
[sudo] password for rosidinino-cpd-storage:
Rule added
rosidinino-cpd-storage@rosidinino-cpd-storage:~$
```

prova de tornar a entrar, i ara si deixa

```
rosidinino-cpd-monitor@rosidinino-cpd-monitor:~$ smbclient //192.168.1.20/rosidinino-share -U rosi
Password for [WORKGROUP\rosi]:
Try "help" to get a list of possible commands.
smb: \> ls
.                D          0  Wed Feb 19 18:39:56 2025
..               D          0  Wed Feb 19 18:39:56 2025

14339080 blocks of size 1024. 7952968 blocks available
smb: \>
```


Conclusió

En aquesta pràctica hem treballat amb 3 màquines de ubuntu server i un desktop, 1 per configurar i activar el server samba, per compartir carpetes entre les màquines, una altre per el server zabbix per controlar totes les màquines el seu rendiment les seves aplicacions, problemes etc, i una màquina per fer gestions internes. També hem vist com activar i configurar ports en firewall per denegar o activar protocols com ssh http i protocol de samba.