

KCTUS IT

Final Documentation

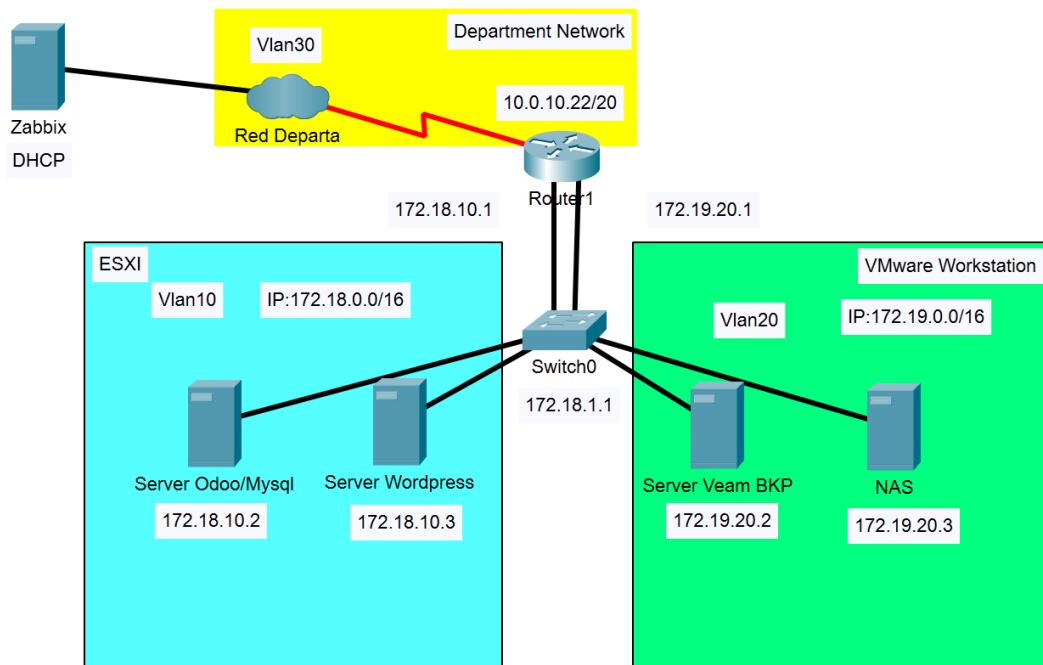


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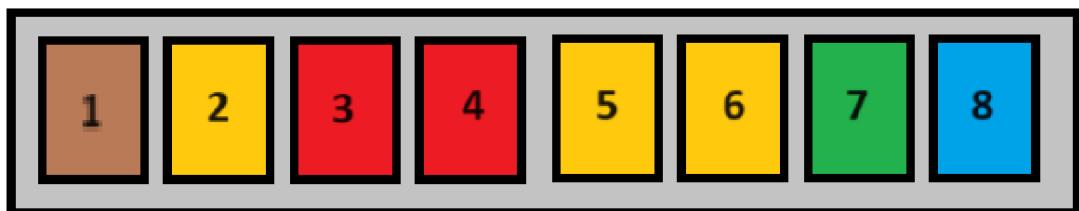
INTRODUCTION



OPERATIVE SYSTEMS & NETWORK ADMINISTRATION

SWITCH

To be able to implement this network infrastructure we will need to configure the main switch with the following configuration.



1. VLAN 1 switch configuration
2. Trunk Esxi
- 3 & 4 VLAN 10 DMZ
- 5 & 6 VLAN 20 BKP
7. Trunk Router
8. VLAN 30 Access department

We will configure the port 1 as the vlan 1 as an access interface to the switch configuration.

Then we will set port numbers 2, 5 and 6 for vlan 20, but port 2 will be in trunk mode because we will be connecting our esxi machine in that port. Following we will configure the ports 3 and



4 in access mode for the vlan 10. The port number 7 will be in trunk mode connected to the router allowing through it vlan 10, 20 and 30. Finally, the port number 8 will be configured from the vlan 30 in access mode and connected to the department by an ethernet cable it will be the access to the exterior of our network infrastructure.

ESXI

For the implementation of ESXI, we will use a virtualisation with VMware Workstation, in which we will install the software of the same house VMware ESXI. This will allow us to have several virtual machines that we will use to install servers, which will provide us with services such as web, odoo and databases.

This machine will be equipped with:

- **5-8 GB of RAM:** Due to its high consumption and higher performance when having two machines at the same time providing services to several users at the same time.
- **2-6 processors:** Unlike RAM, this consumption is not usually so high, but when it comes to processes such as installations, if we want good performance, we should increase its performance.
- **6 disks of 142 GB:** We need such a high amount of disks because 3 of them are for the Odoo machine, 2 disks are for the Wordpress machine and the last one is where the ESXI itself is going to be installed.
- **2 network adapters:** We will need two VLANS (10, 20) to come in, which is why we will need to equip the machine with these two adapters. This point will be explained later in the documentation.

Virtual Machine Settings	
Hardware Options	
Device	Summary
Memory	8 GB
Processors	6
Hard Disk (SCSI)	142 GB
Hard Disk 3 (SCSI)	142 GB
Hard Disk 2 (SCSI)	142 GB
Hard Disk 4 (SCSI)	142 GB
Hard Disk 6 (SCSI)	142 GB
Hard Disk 5 (SCSI)	142 GB
CD/DVD (IDE)	Using file C:\Users\ceraa\De...
Network Adapter 2	Custom (VMnet16)
Network Adapter 3	Custom (VMnet17)
USB Controller	Present
Display	Auto detect



Virtual Network Editor

Name	Type	External Connection	Host Connection	DHCP	Subnet Address
VMnet1	Host-only	-	Connected	Enabled	172.31.0.0
VMnet8	NAT	NAT	Connected	Enabled	172.19.0.0
VMnet15	Bridged	Hyper-V Virtual Ethernet Adapter #3	-	-	-
VMnet16	Bridged	Hyper-V Virtual Ethernet Adapter #4	-	-	-
VMnet17	Bridged	Hyper-V Virtual Ethernet Adapter #5	-	-	-
VMnet19	Bridged	Intel(R) Wi-Fi 6 AX201 160MHz	-	-	-

Add Network... Remove Network... Rename Network...

VMnet Information

Bridged (connect VMs directly to the external network)

Bridged to: Hyper-V Virtual Ethernet Adapter #3 Automatic Settings...

NAT (shared host's IP address with VMs) NAT Settings...

Host-only (connect VMs internally in a private network)

Connect a host virtual adapter to this network
Host virtual adapter name: VMware Network Adapter VMnet16

Use local DHCP service to distribute IP address to VMs DHCP Settings...

Subnet IP: [] Subnet mask: []

Restore Defaults Import... Export... OK Cancel Apply Help

Virtual Network Editor

Name	Type	External Connection	Host Connection	DHCP	Subnet Address
VMnet1	Host-only	-	Connected	Enabled	172.31.0.0
VMnet8	NAT	NAT	Connected	Enabled	172.19.0.0
VMnet15	Bridged	Hyper-V Virtual Ethernet Adapter #3	-	-	-
VMnet16	Bridged	Hyper-V Virtual Ethernet Adapter #4	-	-	-
VMnet17	Bridged	Hyper-V Virtual Ethernet Adapter #5	-	-	-
VMnet19	Bridged	Intel(R) Wi-Fi 6 AX201 160MHz	-	-	-

Add Network... Remove Network... Rename Network...

VMnet Information

Bridged (connect VMs directly to the external network)

Bridged to: Hyper-V Virtual Ethernet Adapter #4 Automatic Settings...

NAT (shared host's IP address with VMs) NAT Settings...

Host-only (connect VMs internally in a private network)

Connect a host virtual adapter to this network
Host virtual adapter name: VMware Network Adapter VMnet17

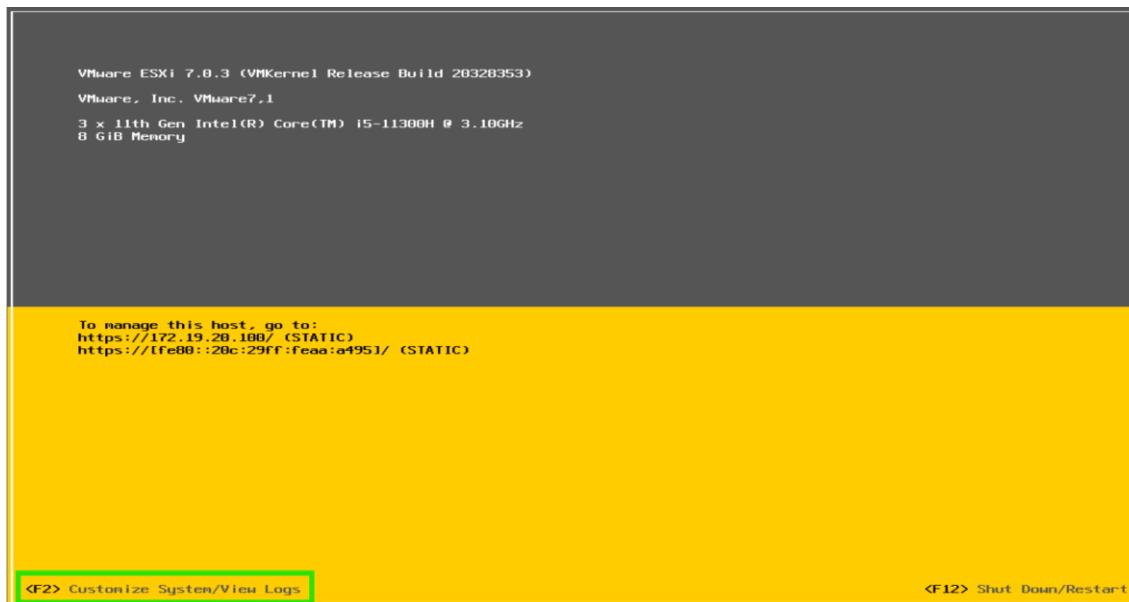
Use local DHCP service to distribute IP address to VMs DHCP Settings...

Subnet IP: [] Subnet mask: []

Restore Defaults Import... Export... OK Cancel Apply Help

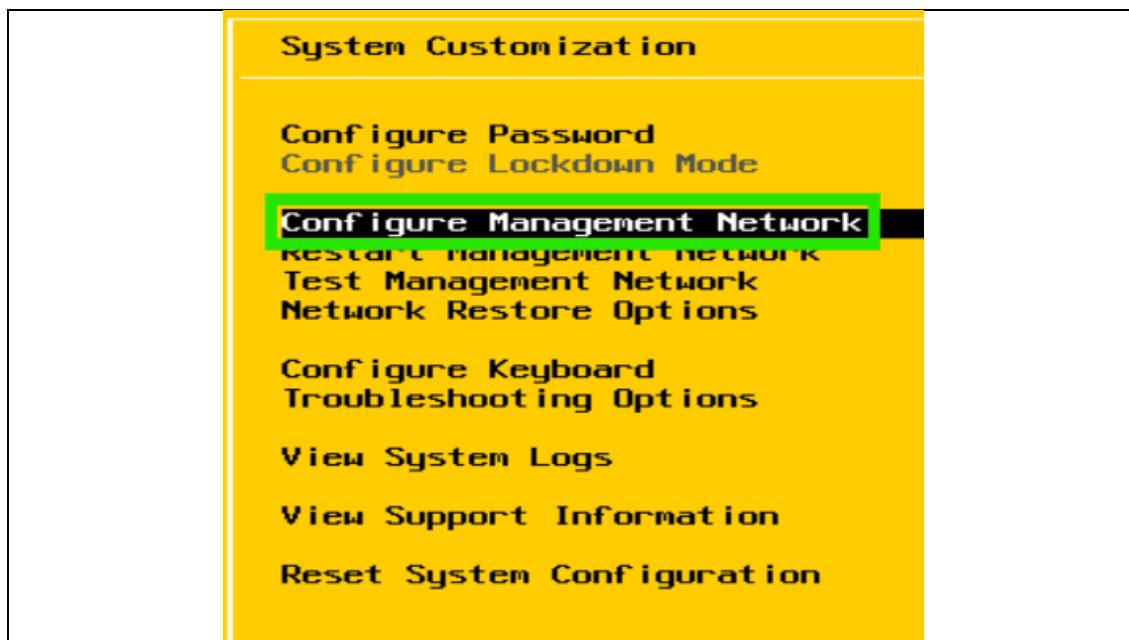


Inside ESXI with F2 you can access the configuration parameters all from the root user and its strong password.



Within the configuration we find parameters such as the network configuration. These settings can be accessed for various purposes:

- First of all, modify the adapter through which we will connect to ESXI, that is, from vlan 20. But we need to connect the adapter of vlan 10 as well because then we can put the machines inside ESXI in the DMZ.
- Then, after selecting the adapter, we will set IP to the ESXI to be able to connect from the vlan20 and to be able to manage it.





Configure Management Network

Network Adapters
VLAN (optional)

IPv4 Configuration
IPv6 Configuration
DNS Configuration
Custom DNS Suffixes

Network Adapters

Select the adapters for this host's default management network connection. Use two or more adapters for fault-tolerance and load-balancing.

Device Name	Hardware Label (MAC Address)	Status
[] vmmic1	Ethernet1 (...c:29:51:53:28)	Connected (...)
[X] vmmic2	Ethernet2 (...c:29:51:53:32)	Connected (...)

<D> View Details <Space> Toggle Selected <Enter> OK <Esc> Cancel

Configure Management Network

Network Adapters
VLAN (optional)

IPv4 Configuration

IPv6 Configuration
DNS Configuration
Custom DNS Suffixes

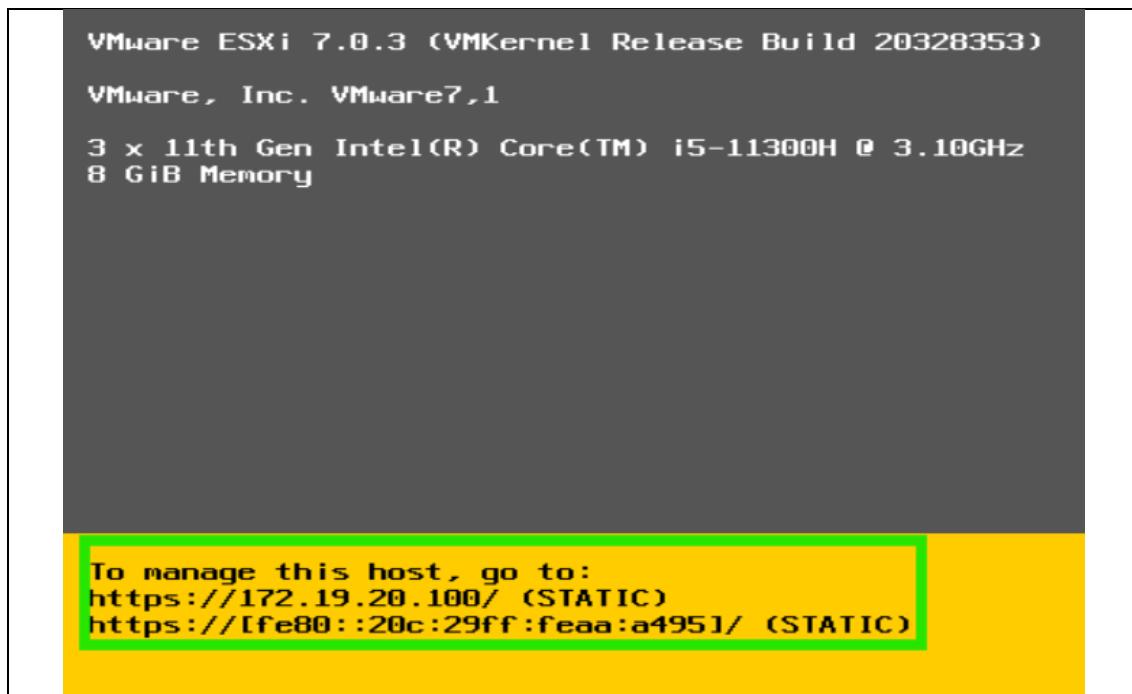
IPv4 Configuration

This host can obtain network settings automatically if your network includes a DHCP server. If it does not, the following settings must be specified:

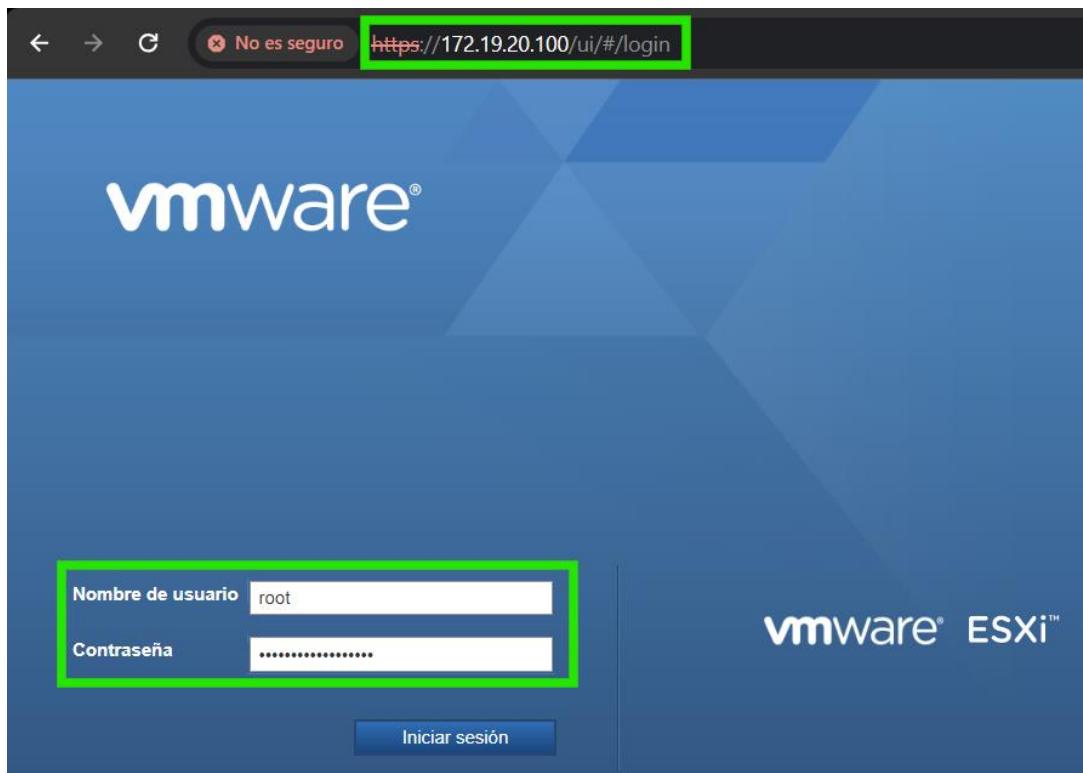
() Disable IPv4 configuration for management network
() Use dynamic IPv4 address and network configuration
(o) Set static IPv4 address and network configuration:

IPv4 Address	[172.19.20.100]
Subnet Mask	[255.255.0.0]
Default Gateway	[172.19.20.1]

<Up/Down> Select <Space> Mark Selected <Enter> OK <Esc> Cancel



To access the ESXi control panel, just enter the IP in our Browser, with root user and password set, we will be inside.





CREATION OF THE DATA STORE

Inside we can go to the storage section where we will create a data store for each of the disks previously added to the machine, these stores are the ones we will use as disks for each of the machines, since, remembering previous information, Odoo will be equipped with 2 disks, and Wordpress with 3 disks.

The steps to create a data warehouse are as follows:

- In the ESXI browser open the option Storage > Datastores.
- Inside you will find the New datastore option.
- A pop-up will open to proceed with the configuration, create a VMFS datastore.
- Name it and select which physical disk to use for the datastore.
- After selecting the partition options, the datastore is ready.

The screenshot shows the VMware ESXi interface under the 'Almacenamiento' (Storage) section. A new datastore named 'datastore1' is being created. The interface includes a navigation bar with 'Host', 'Administrador', 'Supervisar', 'Máquinas virtuales', 'Almacenamiento', and 'Redes'. Below the navigation is a table for existing datastores, showing one entry for 'datastore1'. A modal window titled 'Nuevo almacén de datos' (New storage repository) is open, showing the steps: 1 Seleccionar tipo de creación, 2 Seleccionar dispositivo, 3 Seleccionar opciones de partición, 4 Listo para completar. The 'Crear nuevo almacén de datos de VMFS' option is selected. The 'Nuevo almacenamiento - MySQL_Odoo' window shows step 2 selected, with a list of available devices: 'Local VMware, Disk (mpx.vmhba0.C0:T2:L0)' and 'Local VMware, Disk (mpx.vmhba0.C0:T1:L0)'. Both are listed as 'Disco (SSD)' with 142 GB capacity and 142 GB free space.



Nuevo almacen de datos - MYSQL_Odoo

Seleccionar opciones de partición

Seleccione cómo desea particionar el dispositivo

Usar todo el disco VMFS 6

Antes de editar una partición Después

Espacio libre (142 GB) 1. VMFS (142 GB)

Atrás Siguiente Finalizar Cancelar

Nuevo almacen de datos - MYSQL_Odoo

Listo para completar

Resumen

Nombre	MYSQL_Odoo
Disco	Local VMware, Disk (mpx.vmhba0:C0:T2:L0)
Partición	Usar todo el disco
Versión de VMFS	6

VMFS (142 GB)

Atrás Siguiente Finalizar Cancelar

localhost.localdomain - Almacenamiento

Almacenes de datos Adaptadores Dispositivos Memoria persistente

Nuevo almacen de datos Aumentar capacidad Registrar una máquina virtual Explorador de almacenes de datos Actualizar Acciones Buscar

Nombre	Tipo de unidad	Capacidad	Aprovisionado	Libre	Tipo	Aprovisionamiento	Acceso
BD_WordPress	SSD	141,75 GB	121,89 GB	19,86 GB	VMFS6	Compatible	Individual
datastore1	SSD	13,75 GB	8,1 GB	5,65 GB	VMFS6	Compatible	Individual
MYSQL	No SSD	141,75 GB	121,74 GB	20,01 GB	VMFS6	Compatible	Individual
Odoo	No SSD	141,75 GB	133,28 GB	8,47 GB	VMFS6	Compatible	Individual
PostgreSQL_Odoo	SSD	141,75 GB	121,68 GB	20,07 GB	VMFS6	Compatible	Individual
Srv-Wpresa	SSD	141,75 GB	70,54 GB	71,21 GB	VMFS6	Compatible	Individual

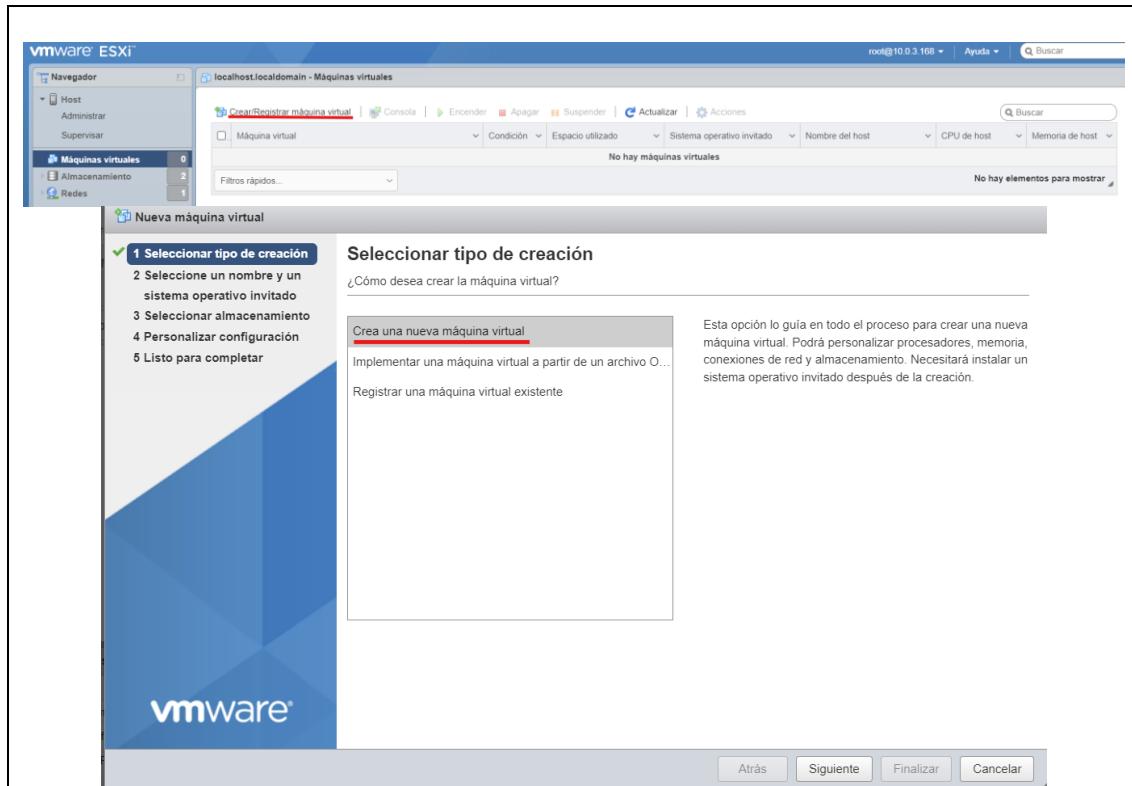
6 elementos



CREATION OF VIRTUAL MACHINES

To create the two virtual machines we will follow the same steps, for example we will create the Odoo machine. To do this we will follow these steps:

- Select the option in the ESXi browser Virtual Machines > Create/Register virtual machine.
- A pop-up will open to proceed with the configuration, where by clicking on Create a new virtual machine we will be able to name it, as well as select the operating system.
- Subsequently, we will select the datastore where we will create the machine.
- Depending on the machine, we will add the appropriate data stores (disks).
- Finally we will select the hardware that the machine will use, this includes CPU and RAM especially, where they will have between 3 and 4 GB of memory each, and at least 3 CPUs.





Nueva máquina virtual - Win MYSQL_Odoo (Máquina virtual de ESXi 7.0 U2)

Seleccione un nombre y un sistema operativo invitado

Especifique un nombre único y sistema operativo

Nombre: Win MYSQL_Odoo

Los nombres de máquinas virtuales pueden tener hasta 80 caracteres y deben ser únicos dentro de cada instancia de ESXi.

Compatibilidad: Máquina virtual de ESXi 7.0 U2

Familia del sistema operativo invitado: Windows

Versión del sistema operativo invitado: Microsoft Windows Server 2022 (64 bits)

Habilitar seguridad basada en virtualización de Windows

Atrás Siguiente Finalizar Cancelar

Nueva máquina virtual - Win MYSQL_Odoo (Máquina virtual de ESXi 7.0 U2)

Selecccionar almacenamiento

Seleccionar tipo de almacenamiento y almacen de datos

Estándar Memoria persistente

Seleccione un almacen de datos para los archivos de configuración de la máquina virtual y todos sus discos virtuales.

Nombre	Capacidad	Libre	Tipo	Aprovisionamiento	Acceso
datastore1	13,75 GB	12,34 GB	VMFS6	Compatible	Individual
MYSOL_Odoo	141,75 GB	140,34 GB	VMFS6	Compatible	Individual

2 elementos

Atrás Siguiente Finalizar Cancelar

localhost.localdomain - Máquinas virtuales

Crear/Registrar máquina virtual | Consola | Encender | Apagar | Suspender | Actualizar | Acciones | Buscar

Máquina virtual	Condición	Espacio utilizado	Sistema operativo invitado	Nombre del host	CPU de host	Memoria de host
Srv-Wordpress	Normal	192,57 GB	Ubuntu Linux (64 bits)	srv-wordpress	267 MHz	1,47 GB
OdooLinux	Normal	376,4 GB	Ubuntu Linux (64 bits)	kctusodoo	415 MHz	3,42 GB

Filtros rápidos... 2 elementos



Odoo Machine

Configuración de hardware	
▶ CPU	3 vCPUs
▶ Memoria	4 GB
▶ Disco duro 1	120 GB
▶ Disco duro 2	120 GB
▶ Disco duro 3	120 GB
▶ Controladora USB	USB 2.0
▶ Adaptador de red 1	VLAN10 (Conectado)
▶ Tarjeta de video	16 MB
▶ Unidad de CD/DVD 1	ISO [datastore1] ubuntu-22.04.3-live-server-amd64.iso. Seleccionar imagen de disco
▶ Otros	Hardware adicional

```
PS C:\Users\oscar> ssh kctus2@172.18.10.3
kctus2@172.18.10.3's password:
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 5.15.0-107-generic x86_64)

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

System information as of lun 27 may 2024 16:21:28 UTC

System load:  0.08          Processes:           246
Usage of /:   20.0% of 57.25GB  Users logged in:    0
Memory usage: 35%           IPv4 address for ens160: 172.18.10.3
Swap usage:   0%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-kubernetes-at-the-edge

El mantenimiento de seguridad expandido para Applications está desactivado

Se pueden aplicar 5 actualizaciones de forma inmediata.
Para ver estas actualizaciones adicionales, ejecute: apt list --upgradable

2 actualizaciones de seguridad adicionales se pueden aplicar con ESM Apps.
Aprenda más sobre cómo activar el servicio ESM Apps at https://ubuntu.com/esm

Last login: Mon May 27 16:20:05 2024 from 172.18.10.183
kctus2@kctusodoo:~$
```



Wordpress Machine

Configuración de hardware	
▶ CPU	2 vCPUs
▶ Memoria	3 GB
▶ Disco duro 1	60 GB
▶ Disco duro 2	120 GB
▶ Controladora USB	USB 3.1
▶ Adaptador de red 1	VLAN10 (Conectado)
▶ Tarjeta de vídeo	16 MB
▶ Unidad de CD/DVD 1	ISO [datastore1] ubuntu-22.04.3-live-server-amd64.iso. Seleccionar imagen de disco
▶ Otros	Hardware adicional

```
PS C:\Users\oscar> ssh kctus2@172.18.10.3
kctus2@172.18.10.3's password:
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 5.15.0-107-generic x86_64)

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

System information as of lun 27 may 2024 16:23:30 UTC

System load:  0.22           Processes:                 247
Usage of /:   20.0% of 57.25GB  Users logged in:      0
Memory usage: 36%            IPv4 address for ens160: 172.18.10.3
Swap usage:   0%

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just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-kubernetes-at-the-edge

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Last login: Mon May 27 16:23:30 2024 from 172.18.10.183
kctus2@kctusodoo:~$
```



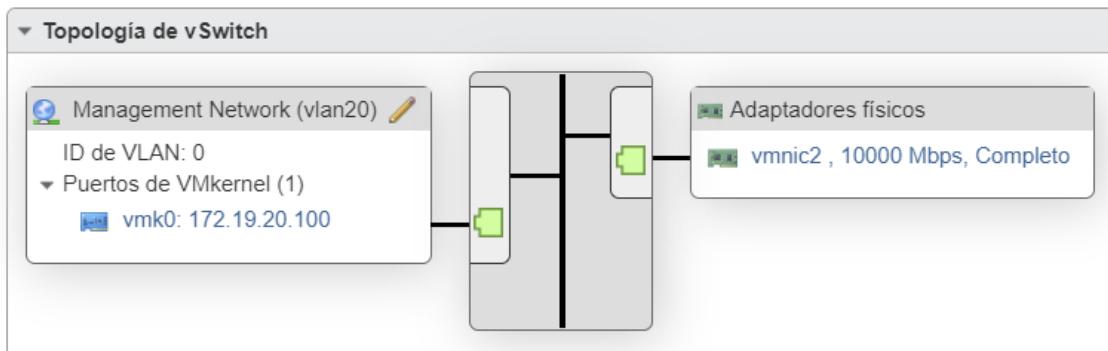
ESXI VIRTUAL SWITCHES

For greater security, we can separate the network through which it works and we connect to ESXI, from the DMZ network of the machines, which is why we will create another vSwitch, and a new group of ports to which we will assign the machines.

In order for each group to exit through a different vlan, each switch will be assigned a different physical NIC, that is to say, a different network adapter, from the two that we have assigned to the ESXI machine previously.

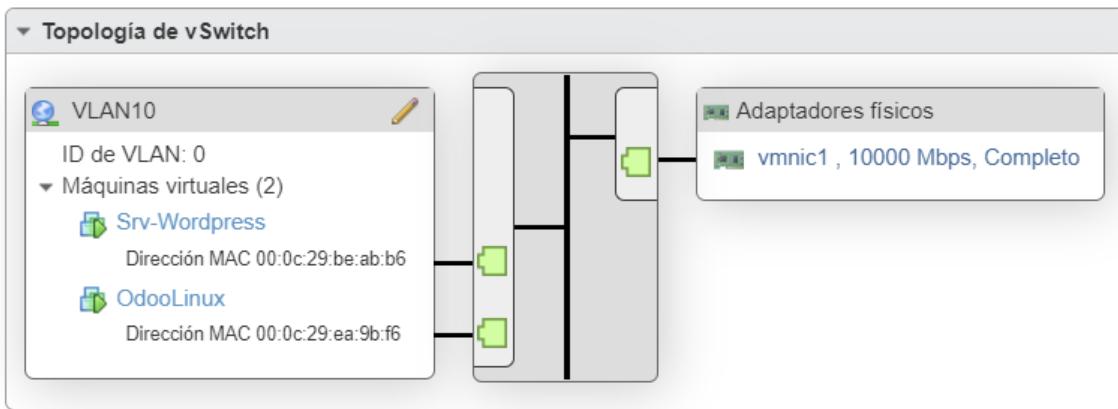
The first screenshot shows the 'Grupos de puertos' (Port Groups) section. It lists two port groups: 'Management Network (vlan20)' and 'VLAN10'. Both are of type 'Grupo de puertos estándar' (Standard Port Group). The 'Management Network (vlan20)' is associated with 'vSwitch0' and has 1 active port. The 'VLAN10' is associated with 'vSwitch1' and has 2 active ports. The second screenshot shows the 'Conmutadores virtuales' (Virtual Switches) section. It lists two vSwitches: 'vSwitch0' and 'vSwitch1', both of type 'vSwitch estándar' (Standard vSwitch). The third screenshot shows the 'NIC físicas' (Physical NICs) section. It lists two physical NICs: 'vmnic1' and 'vmnic2', both connected to the 'nvmxnet3' controller. Both NICs have a MAC address starting with '00:0c:29:51:53' and are set to 'Deshabilitado' (Disabled).

SWITCH 0 (VLAN20 – ESXI Management)





SWITCH 1 (VLAN10 – DMZ [Odoo – Wordpress])



ODOO

INSTALATION AND CONFIGURATION

For its installation we will use a script developed by Adrià, which installs and configures both Odoo and PostgreSQL, which is the database used by Odoo for its operation. This script is commented step by step in the box below.

Before executing the script, you must first create a folder with the necessary permissions, and from there execute the script.

```
#!/bin/bash
#Añadimos el usuario y grupo de sistema 'odoo'.
sudo adduser --system --quiet shell=/bin/bash --home=/opt/odoo --gecos 'odoo' --group odoo
#Creamos en directorio en donde se almacenará el archivo de configuración y log de odoo:
sudo mkdir /etc/odoo && sudo mkdir /var/log/odoo/
# Instalamos Postgres y librerías base del sistema:
sudo apt update
sudo apt install postgresql postgresql-server-dev-14 git python3 python3-pip build-essential python3-dev libldap2-dev libsasl2-dev python3-setuptools libjpeg-dev nodejs npm -y
#Descargamos odoo version 16 desde git:
sudo git clone --depth 1 --branch 17.0 https://github.com/odoo/odoo /opt/odoo/odoo
#Damos permiso al directorio que contiene los archivos de OdooERP e instalamos las dependencias de python3:
sudo chown odoo:odoo /opt/odoo/ -R && sudo chown odoo:odoo /var/log/odoo/ -R && sudo rm /usr/lib/python3/dist-packages/_cffi_backend.cpython-310-x86_64-linux-gnu.so
sudo pip3 install cffi && sudo pip3 install -r /opt/odoo/odoo/requirements.txt
#Descargamos dependencias wkhtmltopdf para generar PDF en odoo
sudo apt install fontconfig xfonts-base xfonts-75dpi -y
cd /tmp
wget https://github.com/wkhtmltopdf/packaging/releases/download/0.12.6.1-2/wkhtmltox_0.12.6.1-2.jammy_amd64.deb && sudo dpkg -i wkhtmltox_0.12.6.1-2.jammy_amd64.deb
sudo ln -s /usr/local/bin/wkhtmltopdf /usr/bin/ && sudo ln -s /usr/local/bin/wkhtmltoimage /usr/bin/
#Creamos un usuario 'odoo' para la base de datos:
sudo su - postgres -c "createuser -s odoo"
#Creamos la configuración de Odoo:
sudo su - odoo -c "/opt/odoo/odoo/odoo-bin --addons-path=/opt/odoo/odoo/addons -s --stop-after-init"
#Creamos el archivo de configuración de odoo:
sudo mv /opt/odoo/.odoorc /etc/odoo/odoo.conf
#Agregamos los siguientes parámetros al archivo de configuración de odoo:
sudo sed -i "s,^(\logfile = ).*,\1/var/log/odoo/odoo-server.log," /etc/odoo/odoo.conf
#Creamos el archivo de inicio del servicio de Odoo:
sudo cp /opt/odoo/odoo/debian/init /etc/init.d/odoo && sudo chmod +x /etc/init.d/odoo
sudo ln -s /opt/odoo/odoo/odoo-bin /usr/bin/odoo
sudo update-rc.d -f odoo start 20 2 3 4 5 .
sudo service odoo start
```



Script of installation for Odoo

```
#!/bin/bash

#we create the user and the system group 'odoo'
sudo adduser --system --quiet --shell=/bin/bash --home=/opt/odoo --gecos 'odoo' --group odoo

#We create the directories where the configuration file and the log of odoo will be stored:
sudo mkdir /etc/odoo && sudo mkdir /var/log/odoo/


# Install Postgres and the base of the system libraries:
sudo apt update
sudo apt install postgresql postgresql-server-dev-14 git python3 python3-pip build-essential python3-dev libldap2-dev libsasl2-dev python3-setuptools libjpeg-dev nodejs npm -y

# We download the odoo version 16 from github:
sudo git clone --depth 1 --branch 17.0 https://github.com/odoo/odoo /opt/odoo/odoo


# We give access to the directory that contains OdooERP files and install the python3 dependencies:
sudo chown odoo:odoo /opt/odoo/ -R && sudo chown odoo:odoo /var/log/odoo/ -R &&
sudo rm /usr/lib/python3/dist-packages/_cffi_backend.cpython-310-x86_64-linux-gnu.so
sudo pip3 install cffi && sudo pip3 install -r /opt/odoo/odoo/requirements.txt

#Download the dependencies and install wkhtmltopdf to generate PDF in odoo
sudo apt install fontconfig xfonts-base xfonts-75dpi -y
cd /tmp
wget https://github.com/wkhtmltopdf/packaging/releases/download/0.12.6.1-2/wkhtmltox_0.12.6.1-2.jammy_amd64.deb && sudo dpkg -i wkhtmltox_0.12.6.1-2.jammy_amd64.deb
sudo ln -s /usr/local/bin/wkhtmltopdf /usr/bin/ && sudo ln -s /usr/local/bin/wkhtmltoimage /usr/bin/


#Create user 'odoo' for the database:
sudo su - postgres -c "createuser -s odoo"

# we create the odoo configuration:
sudo su - odoo -c "/opt/odoo/odoo/odoo-bin --addons-path=/opt/odoo/odoo/addons -s --stop-after-init"

# Create odoo configuration file
sudo mv /opt/odoo/.odoorc /etc/odoo/odoo.conf

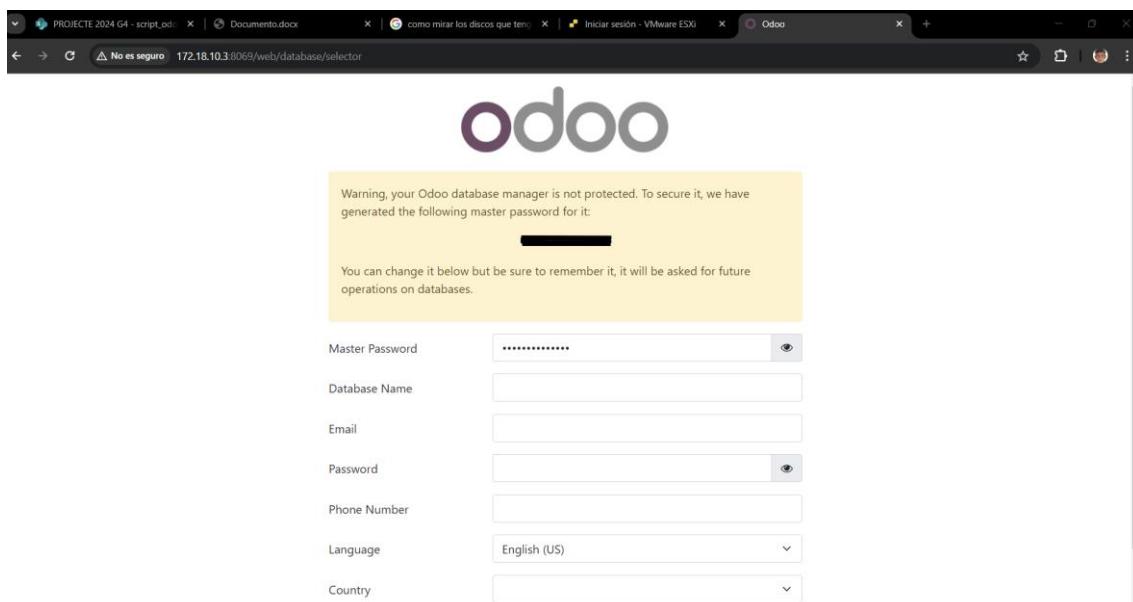
# We add the following parameters to the odoo configuration file:
sudo sed -i "s,^logfile = \).*,\1"/var/log/odoo/odoo-server.log," /etc/odoo/odoo.conf
```



we create the init file of the odoo service:

```
sudo cp /opt/odoo/odoo/debian/init /etc/init.d/odoo && sudo chmod +x /etc/init.d/odoo
sudo ln -s /opt/odoo/odoo-bin /usr/bin/odoo
sudo update-rc.d -f odoo start 20 2 3 4 5 .
sudo service odoo start
```

```
kctus2@kctusodoo:/etc/odoo$ ls
kctus2@kctusodoo:/etc/odoo$ sudo nano odooinstall.sh
[sudo] password for kctus2:
kctus2@kctusodoo:/etc/odoo$ ls
odooinstall.sh
kctus2@kctusodoo:/etc/odoo$ sudo chmod u+x odooinstall.sh
kctus2@kctusodoo:/etc/odoo$ ls -l
total 4
-rwxr--r-- 1 root root 2167 may  6 16:05 odooinstall.sh
kctus2@kctusodoo:/etc/odoo$ sudo sh odooinstall.sh
Obj:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Obj:2 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Obj:3 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Obj:4 http://archive.ubuntu.com/ubuntu jammy-security InRelease
Des:5 http://archive.ubuntu.com/ubuntu jammy/main Translation-es [332 kB]
Des:6 http://archive.ubuntu.com/ubuntu jammy/restricted Translation-es [96 kB]
Des:7 http://archive.ubuntu.com/ubuntu jammy/universe Translation-es [1.35 kB]
Des:8 http://archive.ubuntu.com/ubuntu jammy/multiverse Translation-es [68 kB]
Descargados 1.758 kB en 2s (759 kB/s)
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Se pueden actualizar 2 paquetes. Ejecute «apt list --upgradable» para ver
.
Leyendo lista de paquetes... 0%
```





POSTGRESQL

ODOO OPTIMIZATION

Before creating the Odoo database, we must move the PostgreSQL database to another disk for better performance, as we dedicate one disk to a single database. The system disk is also relieved of the database load.

To do this we must first mount the added disks.

- First we will visualise the mounted disks with fdisk -l to know if the system detects them correctly.
- Then with fdisk we will also mount them specifying one by one the disks, this command will open a menu where we will select the number of partitions (1), the volume of the partition (default - all) and finally we will write the changes.
- Next we will choose the ext4 file system (Linux compatible) through mkfs.
- Then we will create the folders in /mnt where the disks will be mounted.
- And finally, so that they remain mounted every time the system boots, we will write them to fstab.

```
kctus2@kctusodoo:~$ sudo fdisk -l
[sudo] password for kctus2:
Disk /dev/loop0: 63,45 MiB, 66531328 bytes, 129944 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop1: 111,95 MiB, 117387264 bytes, 229272 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop2: 53,26 MiB, 55844864 bytes, 109072 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/loop3: 38,73 MiB, 40615936 bytes, 79328 sectors
Units: sectors of 1 * 512 = 512 bytes
```



```
Disk /dev/sda: 120 GiB, 128849018880 bytes, 251658240 sectors
Disk model: Virtual disk
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: CEBF29E0-CFD4-498C-AB1E-8F4C1630A39F

Device      Start      End    Sectors   Size Type
/dev/sda1    2048    2203647   2201600    1G EFI System
/dev/sda2   2203648   6397951   4194304    2G Linux filesystem
/dev/sda3   6397952  251656191  245258240  116,9G Linux filesystem

Disk /dev/sdb: 120 GiB, 128849018880 bytes, 251658240 sectors
Disk model: Virtual disk
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/sdc: 120 GiB, 128849018880 bytes, 251658240 sectors
Disk model: Virtual disk
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

kctus2@kctusodoo:~$ sudo fdisk /dev/sdb

Welcome to fdisk (util-linux 2.37.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x4ab6601a.

Command (m for help): n
Partition type
  p  primary (0 primary, 0 extended, 4 free)
  e  extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-251658239, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-251658239, default 251658239):

Created a new partition 1 of type 'Linux' and of size 120 GiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```



```
kctus2@kctusodoo:~$ sudo fdisk /dev/sdc
Welcome to fdisk (util-linux 2.37.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x3488c914.

Command (m for help): n
Partition type
  p  primary (0 primary, 0 extended, 4 free)
  e  extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-251658239, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-251658239, default 251658239):

Created a new partition 1 of type 'Linux' and of size 120 GiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```

```
root@kctusodoo:/home/kctus2# mkfs.ext4 /dev/sdb1
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 31457024 4k blocks and 7864320 inodes
Filesystem UUID: e3aeb48f-9e17-4c27-beda-98f8caf2f519
Superblock backups stored on blocks:
      32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
     4096000, 7962624, 11239424, 20480000, 23887872

Allocating group tables: done
Writing inode tables: done
Creating journal (131072 blocks): done
Writing superblocks and filesystem accounting information: done

root@kctusodoo:/home/kctus2# mkfs.ext4 /dev/sdc1
mke2fs 1.46.5 (30-Dec-2021)
Discarding device blocks: done
Creating filesystem with 31457024 4k blocks and 7864320 inodes
Filesystem UUID: 37ae39e2-93ba-47c0-a09e-db4d78bc9768
Superblock backups stored on blocks:
      32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
     4096000, 7962624, 11239424, 20480000, 23887872

Allocating group tables: done
Writing inode tables: done
Creating journal (131072 blocks): done
Writing superblocks and filesystem accounting information: done

root@kctusodoo:/mnt/disk1# mkdir /mnt/disk1
root@kctusodoo:/mnt/disk1# mkdir /mnt/disk2
root@kctusodoo:/mnt/disk1# mount /dev/sdb1 /mnt/disk1
root@kctusodoo:/mnt/disk1# mount /dev/sdc1 /mnt/disk2
```



```
kctus2@kctusodoo: /etc          + - >
GNU nano 6.2                         fstab *
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/ubuntu-vg/ubuntu-lv during curtin installation
/dev/disk/by-id/dm-uuid-LVM-jCCV1w1SWtP6mAnuUeF9Bjqm0Hhejduub0Wz7eF8VccKpcXAojPRUF0Gcw9x1z / ext4 defaults 0 1
# /boot was on /dev/sda2 during curtin installation
/dev/disk/by-uuid/ea6801a5-62a2-4fcc-aac0-369e6f7ed9a8 /boot ext4 defaults 0 1
# /boot/efi was on /dev/sdal during curtin installation
/dev/disk/by-uuid/FA8D-021C /boot/efi vfat defaults 0 1
/swap.img      none    swap   sw     0   0

# Mapeo de discos sdb1 y sdcl (PostgreSQL, MYSQL)
/dev/sdb1    /mnt/disk1  ext4   defaults  0   1
/dev/sdcl    /mnt/disk2  ext4   defaults  0   1

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



```
root@kctusodoo: /etc/postgr  + - >
GNU nano 6.2                         postgresql.conf
# with the "SET" SQL command.
#
# Memory units: B = bytes           Time units: us = microseconds
#                 kB = kilobytes        ms = milliseconds
#                 MB = megabytes       s = seconds
#                 GB = gigabytes        min = minutes
#                 TB = terabytes        h = hours
#                                         d = days

#-----
# FILE LOCATIONS
#-----

# The default values of these variables are driven from the -D command-line
# option or PGDATA environment variable, represented here as ConfigDir.

data_directory = '/var/lib/postgresql/14/main'          # use data in another directory
                                                        # (change requires restart)
hba_file = '/etc/postgresql/14/main/pg_hba.conf'      # host-based authentication file
                                                        # (change requires restart)
ident_file = '/etc/postgresql/14/main/pg_ident.conf'  # ident configuration file
                                                        # (change requires restart)

# If external_pid_file is not explicitly set, no extra PID file is written.
external_pid_file = '/var/run/postgresql/14-main.pid'   # write an extra PID file
                                                        # (change requires restart)
```



To proceed to move the PostgreSQL database, we will locate the main where it is located, and we will move the data to the folder that we create in the new disk with the corresponding permissions.

Afterwards, we will access the PostgreSQL configuration where we will specify the new data_directory, that is to say, where the database we have moved is located.

```
root@kctusodoo:/mnt/disk1# sudo -u postgres psql
psql (14.11 (Ubuntu 14.11-0ubuntu0.22.04.1))
Type "help" for help.

postgres=# SHOW data_directory;
          data_directory
-----
 /var/lib/postgresql/14/main
(1 row)

root@kctusodoo:/mnt/disk1# mkdir psql
root@kctusodoo:/mnt/disk1# chown -R postgres:postgres psql
root@kctusodoo:/mnt/disk1# mv /var/lib/postgresql/14/main /var/lib/postgresql/14/main.bck
root@kctusodoo:/mnt/disk1#
root@kctusodoo:/etc/postgresql/14/main# nano postgresql.conf

#-----#
# FILE LOCATIONS
#-----#

# The default values of these variables are driven from the -D command-line
# option or PGDATA environment variable, represented here as ConfigDir.

data_directory = '/mnt/disk1/psql/postgresql/14/main'          # use data >
                                                               # (change requires restart)
hba_file = '/etc/postgresql/14/main/pg_hba.conf'             # host-based authen >
                                                               # (change requires restart)
ident_file = '/etc/postgresql/14/main/pg_ident.conf'         # ident configurati >
                                                               # (change requires restart)

# If external_pid_file is not explicitly set, no extra PID file is written.
external_pid_file = '/var/run/postgresql/14-main.pid'          # w >
                                                               # (change requires restart)

#-----#
# CONNECTIONS AND AUTHENTICATION
#-----#

# - Connection Settings -

listen_addresses = *          # what IP address(es) to listen on;
                               # comma-separated list of addresses;
                               # defaults to 'localhost'; use '*' >
```



```
root@kctusodoo:~# sudo -u postgres psql
could not change directory to "/root": Permission denied
psql (14.11 (Ubuntu 14.11-0ubuntu0.22.04.1))
Type "help" for help.

postgres=# SHOW data_directory;
data_directory
-----
/mnt/disk1/pgsql/postgresql/14/main
(1 row)

postgres=#

```

The screenshot shows the Odoo Applications interface. On the left, there are two sidebar sections: 'APLICACIONES' (Todos) and 'CATEGORÍAS' (Todos). The 'APLICACIONES' section lists categories like Ventas, CRM, Inventario, Compra, etc., each with a count of items. The 'CATEGORÍAS' section lists categories like Ventas, Servicios, Contabilidad, etc., with their respective counts. The main area displays a grid of 15 application modules, each with a thumbnail, name, brief description, and 'Activar' (Activate) and 'Aprenda más' (Learn more) buttons.

Categoría	Nombre	Descripción	Opciones
Todos	Ventas	De presupuestos a facturas	Activar Aprenda más
	CRM	Seguimiento de clientes potenciales y oportunidades próximas	Activar Aprenda más
	Inventario	Gestione sus actividades de inventario y logística	Activar Aprenda más
Todos	MRP II	Órdenes de trabajo, planificación, informes de inventario.	Aprenda más Actualizar
	Contabilidad	Gestione la contabilidad financiera y analítica	Aprenda más Actualizar
	Punto de venta	Interfaz de TPV amigable para usuarios para tiendas y restaurantes	Activar Aprenda más
Todos	Compra	Órdenes de compra, licitaciones y acuerdos	Activar Aprenda más
	Comercio electrónico	Venda sus productos en línea	Activar Aprenda más
	Hojas de asistencia	Seguimiento al tiempo de empleados en tareas	Activar Aprenda más
Todos	Restaurante	Extensión para restaurantes para el Punto de Venta	Activar Aprenda más
	Facturación	Facturas y pagos	Activar Aprenda más
	Sitio web	Crear sitios web para empresas	Activar Aprenda más
Todos	Información	Centralice, gestione, comparta y haga crecer su librería de conocimiento	Aprenda más Actualizar
	Proyecto	Organice y planifique sus proyectos	Activar Aprenda más
	Marketing por correo electrónico	Diseñe, envíe y rastree correos electrónicos	Activar Aprenda más
Todos	Fabricación	Órdenes de fabricación y listas de materiales	Activar Aprenda más
	Gastos	Envíe, valide y refacture los gastos de los empleados	Activar Aprenda más
	Studio	Cree y personalice sus aplicaciones Odoo	Activar Aprenda más



MSSQL

To install MSSQL, download the files from the path specified on the official Microsoft website, which allows you to download an installation package for Ubuntu.

After obtaining the installation package and doing an apt update, we can proceed to install the database.

After installing it we can do setup to configure it and be able to connect with managers such as Dbeaver and SQLManager.

This configured database can be used to load the SQL script of the F1 data.

```
kctus2@kctusodoo:~$ curl -fsSL https://packages.microsoft.com/keys/microsoft.asc | sudo gpg --dearmor -o /usr/share/keyrings/microsoft-prod.gpg
[sudo] password for kctus2:
kctus2@kctusodoo:~$ curl -fsSL https://packages.microsoft.com/config/ubuntu/22.04/mssql-server-2022.list | sudo tee /etc/apt/sources.list.d/mssql-server-2022.list
deb [arch=amd64,armhf,arm64] https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy sudo apt-get update
Obj:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Des:2 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Des:3 https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy InRelease [3.624 B]
Des:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [109 kB]
Err:3 https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy InRelease
      Las firmas siguientes no se pudieron verificar porque su clave pública no
      está disponible: NO_PUBKEY EB3E94ADBE1229CF
Des:5 http://archive.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Des:6 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1.638 kB]
Des:7 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1.074 kB]
Des:8 http://archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [245 kB]
Des:9 http://archive.ubuntu.com/ubuntu jammy-security/main amd64 Packages [1.427 kB]
Des:10 http://archive.ubuntu.com/ubuntu jammy-security/main Translation-en [247 kB]
Des:11 http://archive.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [852 kB]
Des:12 http://archive.ubuntu.com/ubuntu jammy-security/universe Translation-en [164 kB]
Leyendo lista de paquetes... Hecho
W: Error de GPG: https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy InRelease: Las firmas siguientes no se pudieron verificar porque su clave pública no está disponible: NO_PUBKEY EB3E94ADBE1229CF
E: El repositorio «https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy InRelease» no está firmado.
N: No se puede actualizar de un repositorio como este de forma segura y por tanto está deshabilitado por omisión.
```



```
kctus2@kctusodo:~$ wget -qO- https://packages.microsoft.com/keys/microsoft.asc | sudo apt-key add -
sudo add-apt-repository "$(wget -qO- https://packages.microsoft.com/config/ubuntu/20.04/mssql-server-2019.list)"
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
OK
Repository: 'deb [arch=amd64,armhf,arm64] https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal main'
Description:
Archive for codename: focal components: main
More info: https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019
Adding repository.
Press [ENTER] to continue or Ctrl-c to cancel.
Adding deb entry to /etc/apt/sources.list.d/archive_uri-https_packages_microsoft_com_ubuntu_20_04_mssql-server-2019-jammy.list
Adding disabled deb-src entry to /etc/apt/sources.list.d/archive_uri-https_packages_microsoft_com_ubuntu_20_04_mssql-server-2019-jammy.list
Obj:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Des:2 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal In
Release [3.624 B]
Obj:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Obj:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Obj:5 http://archive.ubuntu.com/ubuntu jammy-security InRelease
Des:6 https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy In
Release [3.624 B]
Des:7 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal/ma
in all Packages [717 B]
Des:8 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal/ma
in amd64 Packages [12,8 kB]
Des:9 https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy/ma
in amd64 Packages [2.815 B]
Descargados 20,0 kB en 1s (13,9 kB/s)
```



```
kctus2@kctusodoo:~$ sudo apt update
sudo apt install mssql-server -y
Obj:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Obj:2 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Obj:3 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Obj:4 http://archive.ubuntu.com/ubuntu jammy-security InRelease
Des:5 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal In
Release [3.624 B]
Des:6 https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy In
Release [3.624 B]
Descargados 7.248 B en 1s (5.757 B/s)
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Se pueden actualizar 12 paquetes. Ejecute «apt list --upgradable» para verlos.
W: https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019/dists/focal
/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg),
see the DEPRECATION section in apt-key(8) for details.
W: https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022/dists/jammy
/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg),
see the DEPRECATION section in apt-key(8) for details.
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Los paquetes indicados a continuación se instalaron de forma automática y ya
no son necesarios.
  linux-headers-5.15.0-78 linux-headers-5.15.0-78-generic
  linux-image-5.15.0-78-generic linux-modules-5.15.0-78-generic
  linux-modules-extra-5.15.0-78-generic
Utilice «sudo apt autoremove» para eliminarlos.
Se instalarán los siguientes paquetes adicionales:
  gdb libbabeltrace1 libboost-regex1.74.0 libc++1 libc++1-14 libc++abi1-14
  libc6-dbg libdebuginfod-common libdebuginfod1 libipt2
  libsasl2-modules-gssapi-mit libsource-highlight-common
```



```
kctus2@kctusodoo:~$ sudo /opt/mssql/bin/mssql-conf setup
Elija una edición de SQL Server:
 1) Evaluation (gratis, sin derechos de uso en producción, límite de 180 días)
 2) Developer (gratis, sin derechos de uso en producción)
 3) Express (gratis)
 4) Web (DE PAGO)
 5) Standard (DE PAGO)
 6) Enterprise (DE PAGO) - CPU core utilization restricted to 20 physical/40 hyperthreaded
 7) Enterprise Core (DE PAGO) - CPU core utilization up to Operating System Maximum
 8) He comprado una licencia mediante un canal de ventas al por menor y tengo una clave de producto.
 9) Standard (Billed through Azure) - Use pay-as-you-go billing through Azure.
10) Enterprise Core (Billed through Azure) - Use pay-as-you-go billing through Azure.
```

Encontrará información sobre las ediciones en
<https://go.microsoft.com/fwlink/?LinkId=2109348&clcid=0x40a>

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Especifique su edición(1-10): 2
Los términos de licencia de este producto se pueden encontrar en
</usr/share/doc/mssql-server> or downloaded from: <https://aka.ms/useterms>

La declaración de privacidad se puede consultar en:
<https://go.microsoft.com/fwlink/?LinkId=853010&clcid=0x40a>



Especifique su edición(1-10): 2

Los términos de licencia de este producto se pueden encontrar en
/usr/share/doc/mssql-server or downloaded from: <https://aka.ms/useterms>

La declaración de privacidad se puede consultar en:
<https://go.microsoft.com/fwlink/?LinkId=853010&clcid=0x40a>

¿Acepta los términos de licencia? [Yes/No]:yes

Elija el idioma de SQL Server:

- (1) English
- (2) Deutsch
- (3) Español
- (4) Français
- (5) Italiano
- (6) 日本語
- (7) 한국어
- (8) Português
- (9) Ру́сский
- (10) 中文 – 简体
- (11) 中文（繁體）

Escriba una opción entre la 1 y la 11: 3

Escriba la contraseña de administrador del sistema de SQL Server:

La contraseña especificada no cumple con los requisitos de la directiva de contraseñas de SQL Server porque es demasiado corta. La contraseña debe tener al menos 8 caracteres.

Escriba la contraseña de administrador del sistema de SQL Server:

Confirme la contraseña de administrador del sistema de SQL Server:

Configurando SQL Server...



Configuración de la conexión "master"

Ajustes de conexión

MS SQL Server / SQL Server ajustes de conexión

General Driver properties SSH SSL + Network configurations.

Server

Connect by: Host URL

URL: jdbc:sqlserver://;serverName=172.18.10.3;databaseName=master

Host: 172.18.10.3 Port: 1433

Database/Schema: master

Authentication

Authentication: SQL Server Authentication

Nombre de usuario: sa

Contraseña: XXXXXXXXXX Save password

Settings

Show All Schemas
 Trust Server Certificate

You can use variables in connection parameters.

Driver name: MS SQL Server / SQL Server Driver Settings Licencia del driver

Probar conexión ... Aceptar Cancelar

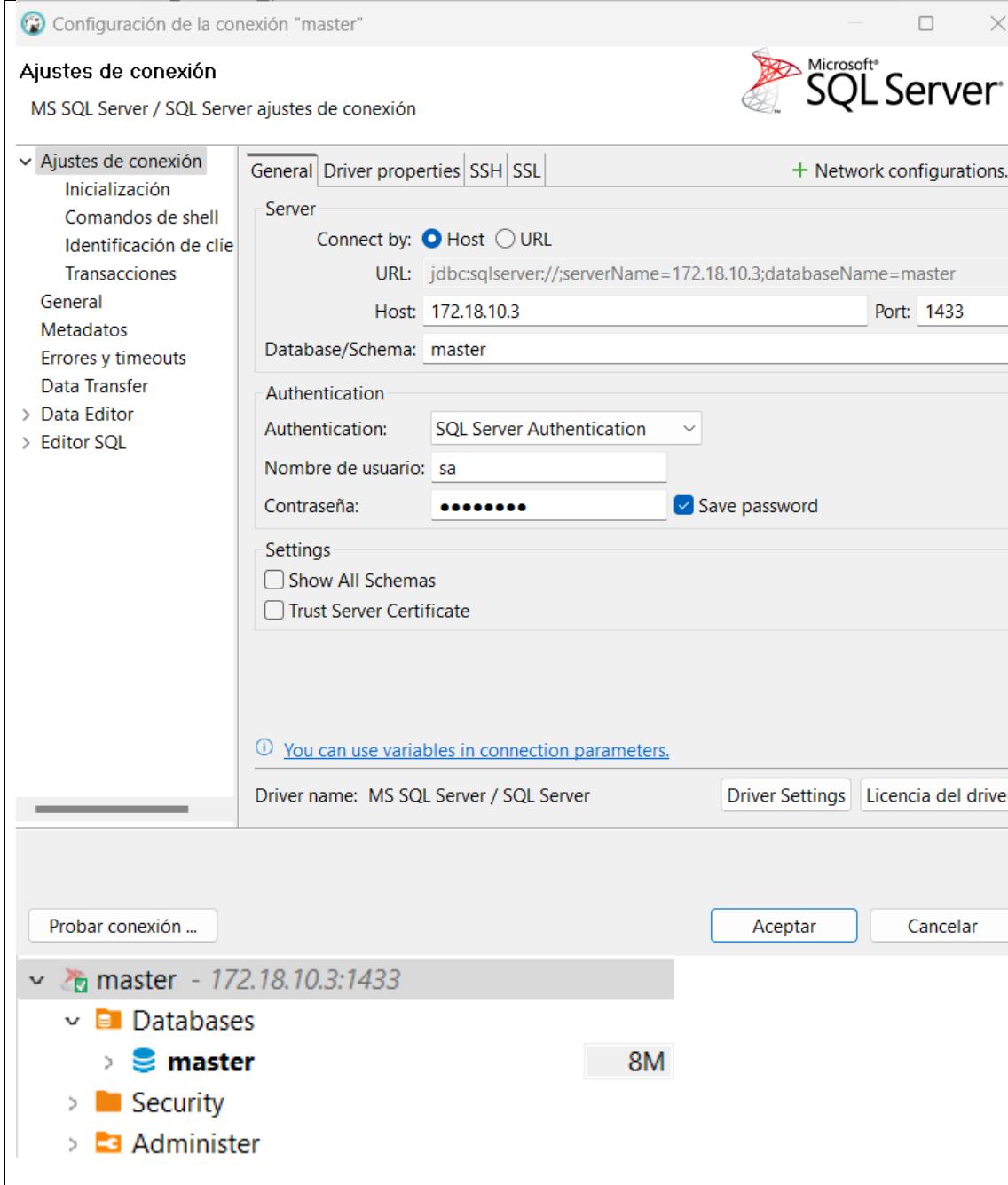
master - 172.18.10.3:1433

Databases

master 8M

Security

Administer





WORDPRESS & MYSQL

To install WordPress, the first step we did was install apache2 (web server).

```
kctus@srv-wordpress:~$ sudo su
root@srv-wordpress:/home/kctus# apt install apache2
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
```

I also installed a mysql-server since WordPress requires it.

```
root@srv-wordpress: /home/kctus
root@srv-wordpress:/home/kctus# apt install mysql-server
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Se instalarán los siguientes paquetes adicionales:
  libcgi-fast-perl libcgi-pm-perl libclone-perl libencode-locale-perl libevent-pthreads-2.1-7
  libfcgi-bin libfcgi-perl libfcgi0ldbl libhtml-parser-perl libhtml-tagset-perl
  libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl
  liblwp-mediatypes-perl libmecab2 libprotobuf-lite23 libtimedate-perl liburi-perl
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0
  mysql-common mysql-server-8.0 mysql-server-core-8.0
Paquetes sugeridos:
  libdata-dump-perl libipc-sharedcache-perl libbusiness-isbn-perl libwww-perl mailx tinyca
Se instalarán los siguientes paquetes NUEVOS:
  libcgi-fast-perl libcgi-pm-perl libclone-perl libencode-locale-perl libevent-pthreads-2.1-7
  libfcgi-bin libfcgi-perl libfcgi0ldbl libhtml-parser-perl libhtml-tagset-perl
  libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl
  liblwp-mediatypes-perl libmecab2 libprotobuf-lite23 libtimedate-perl liburi-perl
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0
  mysql-common mysql-server mysql-server-8.0 mysql-server-core-8.0
0 actualizados, 28 nuevos se instalarán, 0 para eliminar y 3 no actualizados.
Se necesita descargar 29,5 MB de archivos.
Se utilizarán 243 MB de espacio de disco adicional después de esta operación.
¿Desea continuar? [S/n]
```



The next steps are to unzip WordPress into the apache2 web/html folder:

```
root@srv-wordpress:/home/kctus/wordpress
root@srv-wordpress:/home/kctus# ls
wordpress
root@srv-wordpress:/home/kctus# cd wordpress/
root@srv-wordpress:/home/kctus/wordpress# ls
root@srv-wordpress:/home/kctus/wordpress# wget ^C
root@srv-wordpress:/home/kctus/wordpress# wget https://wordpress.org/latest.tar.gz
--2024-05-03 16:11:34-- https://wordpress.org/latest.tar.gz
Resolving wordpress.org (wordpress.org)... 198.143.164.252
Connecting to wordpress.org (wordpress.org)|198.143.164.252|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 24697732 (24M) [application/octet-stream]
Saving to: 'latest.tar.gz'

latest.tar.gz          100%[=====] 23,55M 8,80MB/s   in 2,7s

2024-05-03 16:11:37 (8,80 MB/s) - 'latest.tar.gz' saved [24697732/24697732]

root@srv-wordpress:/home/kctus/wordpress# tar -xvzf latest.tar.gz
wordpress/
wordpress/xmlrpc.php
wordpress/wp-blog-header.php
wordpress/readme.html
wordpress/wp-signup.php
wordpress/index.php
wordpress/wp-cron.php
wordpress/wp-config-sample.php
wordpress/wp-login.php
wordpress/wp-settings.php
wordpress/license.txt
wordpress/wp-content/
wordpress/wp-content/themes/
wordpress/wp-content/themes/twentytwentythree/
wordpress/wp-content/themes/twentytwentythree/theme.json
wordpress/wp-content/themes/twentytwentythree/parts/
wordpress/wp-content/themes/twentytwentythree/parts/footer.html
wordpress/wp-content/themes/twentytwentythree/parts/comments.html
wordpress/wp-content/themes/twentytwentythree/parts/header.html
wordpress/wp-content/themes/twentytwentythree/parts/post-meta.html
wordpress/wp-content/themes/twentytwentythree/patterns/
wordpress/wp-content/themes/twentytwentythree/patterns/hidden-404.php
wordpress/wp-content/themes/twentytwentythree/patterns/post-meta.php
```

PHP also needs to be installed as a requirement:

```
kctus@srv-wordpress:/var/www/html/wordpress$ kctus@srv-wordpress:/var/www/html/wordpress$ sudo apt install php libapache2-mod-php
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Se instalarán los siguientes paquetes adicionales:
  libapache2-mod-php8.1 php-common php8.1 php8.1-cli php8.1-common php8.1-opcache php8.1-readline
Paquetes sugeridos:
  php-pear
Se instalarán los siguientes paquetes NUEVOS:
  libapache2-mod-php libapache2-mod-php8.1 php php-common php8.1 php8.1-cli php8.1-common php8.1-opcache php8.1-readline
0 actualizados, 9 nuevos se instalarán, 0 para eliminar y 3 no actualizados.
Se necesita descargar 5.135 kB de archivos.
Se utilizarán 21,3 MB de espacio de disco adicional después de esta operación.
```

And some modules of it for mysql:

```
kctus@srv-wordpress:/var/www/html/wordpress$ sudo apt install php-mysql
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Se instalarán los siguientes paquetes adicionales:
  php8.1-mysql
Se instalarán los siguientes paquetes NUEVOS:
  php-mysql php8.1-mysql
0 actualizados, 2 nuevos se instalarán, 0 para eliminar y 3 no actualizados.
Se necesita descargar 132 kB de archivos.
Se utilizarán 476 kB de espacio de disco adicional después de esta operación.
¿Desea continuar? [S/n] _
```



Now, in the next step, we are going to change the location of the mysql database, execute this command to see available disks.

```
root@srv-wordpress:/home/kctus
root@srv-wordpress:/home/kctus# fdisk -l
```

I saw that the disk that we connected to the ESXI machine was **/dev/sdb**. We erased the disk by using fdisk and created a ext4 partition using all available disk space:g

```
root@srv-wordpress:/home/kctus# fdisk /dev/sdb

Welcome to fdisk (util-linux 2.37.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x58478c21.

Command (m for help): n
Partition type
  p  primary (0 primary, 0 extended, 4 free)
  e  extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-251658239, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-251658239, default 251658239):

Created a new partition 1 of type 'Linux' and of size 120 GiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

root@srv-wordpress:/home/kctus#
```

We used ext4 because it's one of the file systems that allow cryptographic encryption and permissions for its way of functioning:

https://en.wikipedia.org/wiki/List_of_cryptographic_file_systems



Here we are formatting the disk using EXT4:

```
root@srv-wordpress:/home/kctus# mkfs.ext4 /dev/sdb1
mke2fs 1.46.5 (30-Dec-2021)
Creating filesystem with 31457024 4k blocks and 7864320 inodes
Filesystem UUID: e8cbc5b4-7ceb-44f8-880f-7ae4207d5ec6
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000, 7962624, 11239424, 20480000, 23887872

Allocating group tables: done
Writing inode tables: done
Creating journal (131072 blocks): done
Writing superblocks and filesystem accounting information: done

root@srv-wordpress:/home/kctus#
```

Afterwards, we mounted the disk to test it out just in case:

```
root@srv-wordpress:/home/kctus# mount /dev/sdb1 /mnt/bd/
mount: /mnt/bd/: mount point does not exist.
root@srv-wordpress:/home/kctus# mkdir /mnt/bd
root@srv-wordpress:/home/kctus# mount /dev/sdb1 /mnt/bd/
root@srv-wordpress:/home/kctus# cd /mnt/bd
root@srv-wordpress:/mnt/bd# ls
lost+found
root@srv-wordpress:/mnt/bd#
```

It is also needed for mysql to change this in /etc/apparmor.d/tunables/alias:

```
root@srv-wordpress: /mnt/bd/MySQL-DB
GNU nano 6.2          /etc/apparmor.d/tunables/alias
# -----
#
# Copyright (C) 2010 Canonical Ltd.
#
# This program is free software; you can redistribute it and/or
# modify it under the terms of version 2 of the GNU General Public
# License published by the Free Software Foundation.
#
# -----
#
# Alias rules can be used to rewrite paths and are done after variable
# resolution. For example, if '/usr' is on removable media:
# alias /usr/ -> /mnt/usr/,
#
# Or if mysql databases are stored in /home:
# alias /var/lib/mysql/ -> /home/mysql/,
alias /var/lib/mysql/ -> /mnt/bd/MySQL-DB/,
```

Before continuing, make sure the mysql user has permissions to change contents of the new folder, we did a chown in order for this to work.



```
root@srv-wordpress:/mnt/bd/MySQL-DB# ls -la
total 91608
drwxr-xr-x 7 mysql mysql      4096 may  8 15:12 .
drwxr-xr-x 4 mysql mysql      4096 may  8 14:51 ..
-rw-r---- 1 mysql mysql       56 may  8 15:12 auto.cnf
-rw-r---- 1 mysql mysql     157 may  8 15:12 binlog.000001
-rw-r---- 1 mysql mysql      16 may  8 15:12 binlog.index
-rw----- 1 mysql mysql    1705 may  8 15:12 ca-key.pem
-rw-r--r- 1 mysql mysql   1112 may  8 15:12 ca.pem
-rw-r--r- 1 mysql mysql   1112 may  8 15:12 client-cert.pem
-rw----- 1 mysql mysql   1705 may  8 15:12 client-key.pem
-rw-r---- 1 mysql mysql  196608 may  8 15:15 '#ib_16384_0 dblwr'
-rw-r---- 1 mysql mysql  8585216 may  8 15:12 '#ib_16384_1 dblwr'
-rw-r---- 1 mysql mysql      5721 may  8 15:12 ib_buffer_pool
-rw-r---- 1 mysql mysql 12582912 may  8 15:12 ibdata1
-rw-r---- 1 mysql mysql 12582912 may  8 15:12 ibtmp1
drwxr-x--- 2 mysql mysql      4096 may  8 15:12 '#innodb_redo'
drwxr-x--- 2 mysql mysql      4096 may  8 15:12 '#innodb_temp'
drwxr-x--- 2 mysql mysql      4096 may  8 15:12 mysql
-rw-r---- 1 mysql mysql 26214400 may  8 15:13 mysql.ibd
drwxr-x--- 2 mysql mysql      4096 may  8 15:12 performance_schema
-rw----- 1 mysql mysql     1705 may  8 15:12 private_key.pem
-rw-r--r- 1 mysql mysql      452 may  8 15:12 public_key.pem
-rw-r--r- 1 mysql mysql     1112 may  8 15:12 server-cert.pem
-rw----- 1 mysql mysql     1701 may  8 15:12 server-key.pem
-rw-r---- 1 mysql mysql        5 may  8 15:12 srv-wordpress.pid
drwxr-x--- 2 mysql mysql      4096 may  8 15:12 sys
-rw-r---- 1 mysql mysql 16777216 may  8 15:15 undo_001
-rw-r---- 1 mysql mysql 16777216 may  8 15:15 undo_002
root@srv-wordpress:/mnt/bd/MySQL-DB#
```

After this, we initialized a new folder for mysql in the new location.

```
root@srv-wordpress:/mnt/bd/MySQL-DB#
root@srv-wordpress:/mnt/bd/MySQL-DB# mysqld --initialize_
```



And so we could start creating the database itself, giving permissions, and other stuff for wordpress to work.

Note: In the end, since we reinstalled mysql, I changed the name of the database to bd_wordpress.

```
mysql> CREATE DATABASE bd_wordpress;
```

```
mysql> CREATE USER "admin"@"127.0.0.1" IDENTIFIED BY "NnsfqpMG5JKLA7127127";
Query OK, 0 rows affected (0,06 sec)
```

```
mysql> -
```

```
mysql> GRANT ALL PRIVILEGES ON bd_wordpress.* TO "admin"@"127.0.0.1";
Query OK, 0 rows affected (0,02 sec)
```

```
mysql> -
```

```
mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0,02 sec)
```

```
mysql> EXIT
```

```
Bye
```

```
root@srv-wordpress:/mnt/bd/MySQL-DB# -
```



Once done, we went to the wordpress server and we started the configuration.



Welcome to WordPress. Before getting started, you will need to know the following items.

1. Database name
2. Database username
3. Database password
4. Database host
5. Table prefix (if you want to run more than one WordPress in a single database)

This information is being used to create a `wp-config.php` file. **If for any reason this automatic file creation does not work, do not worry. All this does is fill in the database information to a configuration file. You may also simply open `wp-config-sample.php` in a text editor, fill in your information, and save it as `wp-config.php`.** Need more help? [Read the support article on `wp-config.php`.](#)

In all likelihood, these items were supplied to you by your web host. If you do not have this information, then you will need to contact them before you can continue. If you are ready...

[Let's go!](#)



We put the database name, IP, user and pass for the mysql server.

Below you should enter your database connection details. If you are not sure about these, contact your host.

Database Name The name of the database you want to use with WordPress.

Username Your database username.

Password Show Your database password.

Database Host You should be able to get this info from your web host, if `localhost` does not work.

Table Prefix If you want to run multiple WordPress installations in a single database, change this.



Last step is working, we created the website afterwards 😊

Welcome

Welcome to the famous five-minute WordPress installation process! Just fill in the information below and you'll be on your way to using the most extendable and powerful personal publishing platform in the world.

Information needed

Please provide the following information. Do not worry, you can always change these settings later.

Site Title	KCTUS IT
Username	kctus
Password	g5qGiS7WuV4bnhroruoyw0efyweu0r0w0rt0 Strong
Your Email	pol.vila@sarria.salesians.cat
Search engine visibility	<input checked="" type="checkbox"/> Discourage search engines from indexing this site It is up to search engines to honor this request.

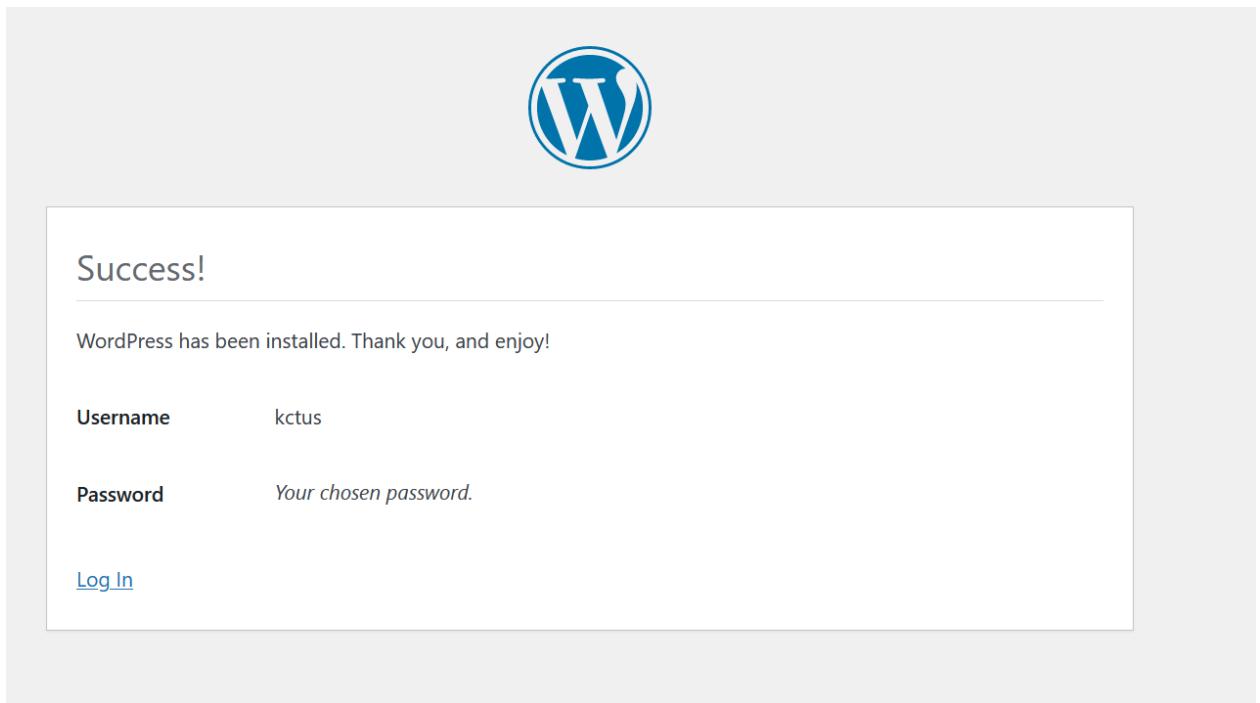
Important: You will need this password to log in. Please store it in a secure location.

Double-check your email address before continuing.

[Install WordPress](#)



And done:



Wordpress website is working correctly:



NAS

In order to store the backups we have used a nas which is a network device that allows us to store a lot of data in a secure and networked way. in this case to mount our pool we are going to do it with a raid z which will allow us to use 3 disks of the 4 inserted and reserve the last one in sphare format which means that if one of the 3 data disks falls the 4 will replace it and we will not lose any information, besides the raid z unlike its brother the raid 5 also fixes writing errors.

The first thing we are going to do is to create a new disk pool which will allow us to visualize all the disks as a single unit.

This screenshot shows the TrueNAS Core web interface. The left sidebar is a navigation menu with sections like Dashboard, Accounts, System, Tasks, Network, Storage (selected), Pools, Snapshots, and VMware-Snapshots. The main content area is titled 'Storage / Pools'. It shows a message 'No pools' and a prominent blue 'ADD' button. The top right corner includes the iXsystems logo and copyright information: 'TrueNAS CORE® © 2023 - iXsystems, Inc.'

This screenshot shows the 'Storage / Pools / Import Pool' screen. The left sidebar is identical to the previous one. The main area is a wizard with four steps: 1. Create or Import pool (active), 2. Decrypt pool, 3. Select pool to import, and 4. Confirm Options. Step 1 contains a section for creating a pool, with two radio buttons: 'Create new pool' (selected) and 'Import an existing pool'. Below this are 'CANCEL' and 'CREATE POOL' buttons. The top right corner shows the iXsystems logo and copyright information: 'TrueNAS CORE® © 2023 - iXsystems, Inc.'

here we will name the pool



Pool Manager

Name *

 [?](#) Encryption [?](#)

RESET LAYOUT **SUGGEST LAYOUT** [?](#) **ADD VDEV** ▾

then we will assign the disks that we want to use

Data VDevs

REPEAT

<input type="checkbox"/>	Disk	Type	Capacity	
<input type="checkbox"/>	da1	HDD	200 GiB	>
<input type="checkbox"/>	da2	HDD	200 GiB	>
<input type="checkbox"/>	da3	HDD	200 GiB	>

0 selected / 3 total

Raid-z

Estimated raw capacity: 396 GiB [?](#)

Pools

ADD

Backup (System Dataset Pool)		ONLINE ? 10.02 MiB (0%) Used 382.03 GiB Free	⚙️ ^					
Name	Type	Used	Available	Compression	Compression Ratio	Readonly	Dedup	Comments
Backup	FILESYSTEM	10.02 MiB	382.03 GiB	lz4	19.06	false	OFF	⋮



Pool

Backup

Total Disks : 3 (data)

Pool Status: ONLINE ✓

Disks w/Errors: 0 ✓

Used Space: 0% ✓

Overview

Path: /mnt/Backup

Available Space: 382,03 GiB

Data: 1 vdev >

Caches: 0

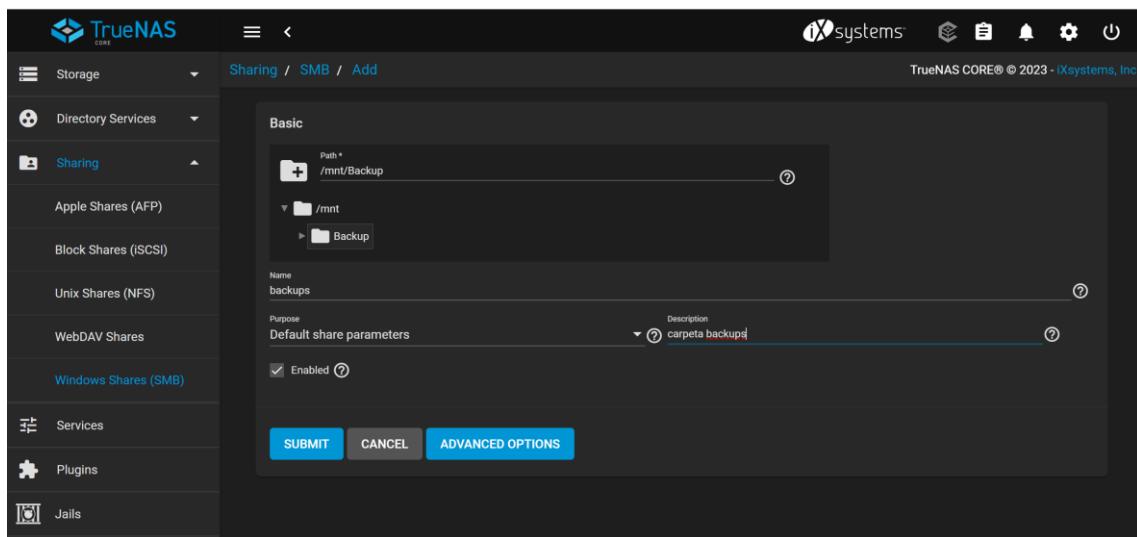
Spares: 0

Logs: 0

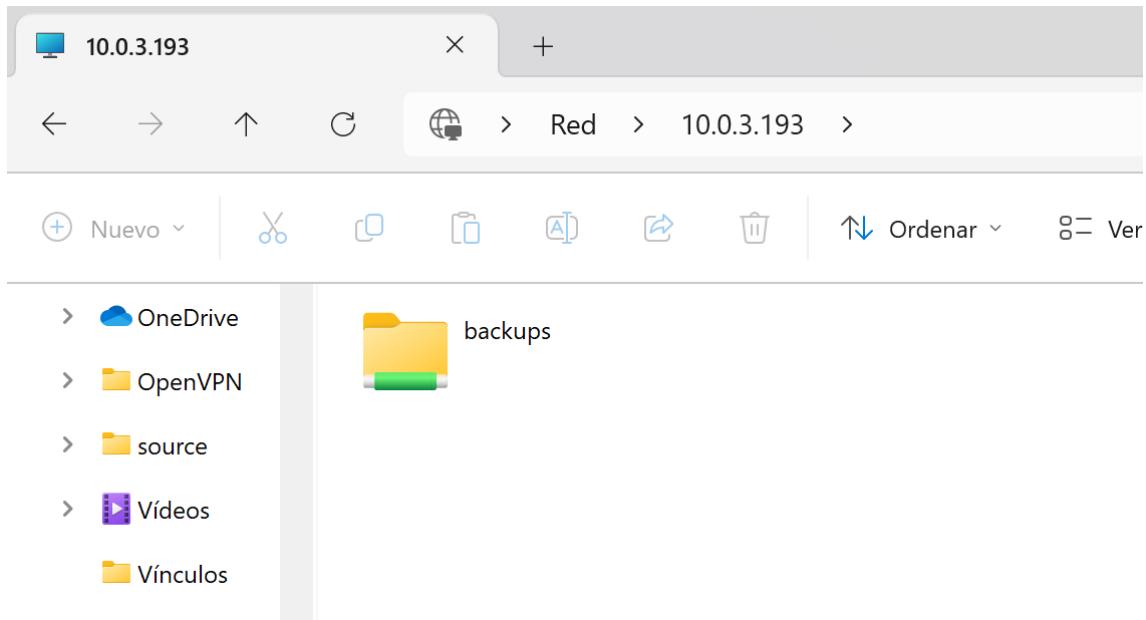
once the pool has been created we are going to activate the smba service to be able to share the network resources.

Name	Path	Description	Enabled
No data to display			

then we will create a shared folder in the pool created previously, this folder will be the one we will use to save the backups of the virtualized machines in esxi.



Once created we will connect in the following way: \\server's IP\name of the shared folder.



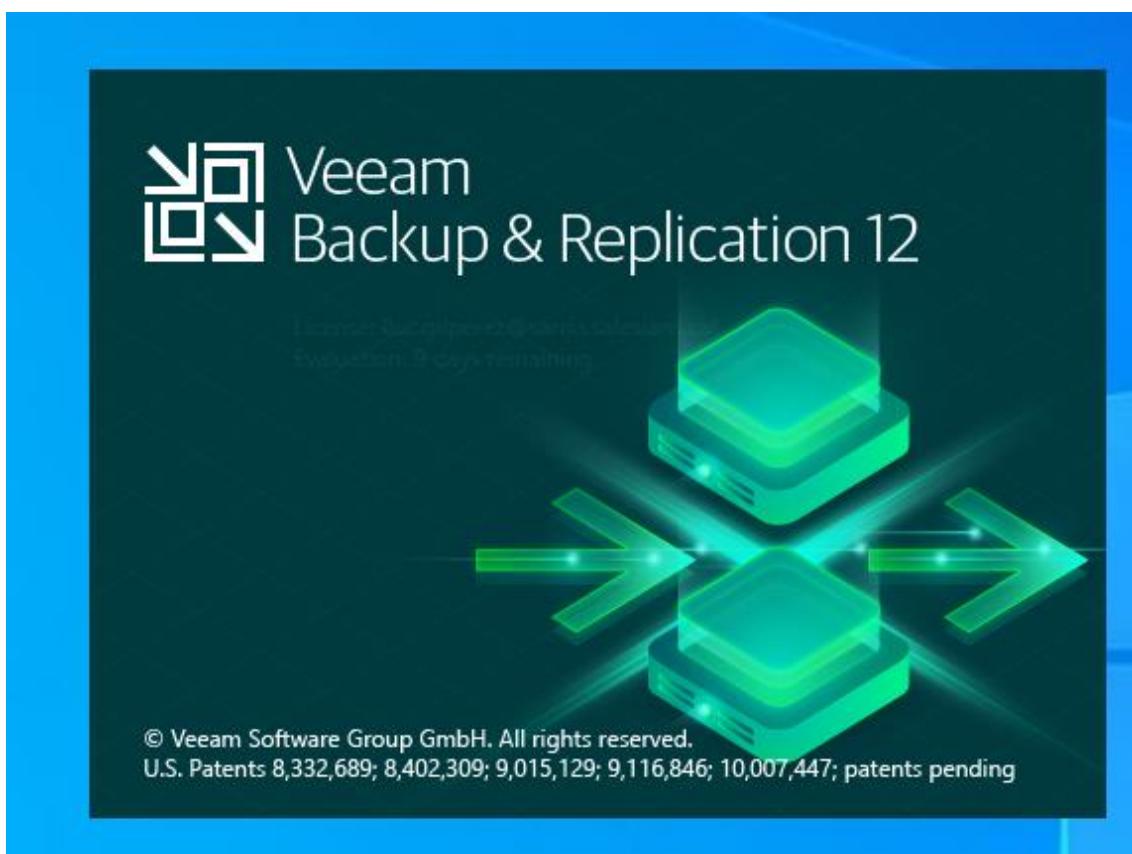
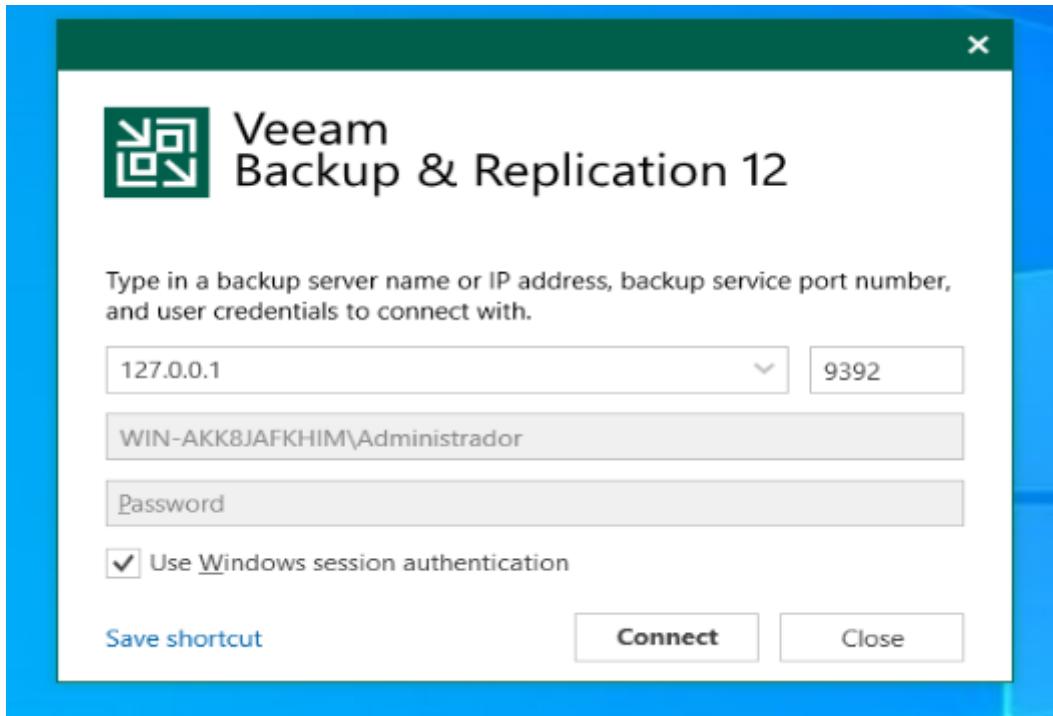
Once everything is finished we are going to create a specific user to make backups and we will secure the folder asking for the login and password.



VEAM BACKUP

HOW TO RUN VEEAM BACKUP

To run Veeam backup we will have to specify the IP address and the credentials, in our case we set the IP as 127.0.0.1 (loopback IP) and then we will select “Use windows session authentication” to log in with our windows session that we are log on.





CONNECTION TO TRUE NAS

Our backups will be stored on our NAS, so we will have to connect our NAS to Veeam Backup as a repository. We will follow the next steps.

We will have to go to “backup infrastructure”.

The screenshot shows the Veeam Backup & Replication interface. The top navigation bar has tabs for Home and Backup Proxy. Below the navigation bar is a toolbar with icons for Add, Edit, Disable, Remove, Upgrade, and Manage Proxy. The main content area is titled 'Backup Infrastructure' and contains a tree view of backup components. A search bar at the top right says 'Type in an object name to search for'. To the right of the search bar is a table showing two entries: 'VMware Backup Proxy' (Type: VMware Agent, Host: WIN-AKK8JAFKHIM) and 'Backup Proxy' (Type: Agent, Host: WIN-AKK8JAFKHIM). The table includes columns for Name, Type, Host, and Description. At the bottom of the interface, there is a sidebar with links for Inventory, Backup Infrastructure (which has a red arrow pointing to it), Analytics, and History.

Then we will have to click on “Add Repository” situated on the top left corner of the screen.

The screenshot shows the Veeam Backup & Replication interface with the 'Backup Repository' tab selected in the top navigation bar. The main content area is titled 'Backup Infrastructure' and contains a tree view of backup components. In the top left corner of the main content area, there is a toolbar with four buttons: 'Add' (with a plus sign icon), 'Edit' (with a pencil icon), 'Rescan' (with a circular arrow icon), and 'Tools'. The 'Add' button has a red arrow pointing to it. The rest of the interface is similar to the previous screenshot, showing the search bar, table, and sidebar.

We will choose “Network attached storage” because our True NAS uses samba share to be accessible from our Vema Backup virtual machine.



Add Backup Repository

Select the type of backup repository you want to add.



Direct attached storage

Microsoft Windows or Linux server with internal or direct attached storage. This configuration enables data movers to run directly on the server, allowing for fastest performance.



Network attached storage

Network share on a file server or a NAS device. When backing up to a remote share, we recommend that you select a gateway server located in the same site with the share.



Deduplicating storage appliance

Dell Data Domain, ExaGrid, Fujitsu ETERNUS CS800, HPE StoreOnce, Infinidat InfiniGuard or Quantum DXi. If you are unable to meet the requirements of advanced integration via native appliance API, use the network attached storage option instead.



Object storage

On-prem object storage system or a cloud object storage provider.

[Cancel](#)

Next, we will choose a logic name for the repository in our case we have chosen “True NAS”,

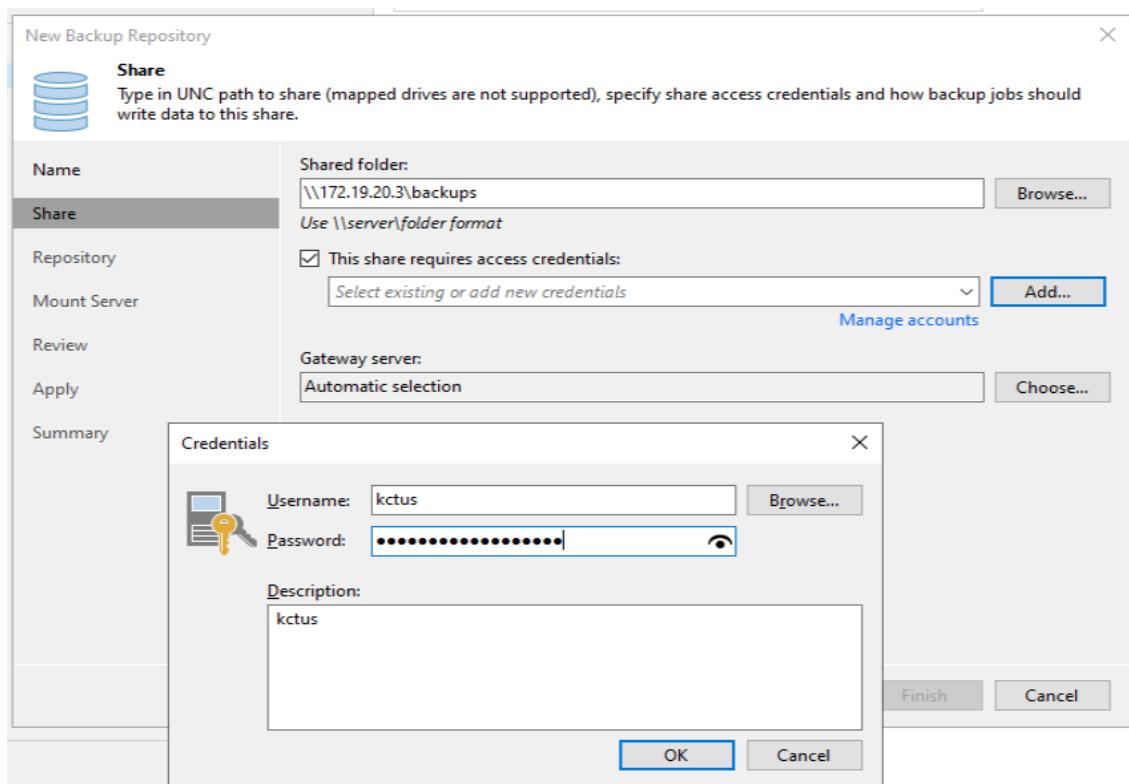
New Backup Repository

Name
Type in a name and description for this backup repository.

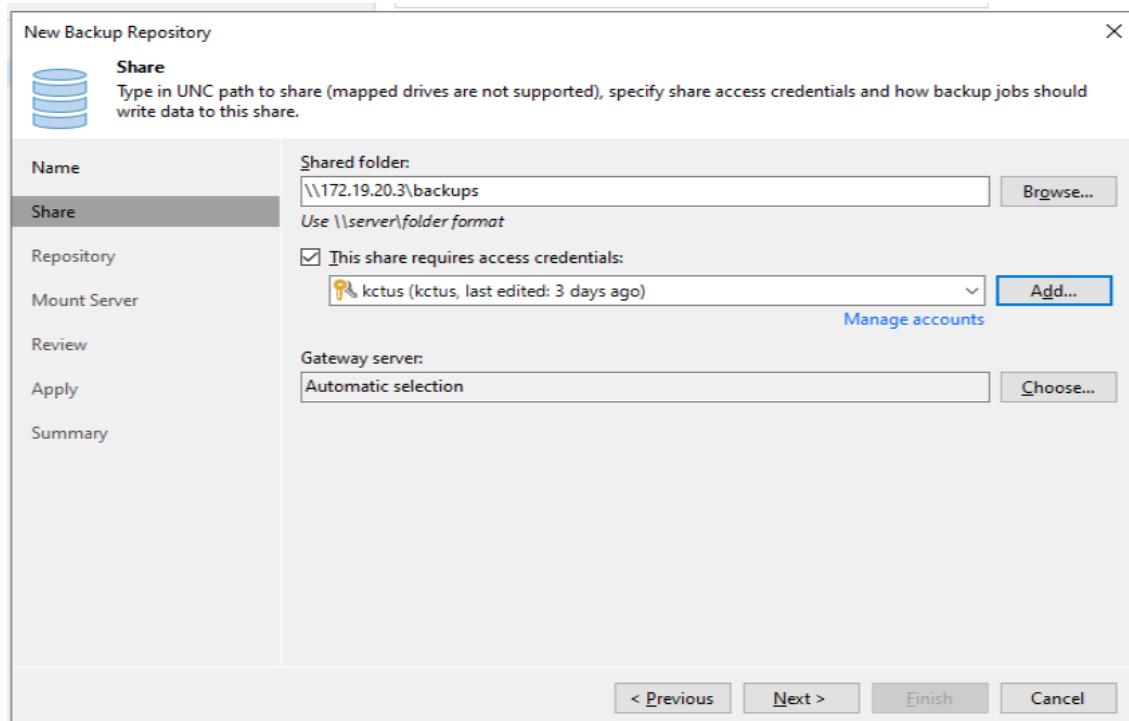
Name	
Share	Name: <input type="text" value="True NAS"/>
Repository	Description: <input type="text" value=""/>
Mount Server	
Review	
Apply	
Summary	

[< Previous](#) [Next >](#) [Finish](#) [Cancel](#)

Then we will add the access route to the shared repository of True NAS and add credentials if they are necessary, in our case it requires a user and a password previously settled on True NAS, so we will click “Add” and write the user and the password.



We will see that it is selected and follow to the next step (the captures are before doing all the backups, this is a demo, that is why it says credentials edited 3 days ago)



We let the default limit of tasks in 4.



New Backup Repository

Repository
Type in path to the folder where backup files should be stored, and set repository load control options.

Name	Location
Share	Path to folder: \\172.19.20.3\backups
Repository	Capacity: 382 GB Free space: 371.9 GB
	<input type="button" value="Populate"/>
Mount Server	Load control
Review	Running too many concurrent tasks against the repository may reduce overall performance, and cause I/O timeouts. Control storage device saturation with the following settings:
Apply	<input checked="" type="checkbox"/> Limit maximum concurrent tasks to: 4
Summary	<input type="checkbox"/> Limit read and write data rate to: 1 MB/s

Click Advanced to customize repository settings.

< Previous

We will select our backup server.

New Backup Repository

Mount Server
Specify a server to mount backups to when performing advanced restores (file, application item and instant VM recoveries). Instant recoveries require a write cache folder to store changed disk blocks in.

Name	Mount server: WIN-AKK8JAFKHIM (Backup server)	<input type="button" value="Add New..."/>
Share	Instant recovery write cache folder: C:\ProgramData\Veeam\Backup\IRCache\	<input type="button" value="Browse..."/>
Repository	Ensure that the selected volume has sufficient free disk space to store changed disk blocks of instantly recovered machines. We recommend placing the write cache folder on an SSD drive.	
Mount Server	<input checked="" type="checkbox"/> Enable vPower NFS service on the mount server (recommended) Unlocks instant recovery of any backup (physical, virtual or cloud) to a VMware vSphere VM. vPower NFS service is not used for instant recovery to a Microsoft Hyper-V VM.	
Review	<input type="button" value="Ports..."/>	
Apply		
Summary		

< Previous

Following it will inform us about the components that will be processed on the server, and we will follow with the process clicking apply.



New Backup Repository

Review
Please review the settings, and click Apply to continue.

Name	The following components will be processed on server WIN-AKK8JAFKHIM:	
Share	Component name	Status
Repository	Transport	already exists
Mount Server	vPower NFS	already exists
	Mount Server	already exists

Search the repository for existing backups and import them automatically
 Import guest file system index data to the catalog

< Previous **Apply** Finish Cancel

Veeam Backup will try to establish connection with the NAS that we have just settled, and as we can see we have all correct and responding.

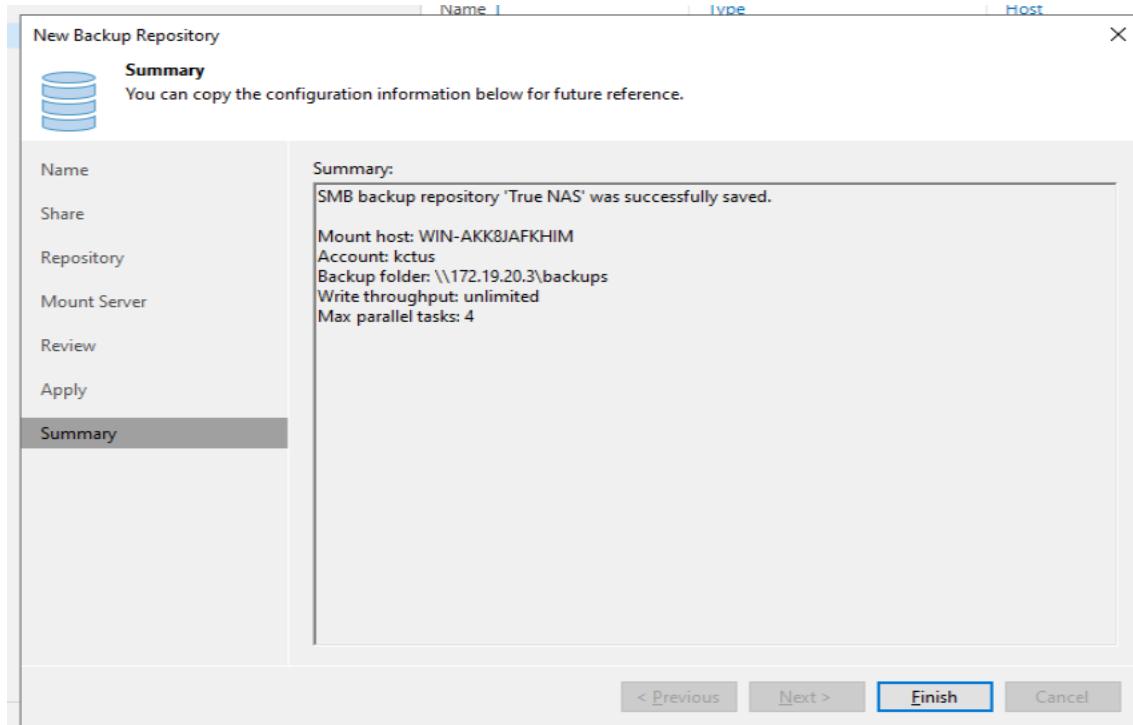
New Backup Repository

Apply
Please wait while backup repository is created and saved in configuration, this may take a few minutes.

Name	Message	Duration
Share	Starting infrastructure item update process	0:00:01
Repository	[WIN-AKK8JAFKHIM] Discovering installed packages	
Mount Server	Registering client WIN-AKK8JAFKHIM for package Transport	
	Registering client WIN-AKK8JAFKHIM for package vPower NFS	
	Registering client WIN-AKK8JAFKHIM for package Mount Server	
	Discovering installed packages	
	All required packages have been successfully installed	
	Detecting server configuration	
	Reconfiguring vPower NFS service	
	Creating configuration database records for installed packages	
	Collecting backup repository info	
	Creating database records for repository	0:00:01
	Backup repository has been saved successfully	

< Previous **Next >** Finish Cancel

Finally, it will appear all the information of what we have configured, so if it is all right, we will click finish and we will have settled NAS as a backup repository.

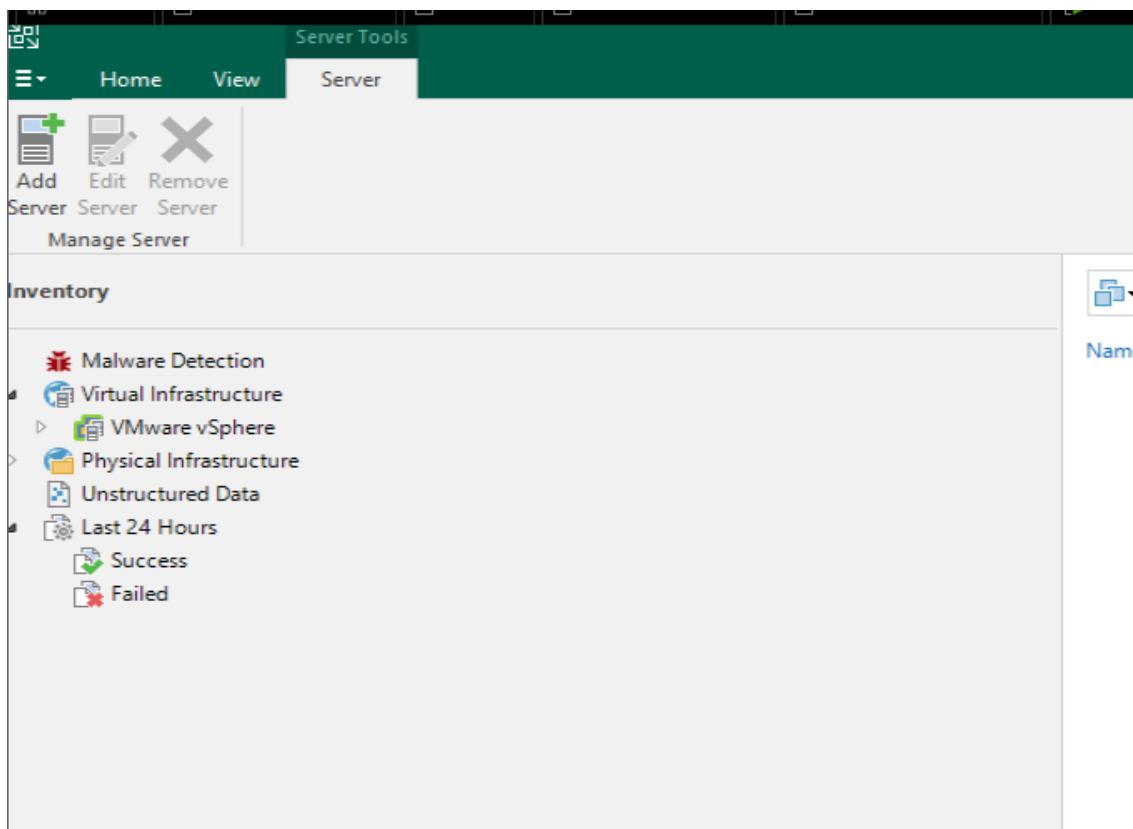


Finally, we must look in our backup repositories and if all the process has gone right we must see our NAS in our backup repositories.

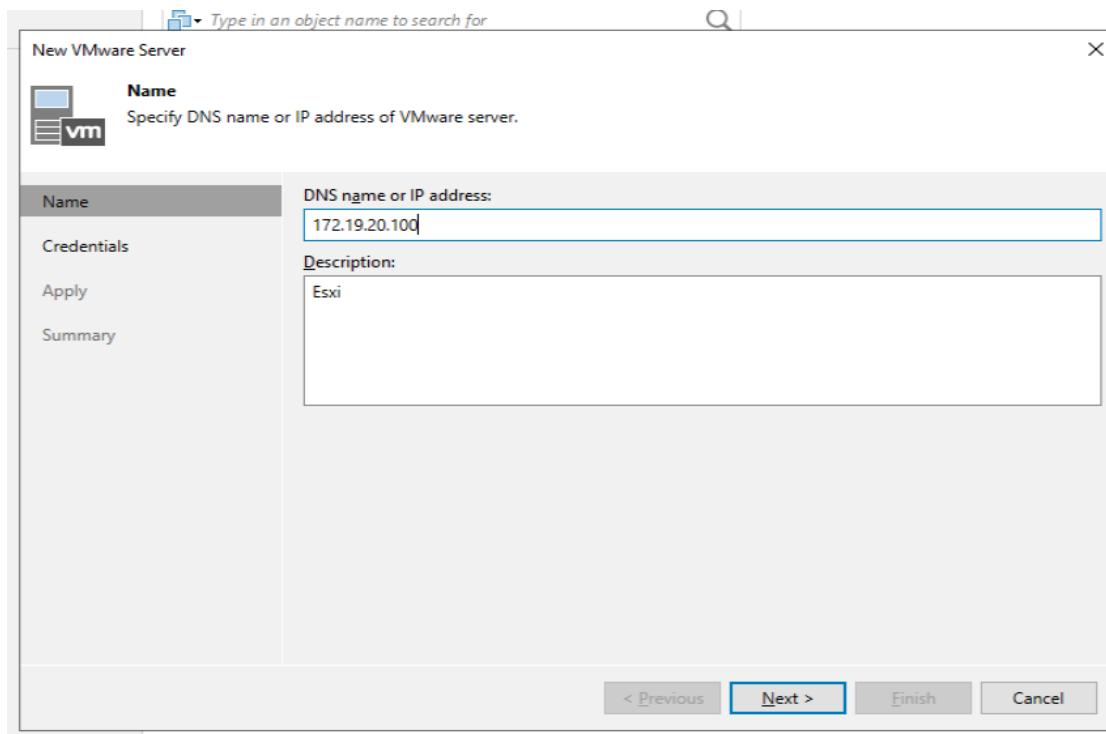
Backup Repositories							
Name	Type	Host	Path	Capa...	Free	Used S...	Description
Default Backup Repository	Windows	WIN-AKK8JAFKHIM...	C\\Backup	59.3 GB	8.1 GB	0 B	Created by Veeam Backup
True NAS	SMB	Gateway (auto)	\\\\172.19.20.3\\b...	382 GB	371,...	0 B	

Veeam Backup is going to take backups of our virtual machines in our esxi, so we will need to set our esxi in Veeam Backup.

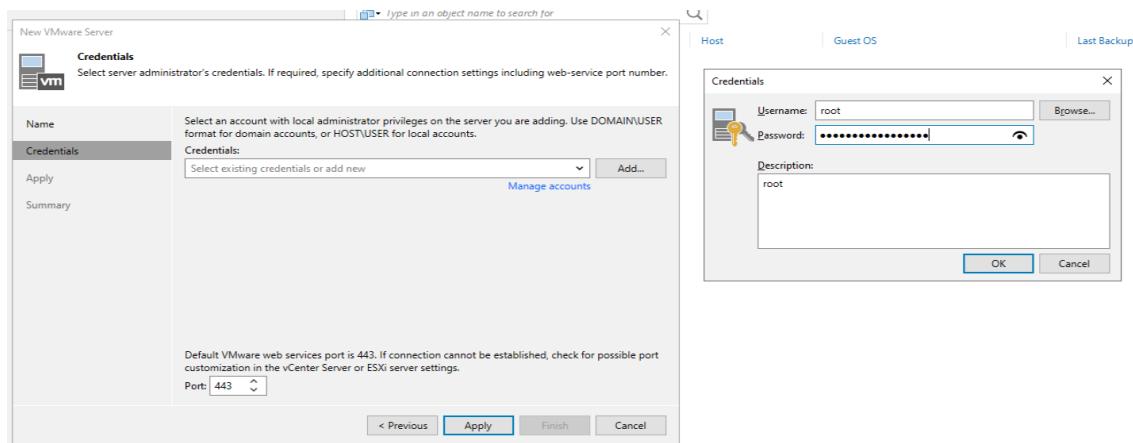
We will go to infrastructure and there we will click on “Add Server”.



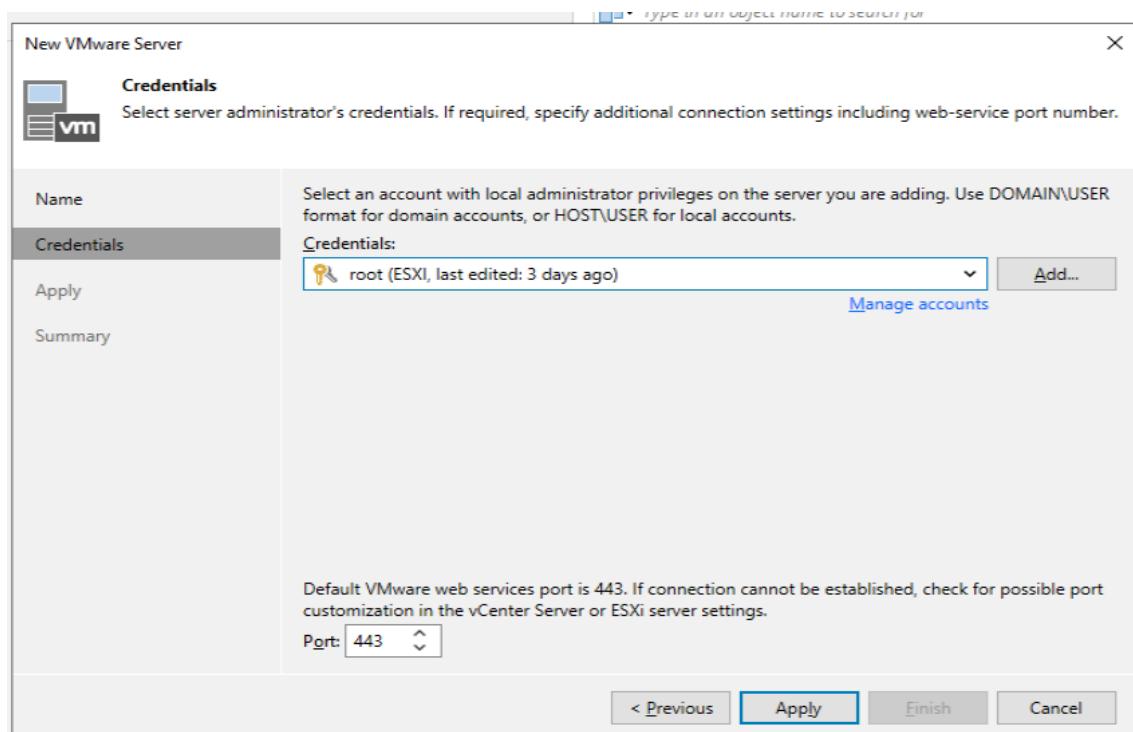
Then it must appear a window where we will have to configure the connection. First of all, we will have to specify the IP address of the esxi virtual machine, in our case 172.19.20.100 /16



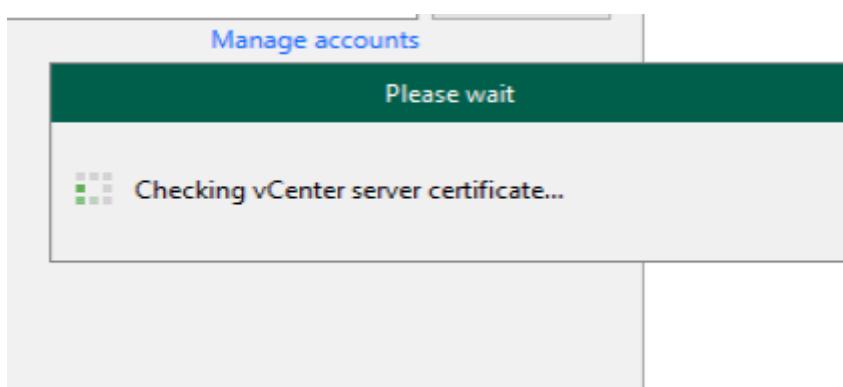
Then it will be asked for the esxi credentials so we will have to proportionate them to Veeam Backup. We will click where it says “add” and write the credentials.



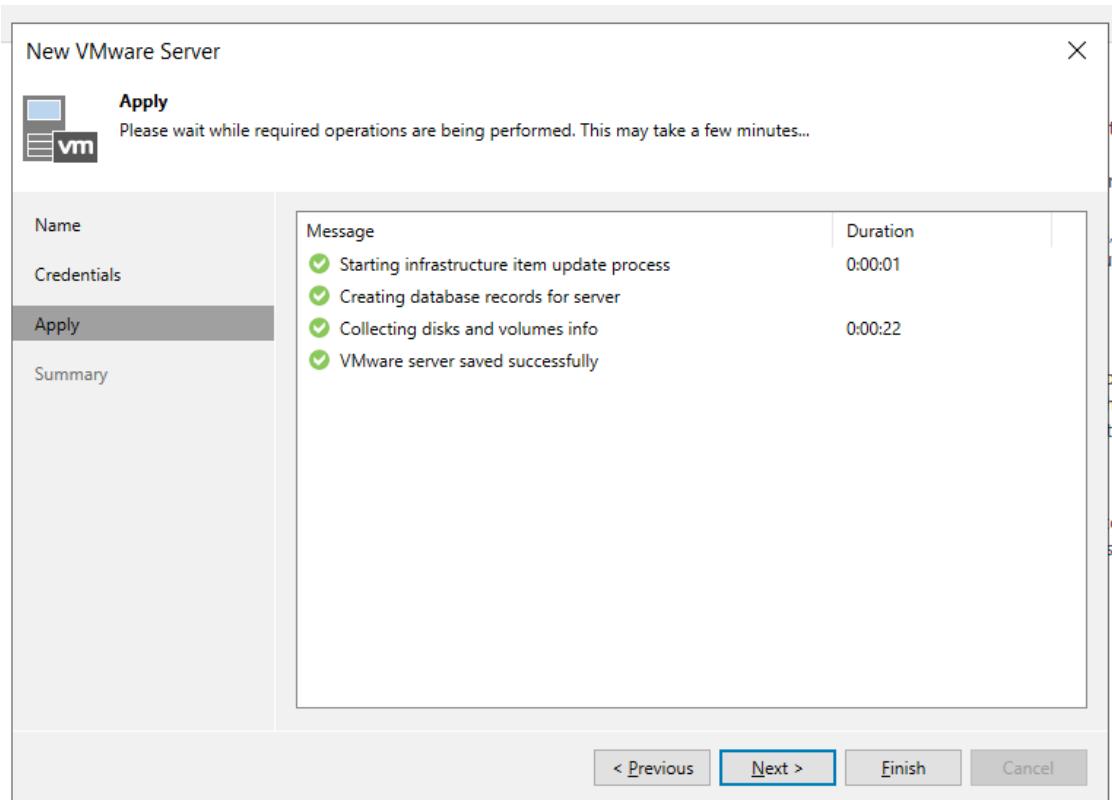
(As we said it's a demo these was created before, so we choose the credentials we had created)



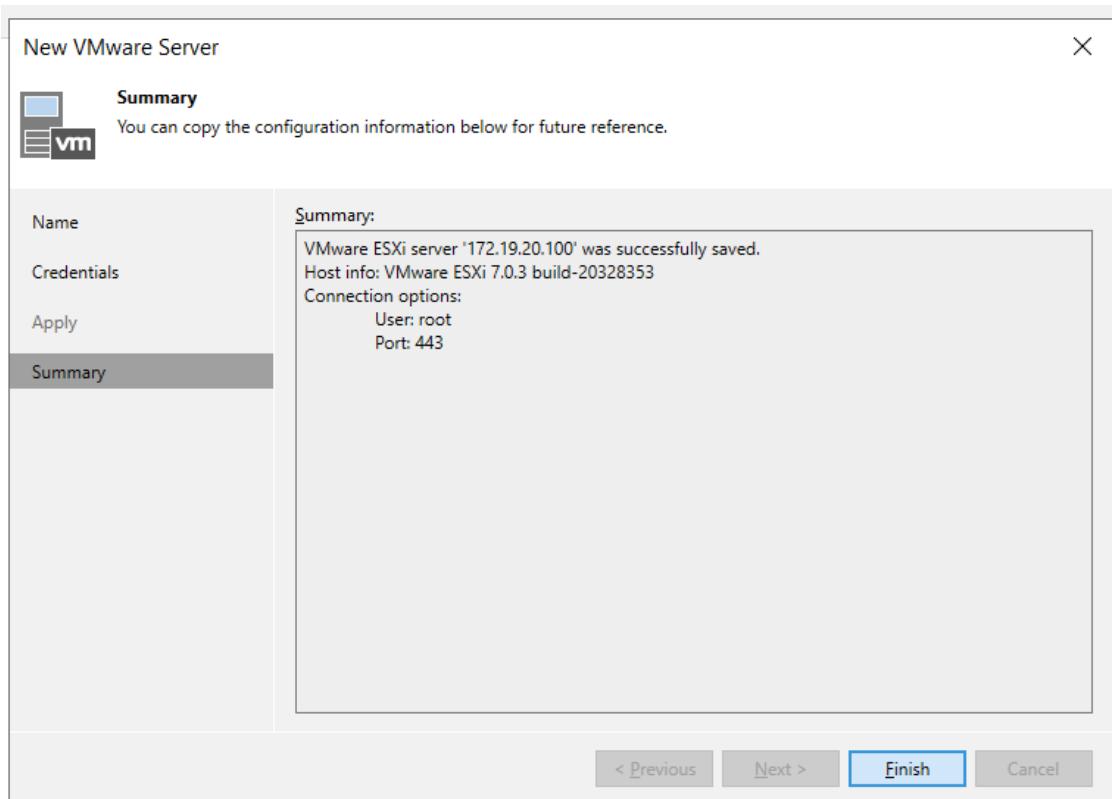
Before clicking apply, we will have to wait till Veeam Backup establish connection with esxi.



Veeam Backup will do a certain tests and then we will be able to continue.



Finally, we will see a summary of all the configurations that we have done, and if it is all correct we will click “finish” and the esxi will be added.



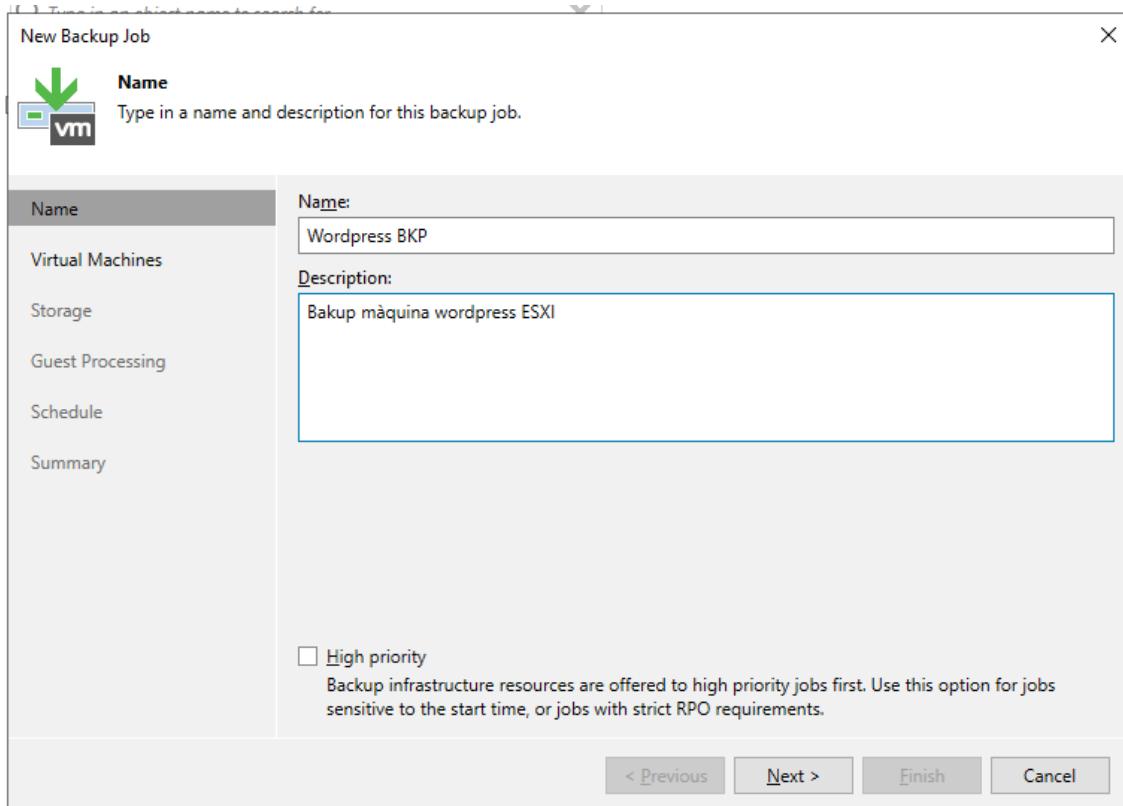


How to create a Backup Job

We have to go to the “home” section, and we will have to click on “Backup Job” on the top left of the screen. A mini menu will be displayed were we have to choose “Virtual machine”(we choose virtual machine because we want to do a backup job of a virtual machine).



When we have clicked on it, a window will pop up and we will be able to start configuring the backup job. The first step will be to give the backup job a logical name, in this case we are creating WordPress backup job so we will call it “Wordpress BKP”. We could add a description if we want.



Following we will choose the virtual machine we want to do backup in this backup job. We will click on "Add" and choose the virtual machine, in this case we are doing WordPress backup job, so we are going to select WordPress "Srv-Wordpress"

Name	Type	Size
Srv-Wordpress		0 B

When we have added the virtual machine, we must be able to see it in the window that says "Virtual machines to backup".



New Backup Job

Virtual Machines

Select virtual machines to process via container, or granularly. Container provides dynamic selection that automatically changes as you add new VMs into the container.

Name	Virtual machines to backup:		
Virtual Machines	Name	Type	Size
	Srv-Wordpress	Virtual machine	183 GB

Add... Remove Exclusions... Up Down Recalculate

Total size: 183 GB

< Previous Next > Finish Cancel

Then we will need to specify where we want to storage the backup, in our case we are going to choose the NAS of our infrastructure.

New Backup Job

Storage

Specify processing proxy server to be used for source data retrieval, backup repository to store the backup files produced by this job and customize advanced job settings if required.

Name	Backup proxy:
Virtual Machines	Automatic selection Choose...
Storage	Backup repository:
	True NAS raid Z (Created by WIN-AKK8JAFKHM\Administrador at 23/05/2024 19:07.)
	Default Backup Repository (Created by Veeam Backup)
	True NAS raid Z (Created by WIN-AKK8JAFKHM\Administrador at 23/05/2024 19:07.)
	Retention policy: / days Configure...
	<input type="checkbox"/> Keep certain full backups longer for archival purposes GFS retention policy is not configured
	<input type="checkbox"/> Configure secondary destinations for this job Copy backups produced by this job to another backup repository, or tape. We recommend to make at least one copy of your backups to a different storage device that is located off-site.
	Advanced job settings include backup mode, compression and deduplication, block size, notification settings, automated post-job activity and other settings. Advanced...

< Previous Next > Finish Cancel

We will proceed with the process.



New Backup Job

Guest Processing

Choose guest OS processing options available for running VMs.

Name	<input type="checkbox"/> Enable application-aware processing Detects and prepares applications for consistent backup, performs transaction logs processing, and configures the OS to perform required application restore steps upon first boot.
Virtual Machines	Customize application handling options for individual machines and applications Applications...
Storage	<input type="checkbox"/> Enable guest file system indexing and malware detection Indexing enables global file search functionality, automatic detection of suspicious file system activity and known malware files.
Guest Processing	Customize advanced guest file system indexing options for individual machines Indexing...
Schedule	Guest interaction proxy: <input type="text" value="Automatic selection"/> Choose...
Summary	Guest OS credentials: <input type="text" value="Select existing credentials or add new"/> Add... Manage accounts Credentials...
	Customize guest OS credentials for individual machines and operating systems
	Verify network connectivity and credentials for each machine included in the job Test Now

< Previous [Next >](#) [Finish](#) [Cancel](#)

At this point we could choose if we want to program the backup job at a certain time and the frequency with which it will be executed the backup job.

New Backup Job

Schedule

Specify the job scheduling options. If you do not set the schedule, the job will need to be controlled manually.

Name	<input checked="" type="checkbox"/> Run the job automatically
Virtual Machines	<input type="radio"/> <u>Daily</u> at this time: <input type="text" value="22:00"/> Everyday Days...
Storage	<input type="radio"/> <u>Monthly</u> at this time: <input type="text" value="22:00"/> Fourth Saturday Months...
Guest Processing	<input type="radio"/> <u>Periodically</u> every: <input type="text" value="1"/> Hours Schedule...
Schedule	<input type="radio"/> <u>After this job:</u> BKP Wordpress (Created by WIN-AKK8JAFKHIM\Administrador at 23, 2018)
Summary	Automatic retry <input checked="" type="checkbox"/> Retry failed items processing: <input type="text" value="3"/> times Wait before each retry attempt for: <input type="text" value="10"/> minutes
	Backup window <input type="checkbox"/> Terminate the job outside of the allowed backup window Window... Long running or accidentally started jobs will be terminated to prevent impact on your production infrastructure during busy hours.

< Previous [Apply](#) [Finish](#) [Cancel](#)

In this demo we will not choose an hour, we will execute it later manually.



New Backup Job

Schedule

Specify the job scheduling options. If you do not set the schedule, the job will need to be controlled manually.

Name	<input checked="" type="checkbox"/> Run the job automatically
Virtual Machines	<input checked="" type="radio"/> Daily at this time: 22:00 Everyday Days...
Storage	<input checked="" type="radio"/> Monthly at this time: 22:00 Fourth Saturday Months...
Guest Processing	<input checked="" type="radio"/> Periodically every: 1 Hours Schedule...
Schedule	<input checked="" type="radio"/> After this job: BKP Wordpress (Created by WIN-AKK8JAFKHM\Administrador at 23, v)
Summary	Automatic retry <input checked="" type="checkbox"/> Retry failed items processing: 3 times Wait before each retry attempt for: 10 minutes
	Backup window <input type="checkbox"/> Terminate the job outside of the allowed backup window Long running or accidentally started jobs will be terminated to prevent impact on your production infrastructure during busy hours. Window...

< Previous **Apply** Finish Cancel

To end with the creation of the backup job, a summary of all the setting will be shown, and we will select the square that says “run the job when I click Finish” to run the backup job when we finish creating it.

New Backup Job

Summary

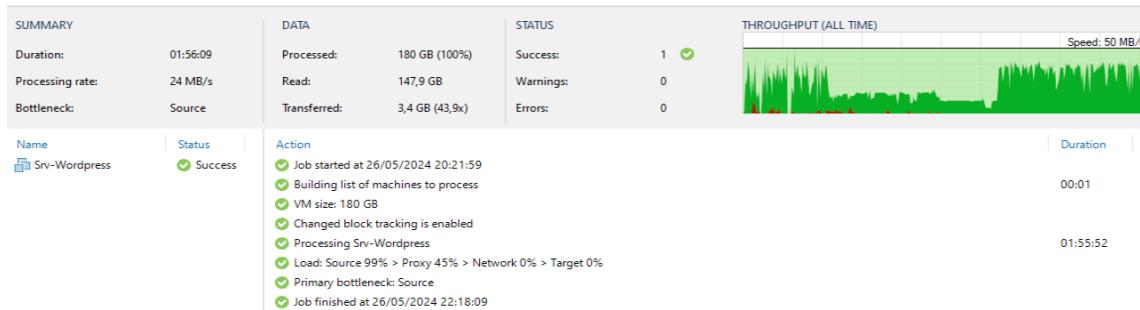
You have successfully created the new backup job.

Name	Summary: Configuration has been successfully saved. Name: Wordpress BKP Target Path: \\172.19.20.3\backups Type: VMware Backup Source items: Srv-Wordpress (172.19.20.100)
Virtual Machines	
Storage	
Guest Processing	
Schedule	
Summary	PowerShell cmdlet for starting the job: Get-VBRJob -Name "Wordpress BKP" Start-VBRJob <input checked="" type="checkbox"/> Run the job when I click Finish

< Previous **Next >** **Finish** Cancel



The job will start automatically. Then if we wait till the end, we will see that the backup has successfully been done.



If we go to the “home” section and click on jobs > Backup, we will see the jobs created, the Odoo and the WordPress backup job that we created. Also, information is displayed, and we are able to see that both backups are done and successfully.

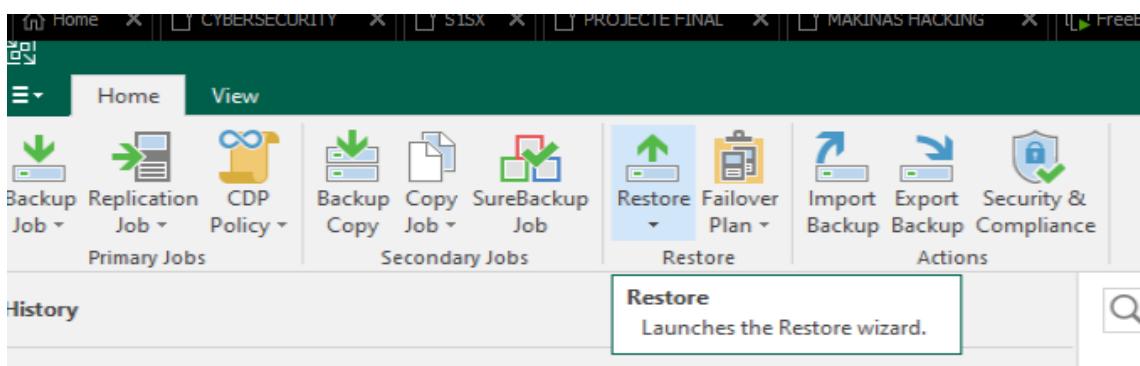
Name	Type	Obj...	Status	Last Run	Last Result	Next Run	Target
Odoo BKP	VMware Backup	1	Stopped	23 hours ago	Success	<Not scheduled>	True NAS raid Z
WordpressBKP	VMware Backup	1	Stopped	19 hours ago	Success	After [Odoo BKP]	True NAS raid Z

We can also see the backups stored in the NAS.

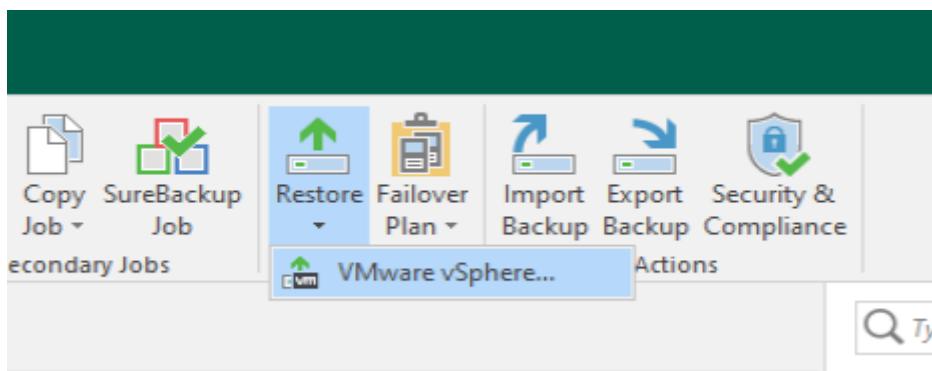
Job Name	Creation Time	Restore Poin...	Repository	Platform
Odoo BKP	26/05/2024 16:18		True NAS raid Z	VMware
OdooLinux	26/05/2024 17:01	1		
WordpressBKP	26/05/2024 20:21		True NAS raid Z	VMware
Srv-Wordpress	26/05/2024 20:29	1		

How to recovery a virtual machine from a Backup

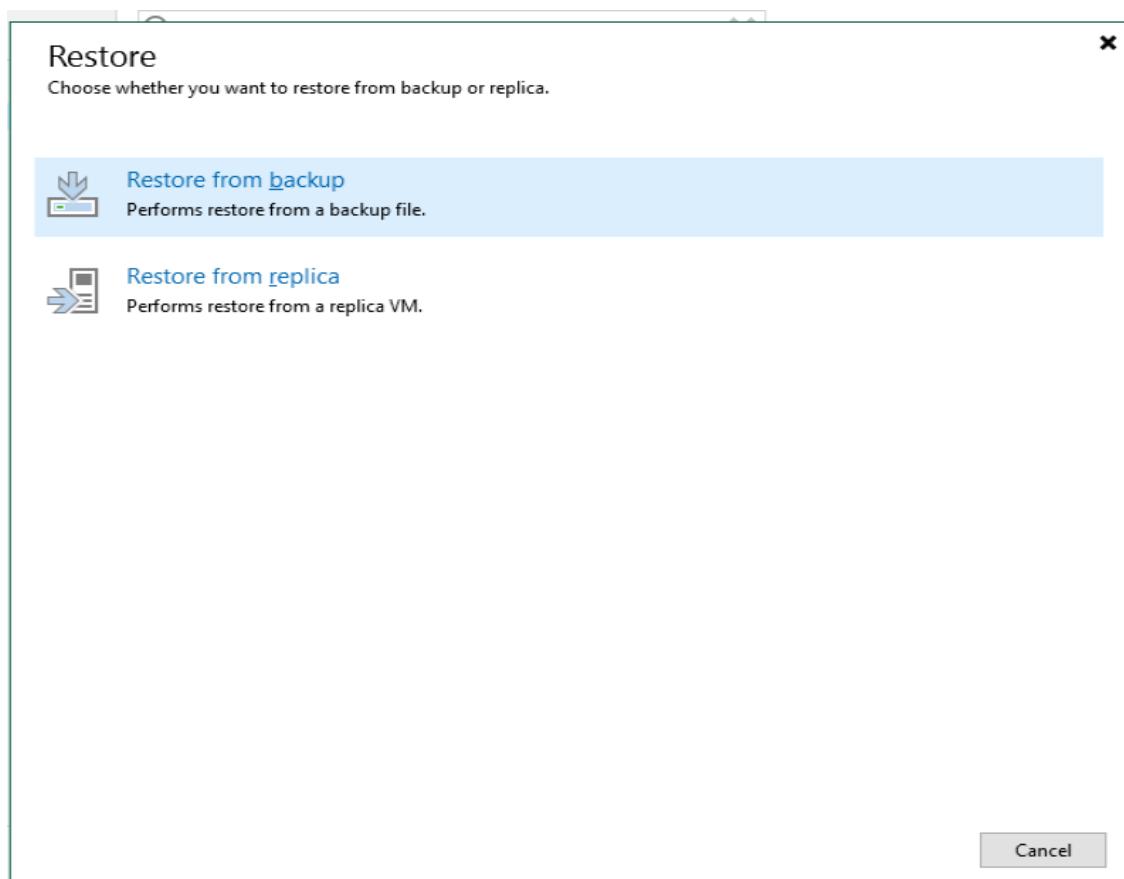
To do a recovery of any virtual machine we have to click on the restore option on the top the screen.



Then we select VMware vSphere, and a window must pop up to start the restore.



The first step will be to select that we are going to do the restore from a backup.



Then we have three options to choose:

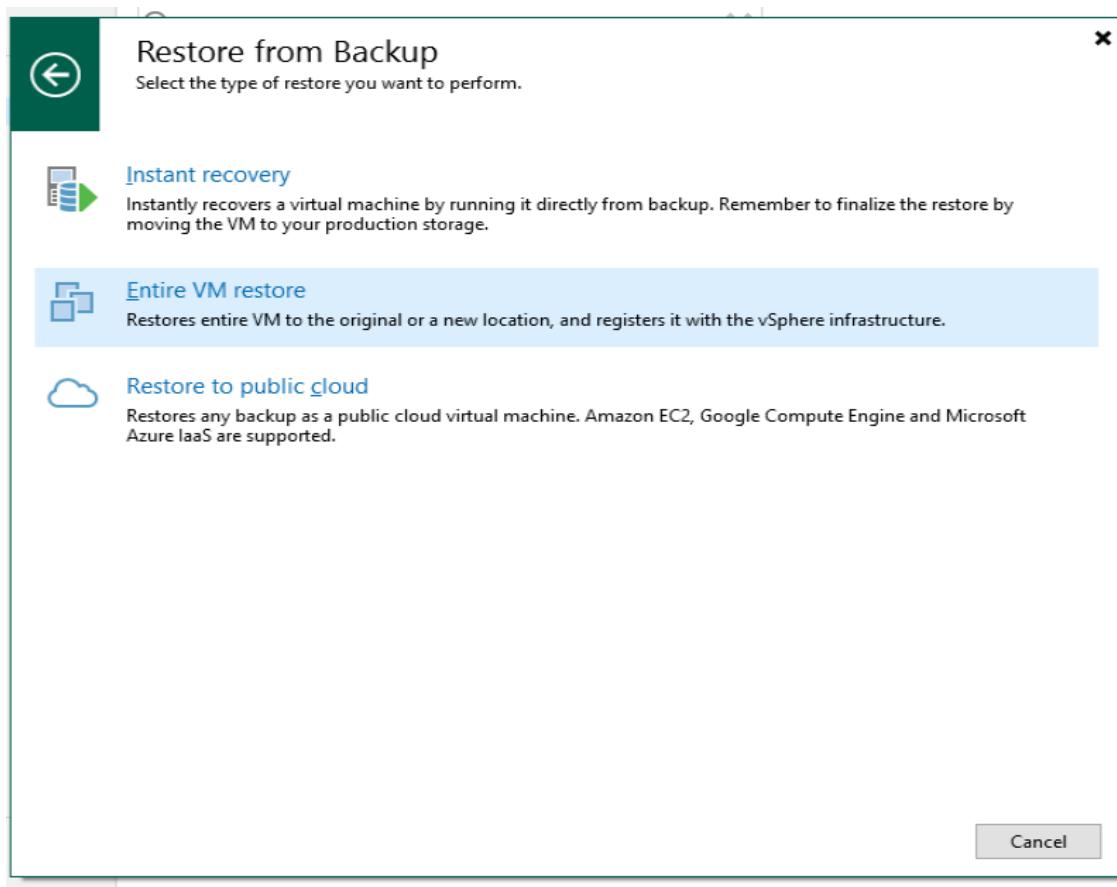


Instant recovery: Runs the virtual machine directly from the backup.

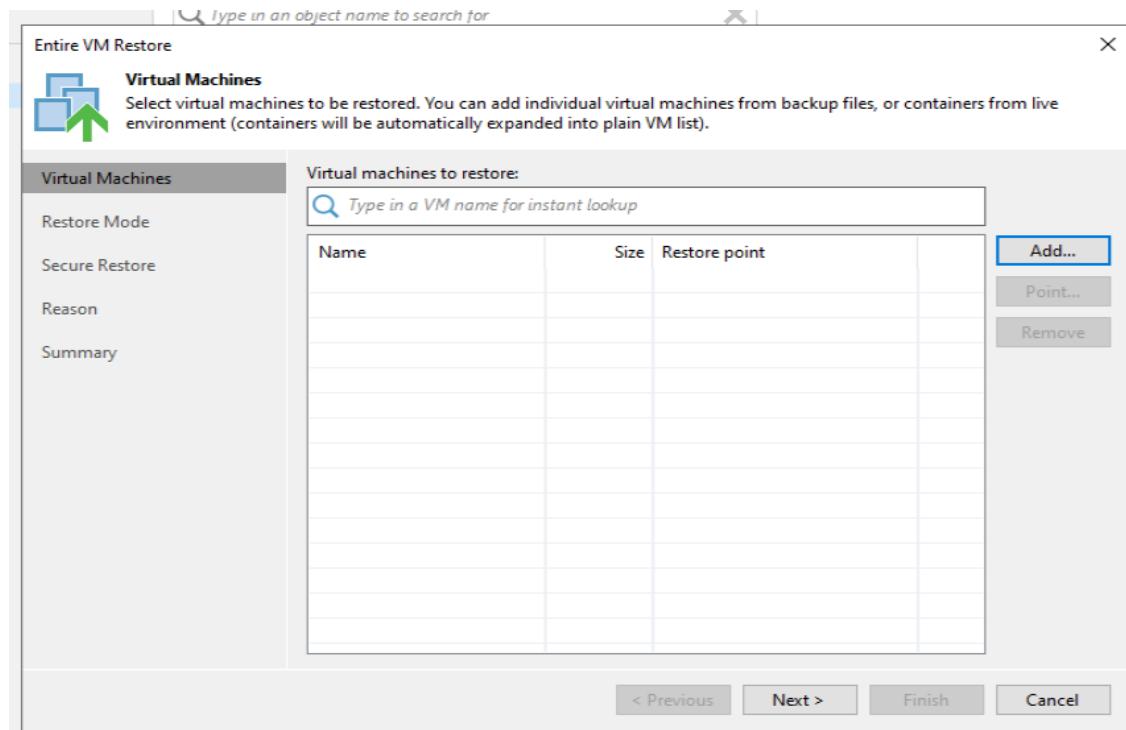
Entire VM restore: makes an entire restore of all the virtual machine, replacing the actual state of the virtual machine for the backup state.

Restore to public cloud: Restores a backup as a public cloud virtual machine.

In our situation we will choose to restore the entire virtual machine.



Then we must select the Backup we want to use to restore the virtual machine.



We will click “Add” and select the backup that we want to use. In this demo we are going to choose WordPress backup to do a recovery of this machine.



I type in an object name to search for

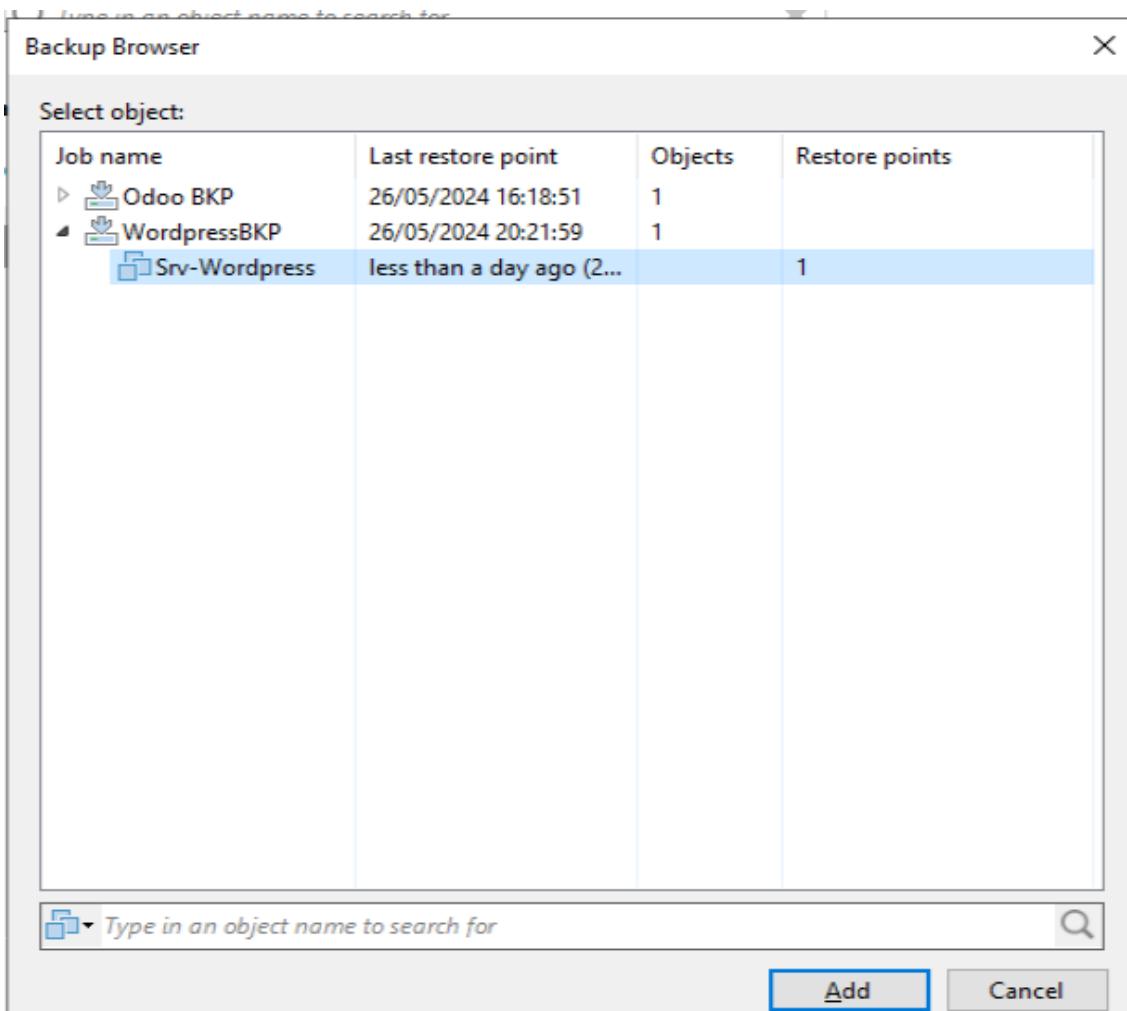
Backup Browser

Select object:

Job name	Last restore point	Objects	Restore points
Odoo BKP	26/05/2024 16:18:51	1	
WordpressBKP	26/05/2024 20:21:59	1	
Srv-Wordpress	less than a day ago (2...	1	

Type in an object name to search for

Add Cancel



As we can see the virtual machine appears to be selected.

I type in an object name to search for

Entire VM Restore

Virtual Machines
Select virtual machines to be restored. You can add individual virtual machines from backup files, or containers from live environment (containers will be automatically expanded into plain VM list).

Virtual Machines

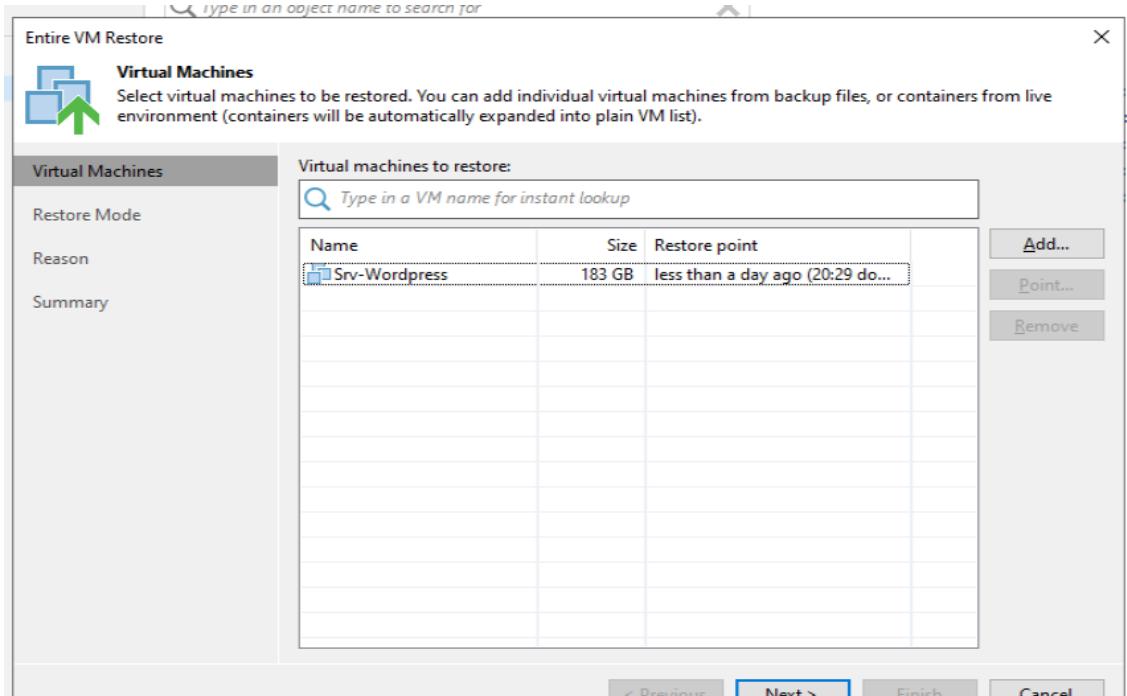
Restore Mode
Reason
Summary

Virtual machines to restore:

Name	Size	Restore point
Srv-Wordpress	183 GB	less than a day ago (20:29 do...

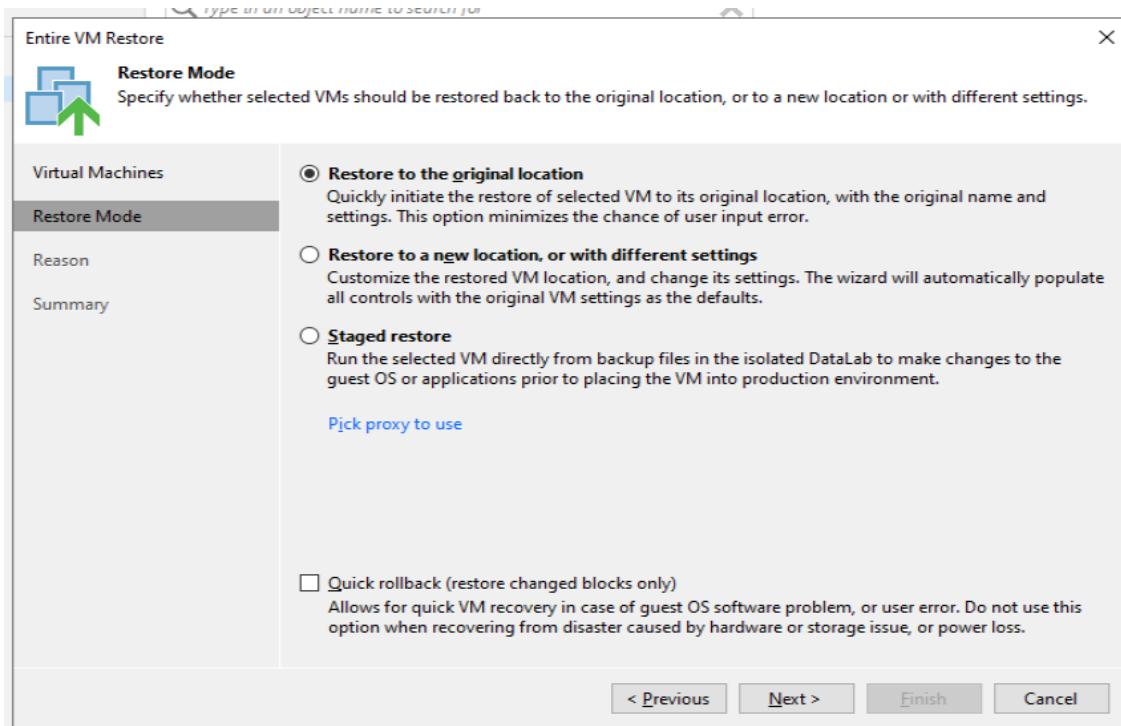
Add... Point... Remove

< Previous Next > Finish Cancel

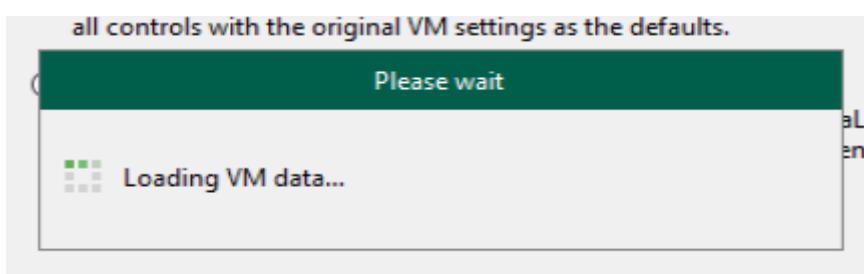




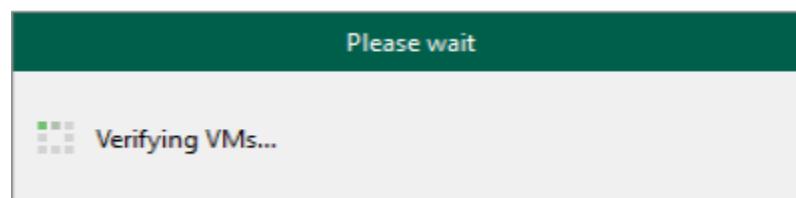
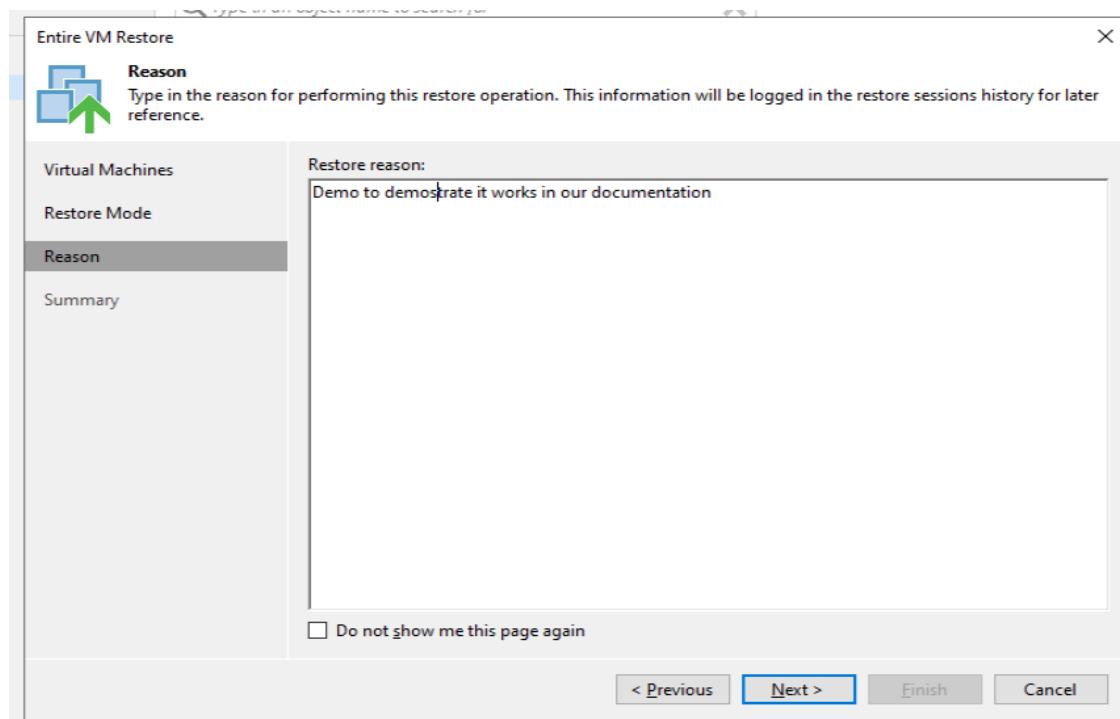
Then we must specify how we want to do the restore. In our case we are going to choose “Restore to the original location” these will replace the current stat of the virtual machine for the current state of the virtual machine in the backup copy.



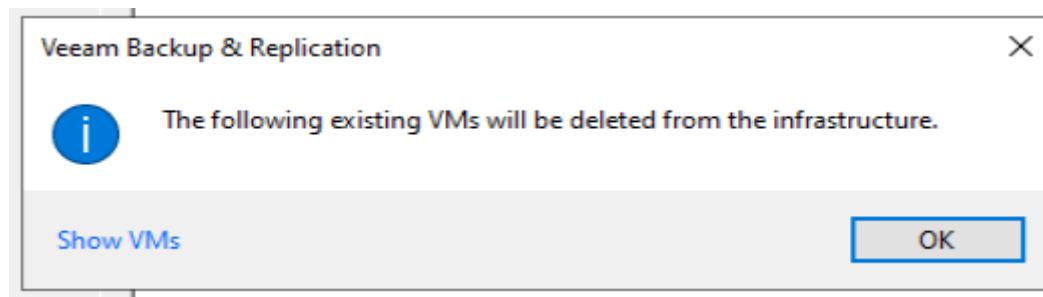
Then Veeam Backup is going to load the data and when this is done, we will be able to proceed with the restore.



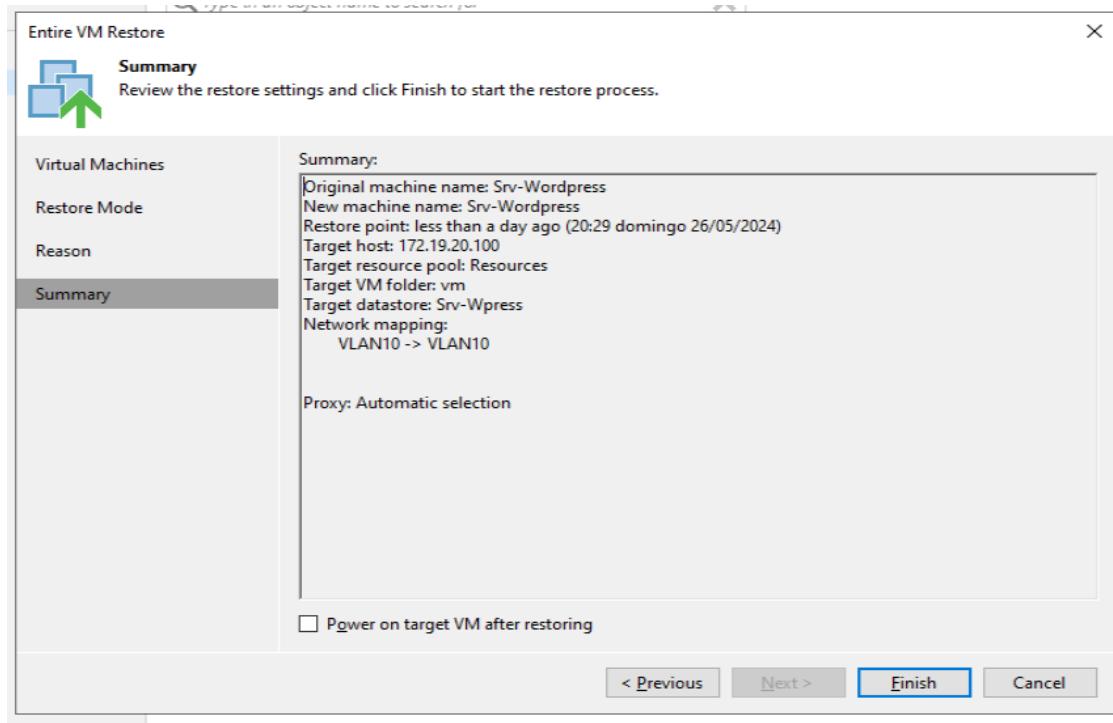
We could add if we want a reason for the restore to keep track about the reason for other people or for other days to see that that restore was done for this reason. In our case due that it's a demo for the documentation, we add this as the reason.



A small window with information will tell us that the current state of the virtual machine will be deleted, we will click “OK”. That is because it deletes the current state and replace it for the backup copy.



When we click finish, it will start coping the backup copy into the virtual machine.



Then we will only have to wait till the restore ends, this will take a couple of minutes only.

We can see also the progress of the restore, as we see in this screenshot it is 75% done.

In this other screenshot we can see that the state of the restore is Succes so that means the restore has been done properly.



The screenshot shows a VMware interface with a search bar at the top. Below it is a table with columns: Job Name, Session Type, Status, Start Time, End Time, and Initiated by. One row is visible: 'Srv-Wordpress' (Session Type: Full VM Restore, Status: Success, Initiated by: WIN-AKK8JAFKHIM\Administrador). A modal window titled 'Restoring VM' is open, displaying details about the restore process. It shows the name 'Srv-Wordpress', status 'Success', and start/end times. The log tab is selected, showing a list of messages with their duration:

Message	Duration
Restoring file Srv-Wordpress.nvram (8,5 KB)	0:00:27
Restoring [Srv-Wpress] Srv-Wordpress/Srv-Wordpress.vmx	
Preparing for virtual disks restore	
Using proxy VMware Backup Proxy for restoring disk Hard disk 1	0:03:10
Using proxy VMware Backup Proxy for restoring disk Hard disk 2	
Restoring Hard disk 2 (60 GB) : 7,3 GB restored at 40 MB/s [nbd]	0:00:24
Restoring Hard disk 1 (120 GB) : 247 MB restored at 13 MB/s [nbd]	
Restore completed successfully	

ZABBIX

We first created a VPC on AWS, so we could choose the resources attached to the machine. We created a VPC with the name “projecte2024” and the CIDR 172.16.0.0/16

The screenshot shows the AWS VPC console with a table titled 'Sus VPC (2)'. The columns are: Name, ID de la VPC, Estado, CIDR IPv4, and CIDR IPv6. Two rows are listed:

Name	ID de la VPC	Estado	CIDR IPv4	CIDR IPv6
projecte2024	vpc-0b43aee186f1b9826	Available	172.16.0.0/16	-
-	vpc-011e47ed94f6b313f	Available	172.31.0.0/16	-

Then, we created a subnet, of course, since 65534 IPs are enough for us, we'll leave it like this.

The screenshot shows the AWS subnet configuration for 'Projecte2024G4'. The subnet is associated with the VPC 'vpc-0b43aee186f1b9826 | proj...' and has the CIDR block '172.16.0.0/16'.

We added a route in “Routing Tables” so, all connections go through the 0.0.0.0/ (anywhere) and through the gateway.



Editar rutas

Destino	Destino	Estado	Propagada
172.16.0.0/16	local Q local	Activado	No
Q 0.0.0.0/0 X	Puerta de enlace de Internet Q igw-097f4882c88da74d2 X	-	No

[Agregar ruta](#) [Quitar](#)

[Cancelar](#) [Vista previa](#) [Guardar cambios](#)



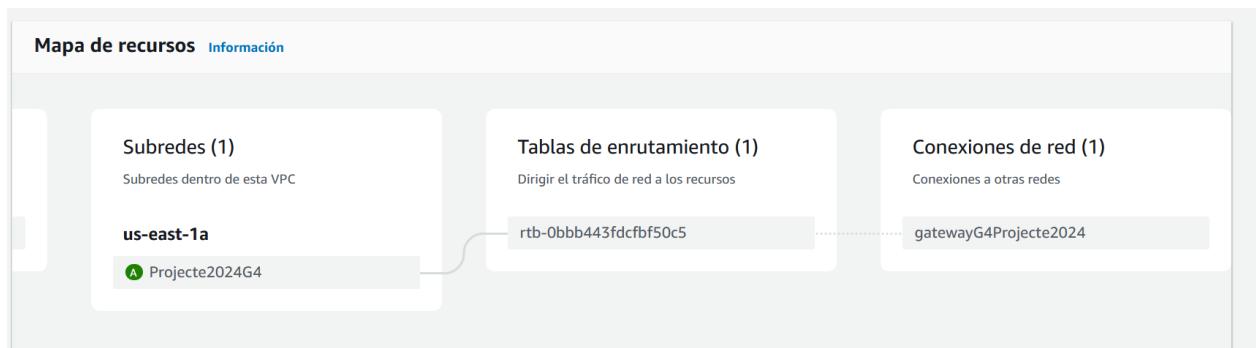
This is the gateway we created on AWS.

The screenshot shows the AWS VPC Gateway details page. The top navigation bar includes 'VPC' > 'Gateways de Internet' > 'igw-097f4882c88da74d2'. The main title is 'igw-097f4882c88da74d2 / gatewayG4Projecte2024'. On the right, there is an 'Acciones' dropdown menu. The 'Detalles' tab is selected, showing the following information:

ID de gateway de Internet igw-097f4882c88da74d2	Estado Attached	ID de la VPC vpc-0b43aee186f1b9826 projecte2024	Propietario 149231240165
--	--------------------	---	-----------------------------

The 'Etiquetas' section contains a search bar 'Buscar etiquetas' and a table with one entry: 'Name' = 'gatewayG4Projecte2024'. There is also a 'Administrar etiquetas' button and a navigation bar with icons for back, forward, and refresh.

With that said, this is the result of the connections we just made:





Now, with the VPC created, we went to EC2 and created an instance while selecting the VPC and selected “Assign a public IP address”:

▼ **Configuraciones de red** [Información](#)

VPC : *obligatorio* [Información](#)

vpc-0b43aee186f1b9826 (projecte2024)
172.16.0.0/16

Subred [Información](#)

subnet-011f94bbabb345c85 Projecte2024G4
VPC: vpc-0b43aee186f1b9826 Propietario: 149231240165
Zona de disponibilidad: us-east-1a Direcciones IP disponibles: 65530
CIDR: 172.16.0.0/16

[Crear nueva subred](#)

Asignar automáticamente la IP pública [Información](#)

Habilitar

Se aplican cargos adicionales cuando no se cumplen los límites del [nivel gratuito](#)

Firewall (grupos de seguridad) [Información](#)

Un grupo de seguridad es un conjunto de reglas de firewall que controlan el tráfico de la instancia. Agregue reglas para permitir que un tráfico específico llegue a la instancia.

[Crear grupo de seguridad](#)

[Seleccionar un grupo de seguridad existente](#)

Nombre del grupo de seguridad - *obligatorio*

launch-wizard-1

Este grupo de seguridad se agregará a todas las interfaces de red. El nombre no se puede editar después de crear el grupo de seguridad. La longitud máxima es de 255 caracteres. Caracteres válidos: a-z, A-Z, 0-9, espacios y _-:/()#+=&;!\$*

Descripción - *obligatorio* [Información](#)

launch-wizard-1 created 2024-05-02T16:26:26.491Z

Reglas de grupos de seguridad de entrada



We also selected Ubuntu Server 22.04 as the base for our Zabbix machine.

Amazon) Información

|

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type ami-04b70fa74e45c3917 (64 bits (x86)) / ami-0eac975a54dfee8cb (64 bits (Arm)) Virtualización: hvm Activado para ENA: true Tipo de dispositivo raíz: ebs	Apto para la capa gratuita
Ubuntu Server 22.04 LTS (HVM), SSD Volume Type ami-0e001c9271cf7f3b9 (64 bits (x86)) / ami-058b428b3b45defec (64 bits (Arm)) Virtualización: hvm Activado para ENA: true Tipo de dispositivo raíz: ebs	Apto para la capa gratuita
Ubuntu Server 20.04 LTS (HVM) with SQL Server 2022 Standard ami-032346ab877c418af (64 bits (x86)) Virtualización: hvm Activado para ENA: true Tipo de dispositivo raíz: ebs	
Ubuntu Pro - Ubuntu Server Pro 24.04 LTS (HVM), SSD Volume Type ami-0103953a003440c37 (64 bits (x86)) / ami-0e879a1b306fffb22 (64 bits (Arm)) Virtualización: hvm Activado para ENA: true Tipo de dispositivo raíz: ebs	
Deep Learning Base OSS Nvidia Driver GPU AMI (Ubuntu 22.04) 20240429 ami-0fd13232c2c7fc2c3 (64 bits (x86)) Virtualización: hvm Activado para ENA: true Tipo de dispositivo raíz: ebs	
Ubuntu Server 22.04 LTS (HVM), SSD Volume Type ami-0e001c9271cf7f3b9 (64 bits (x86)) / ami-058b428b3b45defec (64 bits (Arm)) Virtualización: hvm Activado para ENA: true Tipo de dispositivo raíz: ebs	Apto para la capa gratuita

Descripción
Canonical, Ubuntu, 22.04 LTS, amd64 jammy image build on 2024-04-11

Arquitectura 64 bits (x86) ▾ **ID de AMI** ami-0e001c9271cf7f3b9 **Proveedor verificado**

After creating the EC2 instance and entering the machine via ssh, we went to the zabbix website to follow the steps to install it.

1 Choose your platform

ZABBIX VERSION	OS DISTRIBUTION	OS VERSION	ZABBIX COMPONENT	DATABASE	WEB SERVER
6.4	Alma Linux	24.04 (Noble)	Server, Frontend, Agent	MySQL	Apache
6.0 LTS	CentOS	22.04 (Jammy)	Proxy	PostgreSQL	Nginx
5.0 LTS	Debian	20.04 (Focal)	Agent		
7.0 PRE-RELEASE	OpenSUSE Leap	18.04 (Bionic)	Agent 2		
	Oracle Linux	16.04 (Xenial)	Java Gateway		
	Raspberry Pi OS	14.04 (Trusty)	Web Service		
	Red Hat Enterprise Linux				
	Rocky Linux				
	SUSE Linux Enterprise Server				
	Ubuntu				
	Ubuntu (arm64)				

[Release Notes 6.4](#)

mysql-server also needs to be installed before; we did:

apt install mysql-server

for the correct functioning of Zabbix server.



After that we added the zabbix repository and installed zabbix packages using the following commands:

2

Install and configure Zabbix for your platform

a. Instalar el repositorio de Zabbix

[documentación](#)

```
# wget https://repo.zabbix.com/zabbix/6.4/ubuntu/pool/main/z/zabbix-release/zabbix-release_6.4-1+ubuntu22.04_all.deb  
# dpkg -i zabbix-release_6.4-1+ubuntu22.04_all.deb  
# apt update
```

b. Instala el servidor, la interfaz y el agente de Zabbix

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

Now, it's time to create a database for Zabbix in MySQL, which, is instructed on their website like this:

c. Crear base de datos inicial

[documentación](#)

Make sure you have database server up and running.

Ejecuta lo siguiente en el host de base de datos.

```
# mysql -uroot -p  
password  
mysql> create database zabbix character set utf8mb4 collate utf8mb4_bin;  
mysql> create user zabbix@localhost identified by 'password';  
mysql> grant all privileges on zabbix.* to zabbix@localhost;  
mysql> set global log_bin_trust_function_creators = 1;  
mysql> quit;
```



Once the database has been created, we imported all data from the zabbix SQL package to the MySQL database by doing the zcat command and then disabling one part we enabled just before with the previous commands for Zabbix to be installed correctly.

En el servidor Zabbix, importe el esquema y los datos iniciales. Se le pedirá que ingrese la contraseña recién creada.

```
# zcat /usr/share/zabbix-sql-scripts/mysql/server.sql.gz | mysql --default-character-set=utf8mb4 -uzabbix -p zabbix
```

Disable log_bin_trust_function_creators option after importing database schema.

```
# mysql -uroot -p  
password  
mysql> set global log_bin_trust_function_creators = 0;  
mysql> quit;
```

Afterwards, we enabled the Zabbix server by doing:

```
# systemctl restart zabbix-server zabbix-agent apache2  
# systemctl enable zabbix-server zabbix-agent apache2
```

The latter command will be used so Zabbix and apache2 start when booting the system.

```
ubuntu@ip-172-16-18-61:~$ sudo service zabbix-server start  
ubuntu@ip-172-16-18-61:~$ sudo service zabbix-server status  
● zabbix-server.service - Zabbix Server  
   Loaded: loaded (/lib/systemd/system/zabbix-server.service; disabled; vendor preset: enabled)  
   Active: active (running) since Thu 2024-05-02 16:25:11 UTC; 3s ago  
     Process: 15278 ExecStart=/usr/sbin/zabbix_server -c $CONFFILE (code=exited, status=0/SUCCESS)  
    Main PID: 15280 (zabbix_server)  
      Tasks: 1 (limit: 1121)  
        Memory: 13.5M  
          CPU: 30ms  
        CGroup: /system.slice/zabbix-server.service  
               └─15280 /usr/sbin/zabbix_server -c /etc/zabbix/zabbix_server.conf  
  
May 02 16:25:10 ip-172-16-18-61 systemd[1]: Starting Zabbix Server...  
May 02 16:25:11 ip-172-16-18-61 systemd[1]: Started Zabbix Server.  
ubuntu@ip-172-16-18-61:~$ █
```



Now then, if we go the website <http://IP:80/zabbix>, we can see that zabbix will prompt us the configuration wizard to setup the software. We need to make sure that the database name corresponds to the one created previously in the mysql step and the user and password that we made before in previous steps as well. Port for MySQL is 3389, but Zabbix already has this set in their configuration, so, port '0' will use the default port which is 3380, as we said.

ZABBIX

Configure DB connection

Please create database manually, and set the configuration parameters for connection to this database. Press "Next step" button when done.

Welcome	Database type	MySQL
Check of pre-requisites	Database host	localhost
Configure DB connection	Database port	0 <small>0 - use default port</small>
Settings	Database name	zabbix
Pre-installation summary	Store credentials in	Plain text HashiCorp Vault CyberArk Vault
Install	User	zabbix
	Password	[redacted]

Database TLS encryption Connection will not be encrypted because it uses a socket file (on Unix) or shared memory (Windows).

Back Next step

If everything worked, Zabbix will be finally installed:

ZABBIX

Install

Welcome
Check of pre-requisites
Configure DB connection
Settings
Pre-installation summary
Install

Congratulations! You have successfully installed Zabbix frontend.
Configuration file "conf/zabbix.conf.php" created.

Back Finish

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Now, to allow other agents to find the Zabbix server (in active mode), go to **/etc/zabbix/zabbix_server.conf** and uncomment ListenPort, set it to the default port or change



it to another value for better security. When enabling this, you'll allow other computers running agents to connect to the server. With that said, I set the ListenPort to 10051.

```
#####
# GENERAL PARAMETERS #####
#####

### Option: ListenPort
#       Listen port for trapper.
#
# Mandatory: no
# Range: 1024-32767
# Default:
ListenPort=10051
```

Don't forget to enable TCP port 10051 in the Security Groups on AWS.



To add a Zabbix agent, since we are listening in port 10051, we need to connect from the Zabbix agent to the server.

To do that, install Zabbix agent by selecting “Agent” only in the Zabbix website:

- 1 Choose your platform

ZABBIX VERSION	OS DISTRIBUTION	OS VERSION	ZABBIX COMPONENT	DATABASE	WEB SERVER
6.4	Alma Linux	24.04 (Noble)	Server, Frontend, Agent	---	---
6.0 LTS	CentOS	22.04 (Jammy)	Proxy		
5.0 LTS	Debian	20.04 (Focal)	Agent		
7.0 PRE-RELEASE	OpenSUSE Leap	18.04 (Bionic)	Agent 2		
	Oracle Linux	16.04 (Xenial)	Java Gateway		
	Raspberry Pi OS	14.04 (Trusty)	Web Service		
	Red Hat Enterprise Linux				
	Rocky Linux				
	SUSE Linux Enterprise Server				
	Ubuntu				
	Ubuntu (arm64)				

Release Notes 6.4



It's very similar to what we did previously, so just follow the commands on the website:

2 Install and configure Zabbix for your platform

a. Install Zabbix repository

```
# wget https://repo.zabbix.com/zabbix/6.4/ubuntu/pool/main/z/zabbix-release/zabbix-release_6.4-1+ubuntu22.04_all.deb
# dpkg -i zabbix-release_6.4-1+ubuntu22.04_all.deb
# apt update
```

b. Install Zabbix agent

```
# apt install zabbix-agent
```

c. Start Zabbix agent process

Start Zabbix agent process and make it start at system boot.

```
# systemctl restart zabbix-agent
# systemctl enable zabbix-agent
```

Once done open `zabbix_agentd.conf` (`/etc/zabbix/zabbix_agentd.conf`)

Find the line that says “`ServerActive`” and set it to the Zabbix AWS server IP. The hostname must also match with the one that you write when adding a new agent in the Zabbix server.

```
kctus2@kctusodoo: ~
GNU nano 6.2                                     /etc/zabbix/zabbix_agentd.conf
#      If this parameter is not specified, active checks are disabled.
#      Example for Zabbix proxy:
#          ServerActive=127.0.0.1:10051
#      Example for multiple servers:
#          ServerActive=127.0.0.1:20051,zabbix.domain,[::1]:30051,::1,[12fc::1]
#      Example for high availability:
#          ServerActive=zabbix.cluster.node1;zabbix.cluster.node2:20051;zabbix.cluster.node3
#      Example for high availability with two clusters and one server:
#          ServerActive=zabbix.cluster.node1;zabbix.cluster.node2:20051,zabbix.cluster2.node1;zabbix.cluster2.node2,zabbix.domain
#
# Mandatory: no
# Default:
# ServerActive=
ServerActive=100.27.71.66
## Option: Hostname
#      List of comma delimited unique, case sensitive hostnames.
#      Required for active checks and must match hostnames as configured on the server.
#      Value is acquired from HostnameItem if undefined.
#
# Mandatory: no
# Default:
# Hostname=
Hostname=ServerOdoo
```

(For instance, this is the hostname that you write on the website)

ServerOdoo	ZBX	class: os	target: linux	Enabled
------------	-----	-----------	---------------	---------



Once done, Zabbix will show up green and it will let you monitor all data from the agent:

The screenshot shows the Zabbix interface for managing hosts. On the left is a sidebar with various navigation options like Dashboards, Monitoring, Services, Inventory, Reports, Data collection, Alerts, Users, Administration, Support, and Integrations. The main area is titled 'Hosts' and contains a search bar and several filter options: Name, Host groups (with a search input), IP, DNS, Port, Status (Any, Enabled, Disabled), Tags (And/Or, Or), Severity (Not classified, Warning, High, Information, Average, Disaster), and checkboxes for 'Show hosts in maintenance' and 'Show suppressed problems'. Below these are 'Save as', 'Apply', and 'Reset' buttons. The main table lists four hosts:

Name	Interface	Availability	Tags	Status	Latest data	Problems	Graphs	Dashboards	Web
Router	ZBX		class: os target: linux	Enabled	Latest data 91	0	Graphs 16	Dashboards 2	Web
ServerOdoo	ZBX		class: os target: linux	Enabled	Latest data 103	1	Graphs 22	Dashboards 2	Web
ServerWordpress	ZBX		class: os target: linux	Enabled	Latest data 88	0	Graphs 18	Dashboards 2	Web
Zabbix server	127.0.0.1:10050	ZBX	class: os class: software target: linux	Enabled	Latest data 128	1	Graphs 24	Dashboards 4	Web

At the bottom right of the table, it says 'Displaying 4 of 4 found'.

Then you can change the dashboard and make it look better like we did here:

The screenshot shows a custom Zabbix dashboard titled 'Global view'. The left sidebar is identical to the previous one. The main area is titled 'Global view' and contains a grid of monitoring panels. The panels are arranged in two rows of four. The top row contains CPU utilization graphs for Zabbix Server, Wordpress, Odoo, and Router. The bottom row contains RAM utilization graphs for Zabbix Server, Wordpress, Odoo, and Router. Each graph includes a clock icon indicating real-time data. A small analog clock is also present in the bottom-left corner of the dashboard area. At the bottom of the dashboard, there is a footer note: 'Zabbix 6.4.14. © 2001–2024, Zabbix SIA'.



ROUTER

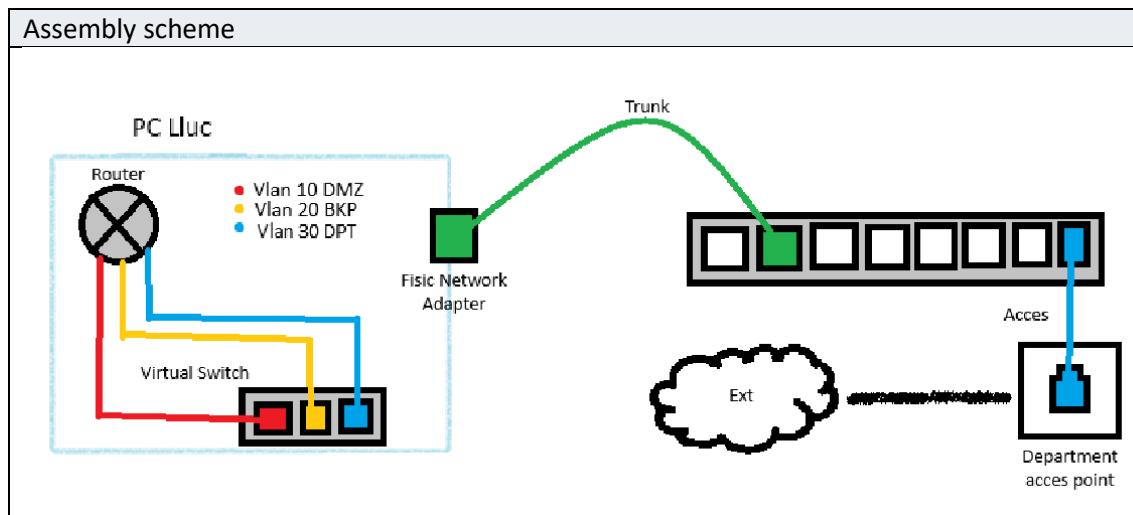
Creació del enrutador

In our case the router will be mounted on a local computer, so that we will have to prepare this computer previously.

We will mount a router with 3 network adapters, one for each vlan/Network.

Network Adapter	Network Address	Name	Vlan
ens33	172.18.10.0 /16	DMZ	10
ens37	172.19.20.0 /16	Backup	20
ens38	10.0.0.0 /20	Department	30

In order for the router to work properly, we must first create a virtual switch on our computer, because the PC that will have a router in, only has a network adapter. Therefore, we should put the port of the real switch to which the computer is connected in trunk mode, so that when we create our virtual switch it will be as if we had two connected switches, even if one is virtual.



To create our virtual switch we are going to use Hyper-V and powershell.

We have to create the following script and run it

Virtual Switch creation script
<pre># Variables declaration # Name of the switch we are going to create \$NombreSwitch = "switch0" # vlan 1 name (recieves the name of the swich by defualt) \$NombreNuevo = "vlan1" # Name of our interface that we are going to use \$NombreAdaptador = "Ethernet"</pre>



```
# We create de virtual switch, by default vlan 1 is created with the same
# name as the switch (change it later)

New-VMSwitch -name $NombreSwitch -NetAdapterName $NombreAdaptador -
AllowManagementOS $true

# Creates an adapter to the switch called vlan10, we specify acces mode and
# the vlan id (Repeat the process with the other vlans)
Add-VMNetworkAdapter -ManagementOS -Name "vlan10" -SwitchName $NombreSwitch
-PassThru | Set-VMNetworkAdapterVlan -Access -VlanId 10

Add-VMNetworkAdapter -ManagementOS -Name "vlan20" -SwitchName $NombreSwitch
-PassThru | Set-VMNetworkAdapterVlan -Access -VlanId 20

Add-VMNetworkAdapter -ManagementOS -Name "vlan30" -SwitchName $NombreSwitch
-PassThru | Set-VMNetworkAdapterVlan -Access -VlanId 30

# We change the name of the vlan 1, setting his name as "vlan1"
Get-VMNetworkAdapter -ManagementOS -Name $NombreSwitch | Rename-
VMNetworkAdapter -NewName $NombreNuevo
Get-VMSwitch -Name *
```

To verify that it has been created correctly, we will execute the following commands:

`Get-VmNetworkAdapter -all` (Shows all the network adapters that we have in our pc)

Name	IsManagementOS	VMName	SwitchName	MacAddress	Status	IPAddresses
vlan1	True		switch0	047C16AF39C8	{ok}	
vlan20	True		switch0	00155D001413	{ok}	
vlan30	True		switch0	00155D001414	{ok}	
Host Vnic C08CB7B8-9B3C-408E-8E30-5E16A3AEB444	True		Default Switch	00155DF27991	{ok}	
vlan10	True		switch0	00155D001412	{ok}	

As we can see, we have the 3 interfaces created (corresponding to our vlans) (vlan 1 can not be deleted comes by default but we will not use it) and connected to the virtual switch that we have created (Switch0).

`Get-VmNetworkAdapterVlan -ManagementOS` (Gives the vlans and information such as mode of the interface and the id of the vlan)

VMName	VMNetworkAdapterName	Mode	VlanList
vlan1		Untagged	
vlan20		Access	20
vlan30		Access	30
Host Vnic C08CB7B8-9B3C-408E-8E30-5E16A3AEB444	vlan10	Untagged	
		Access	10

If we check we see that we have the Vlan 1 untagged and the other vlans (10, 20, 30) in Access mode.

Finally if we go to our control panel to see the interfaces we have, we can see that appear 4 new interfaces corresponding to the vlans of the switch that we have just created. (We will use them in the next steps)

Switch0 Interfaces



vEthernet (vlan1)	Cable de red desconectado	Hyper-V Virtual Ethernet Adapter #2
vEthernet (vlan10)	Cable de red desconectado	Hyper-V Virtual Ethernet Adapter #3
vEthernet (vlan20)	Cable de red desconectado	Hyper-V Virtual Ethernet Adapter #4
vEthernet (vlan30)	Cable de red desconectado	Hyper-V Virtual Ethernet Adapter #5

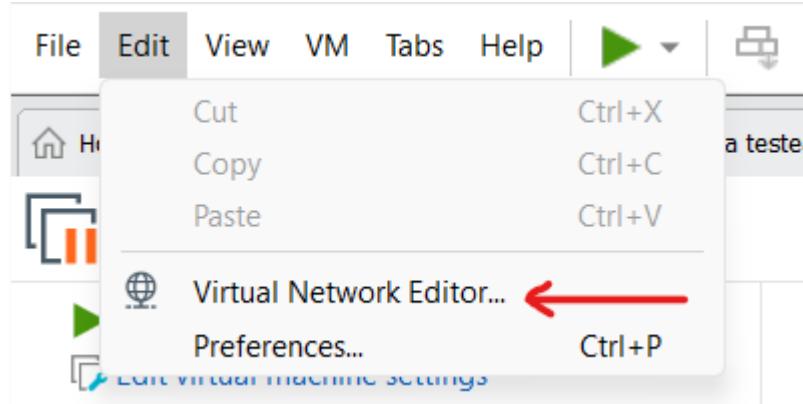
Now that we have the virtual switch created what we must do is go to Vm-Ware and create the machine that will work as a router. In our case, what we're going to do is create an ubuntu server machine.

To this machine we will have to add 3 network adapters as we have mentioned earlier.

What we will do is create in Vm-Ware the networks of the vlans connected to their respective adapters. We will go to the Virtual Network editor section and create 3 new networks.

(We must run the application in administrator mode)

We will go to the “Edit” section and go to “Virtual Network Editor”.



Once the menu is unfolded, what we will do is click where it says “Add Network” to create a new network.



Virtual Network Editor

Name	Type	External Connection	Host Connection	DHCP	Subnet Address
VMnet0	Bridged	Intel(R) Wi-Fi 6 AX201 160MHz	-	-	-
VMnet1	Host-only	-	Connected	Enabled	172.31.0.0
Vlan 20	Bridged	Hyper-V Virtual Ethernet Adapt...	-	-	-
VMnet8	NAT	NAT	Connected	Enabled	192.168.0.0
VLAN 10	Bridged	Hyper-V Virtual Ethernet Adapt...	-	-	-
VLAN 30	Bridged	Hyper-V Virtual Ethernet Adapt...	-	-	-

Add Network... Remove Network... Rename Network...

VMNet Information

Bridged (connect VMs directly to the external network)

Bridged to: Intel(R) Wi-Fi 6 AX201 160MHz Automatic Settings...

NAT (shared host's IP address with VMs) NAT Settings...

Host-only (connect VMs internally in a private network)

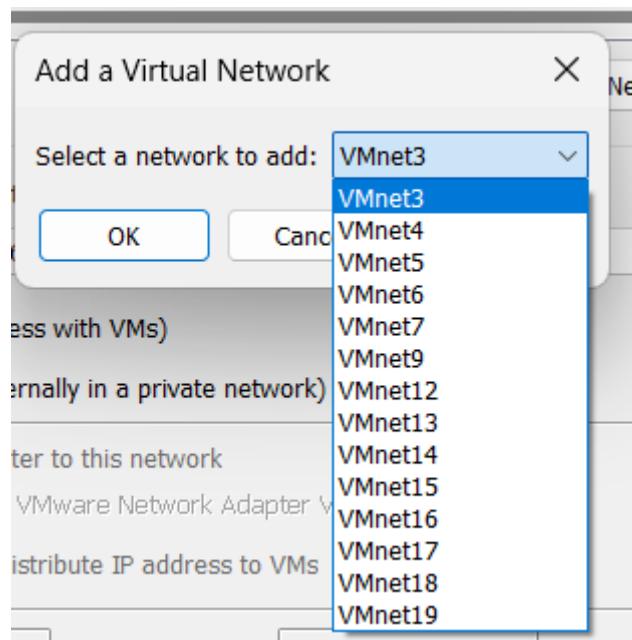
Connect a host virtual adapter to this network Host virtual adapter name: VMware Network Adapter VMnet0

Use local DHCP service to distribute IP address to VMs DHCP Settings...

Subnet IP: [] Subnet mask: []

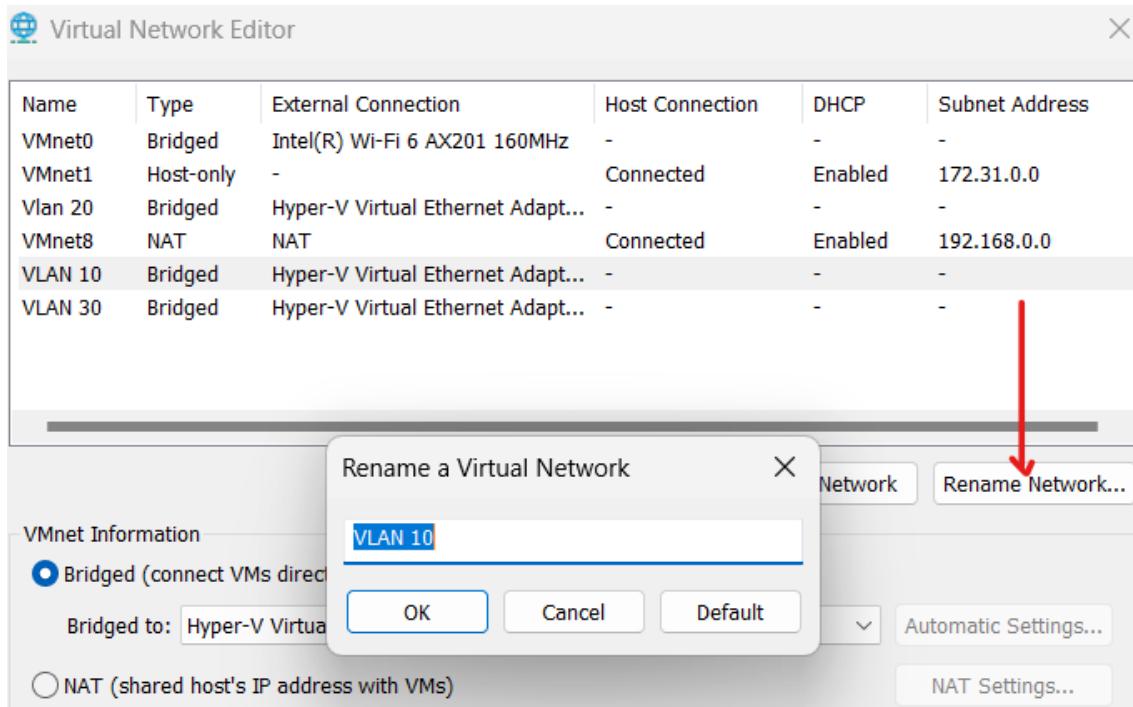
Buttons: Restore Defaults, Import..., Export..., OK, Cancel, Apply, Help

Then we choose one network that isn't in use, doesn't matter the name, we will change it later



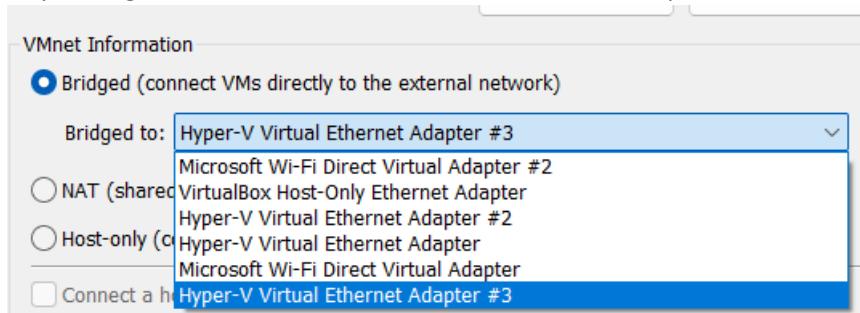


Next we will have to rename the networks that we have just created with a logical name, in our case we have chosen to name them as the vlans. (Just to make easier to configurate the machines in the pc, we will know where will be connecting the interfaces just because of the name)



Then what we have to do is click on the network, and indicate that we want it to be bridged, so that it is connected to the outside as a real network and we will select the adapter through which we want to go out.

Depending on each vlan it will be connected to one adapter or another.





To know the adapter we need to connect we will look for the full name of the adapter in the control panel of the pc

Nombre	Estado	Nombre del dispositivo
Conexión de área local	Cable de red desconectado	Kaspersky VPN
Ethernet	Habilitado	Realtek PCIe GbE Family Controller
Ethernet 2	Habilitado	VirtualBox Host-Only Ethernet Adapter
vEthernet (vlan1)	Red no identificada	Hyper-V Virtual Ethernet Adapter #2
vEthernet (vlan10)	Red no identificada	Hyper-V Virtual Ethernet Adapter #3
vEthernet (vlan20)	Red no identificada	Hyper-V Virtual Ethernet Adapter #4
vEthernet (vlan30)	B309-EPSS-BYOD	Hyper-V Virtual Ethernet Adapter #5
VMware Network Adapter VMnet1	Habilitado	VMware Virtual Ethernet Adapter for VMnet1
VMware Network Adapter VMnet8	Habilitado	VMware Virtual Ethernet Adapter for VMnet8
Wi-Fi	No conectado	Intel(R) Wi-Fi 6 AX201 160MHz

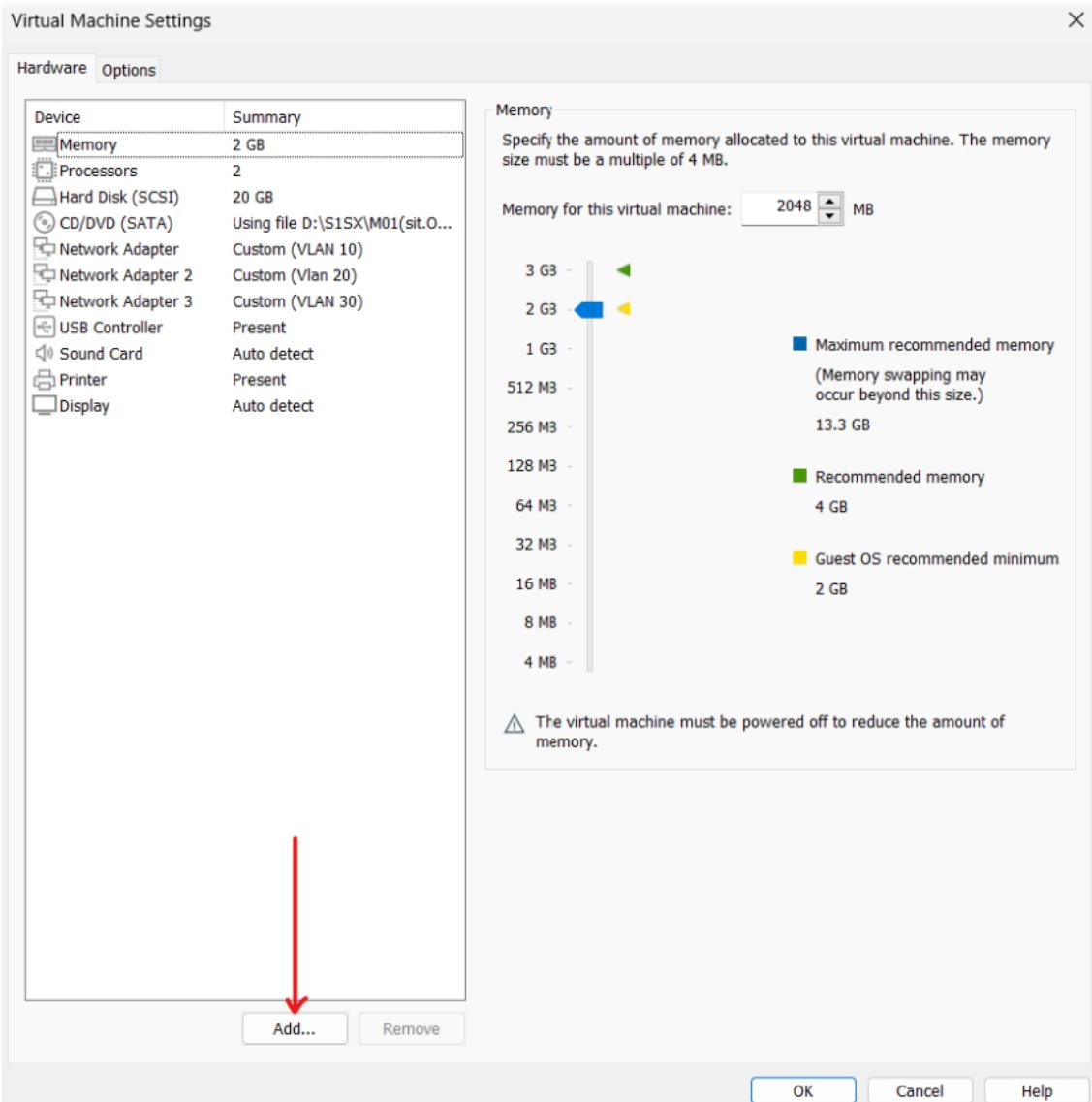
Finally it should look like this:

Virtual Network Editor						
Name	Type	External Connection	Host Connection	DHCP	Subnet Addr	Gateway
VMnet0	Bridged	Intel(R) Wi-Fi 6 AX201 160MHz	-	-	-	
VMnet1	Host-only	-	Connected	Enabled	172.31.0.0	
Vlan 20	Bridged	Hyper-V Virtual Ethernet Adapter #4	-	-	-	
VMnet8	NAT	NAT	Connected	Enabled	192.168.0.0	
VLAN 10	Bridged	Hyper-V Virtual Ethernet Adapter #3	-	-	-	
VLAN 30	Bridged	Hyper-V Virtual Ethernet Adapter #5	-	-	-	

With our networks created, we will have to go to the machine that we will use as a router and put in it the 3 network adapters to connect them to the networks that we have just created.

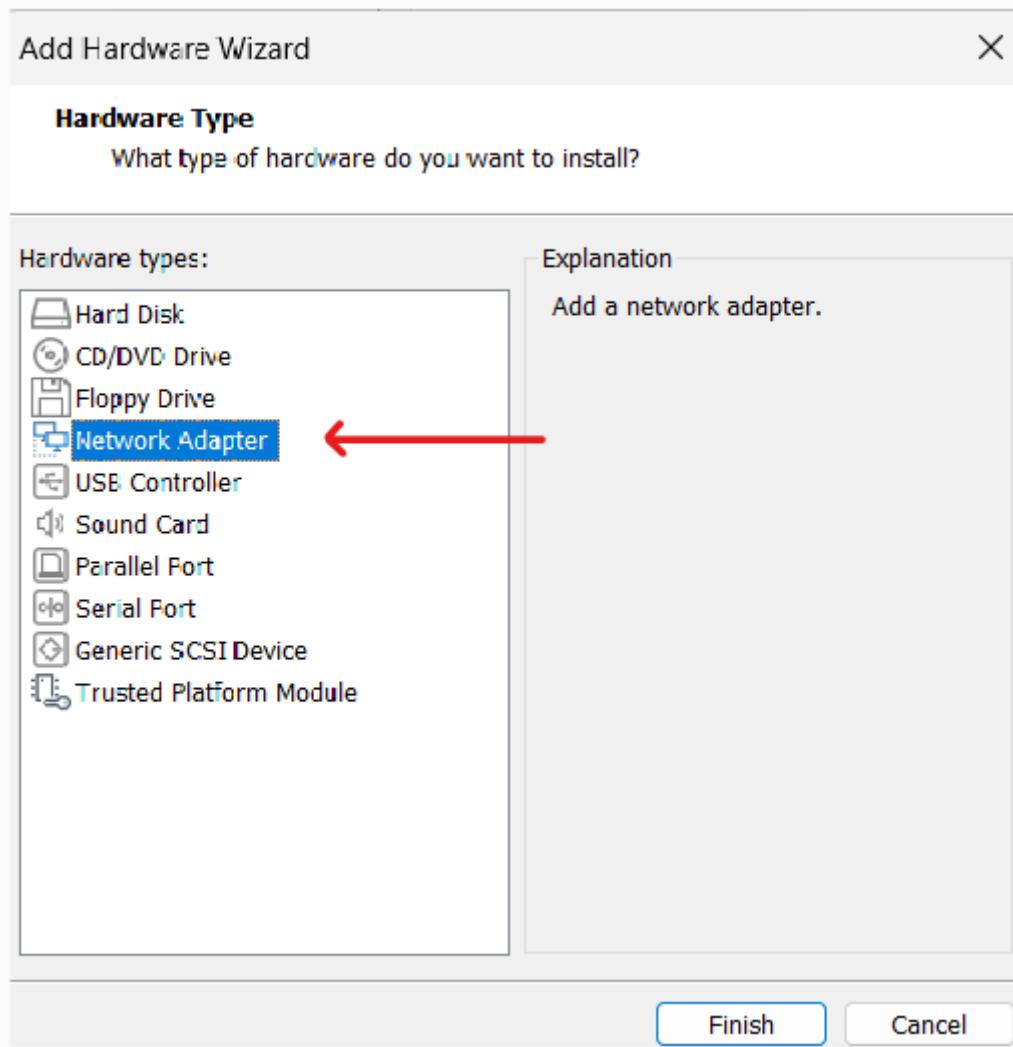


To do this we will go to the settings of the virtual machine and click where it says “add”.





A menu of options will unfold where we will select “Network Adapter” to add a network adapter to our router.





Finally, what remains will be to connect these adapters to the corresponding network depending on the vlan we want them to be in

The screenshot shows the 'Hardware' tab selected in the VMware settings window. On the left, a tree view lists various hardware components: Memory (2 GB), Processors (2), Hard Disk (SCSI) (20 GB), CD/DVD (SATA) (Using file D:\S1SX\M01\sit.O...), Network Adapter (Custom (VLAN 10)), Network Adapter 2 (Custom (Vlan 20)), Network Adapter 3 (Custom (VLAN 30)), USB Controller (Present), Sound Card (Auto detect), Printer (Present), and Display (Auto detect). The 'Network Adapter' entry is expanded. On the right, under 'Device status', 'Connected' and 'Connect at power on' are checked. Under 'Network connection', 'Custom: Specific virtual network' is selected, and a dropdown menu is open, showing a list of available VLANs. The option 'VLAN 10' is highlighted with a blue selection bar.

Once we have all this set up, we can start the virtual machine and set up our netplan. We will configure the vlan 30 with a fixed IP(We have been provided with four IP addresses of the department) as gateway we will put the department's router and the DNS server also the DNS of the department, as a secondary we will put google DNS. With this configuration we will be able to have connection to the outside by the vlan 30.

Interfice	Vlan
Ens33	10
Ens37	20
Ens38	30



```
GNU nano 6.2                               /etc/netplan/00-installer-config.yaml *
# This is the network config written by 'subiquity'
network:
  version: 2
  renderer: networkd
  ethernets:
    ens33:
      dhcp4: false
      addresses: [172.18.10.1/16]
    ens37:
      dhcp4: false
      addresses: [172.19.20.1/16]
    ens38:
      dhcp4: false
      addresses: [10.0.10.22/20]
      routes:
        - to: default
          via: 10.0.0.1
    nameservers:
      addresses: [10.0.0.2,8.8.8.8]
```

Then we will have to activate the forwarding so that we can use the virtual machine as a router. We will have to edit the file /etc/sysctl.conf and look for the line where it says "net.ipv4.ip.forward=0" we will have to replace the 0 with the 1, and this will activate the forwarding in our router.

```
GNU nano 6.2                               /etc/sysctl.conf *
#
# /etc/sysctl.conf - Configuration file for setting system variables
# See /etc/sysctl.d/ for additional system variables.
# See sysctl.conf (5) for information.
#
#kernel.domainname = example.com
#
# Uncomment the following to stop low-level messages on console
#kernel.printk = 3 4 1 3
#####
# Functions previously found in netbase
#
#
# Uncomment the next two lines to enable Spoof protection (reverse-path filter)
# Turn on Source Address Verification in all interfaces to
# prevent some spoofing attacks
#net.ipv4.conf.default.rp_filter=1
#net.ipv4.conf.all.rp_filter=1
#
# Uncomment the next line to enable TCP/IP SYN cookies
# See http://lwn.net/Articles/277146/
# Note: This may impact IPv6 TCP sessions too
#net.ipv4.tcp_syncookies=1
#
# Uncomment the next line to enable packet forwarding for IPv4
#net.ipv4.ip_forward=1
#
# Uncomment the next line to enable packet forwarding for IPv6
# Enabling this option disables Stateless Address Autoconfiguration
# based on Router Advertisements for this host
#net.ipv6.conf.all.forwarding=1

```

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

We will verify that it has been applied using the command "sysctl -p /etc/sysctl.conf". As we can see, we get the number one we just put in.

```
root@usvr-lluc:/home/lucxf# sysctl -p /etc/sysctl.conf
net.ipv4.ip_forward = 1
```



Finally we will restart the network service and then we will just have to create the firewall rules. We will use the command “systemctl restart system-networkd” to restart the network service.

```
root@usvr-lluc:/home/lucxf# systemctl restart systemd-networkd
```

The first thing we will do is install “iptables-persistent” so that we can save the rules of our Firewall and they run when you start the operating system without having to start them apply them manually.

We use the command “sudo apt install iptables-persistent” to install iptables-persistent.

```
lucxf@usvr-lluc:~$ sudo apt install iptables-persistent
```

Referring to the creation of the firewall, we will create a special directory within /etc called /firewall where we will save our Firewall file there.

```
root@usvr-lluc:/home/lucxf# mkdir /etc/firewall
root@usvr-lluc:/home/lucxf# cd /etc
root@usvr-lluc:/etc# cd firewall/
```

We will create our firewall rules with iptables and save them in a file:

```
#!/bin/bash

#      RED 10  DMZ      RED 20 BKP      RED 30 DPT
red10="172.18.0.0/16" "172.19.0.0/16" "10.0.0.0/20"
targetes=("ens33" "ens37" "ens38")
# Contador per a els bucles
contador=0

# networks and interfaces
red10="172.18.0.0/16"
vlan10="ens33"

red20="172.19.0.0/16"
vlan20="ens37"

red30="10.0.0.0/20"
vlan30="ens38"

# IP's
srvwordpress="172.18.10.4"
srvvodoo="172.18.10.3"
```



```

srvzabbix="100.27.71.66"
srvBKP="172.19.20.3"
NAS="172.19.20.3"

# Mac's
macLluc="00:15:5D:00:14:14"

macOdoo="00:0C:29:EA:9B:F6"
macWordpress="00:0C:29:BE:AB:B6"
macBKP="00:0C:29:6A:A6:A0"

# Ports

ssh="22"
mssql="1433"
dns="53"
http="80"
https="443"
wpentrada="7000"
odooentrada="5000"
zabbix="10051"
wp="80"
odoo="8069"

#===== PREVIOUS STEPS =====>

# ERASES INITIAL RULES
iptables -F
# Set to 0 iptables counters
iptables -X
# erases chain rules
iptables -Z

# erases nat rules
iptables -t nat -F

# DROP default policy
iptables -P INPUT DROP
iptables -P OUTPUT DROP
iptables -P FORWARD DROP

# ALLOWS LOOPBACK

iptables -A OUTPUT -o lo -j ACCEPT
iptables -A INPUT -i lo -j ACCEPT

#===== SSH =====>
# ALLOWS SSH FROM LLUC'S PC
iptables -A INPUT -i $vlan30 -p tcp --dport $ssh -m mac --mac-source $macLluc -j ACCEPT
iptables -A OUTPUT -o $vlan30 -p tcp --sport $ssh -j ACCEPT

#===== POSTROUTING ======>

# APLY NAT

# Loop for doing the postrouting for each network

for targete in "${targetes[@]}"
do
    red="${reds[$contador]}"
    # takes what is in the position of the number of the counter on the list reds
    iptables -t nat -A POSTROUTING -d $red -o $targete -j MASQUERADE
    # counter plus 1
    contador=$((contador + 1))
done

# when Ip destination = network 10 --> sends trough vlan 10
# when Ip destination = network 20 --> sends trough vlan 20
# when Ip destination = network 30 --> sends trough vlan 30

# If destination port is not from any of the 3 networks it sends it trough vlan 30
iptables -t nat -A POSTROUTING -o $vlan30 -j MASQUERADE

```



```
#===== PUBLIC ACES TO SERVICES =====>
# PREROUTING
# http://10.0.10.22:5000 --> traducts --> http://172.18.10.3:8069
iptables -t nat -A PREROUTING -i $vlan30 -p tcp --dport $odooentrada -j DNAT --to-destination $srvodo
# http://10.0.10.22:7000 --> traducts --> http://172.18.10.4:80
iptables -t nat -A PREROUTING -i $vlan30 -p tcp --dport $wpentrada -j DNAT --to-destination $srvwordpress

# Allowed forwarding
iptables -A FORWARD -i $vlan30 -s $red30 -p tcp --dport $odoo -d $srvodoo -j ACCEPT
iptables -A FORWARD -o $vlan30 -d $red30 -p tcp --sport $odoo -s $srvodoo -j ACCEPT

iptables -A FORWARD -i $vlan30 -s $red30 -p tcp --dport $wp -d $srvwordpress -j ACCEPT
iptables -A FORWARD -o $vlan30 -d $red30 -p tcp --sport $wp -s $srvwordpress -j ACCEPT

#===== UPDATE & UPGRADE & INSTALL =====>
# VLAN 10
iptables -A FORWARD -i $vlan10 -o $vlan30 -p tcp -m multiport --dports $http,$https -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan10 -p tcp -m multiport --sports $http,$https -j ACCEPT

# VLAN 20
iptables -A FORWARD -i $vlan20 -o $vlan30 -p tcp -m multiport --dports $http,$https -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan20 -p tcp -m multiport --sports $http,$https -j ACCEPT

# ROUTER
iptables -A OUTPUT -o $vlan30 -p tcp -m multiport --dports $http,$https -j ACCEPT
iptables -A INPUT -i $vlan30 -p tcp -m multiport --sports $http,$https -j ACCEPT
```

```
# http://10.0.10.22:5000 --> traducts --> http://172.18.10.3:8069
iptables -t nat -A PREROUTING -i $vlan30 -p tcp -dport $odooentrada -j DNAT --to-destination $srvodoo:$odoo
# http://10.0.10.22:7000 --> traducts --> http://172.18.10.4:80
iptables -t nat -A PREROUTING -i $vlan30 -p tcp --dport $wpentrada -j DNAT --to-destination $srvwordpress:$wp
```

```
#===== ICMP =====>
# Allowed any ICMP request and reply from any IP destination and source
iptables -A INPUT -p icmp --icmp-type echo-request -j ACCEPT
iptables -A OUTPUT -p icmp --icmp-type echo-reply -j ACCEPT

iptables -A INPUT -p icmp --icmp-type echo-reply -j ACCEPT
iptables -A OUTPUT -p icmp --icmp-type echo-request -j ACCEPT

iptables -A FORWARD -p icmp --icmp-type echo-request -j ACCEPT
iptables -A FORWARD -p icmp --icmp-type echo-reply -j ACCEPT

#===== DNS =====>
# FROM VLAN 10
iptables -A FORWARD -i $vlan10 -o $vlan30 -p udp --dport $dns -j ACCEPT
iptables -A FORWARD -o $vlan10 -i $vlan30 -p udp --sport $dns -j ACCEPT

# FROM VLAN 20
iptables -A FORWARD -i $vlan20 -o $vlan30 -p udp --dport $dns -j ACCEPT
iptables -A FORWARD -o $vlan20 -i $vlan30 -p udp --sport $dns -j ACCEPT

# FROM 30
iptables -A OUTPUT -o $vlan30 -p udp --dport $dns -j ACCEPT
iptables -A INPUT -i $vlan30 -p udp --sport $dns -j ACCEPT
```



```
#===== ZABBIX =====>

# Zabbix uses port 10051
# Odoo --> SRV ZABBIX
iptables -A FORWARD -i $vlan10 -o $vlan30 -p tcp --dport $zabbix -m mac --mac-source $macOdoo -d $srvzabbix -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan10 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# Wordpress --> SRV ZABBIX
iptables -A FORWARD -i $vlan10 -o $vlan30 -p tcp --dport $zabbix -m mac --mac-source $macWordpress -d $srvzabbix -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan10 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# WindowsBKP --> SRV ZABBIX
iptables -A FORWARD -i $vlan20 -o $vlan30 -p tcp --dport $zabbix -m mac --mac-source $macBKP -d $srvzabbix -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan20 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# Router --> SRV ZABBIX
iptables -A OUTPUT -o $vlan30 -p tcp --dport $zabbix -d $srvzabbix -j ACCEPT
iptables -A INPUT -i $vlan30 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# NAS --> SRV ZABBIX
iptables -A FORWARD -i $vlan20 -o $vlan30 -p tcp --dport $zabbix -s $NAS -d $srvzabbix -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan20 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# we save the rules in our iptables persistance
iptables-save > /etc/iptables/rules.v4
```

```
# Odoo --> SRV ZABBIX
iptables -A FORWARD -i $vlan10 -o $vlan30 -p tcp --dport $zabbix -m mac --mac-source $macOdoo -d $srvzabbix -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan10 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# Wordpress --> SRV ZABBIX
iptables -A FORWARD -i $vlan10 -o $vlan30 -p tcp --dport $zabbix -m mac --mac-source $macWordpress -d $srvzabbix -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan10 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# WindowsBKP --> SRV ZABBIX
iptables -A FORWARD -i $vlan20 -o $vlan30 -p tcp --dport $zabbix -m mac --mac-source $macBKP -d $srvzabbix -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan20 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# Router --> SRV ZABBIX
iptables -A OUTPUT -o $vlan30 -p tcp --dport $zabbix -d $srvzabbix -j ACCEPT
iptables -A INPUT -i $vlan30 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT

# NAS --> SRV ZABBIX
iptables -A FORWARD -i $vlan20 -o $vlan30 -p tcp --dport $zabbix -s $NAS -d $srvzabbix -j ACCEPT
iptables -A FORWARD -i $vlan30 -o $vlan20 -p tcp --sport $zabbix -s $srvzabbix -j ACCEPT
```

Next we must able the file to be executed, we will execute the following command “chmod +x file” to give right of execution to the file so we can execute our firewall rules.

```
root@usvr-lluc:/etc/firewall# chmod +x fw.sh
root@usvr-lluc:/etc/firewall# ./fw.sh
```

Finally, we will execute the file and the firewall rules will be established.

With the firewall done, we will do the following proves to make sure it works properly.



Ping --- we are able to have ping to any ip address from any IP address

```
kctus2@kctusodoo:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=112 time=12.0 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=112 time=12.2 ms
^C
--- 8.8.8.8 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 12.028/12.138/12.248/0.110 ms
kctus2@kctusodoo:~$ ping 172.18.10.1
PING 172.18.10.1 (172.18.10.1) 56(84) bytes of data.
64 bytes from 172.18.10.1: icmp_seq=1 ttl=64 time=1.23 ms
64 bytes from 172.18.10.1: icmp_seq=2 ttl=64 time=2.60 ms
^C
--- 172.18.10.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 1.226/1.911/2.597/0.685 ms
kctus2@kctusodoo:~$ ping 172.19.20.1
PING 172.19.20.1 (172.19.20.1) 56(84) bytes of data.
64 bytes from 172.19.20.1: icmp_seq=1 ttl=64 time=2.44 ms
64 bytes from 172.19.20.1: icmp_seq=2 ttl=64 time=2.48 ms
^C
--- 172.19.20.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 2.442/2.463/2.484/0.021 ms
kctus2@kctusodoo:~$ 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: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:0c:29:ea:9b:f6 brd ff:ff:ff:ff:ff:ff
    altname enp3s0
    inet 172.18.10.3/16 brd 172.18.255.255 scope global ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:feea:9bf6/64 scope link
        valid_lft forever preferred_lft forever
kctus2@kctusodoo:~$
```

DNS --- name resolution works in each vlan

```
kctus2@kctusodoo:~$ nslookup www.google.com
Server:      127.0.0.53
Address:     127.0.0.53#53

Non-authoritative answer:
Name:   www.google.com
Address: 142.250.178.164
Name:   www.google.com
Address: 2a00:1450:4003:80d::2004

kctus2@kctusodoo:~$ 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: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:0c:29:ea:9b:f6 brd ff:ff:ff:ff:ff:ff
    altname enp3s0
    inet 172.18.10.3/16 brd 172.18.255.255 scope global ens160
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:feea:9bf6/64 scope link
        valid_lft forever preferred_lft forever
kctus2@kctusodoo:~$ |
```

Update & Upgrade --- we can Update the System and upgrade it, also it is allowed to install packages



```
kctus2@kctusodoo:~$ sudo apt update
[sudo] password for kctus2:
Obj:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Des:2 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal InRelease [3.624 B]
Des:3 https://archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Des:4 https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy InRelease [3.624 B]
Obj:5 https://repo.zabbix.com/zabbix/6.4/ubuntu jammy InRelease
Obj:6 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Des:7 http://archive.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Des:8 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1.683 kB]
Des:9 http://archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [312 kB]
Des:10 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [1.933 kB]
Des:11 http://archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [328 kB]
Des:12 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1.075 kB]
Des:13 http://archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [246 kB]
Des:14 http://archive.ubuntu.com/ubuntu jammy-security/main amd64 Packages [1.472 kB]
Des:15 http://archive.ubuntu.com/ubuntu jammy-security/main Translation-en [253 kB]
Des:16 http://archive.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [1.876 kB]
Des:17 http://archive.ubuntu.com/ubuntu jammy-security/restricted Translation-en [318 kB]
Des:18 http://archive.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [853 kB]
Descargados 10,6 MB en 13s (828 kB/s)
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Se pueden actualizar 8 paquetes. Ejecute «apt list --upgradable» para verlos.
W: https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019/dists/focal/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg),
see the DEPRECATION section in apt-key(8) for details.
W: https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022/dists/jammy/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg),
see the DEPRECATION section in apt-key(8) for details.
kctus2@kctusodoo:~$
```



```
kctus2@kctusodoo:~$ sudo apt upgrade
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Calculando la actualización... Hecho
Get another security update through Ubuntu Pro with 'esm-apps' enabled:
  node-ip
Learn more about Ubuntu Pro at https://ubuntu.com/pro
Los siguientes paquetes se han retenido:
  python3-update-manager update-manager-core
Se actualizarán los siguientes paquetes:
  mssql-server python3-idna ubuntu-advantage-tools ubuntu-pro-client ubuntu-pro-client-l10n zabbix-agent
6 actualizados, 0 nuevos se instalarán, 0 para eliminar y 2 no actualizados.
1 standard LTS security update
Se necesita descargar 272 MB de archivos.
Se utilizarán 112 kB de espacio de disco adicional después de esta operación.
¿Desea continuar? [S/n]
```

Zabbix --- Allowed to receive and send information to the zabbix server

Name	Interface	Availability	Tags	Status	Latest data	Problems	Graphs	Dashboards	Webhooks
Router	ZBX	Green	class: os target: linux	Enabled	Latest data 91	Problems	Graphs 16	Dashboards 2	Webs 1
ServerOdoo	ZBX	Green	class: os target: linux	Enabled	Latest data 103	Yellow	Graphs 22	Dashboards 2	Webs 1
ServerWordpress	ZBX	Green	class: os target: linux	Enabled	Latest data 88	Problems	Graphs 18	Dashboards 2	Webs 1
Zabbix server	127.0.0.1:10050	Green	class: os class: software target: linux ***	Enabled	Latest data 128	Yellow	Graphs 24	Dashboards 4	Webs 1

Public Services --- Allowed using prerouting the access to the services from the department network (Vlan30)

WordPress --- port 7000 (default port 80)

A screenshot of a web browser window. The address bar shows 'No es seguro 10.0.10.22:7000/wordpress/'. The page content includes a header with 'KCTUS IT' on the left and 'Sample Page' on the right. Below the header is a large heading 'A commitment to innovation and sustainability'. Underneath the heading is a paragraph: 'Études is a pioneering firm that seamlessly merges creativity and functionality to redefine architectural excellence.' A dark button labeled 'About us' is centered below the paragraph. The bottom of the browser window shows a blue horizontal bar with the text 'Odoo --- port 5000 (default port 8069)'.



The screenshot shows a web browser window with the URL 10.0.10.22:5000/web/login. The page has a light blue header with the text "Your logo". Below it is a form with two input fields: "Correo electrónico" and "Contraseña", both with placeholder text "Correo electrónico" and "Contraseña" respectively. A dark blue "Iniciar sesión" button is centered below the inputs. At the bottom of the page, there is a small footer with the text "Gestionar bases de datos | Con la tecnología de Odoo". The browser's address bar shows the same URL, and the status bar indicates "No es seguro". The browser interface includes various icons for bookmarks and tabs.

How is that possible? We are applying prerouting in our Firewall so that when is tried to access by the vlan30 interface IP address with port 7000 or 5000, the router makes the prerouting changing the external IP for the IP and the port that correspond to the service that it's been asked to access.

<https://10.0.10.22:7000> ---- Prerouting ----- <https://172.18.10.80>

<https://10.0.10.22:5000> ---- Prerouting ----- <https://172.18.10.8069>

Finally, we had edited the file /etc/issue and that give us the chance to customize an initial banner that appears after the log in.



```
GNU nano 6.2                               /etc/issue *
```

```
/$$  $$ /$$$$$$ /$$$$$$$$$/ $$  $$ /$$$$$      /$$$$$$ /$$$$$$$$$  
| $$ /$$/ /$$/_ $$|_ $$/_/| $$ | $$ /$$/_ $$      |_ $$/_/|_ $$/_/  
| $$ /$$/ | $$ \_) | $$ | $$ | $$| $$ \_) /  
| $$$$/ | $$    | $$ | $$ | $$| $$$$/  
| $$ $$ | $$    | $$ | $$ | $$ \_) $$  
| $$( $$ | $$ $$ | $$ | $$ | $$ /$$ \ $$  
| $$ ( $$|$$$$$/ | $$ | $$$$/| $$$$/| $$  
|_/( __/ (____/ |_/( ____/ (____/ |_/( ____/ |_/( ____/  
  
Wellcome to Kctus IT  


```
|-----|
GROUP MEMBERS : Oscar, Pol, Adrià y Lluc
DEVICE : Router

Vlan 10

Vlan 20

Vlan 30

```


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


```



BITWARDEN

In order to have secure passwords, and for all members to have access to them, we can use sites such as Bitwarden which allow us to store all kinds of passwords, which we can then copy and paste when we need to use them.

This makes for strong passwords that are difficult to crack, and also an efficient way to log into devices. You can also save the username and IP, data that can help you remember the name or IP to connect to.

Todo	Nombre	Propietario	⋮
<input type="checkbox"/>	172.18.10.3	Yo	⋮
<input type="checkbox"/>	ESIX pc lluc	root	⋮
<input type="checkbox"/>	ESXI	root	⋮
<input type="checkbox"/>	kctusmysql	kctus	⋮
<input type="checkbox"/>	kctusmysql2	kctus	⋮
<input type="checkbox"/>	MySQL admin user (Usuario...)	admin	⋮

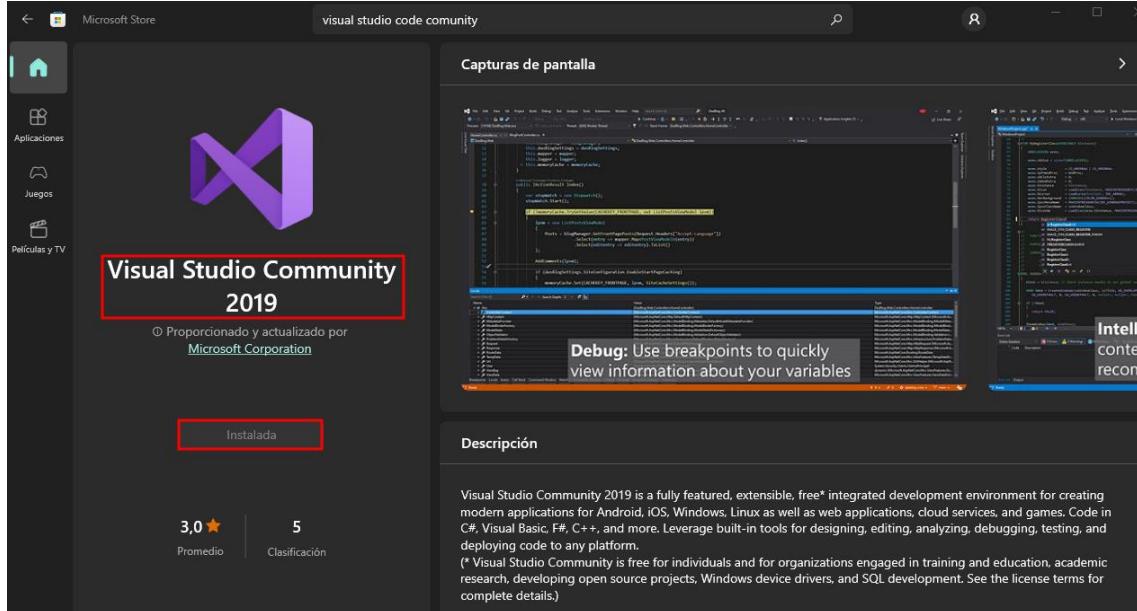


BRAND LANGUAGE & BUSINESS MANAGEMENT SYSTEMS

BBDD F1

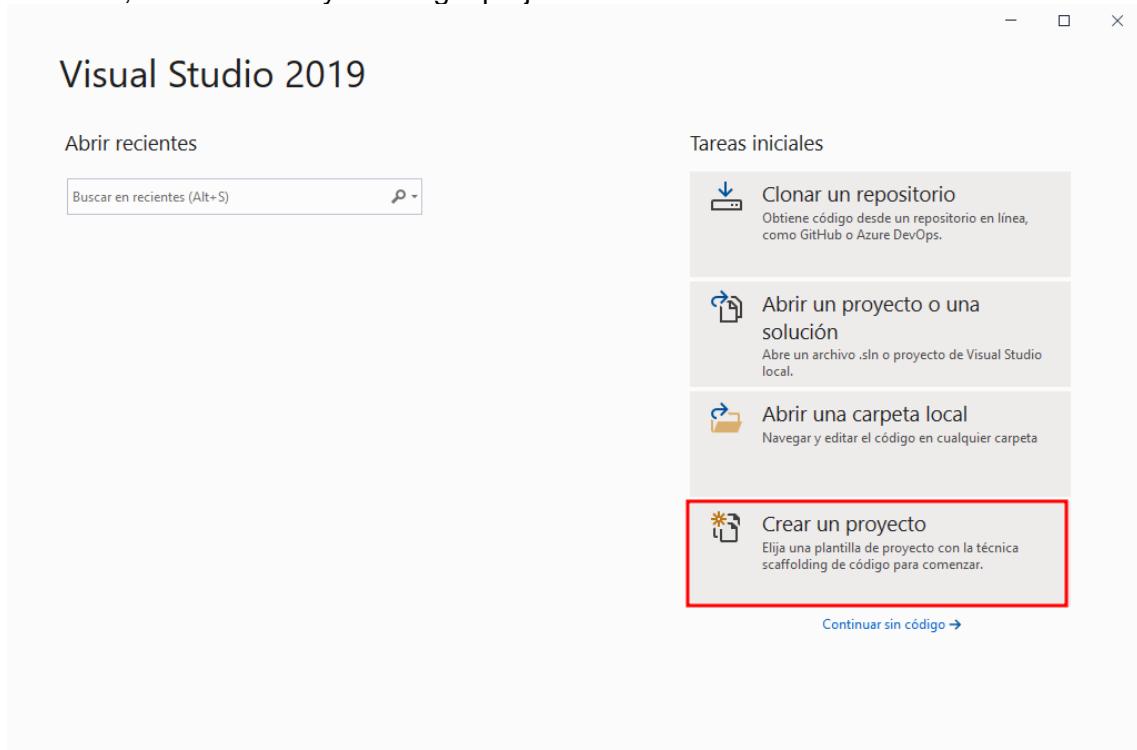
Visual Studio code

I installed the visual studio code from Microsoft store

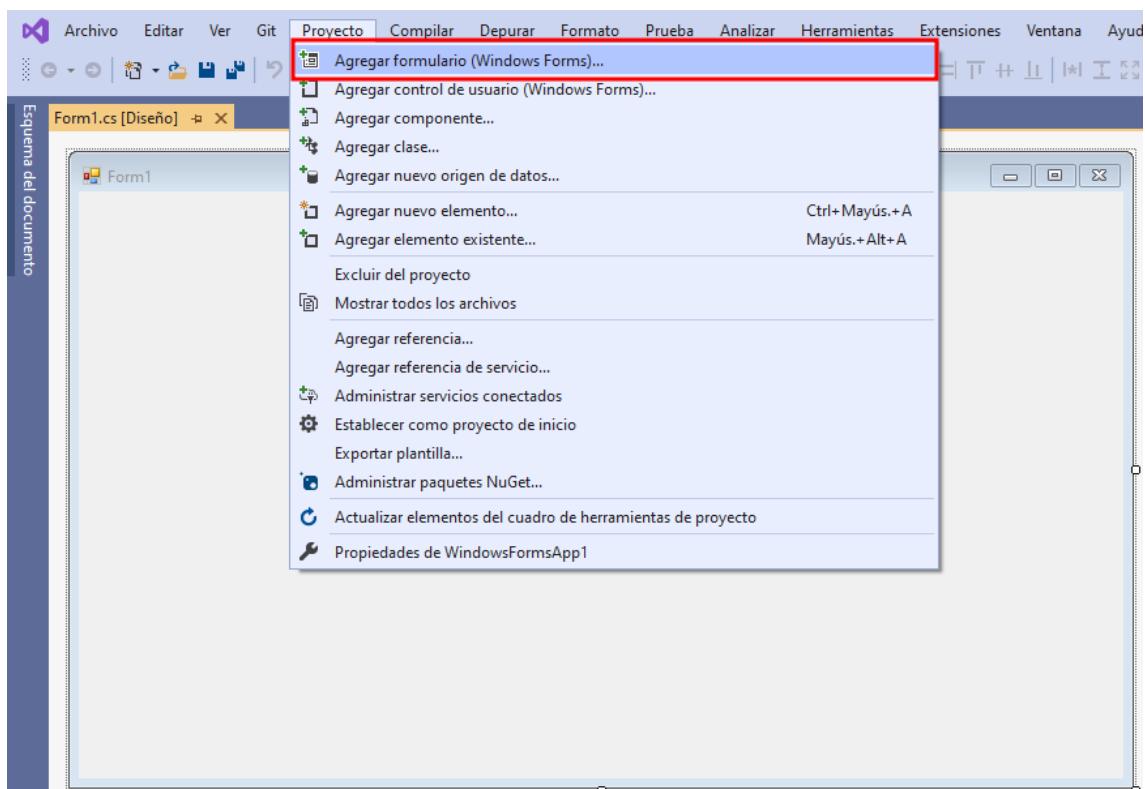


Then we install crystal reports

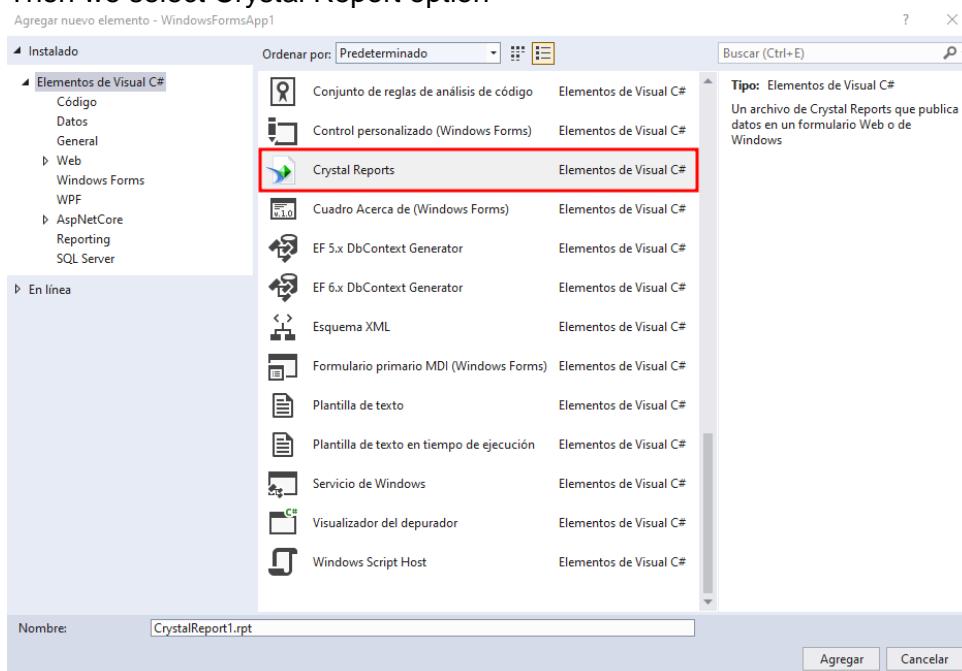
After this, we can start by creating a project



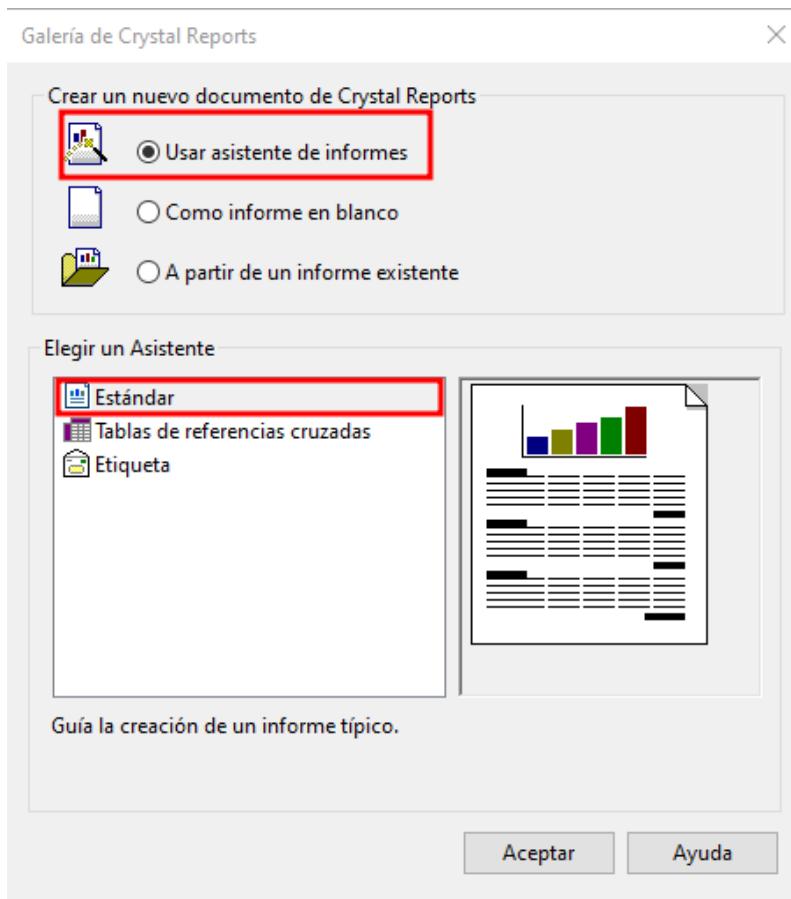
And we add a form



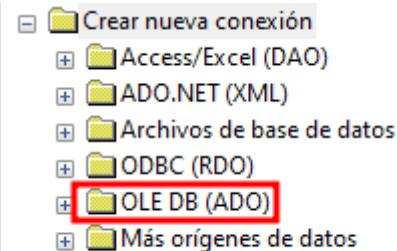
Then we select Crystal Report option



And we select this settings



After that we create a new connection from “OLE DB”



Then we select the SQL server native client from the provider options



OLE DB (ADO)

X

Proveedor de BD OLE

Seleccionar un proveedor de la lista o un archivo de vínculos a datos.

Proveedor:	<ul style="list-style-type: none">Microsoft OLE DB Provider for Analysis ServicesMicrosoft OLE DB Provider for ODBC DriversMicrosoft OLE DB Provider for OracleMicrosoft OLE DB Provider for SearchMicrosoft OLE DB Provider for SQL ServerMicrosoft OLE DB Simple ProviderMSDataShapeOLE DB Provider for Microsoft Directory ServiceSQL Server Native Client 11.0
Utilizar archivo de Vínculos a datos:	<input type="checkbox"/>
Archivo de Vínculos a datos de Microsoft:	<input type="text"/> ...

[< Atrás](#) [Siguiente >](#) **Finalizar** [Cancelar](#) [Ayuda](#)

We put the name of the server we are going to use and the database we need



OLE DB (ADO)

Información de conexión
Proporcione la información necesaria para conectarse al origen de datos seleccionado.

Servidor: DESKTOP-C1D59SV\SQLEXPRESS

Id. del usuario:

Contraseña:

Base de datos: PROJ

Seguridad integrada:

< Atrás Siguiente > Finalizar Cancelar Ayuda

And select the tables we need to do the report

Asistente para la creación de informes estándar

Datos
Elija los datos para elaborar el informe.

Orígenes de datos disponibles:

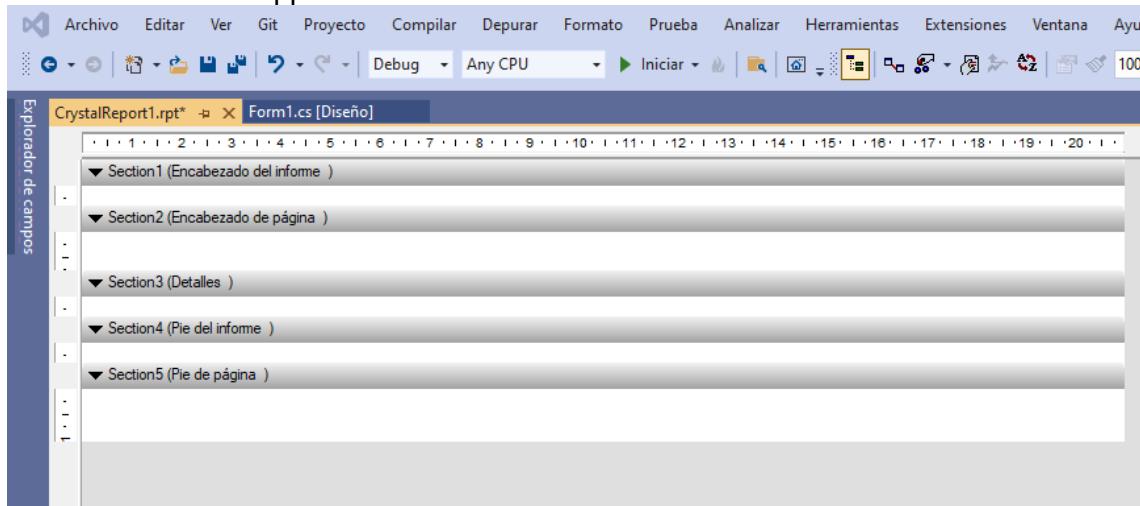
- Establecer nueva conexión
- DESKTOP-C1D59SV\SQLEXPRESS
 - Agregar comando
 - PROJ
 - dbo
 - Tablas
 - Circuits
 - ClassificacioGP
 - DetailsIncidencies
 - Escuderias
 - GP
 - Incidencies
 - Pilots
 - Puntuaciones
 - TipusIncidencia

Tablas seleccionadas:

- DESKTOP-C1D59SV\SQLEXPRESS
 - Circuits
 - GP



Then this table will appear



The final result would be this

 Formula 1  Race Standings 2023				
<hr/>				
Pos.	Pts.	Pilot.	Num.	Racing team
1	25	Max Verstappen	1	Red Bull Racing
2	18	Lewis Hamilton	44	Mercedes
3	15	Charles Leclerc	16	Ferrari
4	12	Sergio Pérez	11	Red Bull Racing
5	10	Oscar Piastri	81	McLaren
6	8	Lando Norris	4	McLaren
7	6	Pierre Gasly	10	Alpine
8	4	Esteban Ocon	31	Alpine
9	2	George Russell	63	Mercedes
10	1	Carlos Sainz	55	Ferrari

GP Baréin - Sakhir 05/03/2023				
<hr/>				
Pos.	Pts.	Pilot.	Num.	Racing team
1	25	Charles Leclerc	16	Ferrari
2	18	Max Verstappen	1	Red Bull Racing
3	15	Sergio Pérez	11	Red Bull Racing
4	12	George Russell	63	Mercedes
5	10	Carlos Sainz	55	Ferrari
6	8	Lando Norris	4	McLaren
7	6	Pierre Gasly	10	Alpine
8	4	Esteban Ocon	31	Alpine
9	2	Lewis Hamilton	44	Mercedes
10	1	Oscar Piastri	81	McLaren



CRYSTAL REPORTS

GP STANDINGS



Race Standings 2023

GP Baréin - Sakhir
05/03/2023

Pos.	Pts.	Pilot.	Num.	Racing team
1	25	Max Verstappen	1	Red Bull Racing
2	18	Lewis Hamilton	44	Mercedes
3	15	Charles Leclerc	16	Ferrari
4	12	Sergio Pérez	11	Red Bull Racing
5	10	Oscar Piastri	81	McLaren
6	8	Lando Norris	4	McLaren
7	6	Pierre Gasly	10	Alpine
8	4	Esteban Ocon	31	Alpine
9	2	George Russell	63	Mercedes
10	1	Carlos Sainz	55	Ferrari

GP Arabia Saudí - Jeddah International Street
12/03/2023

Pos.	Pts.	Pilot.	Num.	Racing team
1	25	Charles Leclerc	16	Ferrari
2	18	Max Verstappen	1	Red Bull Racing
3	15	Sergio Pérez	11	Red Bull Racing
4	12	George Russell	63	Mercedes
5	10	Carlos Sainz	55	Ferrari
6	8	Lando Norris	4	McLaren
7	6	Pierre Gasly	10	Alpine
8	4	Esteban Ocon	31	Alpine
9	2	Lewis Hamilton	44	Mercedes
10	1	Oscar Piastri	81	McLaren

SUMMARY OF THE DRIVERS OF EACH TEAM

1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 · 11 · 12 · 13 · 14 · 15 · 16 · 17 · 18 · 19 · 20

- ▼ Section1 (Encabezado del informe)
- ▼ Section2 (Encabezado de página)
- ▼ GroupHeaderSection1 (Encabezado de grupo #1: Escuderias.idEscuderia - A)

Formula1

Racing Team info

Nombre de grupo #1

- ▼ GroupHeaderSection2 (Encabezado de grupo #2: Pilots.idPilot - A)

	Pilot	Name
	Car Number	Dorsal
	Season points	Suma de ✓

Season results

Race	Position	Points
DescGP	posicio	puntuacio

- ▼ GroupHeaderSection3 (Encabezado de grupo #3: GP.idGP - O)
- ▼ Section3 (Detalles)



EXPORTING & EXPLOITING DATA IN OFFICE TOOLS

DYNAMIC TABLE

TABLA DINÁMICA

In order to create a dynamic table with data from a database, we must first go to the top menu section of Excel, where we will find the Data section, where we can select the data from a database.

There we will specify the properties of the database in question (IP, Table, User, Password).

Once the connection is established we can select which tables we want to extract, but in our case we will choose an already created view that has selected the data we need for the pivot table.

Once the information has been exported to a table in Excel, we can use the top menu to insert the pivot table from the view created and grouping the data in rows and columns.



Screenshot of Microsoft Excel showing the "Dades" (Data) tab selected. The "Obtén dades" (Get Data) icon is highlighted with a red box. A dropdown menu is open under "Obtén dades", showing various options for connecting to data sources. The option "Des d'una base de dades de l'SQL Server" (From an SQL Server database) is highlighted with a red box.

Obtén dades

- Des d'un fitxer
 - Des d'una base de dades de l'SQL Server
 - Des de la base de dades de Microsoft Access
 - Des de l'Analysis Services
 - Des d'una base de dades de l'SQL Server Analysis Services (importació)
 - Des d'una base de dades de l'Oracle
 - Des d'una base de dades de l'IBM Db2
 - Des d'una base de dades del MySQL
 - Des d'una base de dades del PostgreSQL
 - Des d'una base de dades del Sybase
 - Des d'una base de dades del Teradata
 - Des d'una base de dades SAP HANA
- Des de l'Azure
- Des del Power Platform
- Des de serveis en línia
- Des d'altres orígens
- Combina les consultes
- Inicia l'Editor del Power Query...
- Configuració de l'origen de dades...
- Opcions de consulta

SQL Server database

Server

Database (optional)

Advanced options



Navigator

Select multiple items

Display Options ▾

- 172.18.10.3; F12324 [12]
 - StandingsByRace** (highlighted with a red box)
 - Circuits
 - ClassificacioGP
 - DetailsIncidencies
 - Escuderies
 - GP
 - Incidencies
 - Pilots
 - Puntuacions
 - sysdiagrams
 - TipusIncidencia

StandingsByRace

DescEscuderia	Name	puntuacio	DescGP	DataGP
Red Bull Racing	Max Verstappen	25	GP Baréin	
Red Bull Racing	Max Verstappen	18	GP Arabia Saudí	
Mercedes	Lewis Hamilton	18	GP Baréin	
Ferrari	Charles Leclerc	25	GP Arabia Saudí	
Ferrari	Charles Leclerc	15	GP Baréin	
Red Bull Racing	Sergio Pérez	15	GP Arabia Saudí	
Mercedes	George Russell	12	GP Arabia Saudí	
Ferrari	Carlos Sainz	10	GP Arabia Saudí	
McLaren	Lando Norris	8	GP Arabia Saudí	
Alpine	Pierre Gasly	6	GP Arabia Saudí	
Alpine	Esteban Ocon	4	GP Arabia Saudí	
Mercedes	Lewis Hamilton	2	GP Arabia Saudí	
McLaren	Oscar Piastri	1	GP Arabia Saudí	
Ferrari	Carlos Sainz	1	GP Baréin	
Red Bull Racing	Sergio Pérez	12	GP Baréin	
McLaren	Oscar Piastri	10	GP Baréin	
McLaren	Lando Norris	8	GP Baréin	
Alpine	Pierre Gasly	6	GP Baréin	
Alpine	Esteban Ocon	4	GP Baréin	
Mercedes	George Russell	2	GP Baréin	
McLaren	Oscar Piastri	1	GP Australia	
Ferrari	Carlos Sainz	18	GP Australia	
Red Bull Racing	Sergio Pérez	8	GP Australia	

Select Related Tables

Load ▾ Transform Data Cancel

StandingsByRace - Power Query Editor

Close & Load (highlighted with a red box)

Source ([Schema="dbo",Item="StandingsByRace"]) [Data]

DescEscuderia	Name	puntuacio	DescGP	DataGP
1 Red Bull Racing	Max Verstappen	25	GP Baréin	05/03/2023 0:00:00
2 Red Bull Racing	Max Verstappen	18	GP Arabia Saudí	17/03/2023 0:00:00
3 Mercedes	Lewis Hamilton	18	GP Baréin	05/03/2023 0:00:00
4 Ferrari	Charles Leclerc	25	GP Arabia Saudí	17/03/2023 0:00:00
5 Ferrari	Charles Leclerc	15	GP Baréin	05/03/2023 0:00:00
6 Red Bull Racing	Sergio Pérez	15	GP Arabia Saudí	17/03/2023 0:00:00
7 Mercedes	George Russell	12	GP Arabia Saudí	17/03/2023 0:00:00
8 Ferrari	Carlos Sainz	10	GP Arabia Saudí	17/03/2023 0:00:00
9 McLaren	Lando Norris	8	GP Arabia Saudí	17/03/2023 0:00:00
10 Alpine	Pierre Gasly	6	GP Arabia Saudí	17/03/2023 0:00:00
11 Alpine	Esteban Ocon	4	GP Arabia Saudí	17/03/2023 0:00:00
12 Mercedes	Lewis Hamilton	2	GP Arabia Saudí	17/03/2023 0:00:00
13 McLaren	Oscar Piastri	1	GP Arabia Saudí	17/03/2023 0:00:00
14 Ferrari	Carlos Sainz	1	GP Baréin	05/03/2023 0:00:00
15 Red Bull Racing	Sergio Pérez	12	GP Baréin	05/03/2023 0:00:00
16 McLaren	Oscar Piastri	10	GP Baréin	05/03/2023 0:00:00
17 McLaren	Lando Norris	8	GP Baréin	05/03/2023 0:00:00
18 Alpine	Pierre Gasly	6	GP Baréin	05/03/2023 0:00:00
19 Alpine	Esteban Ocon	4	GP Baréin	05/03/2023 0:00:00
20 Mercedes	George Russell	1	GP Baréin	05/03/2023 0:00:00

Query Settings

Properties

Applied Steps

Source: StandingsByRace

Navigation

PREVIEW DOWNLOADED AT 19:27



Screenshot of Microsoft Excel showing the ribbon menu with "Inserció" selected. A red box highlights the "Taula dinàmica" icon in the "Taulas" section of the ribbon.

The main area shows a table titled "StandingsByRace" with the following data:

	DescEscuderia	Name	puntuacio	DescGP	DataGP	mes	Trimestre
2	Red Bull Racing	Max Verstappen	25	GP Baréin	05/03/2023 0:00	3	1
3	Red Bull Racing	Max Verstappen	18	GP Arabia Saudí	17/03/2023 0:00	3	1
4	Mercedes	Lewis Hamilton	18	GP Baréin	05/03/2023 0:00	3	1
5	Ferrari	Charles Leclerc	25	GP Arabia Saudí	17/03/2023 0:00	3	1
6	Ferrari	Charles Leclerc	15	GP Baréin	05/03/2023 0:00	3	1
7	Red Bull Racing	Sergio Pérez	15	GP Arabia Saudí	17/03/2023 0:00	3	1
8	Mercedes	George Russell	12	GP Arabia Saudí	17/03/2023 0:00	3	1
9	Ferrari	Carlos Sainz	10	GP Arabia Saudí	17/03/2023 0:00	3	1
10	McLaren	Lando Norris	8	GP Arabia Saudí	17/03/2023 0:00	3	1
11	Alpine	Pierre Gasly	6	GP Arabia Saudí	17/03/2023 0:00	3	1
12	Alpine	Esteban Ocon	4	GP Arabia Saudí	17/03/2023 0:00	3	1
13	Mercedes	Lewis Hamilton	2	GP Arabia Saudí	17/03/2023 0:00	3	1

A modal dialog box titled "Taula dinàmica de la taula o interval" is open, showing the configuration for the dynamic table:

- Taula o interval: StandingsByRace
- Ubicació: StandingsByRace!\$J\$15
- Full de càlcul nou (radio button)
- Full de càlcul existent (radio button, selected)
- Afegeix aquestes dades al model de dades (checkbox)

Buttons at the bottom: D'acord (Accept) and Cancel·la (Cancel).



Camps de la taula dinàmica

Trieu els camps que voleu afegir a l'informe:

Cerca

Name
 puntuacio
 DescGP
 DataGP
 mes
 Trimestre

Més taules...

Arrossega els camps entre les àrees de sota:

Filtres

Columnes

Trimestre
mes
DescGP

Filtes

DescEscuderia
Name

Valors

Suma de puntuacio

Suma de puntuacio	Etiquetes de columna	1 Total	2 Total	3 Total	4 Total	5 Total	6 Total	7 Total	8 Total	9 Total	10 Total	11 Total	12 Total	13 Total	14 Total
		10	10	20	20	8	16	30	3	17	50	18	25	43	109
	GP Baréin					GP Australia	GP Azerbaidjan	GP Emilia Romagna	GP Miami	GP Mónaco	GP Canadá	GP España			
Etiquetes de fila	GP Arabia Saudi	10	10	20	20	8	16	30	3	17	50	18	25	43	109
Alpine		4	4	8	8	2	6	12	2	15	29	10	10	20	57
Esteban Ocon		6	6	12	12	6	2	18	1	2	21	8	15	23	52
Pierre Gasly		35	16	51	51	33	37	70	26	16	10	52	43	18	61
Ferrari		10	1	11	11	18	12	30	1	10	6	17	18	6	24
Charles Leclerc		25	15	40	40	15	25	40	25	6	4	35	25	12	37
McLaren		9	18	27	27	13	19	32	12	12	22	46	27	19	46
Lando Norris		8	8	16	16	12	1	13	4	4	10	18	15	18	33
Oscar Piastri		1	10	11	11	1	18	19	8	8	12	28	12	1	13
Mercedes		14	20	34	34	14	25	39	25	40	33	99	7	27	34
George Russell		12	2	14	14	4	10	14	15	25	25	65	1	2	3
Lewis Hamilton		2	18	20	20	10	15	25	10	15	8	33	6	25	31
Red Bull Racing		33	37	70	70	33	12	45	8	30	19	57	6	12	18
Max Verstappen		18	25	43	43	25	4	29	6	18	1	25	2	4	6
Sergio Pérez		15	12	27	27	8	8	16	2	12	18	32	4	8	12
Total general		101	101	202	202	101	101	202	101	101	101	303	101	101	202
															707
															101
															101
															101



PROGRAMMING

The programme will be attached to the delivery.

Exercices library

```

Import time

def menu_opcions():

    print("*****")
    print("*           MENU GRUP 4 KCTUS IT           *")
    print("*****")
    print("*     A. Generar dades          (act1)      *")
    print("*     B. Generar Llista pilots temporada (act2)  Adri   *")
    print("*     C. Generar dades pilot temporada (act3)  Oscar  *")
    print("*     D. Generar dades equip       (act4)  Lluc   *")
    print("*     E. Generar dades algunes temporades (act1 Ampliacio)  *")
    print("*     F. Generar Llista pilots       (act2 Ampliacio)  *")
    print("*     G. Generar dades equip       (act3 Ampliacio)  *")
    print("*     H. Generar dades equips      (act4 Ampliacio)  *")
    print("*     X. Tancar programa          *")
    print("*****")

def frontPage():
    print("*****")
    print("* F1 OFICIAL PAGE PROGRAM *")
    print("*                         *")
    print("* LOOK FOR DRIVER RESULTS *")
    print("*****")
    print("*     INSTRUCTIONS      *")
    print("*     ======"        *")
    print("*- PUT THE NAME        *")
    print("*- PUT THE SURNAME     *")
    print("*- PUT THE SEASON       *")
    print("*- AND LOOK THE RESULTS *")
    print("*                         *")
    print("* Powered by KCTUSIT    *")
    print("*****")

def menu():
    new_menu = "Season,Track,Position,No,Driver,Team,Starting Grid,Laps,Time/Retired,Points\n"

    return new_menu

def CrearLlista(linea):
    # Splits words in a list when it finds ","
    llista = linea.split(",")
    return llista

def ReemplazaEspai(nom_escuderia):
    # Replace spaces with "_"
    escuderia = nom_escuderia.replace(" ", "_")

    return escuderia

```



```
def RemoveN(escuderia):
    # Erases the caracter "\n"
    escuderia = escuderia.replace("\n", "")
    return escuderia

def exercici2():
    # Define a list of valid years
    rango_anos = list(range(2013, 2024))

    # Flag to validate year input
    busqueda_valida = False

    # Loop to get a valid year from the user
    while not busqueda_valida:
        # Get user input for the year
        busqueda = int(input("Insertar año: "))
        # Check if the year is valid and open the corresponding file
        if busqueda in rango_anos:
            ano = open(f"Formula1_{busqueda}season_raceResults.csv", "r")
            busqueda_valida = True
        else:
            # Inform the user of an invalid year entry
            print("error al insertar el año")

    # Open or create a drivers file for writing
    drivers = open(f"Formula1_drivers{busqueda}.csv", "w+")
    # Read data from the race results file
    lineas = ano.readlines()[1:]

    # Initialize a dictionary to store driver names
    diccionari = {}

    # Process each line of race results to extract driver names
    for linea in lineas:
        nom_pilot = linea.strip().split(',')[3]
        apellido, nombre = nom_pilot.split()[-1], nom_pilot.split()[0]
        if apellido not in diccionari:
            diccionari[apellido] = nombre

    # Sort the dictionary of drivers
    sorted_drivers = sorted(diccionari.items())

    # Write sorted driver names to the drivers file
    index = 1
    for apellido, nombre in sorted_drivers:
        drivers.write(f"{index}: {nombre} {apellido}\n")
        index += 1

    # Close the files
    ano.close()
    drivers.close()

def exercici2_Ampliacio():
    rango_anos = list(range(2013, 2024))
```



```

busqueda_valida = False

while not busqueda_valida:
    busqueda = int(input("Insertar año: "))
    if busqueda in rango_anos:
        ano = open(f"Formula1_{busqueda}season_raceResults.csv", "r")
        busqueda_valida = True
    else:
        print("error al insertar el año")

drivers = open(f"Formula1_drivers{busqueda}.csv", "w+")
lineas = ano.readlines()[1:]

diccionari = {}

for linea in lineas:
    nom_pilot = linea.strip().split(',')[3]
    apellido, nombre = nom_pilot.split()[-1], nom_pilot.split()[0]
    if apellido not in diccionari:
        diccionari[apellido] = nombre

sorted_drivers = sorted(diccionari.items())

index = 1
for apellido, nombre in sorted_drivers:
    drivers.write(f"{index}: {nombre} {apellido}\n")
    index += 1

ano.close()
drivers.close()

def exercici3():

    # First of all we show the user a customised Front Page
    # for simple aesthetics
    frontPage()

    # We call to enter the first name, surname and season by keyboard.
    pilot_name = input("NAME OF THE PILOT: ").strip().upper()
    pilot_surname = input("SURNAME OF THE PILOT: ").strip().upper()
    season = input("SEASON: ").strip()

    # We specify try so that if it cannot open the file or cannot find it,
    # it executes what is found after the except, instead of displaying an error.
    try:
        # We open the file with the season variable for the season we want to read.
        # Then with w+ we open a new csv file where we will write the results
        # again each time it is run.
        csv_season = open(f"Formula1_{season}season_raceResults.csv", "r")
        result = open(f"Formula1_{pilot_name}_{pilot_surname}_{season}.csv", "w+")

        # Through a function where we implement the menu we write it at the top
        # of the document
        final_menu = menu()
        result.write(f"{final_menu}\n")

        # We create a loop with an if so that each time it finds the pilot it will
        # write it next to the year of the season

```



```
for i in csv_season:
    if (pilot_name in i.upper()) or (pilot_surname in i.upper()):
        write_result = season + "," + i
        result.write(f"{write_result}\n")

# Close the two files
result.close()
csv_season.close()

except Exception:
    print("Sorry, something went wrong, the names and season are correct?")
    # We use the sleep function of the time library so that there is a delay
    # between prints to allow everything to be read correctly
    time.sleep(2)
    print("Try it again")
    time.sleep(1.5)

    # We restart the programme
    frontPage()

pilot_name = input("NAME OF THE PILOT: ").strip().upper()
pilot_surname = input("SURNAME OF THE PILOT: ").strip().upper()
season = input("SEASON: ").strip()

def exercici3_Ampliacio():

    # We define the seasons we want
    TEMP_INI = 2013
    TEMP_FIN = 2024

    frontPage()

    pilot_name = input("NAME OF THE PILOT: ").strip().upper()
    pilot_surname = input("SURNAME OF THE PILOT: ").strip().upper()

    try:
        # First we open the file in script
        result = open(f"Formula1_{pilot_name}_{pilot_surname}.csv", "w+")

        # We write the menu
        final_menu = menu()
        result.write(f"{final_menu}\n")

        # We create a loop to do all the seasons that we have defined
        for season in range(TEMP_INI, TEMP_FIN):
            # For each season read us the document
            csv_season = open(f"Formula1_{season}season_raceResults.csv", "r")

            for i in csv_season:
                if (pilot_name in i.upper()) or (pilot_surname in i.upper()):
                    write_result = str(season) + "," + i
                    result.write(f"{write_result}\n")

    except Exception:
        print("Sorry, something went wrong, the names are correct?")
        time.sleep(2)
        print("Try it again")
        time.sleep(1.5)
        frontPage()
```



```
pilot_name = input("NAME OF THE PILOT: ").strip().upper()
pilot_surname = input("SURNAME OF THE PILOT: ").strip().upper()

result.close()
csv_season.close()

def exercici4():

    # A list with all the years of the seasons

    anys = [
        '2013',
        '2014',
        '2015',
        '2016',
        '2017',
        '2018',
        '2019',
        '2020',
        '2021',
        '2022',
        '2023'
    ]

    # insert the team

    escuderia = input("ESCUDERIA: ").strip().lstrip().upper()

    # Replaces the spaces for creating the new file without problems

    equip = RemplazaEspai(escuderia)

    # Creates the new file

    fitxer_escuderia = open(f"Formula1_{equip}.csv", "w+")

    # Faig que m' obri una temporada cada cop al bucle
    # A loop that opens each season file

    for temporada in anys:
        fitxer = open(f"Formula1_{temporada}season_raceResults.csv", "r")

        # Stores the file lines in a list

        contingut = fitxer.readlines()

        # Writes the season on the file

        fitxer_escuderia.write(f"Season ---> {temporada}\n")
        # Make a counter to count if there are pilots or not
        pilots = 0
        # A list where pilots will be added to avoid repetition
        nom_pilots = []

        # takes line by line of the list

        for linea in contingut:
```



```
# Creates a list where stores each element of the line

elements = CrearLlista(linea)

# name = position 3
nom_pilot = elements[3]
# team name = position 4
nom_escuderia = elements[4]

# Comprovo el nom de la escuderia, si coincideix i el pilot
# Comprueba el nombre de la escudería, si coincidece con el piloto
# adds the pilot name to the list so that avoid repetition

if nom_escuderia.upper() == escuderia and \
    (nom_pilot not in nom_pilots):
    fitxer_escuderia.write(f"{nom_pilot}\n")
    pilots += 1
    nom_pilots.append(nom_pilot)
# if pilots are 0 then it writes this
if pilots == 0:
    fitxer_escuderia.write("NO HI HA PILOTS\n")

# Closes the season file

fitxer.close()

# Closes the definitive file

fitxer_escuderia.close()

def exercici4_Ampliacio():

    anys = [
        '2013',
        '2014',
        '2015',
        '2016',
        '2017',
        '2018',
        '2019',
        '2020',
        '2021',
        '2022',
        '2023'
    ]

    # Opens the files with the teams that has to use

    fitxer_escuderies_i = open("Teams.txt", "r")

    # stores the team names in a list

    llista_escuderies = fitxer_escuderies_i.readlines()

    # Opens the final file

    fitxer_teams = open("Formula1_teams.csv", "w+")
```



```
# for each team on the list does:

for escuderia in llista_escuderies:

    # Erases "/n"

    escuderia = RemoveN(escuderia)

    # Writes to the file the name of the team

    fitxer_teams.write(f"-----{escuderia.upper()}----- \n")

    # for each season does :

    for temporada in anys:

        # Open the season file

        fitxer = open(f"Formula1_{temporada}season_raceResults.csv", "r")

        # Guardo el contingut en una llista

        contingut = fitxer.readlines()

        # Writes on the final file the season number

        fitxer_teams.write(f"Season ---> {temporada}\n")

        # counts the pilots
        pilots = 0
        # stores the pilots names to avoid repetitions
        nom_pilots = []

        # for each line does:

        for linea in contingut:

            # separate elements on a list

            elements = CrearLlista(linea)

            # name = position 3
            nom_pilot = elements[3]
            # team name = position 4
            nom_escuderia = elements[4]

            # if the name of the team is the same and
            # the pilot isn't writted does the following does:

            if nom_escuderia.upper() == escuderia.upper() and\
               (nom_pilot not in nom_pilots):

                fitxer_teams.write(f"\n{nom_pilot}\n")
                pilots += 1
                nom_pilots.append(nom_pilot)

            # if pilots are 0 then writes
```



```
if pilots == 0:  
    fitxer_teams.write("NO HI HA PILOTS\n")  
  
    # close season file  
  
    fitxer.close()  
  
    # close final file  
  
    fitxer_teams.close()
```

Main Menu

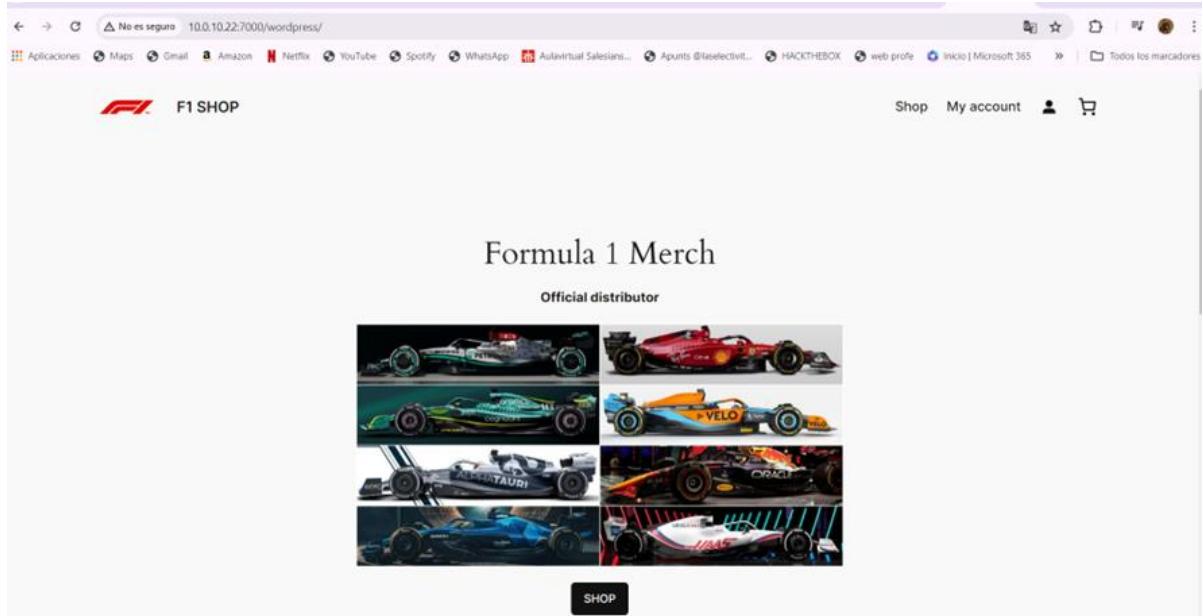
```
import llibreria_menu as f  
  
OPCIONS = 'ABCDEFGHIX'  
  
f.menu_opcions()  
  
ocio = input("OPTION: ").lstrip().strip().upper()  
  
whileocio not in OPCIONS:  
    print("No valid option, try again")  
    f.menu_opcions()  
  
ocio = input("OPCIO: ").lstrip().strip().upper()  
  
whileocio != 'X':  
    whileocio not in OPCIONS:  
        print("No valid option, try again")  
        f.menu_opcions()  
  
       ocio = input("OPCIO: ").lstrip().strip().upper()  
  
    ifocio == 'A':  
        print("Activiti 1 is not available")  
        # falta ex 1  
    elifocio == 'B':  
        f.exercici2()  
    elifocio == 'C':  
        f.exercici3()  
    elifocio == 'D':  
        f.exercici4()  
    elifocio == 'E':  
        print("Activiti 1 ampliation is not available")  
        # falta ex 1 ampliació  
    elifocio == 'F':  
        f.exercici2_Ampliacio()  
    elifocio == 'G':  
        f.exercici3_Ampliacio()  
    elifocio == 'H':  
        f.exercici4_Ampliacio()
```



```
opcion = input("OPTION: ").lstrip().strip().upper()
```

DATABASES

MERCHANDISING WEBPAGE



BACKUPS

MYSQL

To backup the wordpress database we have used an application called iperius backup which allows us to make a copy of the database remotely and even automate the backup.

the first thing we are going to do is to create an iperius account with all the data to be able to establish the connection. for this case we will use a user that has permissions on the database to be able to make the backup.



Modificar cuenta de MySQL (WordPress) ×

Nombre de cuenta:

Server:

Puerto:

Nombre de usuario:

Contraseña: Configurar

Prueba de conexión Guardar Anular

next we are going to configure the bkp devices in the following way so that you can perform the bkp in a correct way.



Añadir / editar copia de seguridad de MySQL

Cuenta de conexión a MySQL

WordPress

Realizar la copia de seguridad de todas las bases de datos
 Realizar la copia de seguridad de la base de datos siguiente:
[empty dropdown]

Excluir las siguientes BBDD (separadas por comas):
[empty input field]

Realizar la copia de seguridad en la carpeta siguiente:
C:\Users\ceraa\Desktop\2024\bakups_projecte_2024 { }

Incluir en la copia de seguridad de los siguientes objetos:
Estructura de las tablas, Datos, Procedimientos almacenados, ...

Parámetros principales Opciones

Verificar la copia de seguridad
 Añadir texto y/o variables dinámicas al nombre de los archivos de copia de seguridad:
.bak { }

Codificación de archivos:
Unicode Bloquear tablas durante la copia de seguridad

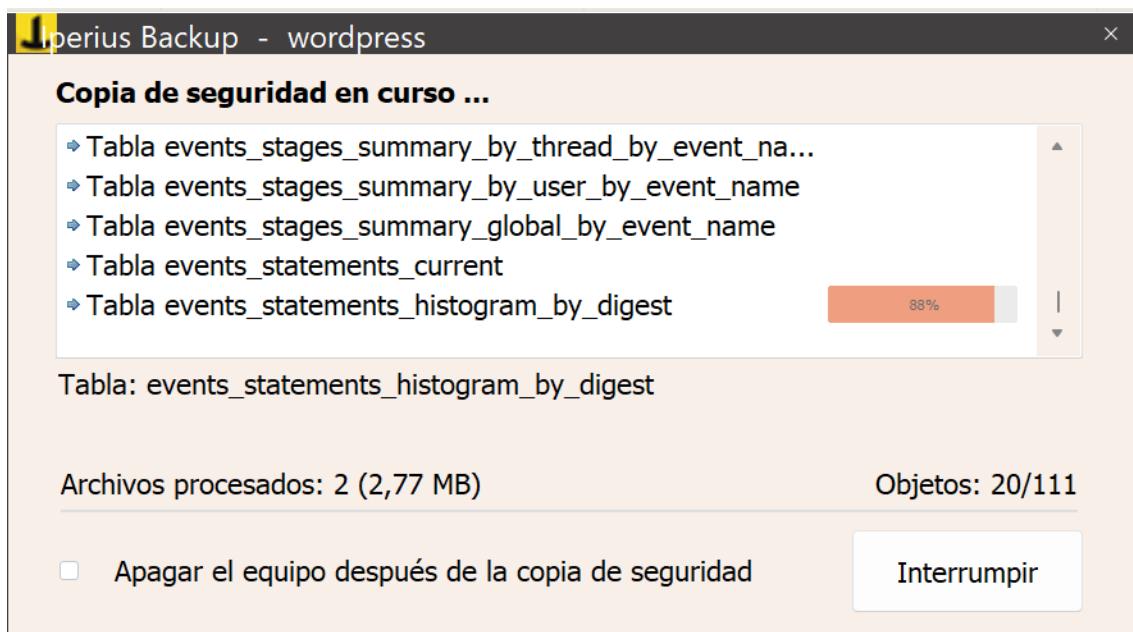
Copiar los archivos de copia de seguridad en el destinos de la tarea (FTP, Cloud, Tape, S3,

Excluir de la copia de seguridad

once the task has been configured, we are going to run it

wordpress 24/05/2024 19:12:58 Copia de seguridad finalizada con avisos 97,9 MB - 5 archivos (00:07:09)

Ejecutar la copia de seguridad
Modificar
Eliminar
Renombrar
Duplicar
Exportar
Mostrar la lista de registros
Archivo de configuración



Then to do the test we are going to go to the mysql of our wordpress and we are going to make a drop table of the wordpress database.



```
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 253
Server version: 8.0.36-0ubuntu0.22.04.1 (Ubuntu)

Copyright (c) 2000, 2024, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

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

mysql> USE wordpress;
ERROR 1049 (42000): Unknown database 'wordpress'
mysql> USE bd_wordpress;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> DROP DATABASE;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version
for the right syntax to use near '' at line 1
mysql> DROP DATABASE
-> ^C
mysql> DROP DATABASE bd_wordpress;
Query OK, 74 rows affected (0,95 sec)

mysql>
```

mysql> SELECT * FROM bd_wordpress;
 ERROR 1046 (3D000): No database selected
 mysql>

10.0.10.22:7000/wordpress/

Error establishing a database connection

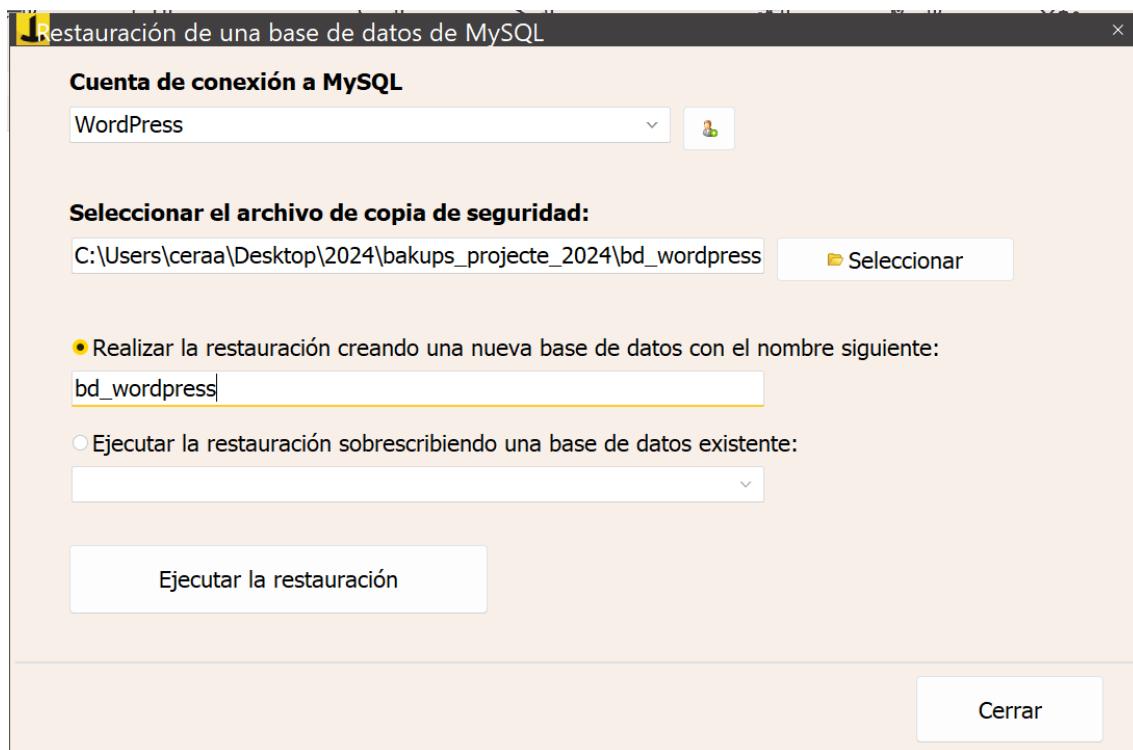
once we have verified that the database is not working, we will reset it as follows

Iberius Backup - Full [Versión de prueba]

Restaurar

Tarea de copia de seguridad	Última ejecución	Último resultado	Estado / Información sobre la última copi...
POSTGRESQL	24/05/2024 16:13:48 (Hoy)	Copia de seguridad finalizada con avisos 8,3 MB - 2 archivos (00:00:59)	
SQL SERVER	23/05/2024 19:04:00 (Ayer)	Copia de seguridad completada correc... 34,1 MB - 5 archivos (00:00:18)	
wordpress	24/05/2024 19:12:58 (Hoy)	Copia de seguridad finalizada con avisos 97,9 MB - 5 archivos (00:07:09)	

to restore the databases you have to do it one by one and you have to check if it is broken or you have to recreate it.



once the copy has been made we will check that everything works correctly again

MSSQL

BACKUP

For the backup of the MSSQL database we will first create a folder with appropriate permissions, where the .bck files will be stored.

Then, with the Iperius tool, we can create a backup task for all the database tables. All this specifying data:

- IP – 172.18.10.3
- User – sa
- Password
- And finally, specifying the path to the folder created.

Once the connection has been created and with these data specified, all we have to do is execute the copy, so that it can be made.

```
root@kctusodoo:/backups# pwd
/backups
root@kctusodoo:/backups#
root@kctusodoo:/# chmod 744 backups
root@kctusodoo:/# ls -l
total 3038280
drwxr--r--  2 root root      4096 may 23 16:29 backups
```



Modificar cuenta de SQL Server (master)

Nombre de la cuenta:
master

Servidor:
172.18.10.3

Utilizar la autenticación integrada de Windows
 Utilizar autenticación de SQL Server:

Nombre de Usuario: sa
Contraseña:

Utilizar la biblioteca de red TCP/IP
 Usar Persist Security Info
 Usar Integrated Security SSPI
 Usar Trusted Connection (necesario si se utiliza la autenticación de Windows)
 Usar conexión encriptada

Test

2. Seleccione las bases de datos para hacer una copia de seguridad:

Realizar la copia de seguridad de todas las bases de datos
 Realizar la copia de seguridad de la base de datos siguiente:

172.18.10.3 - SQL Server 2022 (RTM Developer Edition (64-bit) RTM (CU12-GDR))
master
model
msdb
F12324
Test

Excluir de la copia de seguridad



Test

3. Elija el destino de la copia de seguridad:

Realizar la copia de seguridad en la carpeta por defecto
 Realizar la copia de seguridad en la carpeta siguiente:

/backups { }

⚠ Introduzca una ruta existente en el servidor donde está instalada la base de datos: kctusodoo

Utilice la siguiente cuenta de usuario para acceder a la red:

(Opción no disponible si la base de datos no está en la máquina local)

Copiar los archivos de copia de seguridad en el destinos de la tarea (FTP, Cloud, Tape, S3, etc.)
(Opción no disponible si la base de datos no está en la máquina local)

Excluir de la copia de seguridad Anular Aceptar

SQL SERVER	27/05/2024 16:18:03 (Hoy)	Copia de seguridad completada correc... 28,6 MB - 4 archivos (00:00:15)
wordpress	024 19:02:05 (Hoy)	Copia de seguridad finalizada con avisos 78,2 MB - 5 archivos (00:06:27)
<input type="checkbox"/> Ejecutar la copia de seguridad <input type="checkbox"/> Modificar <input type="checkbox"/> Eliminar <input type="checkbox"/> Renombrar <input type="checkbox"/> Duplicar <input type="checkbox"/> Exportar <input type="checkbox"/> Mostrar la lista de registros <input type="checkbox"/> Archivo de configuración		

Iperius Backup - SQL SERVER

Copia de seguridad completada correctamente

- ↳ Verificación de la copia de seguridad
- ↳ Verificación de la copia de seguridad realizada correcta...
- ↳ Almacenamiento de archivo de registro
- ↳ Cancelación de carpetas temporales
- ✓ Copia de seguridad completada correctamente

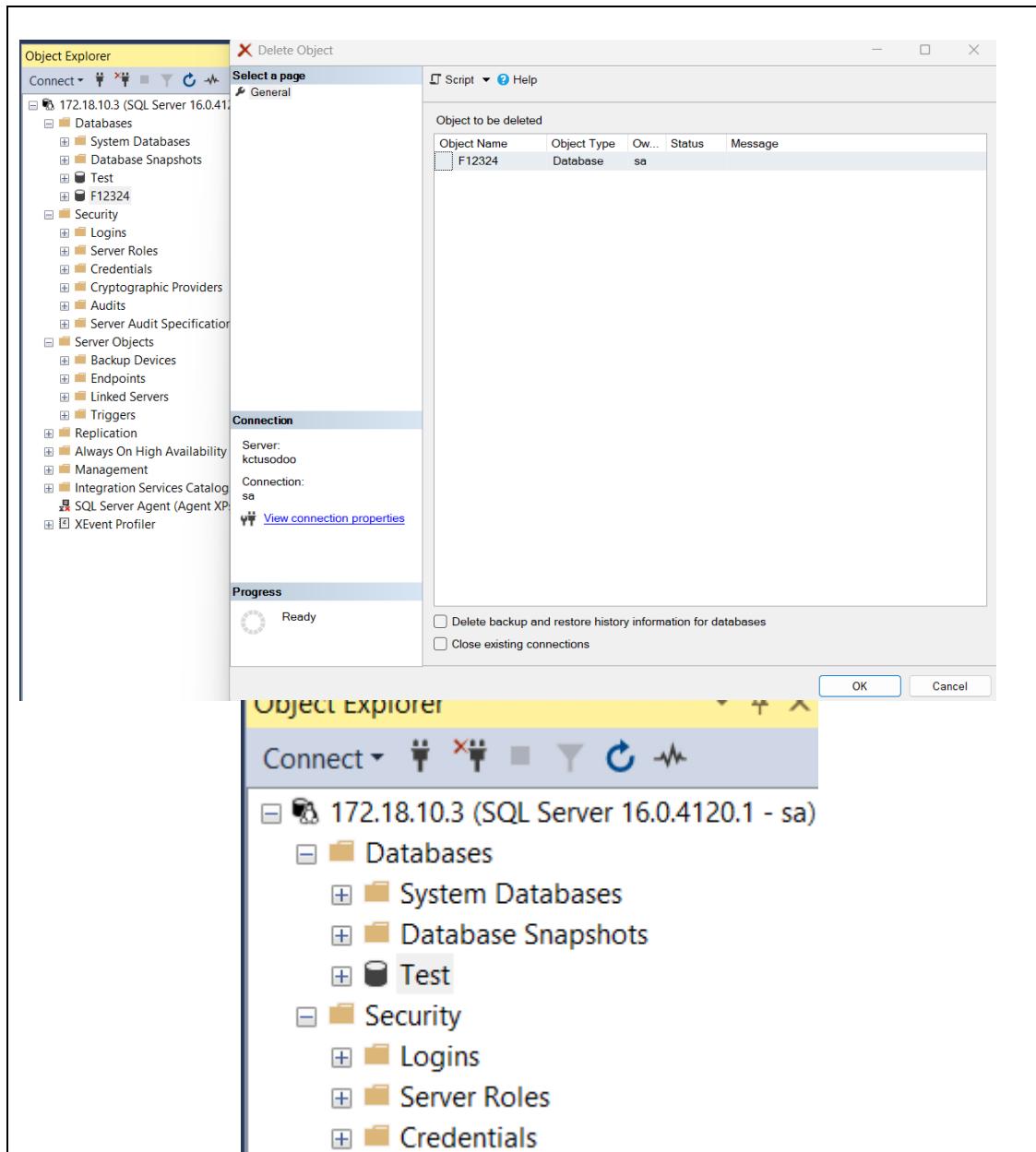
Archivos procesados: 5 (34,15 MB)

RESTORE

Once we have the copy made, we are going to test if it restores well, all this by deleting the F1 database.



To recover it we will connect through SQLManager where we can right click on databases and selecting Restore we will find that we can choose which database we want to recover, in our case, F12324. It will automatically detect the backup made by Iperius, and it will be the one used to recover it.





Screenshot of the Microsoft SQL Server Management Studio (SSMS) Object Explorer context menu for a database named 'F12324'. The 'Restore Database...' option is highlighted with a green box.

The main window shows the 'Select a page' dropdown set to 'General'. The 'Source' section has 'Database:' set to 'F12324'. The 'Destination' section has 'Database:' set to 'F12324' and 'Restore to:' set to 'The last backup taken (jueves)'. The 'Restore plan' section shows a table titled 'Backup sets to restore' with one entry:

Restore	Name	Com	Data
<input checked="" type="checkbox"/>	IperiusBackup-F12324-98B41EE5EDB234D42052C2B4E3C93BE		

At the bottom right of the dialog are 'OK', 'Cancel', and 'Help' buttons.



Restore Database - F12324

Restoring: /backups/F12324.bak

Select a page

- General
- Files
- Options

Source

- Database: F12324
- Device:

Destination

- Database: F12324
- Restore to:

Restore plan

Backup sets to restore

Restore	Name
<input checked="" type="checkbox"/>	IperiusBack

The last backup taken successfully.

Microsoft SQL Server Management Studio

Database 'F12324' restored successfully.

Aceptar

Connection

172.18.10.3 [sa]

View connection properties

Progress

Verify Backup Media

OK Cancel Help

Object Explorer

Connect ▾ 172.18.10.3 (SQL Server 16.0.4120.1 - sa)

- Databases
 - System Databases
 - Database Snapshots
 - Test
 - F12324
- Security
 - Logins
 - Server Roles

128



EXTRA

SQL QUERIES

Show the top three Pilots

The screenshot shows a SQL query being run in a database environment. The query is:

```

SELECT TOP 3 E.idEscuderia, E.DescEscuderia, SUM(P.PuntsCarnet) AS PuntuacioTotal
FROM Escuderries E
JOIN Pilots P ON E.idEscuderia = P.idEscuderia
GROUP BY E.idEscuderia, E.DescEscuderia
ORDER BY PuntuacioTotal DESC;

```

The results table displays the top three escuderias with their names and total points:

	idEscuderia	DescEscuderia	PuntuacioTotal
1	4	Alpine	60
2	3	Mercedes	60
3	2	Ferrari	60

```

SELECT TOP 3 E.idEscuderia, E.DescEscuderia, SUM(P.PuntsCarnet) AS
PuntuacioTotal
FROM Escuderries E
JOIN Pilots P ON E.idEscuderia = P.idEscuderia
GROUP BY E.idEscuderia, E.DescEscuderia
ORDER BY PuntuacioTotal DESC;

```

DBEAVER ONLINE

CLOUD BEAVER

We will install cloud beaver into a container of docker, so first of all we must install docker. To install docker we will use the command “sudo apt install docker.io”.

```
lucxf@usvr-lluc:~$ sudo apt install docker.io -y
```

When we have docker installed we will run the following command “sudo docker pull dbeaver/cloudbeaver:latest” to download the latest release of community edition cloud beaver.



```
lucxf@usvr-lluc:~$ sudo docker pull dbeaver/cloudbeaver:latest
[sudo] password for lucxf:
Sorry, try again.
[sudo] password for lucxf:
latest: Pulling from dbeaver/cloudbeaver
56c566a8d234: Downloading [=====] 16.27MB/27.23MB
0018f21e6b91: Downloading [=====] 18.91MB/40.36MB
7a1ce1bf8b66: Downloading [=====] 27.95MB/145.1MB
7316ce5a9620: Waiting
295e089422fd: Waiting
13cbb24102fc: Waiting
d74bbf5e3de1: Waiting
4f4fb700ef54: Waiting
```

```
lucxf@usvr-lluc:~$ sudo docker pull dbeaver/cloudbeaver:latest
[sudo] password for lucxf:
Sorry, try again.
[sudo] password for lucxf:
latest: Pulling from dbeaver/cloudbeaver
56c566a8d234: Pull complete
0018f21e6b91: Pull complete
7a1ce1bf8b66: Pull complete
7316ce5a9620: Pull complete
295e089422fd: Pull complete
13cbb24102fc: Pull complete
d74bbf5e3de1: Pull complete
4f4fb700ef54: Pull complete
Digest: sha256:8ee0a6aa34dec78cef6dd24503cb0a8e5a3e27cad7269ea0f52fa41740c1c47
Status: Downloaded newer image for dbeaver/cloudbeaver:latest
docker.io/dbeaver/cloudbeaver:latest
```

Then the next step is to run the container with the image we have just downloaded.

We will call the container cloud beaver and we set the port 8080.

We will execute the command “`docker run --name cloudbeaver --rm -ti -p 8080:8978 -v /opt/cloudbeaver/workspace dbeaver/cloudbeaver:latest`”

```
lucxf@usvr-lluc:~$ sudo docker run --name cloudbeaver --rm -ti -p 8080:8978 -v /opt/cloudbeaver/workspace dbeaver/cloudbeaver:latest
Starting Cloudbeaver Server
WARNING: Using incubator modules: jdk.incubator.vector, jdk.incubator.foreign
27-05-2024 16:48:28.212 [main] DEBUG i.c.model.app.BaseWebApplication - Loading configuration from /opt/cloudbeaver/conf/cloudbeaver.conf
27-05-2024 16:48:28.214 [main] DEBUG i.c.s.CBServerConfigurationController - Using configuration [/opt/cloudbeaver/conf/cloudbeaver.conf]
27-05-2024 16:48:28.216 [main] DEBUG i.c.s.CBServerConfigurationController - Read configuration [/opt/cloudbeaver/conf/cloudbeaver.conf]
27-05-2024 16:48:28.291 [main] INFO io.cloudbeaver.server.CBPlatform - Initialize web platform...
27-05-2024 16:48:28.444 [main] DEBUG o.j.d.runtime.SecurityProviderUtils - BounceCastle bundle found. Use JCE provider BC
27-05-2024 16:48:28.751 [main] DEBUG o.j.d.registry.BasePlatformImpl - Initialize base platform...
27-05-2024 16:48:29.048 [main] DEBUG o.j.d.r.DataSourceProviderRegistry - Total database drivers: 117 (117)
27-05-2024 16:48:29.056 [main] ERROR io.cloudbeaver.server.CBPlatform - Driver 'yandex_clickhouse' is missing library 'ru.yandex.se-jdbc:RELEASE'
27-05-2024 16:48:29.067 [main] INFO io.cloudbeaver.server.CBPlatform - Available drivers: ClickHouse,Db2 for LUW,Db2 for IBM i,Firebird,che Kyuubi,Trino,H2 Embedded,H2 Embedded V.2,MS SQL Server / SQL Server,MySQL,MariaDB,Oracle,PostgreSQL,SQLite
27-05-2024 16:48:29.081 [main] DEBUG io.cloudbeaver.server.CBApplication - CloudBeaver CE Server 24.0.5.202405200838 is starting
27-05-2024 16:48:29.084 [main] DEBUG io.cloudbeaver.server.CBApplication - OS: Linux 5.15.0-106-generic (amd64)
27-05-2024 16:48:29.085 [main] DEBUG io.cloudbeaver.server.CBApplication - Java version: 17.0.11 by Eclipse Adoptium (64bit)
27-05-2024 16:48:29.086 [main] DEBUG io.cloudbeaver.server.CBApplication - Install path: '/opt/cloudbeaver/server'
27-05-2024 16:48:29.087 [main] DEBUG io.cloudbeaver.server.CBApplication - Global workspace: 'file:/opt/cloudbeaver/workspace/'
27-05-2024 16:48:29.091 [main] DEBUG io.cloudbeaver.server.CBApplication - Memory available 744Mb/484Mb
27-05-2024 16:48:29.092 [main] DEBUG io.cloudbeaver.server.CBApplication - Content root: /opt/cloudbeaver/web
27-05-2024 16:48:29.092 [main] DEBUG io.cloudbeaver.server.CBApplication - Drivers storage: /opt/cloudbeaver/drivers
27-05-2024 16:48:29.097 [main] DEBUG io.cloudbeaver.server.CBApplication - Listen port: 8978 on all interfaces
```

With this done we can now access to cloud beaver and configurate it



Welcome to CloudBeaver Community, cloud database management system!

The easy configuration wizard will guide you through several simple steps to set up the server. You will need to set server information and administrator credentials. You can set up additional server parameters once the easy configuration is completed.

Note: you will be able to change these configuration parameters later on the administration panel.

We will leave by default the configuration, but we must create a user account with a password to access to cloud beaver.

SERVER INFORMATION

Server Name *
CloudBeaver Grup 4

Server URL *
http://172.18.10.5:8080

Session lifetime, min *
30

CONFIGURATION

Enable private connections
Allows users to create private connections

Navigator simple view
By default, all user's new connections will contain only basic information in navigation tree

RESOURCE MANAGER

Enable Resource Manager
Enable Resource Manager functionality

AUTHENTICATION SETTINGS

Allow anonymous access
Allows to work with CloudBeaver without user authentication

Local
Local name/password based authentication

ADMINISTRATOR CREDENTIALS

Login *
kctus_1

Password *
contrasenya12345aA

SECURITY

Save credentials
Allow to save credentials for pre-configured database

Save users credentials
Allow to save credentials for non-admin users

DISABLED DRIVERS

Search for the driver...
SQLite X H2 Embedded X H2 Embedded V.2 X DuckDB X

Finally, we will have to click finish and then log in.

INITIAL SERVER CONFIGURATION

BACK FINISH Confirmation

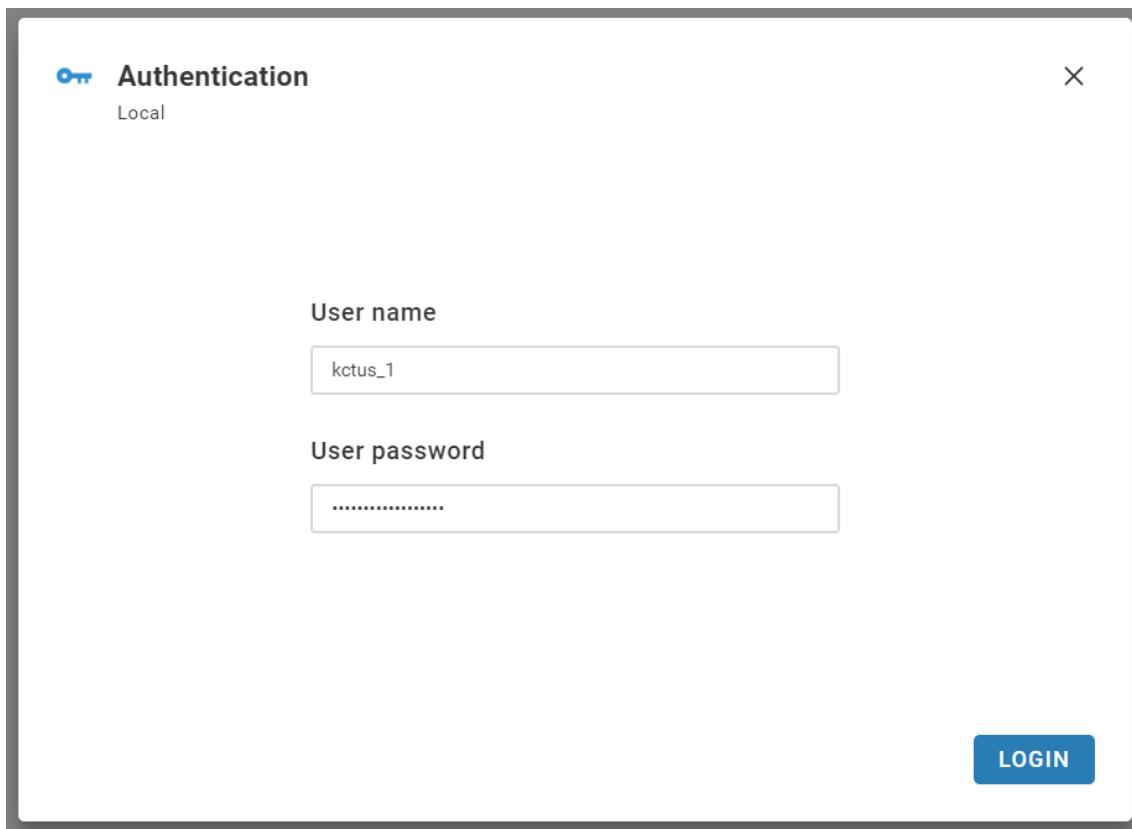
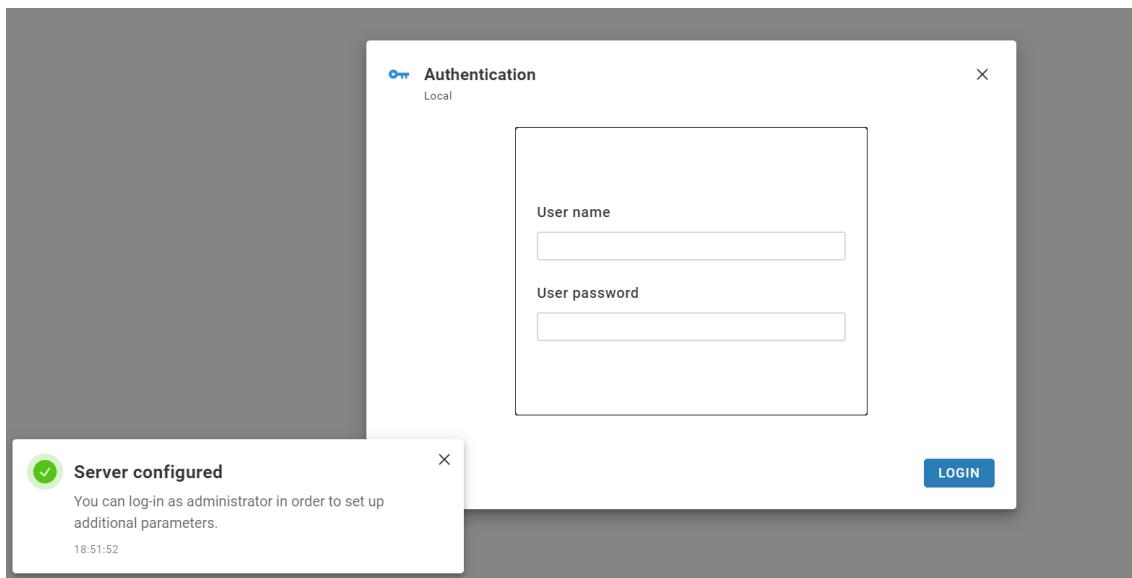
Confirmation

That is almost it.

Press the Finish button to complete the server configuration. You can return to the previous pages if you want to change or add something. When the configuration is completed all entered settings will be applied for your server. You will be redirected to the main page to start working. You can always login to the system as administrator to change the server settings.

FINISH

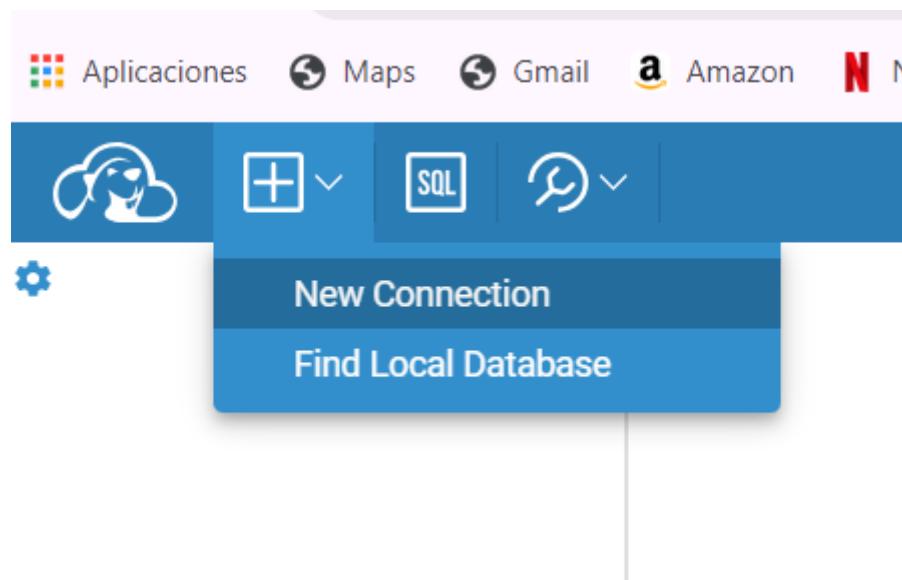
We will use the username and password that we have just created.



As we see we are now logged in

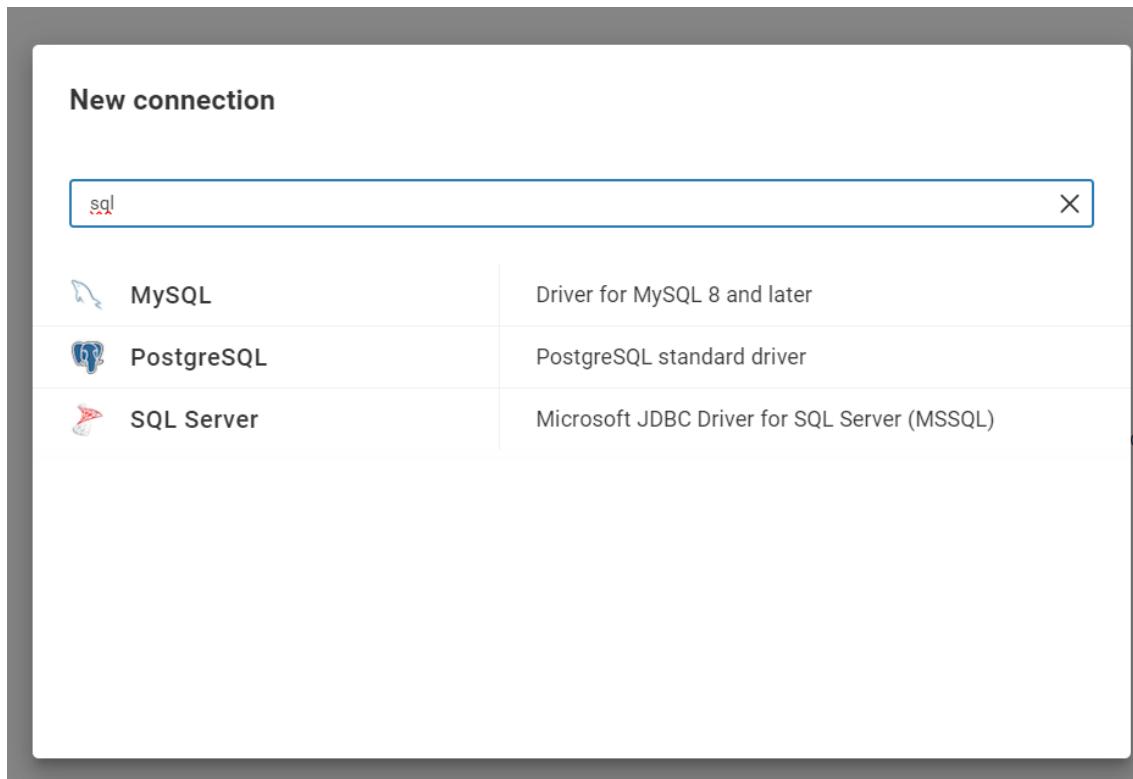


Now we must add the connections to the different databases. We will go to the top left corner of the screen and



Then we will be able to select the database we want to connect to.

We will start connecting to MySQL.



We will add the host IP address, the user and the password, and the database we want to connect to. The port in these case as it is right by default we won't touch it.



MAIN DRIVER PROPERTIES SSH TUNNEL SSL ACCESS CANCEL TEST CREATE

Driver

MySQL

Host *
172.18.10.4

Port
3306

Database
bd_wordpress

AUTHENTICATION

User name
bkp

User password
ntoUzA768Wgz8r163...

Save credentials

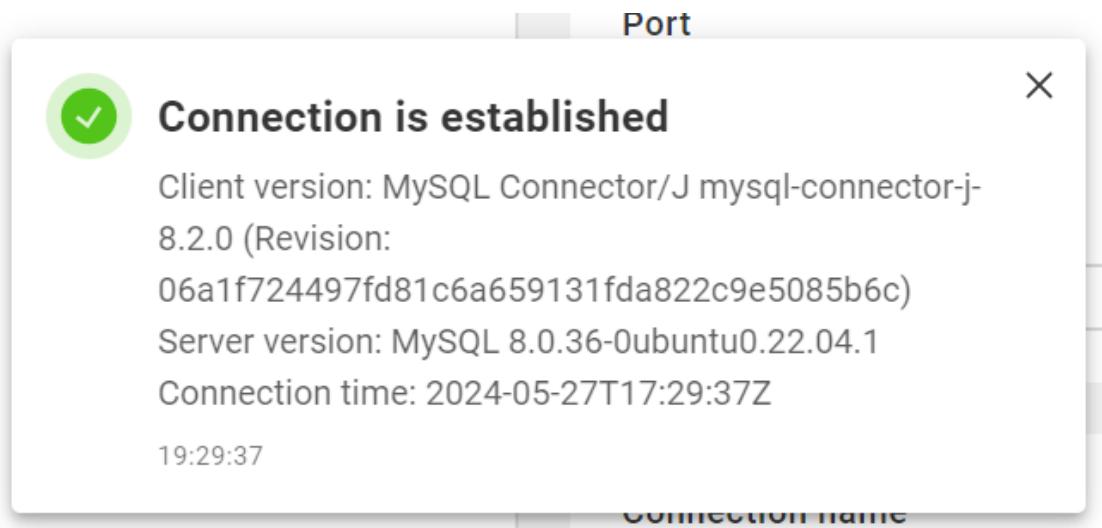
Keep alive (in seconds)
0

ADVANCED

Server Time Zone

Connection name *
MySQL@172.18.10.4

We will try to connect clicking on the button “test”. And if all has gone right it must pop up a notification informing us that all has gone correct, and the connection has been established.



With these done we will create the connection and if we go to the left side of the screen, we would be able to see the connection with the database and see all the databases and the tables of each database.



The screenshot shows the MySQL Workbench interface. At the top, there are tabs for 'MySQL' and 'SQL', along with icons for 'New Connection', 'Import', 'Export', and 'Search'. Below the tabs, there's a toolbar with icons for 'Edit', 'File', 'Edit', and 'Search'. The main pane is titled 'Shared' and shows a tree view of databases. Under 'MySQL@172.18.10.4', the 'Databases' node is expanded, revealing 'bd_wordpress', 'sys', 'Users', and 'System Info'.

Next, we will create the connection with SQL Server following the same steps as we did with MySQL.

The screenshot shows the 'MAIN' tab of the SQL Server connection configuration dialog. The 'Driver' dropdown is set to 'SQL Server'. The 'Configuration' section has 'Manual' selected. The 'Host' field is set to '172.18.10.3', 'Port' is set to '1433', and 'Database' is set to 'F12324'. The 'AUTHENTICATION' section shows 'SQL Server Authentication' selected, with 'User name' set to 'sa' and 'User password' set to '.....'. A 'Save credentials' checkbox is checked. The 'Keep alive (in seconds)' field is set to '0'.

As we see the connection is established without any problem.



No Connections. Use the top

PORT

Connection is established

Client version: Microsoft JDBC Driver 8.2 for SQL Server 8.2.0.0

Server version: Microsoft SQL Server 16.00.4120 Microsoft SQL Server 2022 (RTM-CU12-GDR) (KB5036343) - 16.0.4120.1 (X64)

Mar 18 2024 12:02:14

Copyright (C) 2022 Microsoft Corporation

Developer Edition (64-bit) on Linux (Ubuntu 22.04.4)

19:04:16

And now we will be able to create the connection.

The screenshot shows the SQL Server Object Explorer interface. At the top, there are icons for gear (Properties), folder plus (New), and magnifying glass (Search). Below that, the word "Shared" is displayed. The main pane shows a hierarchical tree structure:

- SQL Server@172.18.10.3
 - Databases
 - F12324
 - Schemas
 - dbo
 - Database triggers
 - Test
 - Security



WEBGRAPHY

WORDPRESS & MYSQL:

[How to move MySQL to another disk](#)

ZABBIX:

[Zabbix Passive vs Active – Zabbix Blog](#)

VMware ESXI:

[Install & Configure ESXI](#)

[Configuration of ESXI](#)

[ESXI vSwitches Configuration](#)

Odoo:

[Odoo installation & Configuration](#)

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[How to make a backup of a sql server data base](#)