2025

A VMsources Whitepaper

PVE Basic Setup

Basic installation of Proxmox Virtual Environment (PVE) with Network, iSCSI, Migration from ESXi and Building a VM

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Contents

Proxmox Virtual Environment (PVE)

Installing Proxmox (PVE) is a very simple process. Since PVE has such a wide hardware compatibility, it will install on most servers, even legacy hardware, but it is always recommended to use the best/latest servers your Organization can afford.

Furthermore, PVE supports both traditional SAN and hyperconverged storage at no additional cost. That means you can use your existing servers and install PVE in-place of other hypervisors, then gradually migrate your VMs from the other platform to PVE.

For the most part, managing PVE is simple and straightforward, using the embedded GUI. There are some instances where PVE will absolutely require the use of the command-line. In terms of features, PVE is comparable to all major hypervisors, and superior to many. PVE supports the flowing features critical to many Organizations:

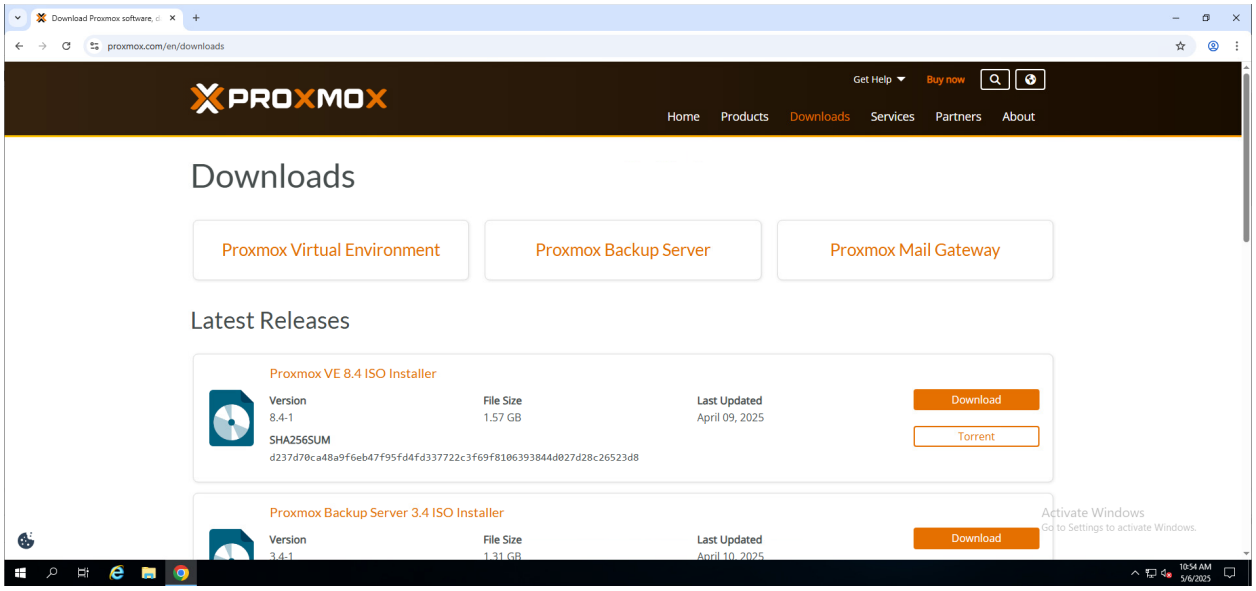
- High Availability failover of VMs
- Live Migration of VMs between PVE hosts
- iSCSI & FC SAN
- Hyperconverged storage
- Live patching of PVE hosts
- Supported by major backup platforms including Veeam

Downloads:

- PVE
  - https://www.proxmox.com/en/downloads
- VirtIO
  - https://fedorapeople.org/groups/virt/virtio-win/direct-downloads/stable-virtio/virtio-win.iso

Installing PVE

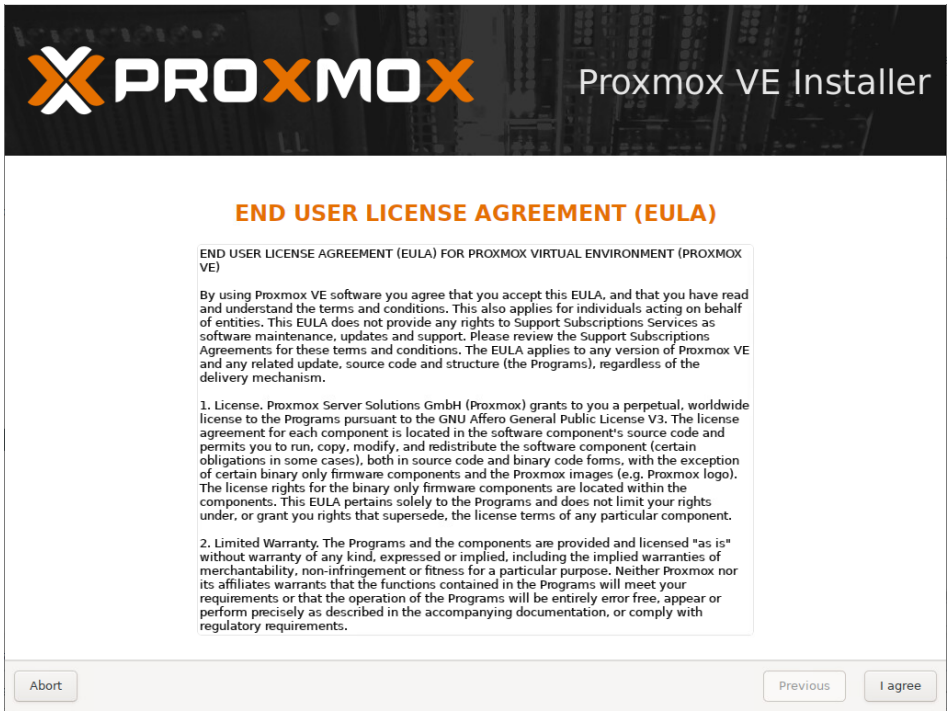
1. Download the PVE ISO: https://www.proxmox.com/en/downloads

a. 

2. Mount the ISO to the server you will be installing to and boot to ISO:

a. 

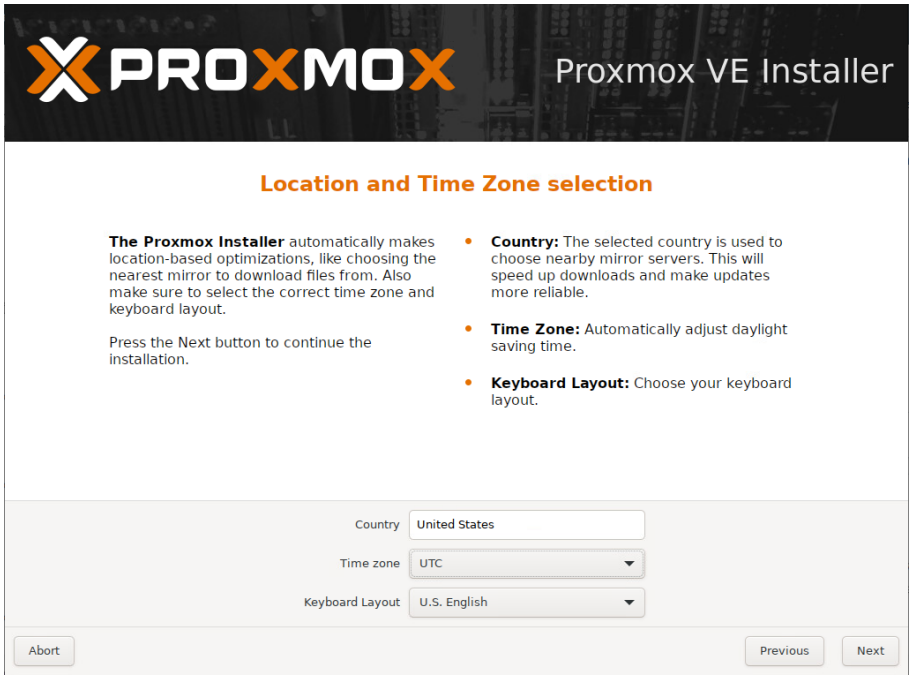
b.



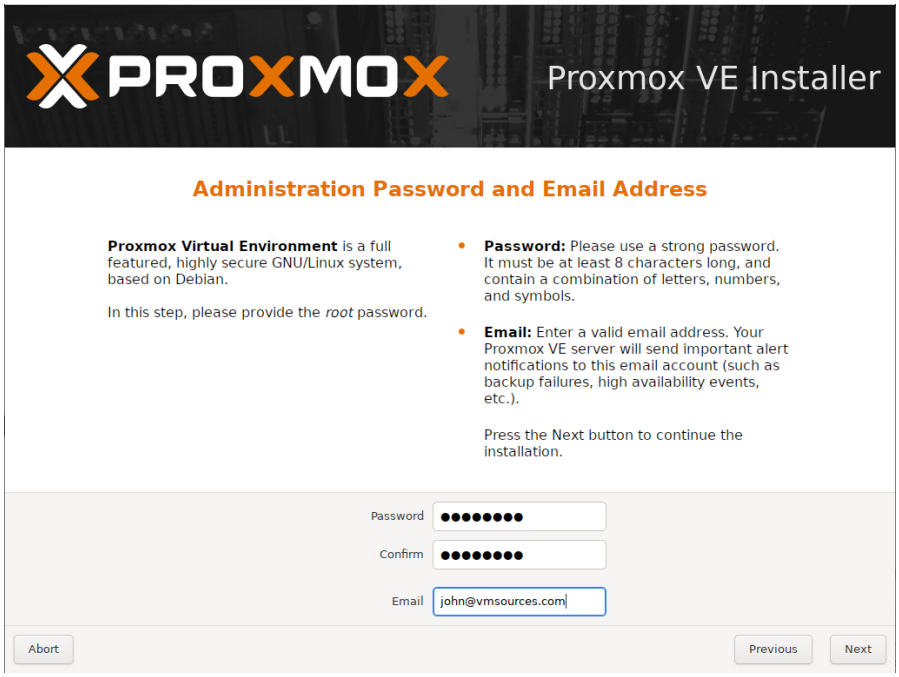
3. Select the install disk, PVE can be installed to flash-media, but it is recommended to install PVE on redundant disks (RAID 1 or equivalent) such as HDD, SDD or NVMe

a.

4. Select your country, time zone and language. **We recommend using UTC for all infrastructure servers.**

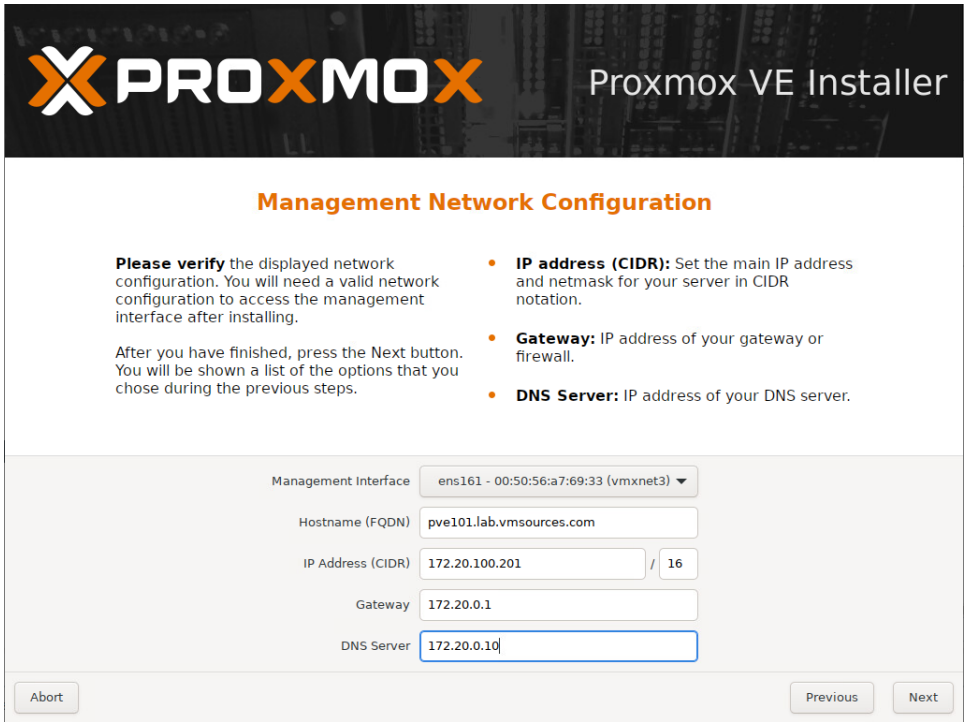
a. 

5. Set password and email.

a. 

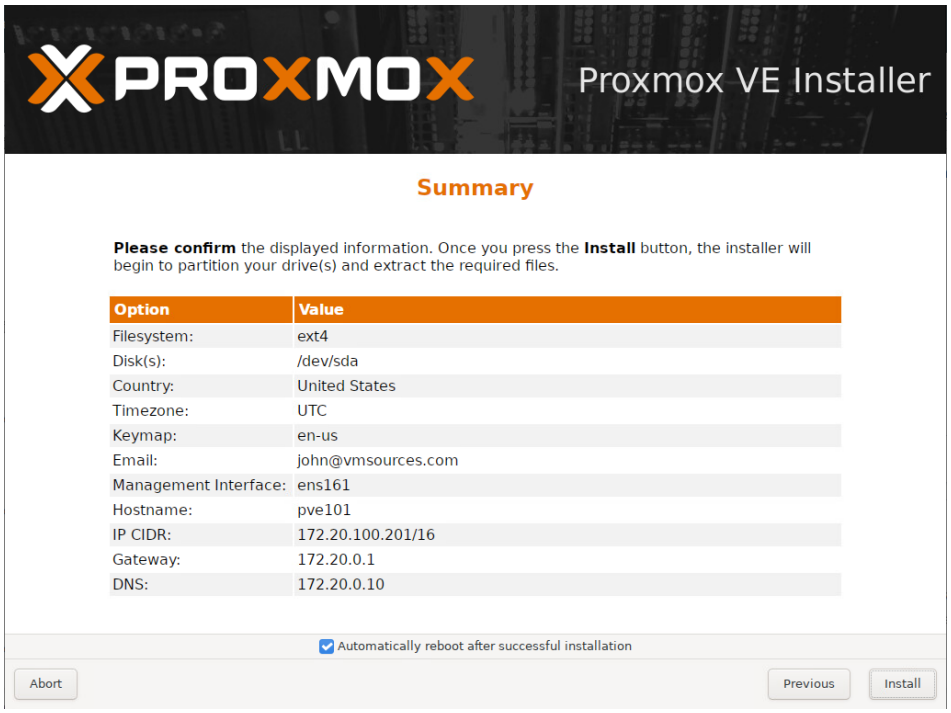
6. Set the initial network properties for this PVE host.

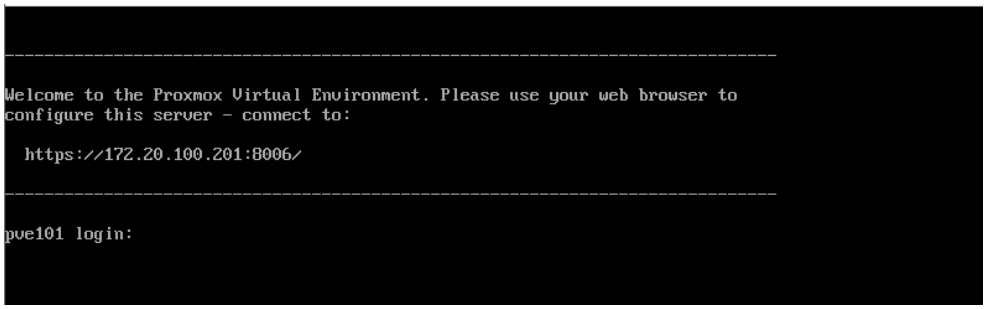
a.

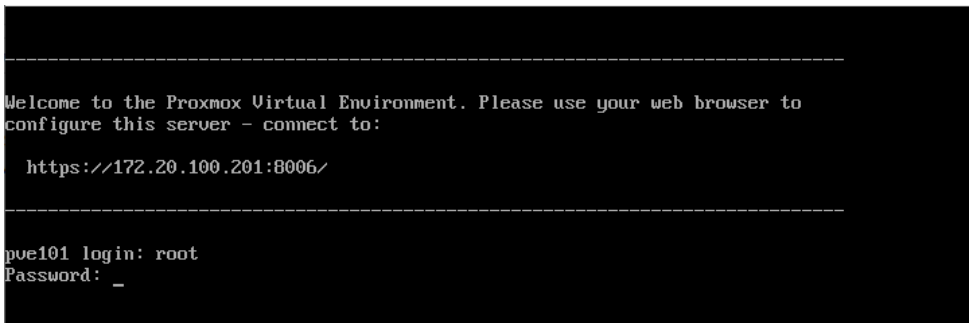


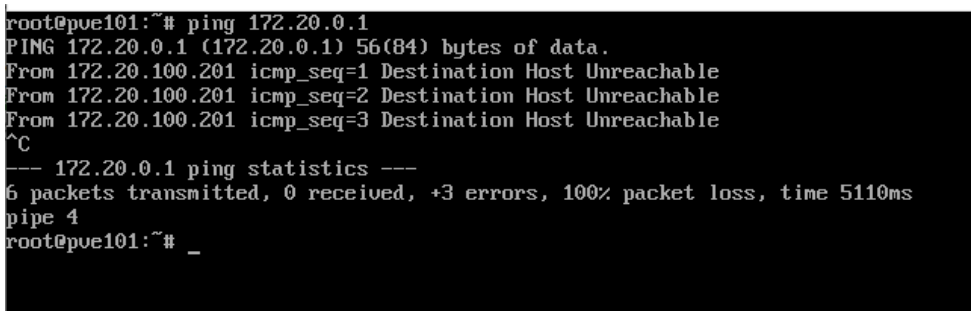
7. Summary

a.



8. Install complete.
   a. 

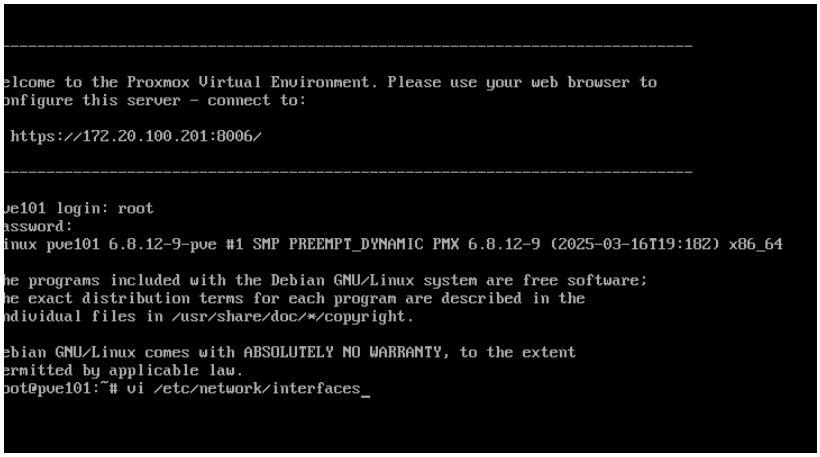
9. Login as root with the password you set.
   a. 

10. Test networking by pinging the gateway or other known good IP: ping 172.20.0.1
    a. 

    b. As you can see, network connectivity is not presently functioning because our environment uses TRUNK ports for everything except iSCSI storage. We will need to configure our VLAN at the CLI to proceed

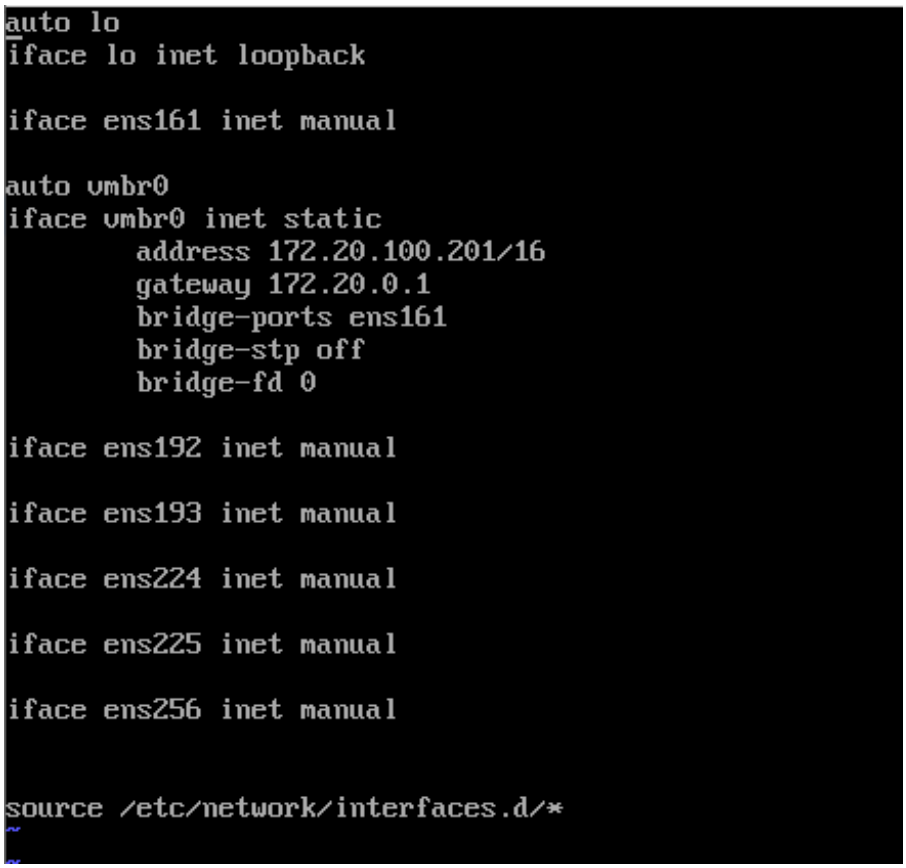
If you use VLANs and ping was unsuccessful, run: vi /etc/network/interfaces

c.



11. This is the configuration created by the installer without VLAN

a.



12. If you use VLANs (TRUNK ports), you will need to make your initial config look like the example, except substituting your correct values.

```
auto lo
iface lo inet loopback

iface ens161 inet manual

auto vmbr0.26
iface vmbr0.26 inet static
        address 172.20.100.201/16
        gateway 172.20.0.1

auto vmbr0
iface vmbr0 inet manual
        bridge-ports ens161
        bridge-stp off
        bridge-fd 0
        bridge-vlan-aware yes
        bridge-vids 24-26

iface ens192 inet manual

iface ens193 inet manual

iface ens224 inet manual

iface ens225 inet manual

iface ens256 inet manual


source /etc/network/interfaces.d/*
```

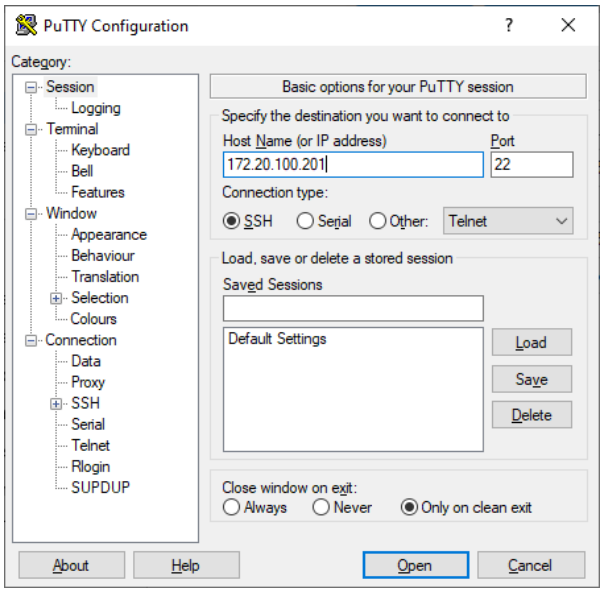
a.
b. We are using VLAN 26, so we have specified that in several places with: vmbr0.26
c. We have also separated the bridge settings and added some VLAN specific lines under: auto vmbr0

13. Reboot

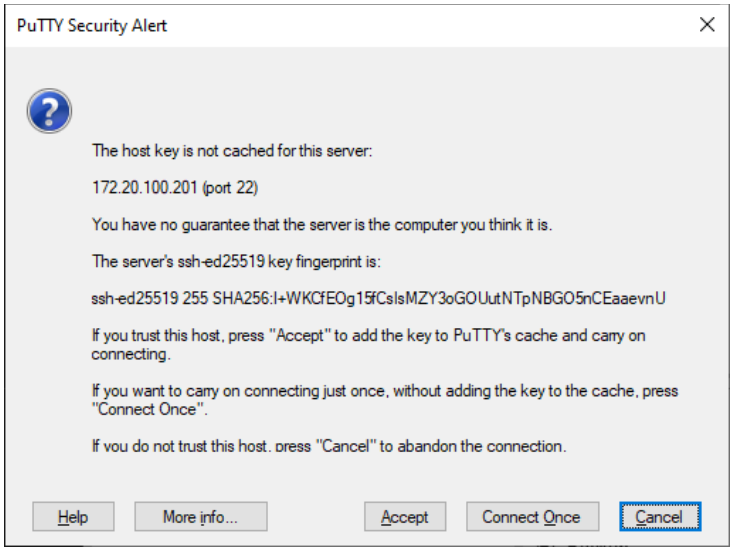
Initial Updates for PVE

1. Now we can access the PVE host in-band at its assigned IP address with SSH

a.

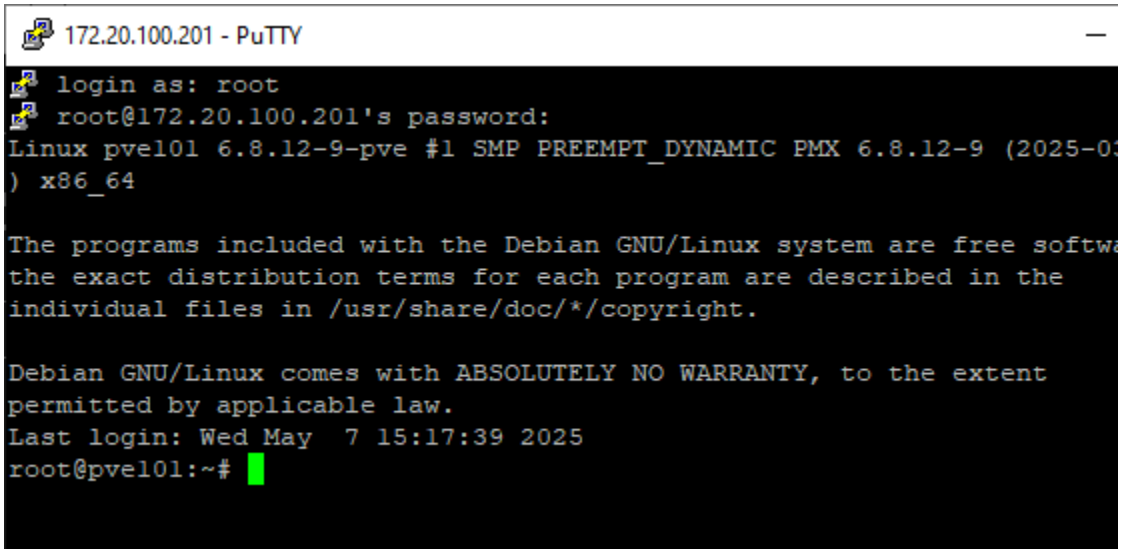


b.



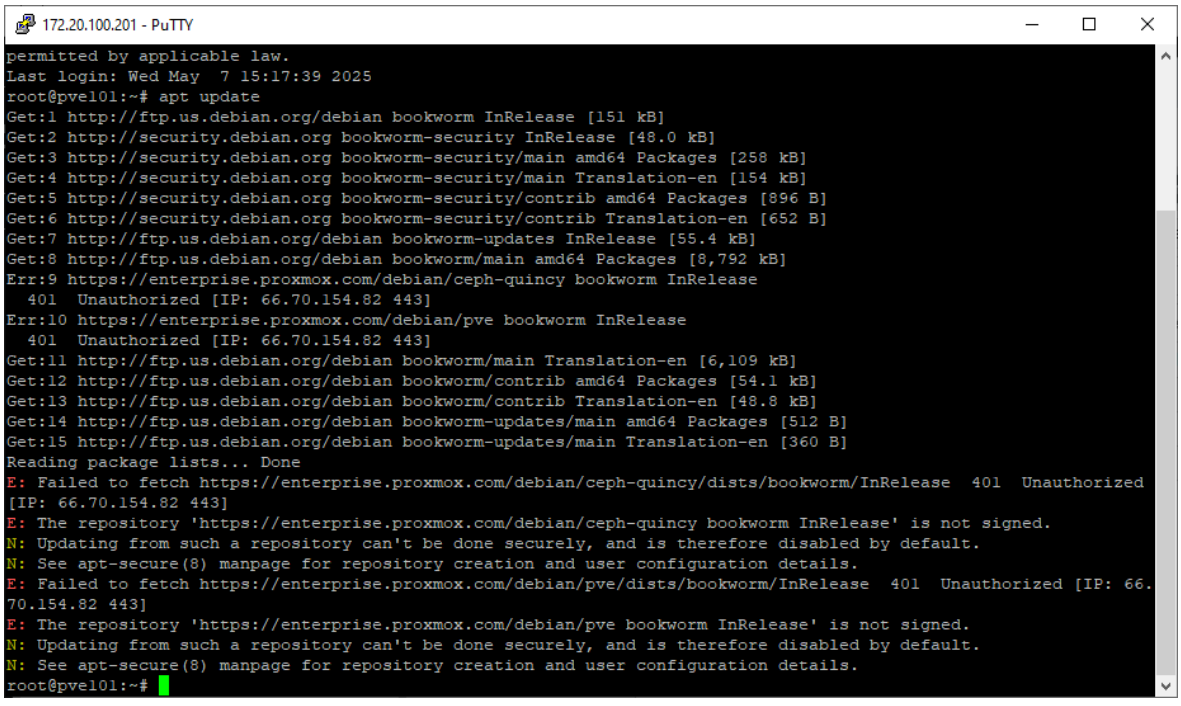
2. Login as: root

a.



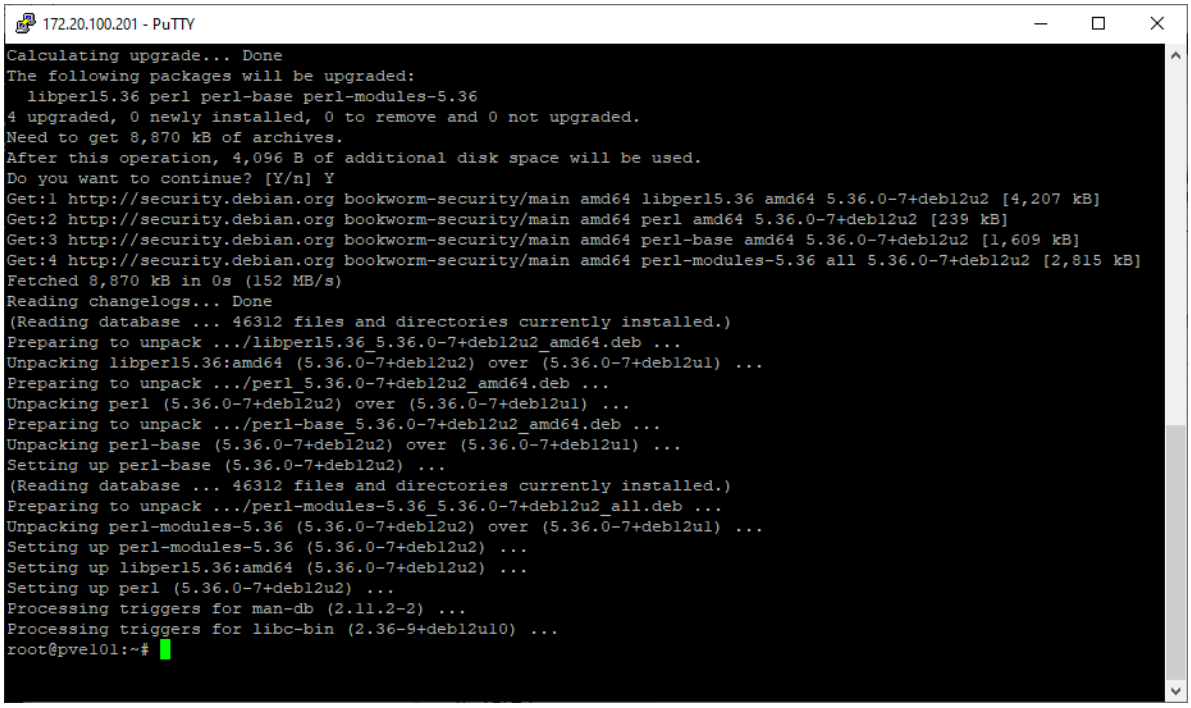
3. Run: apt update

a.



4. Run: apt upgrade

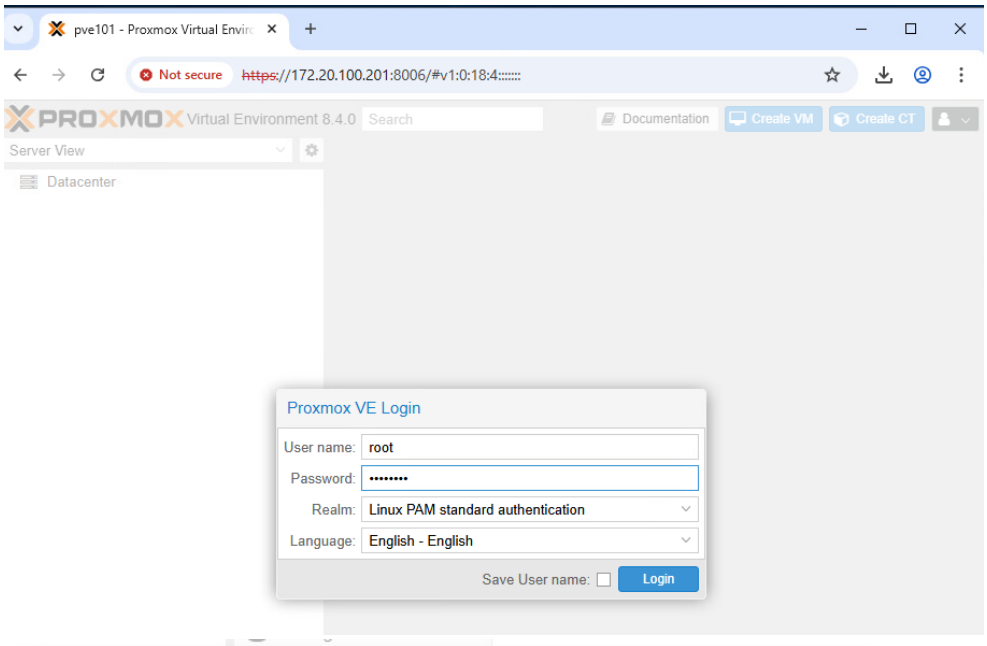
a.



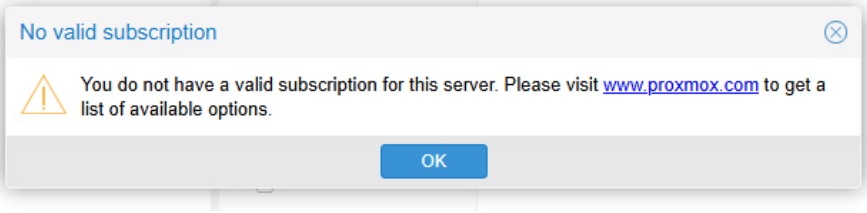
GUI Network Config for PVE

1. Now connect to the GUI at: https://<IP>:8006

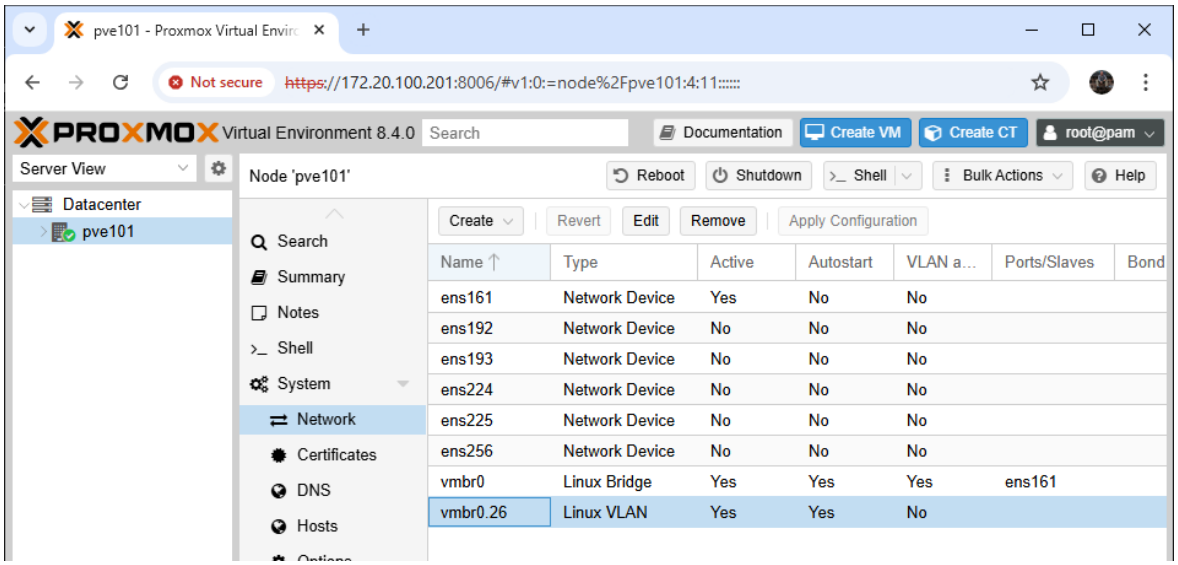
a.

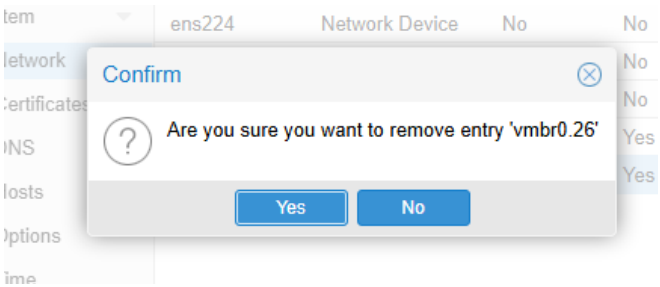


b.

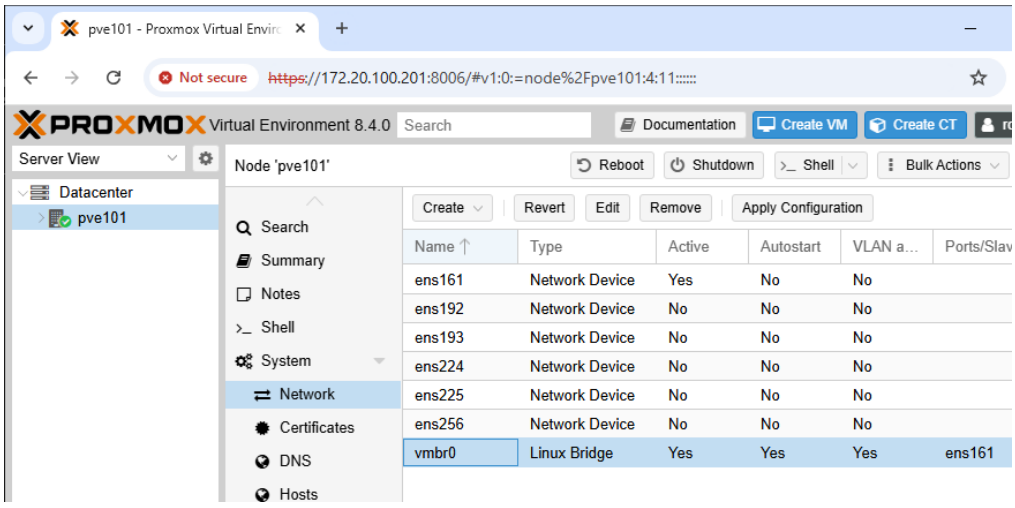


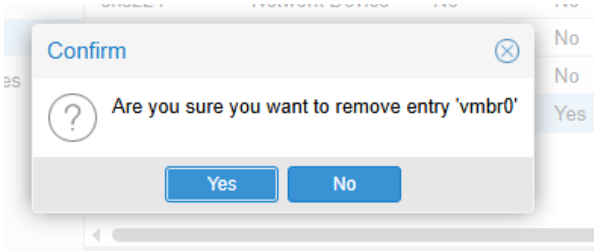
2. First thing we are going to do is setup the basic network for trunking all available TRUNK ports. Select the LinuxVLAN (if specified) and remove

a. 

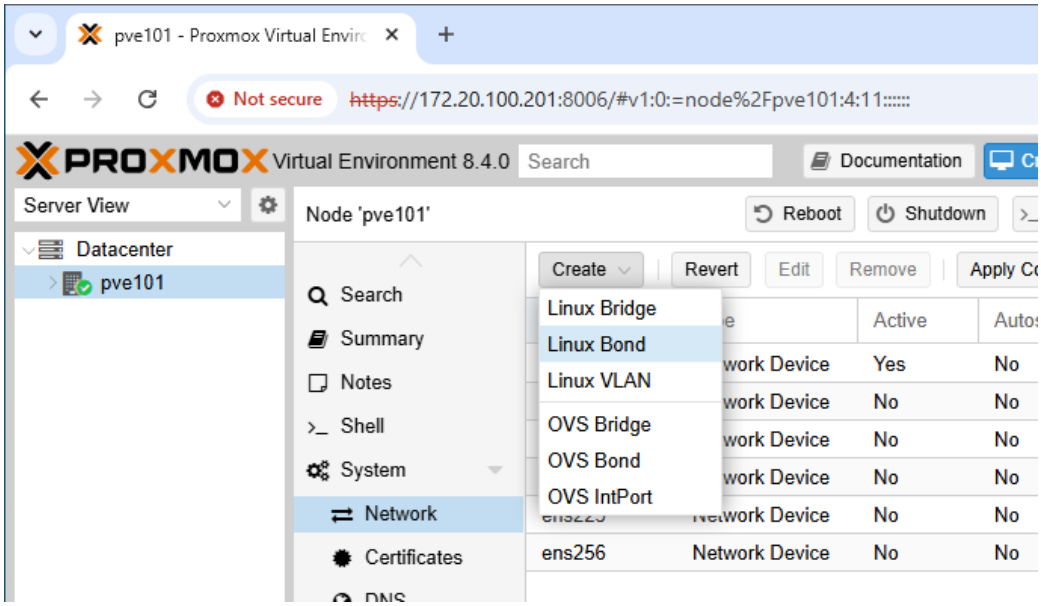
b. 

3. Now select the bridge itself and remove

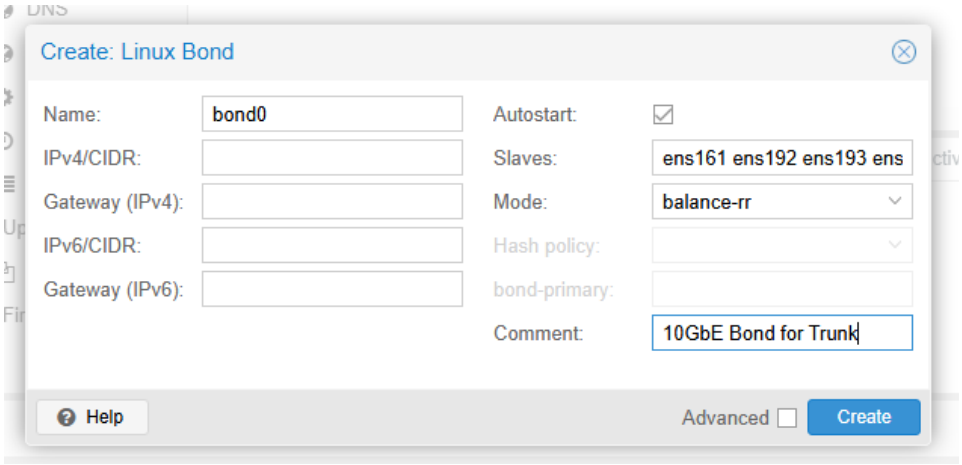
a. 

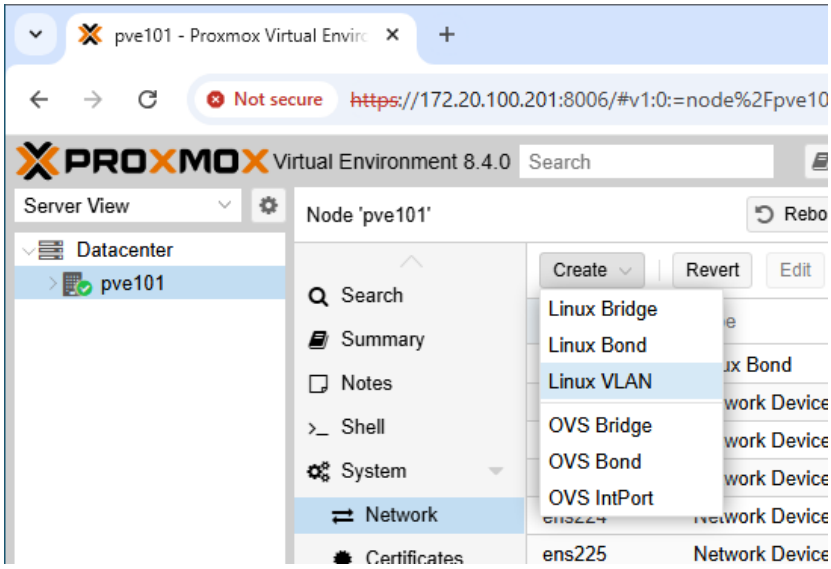
b. 

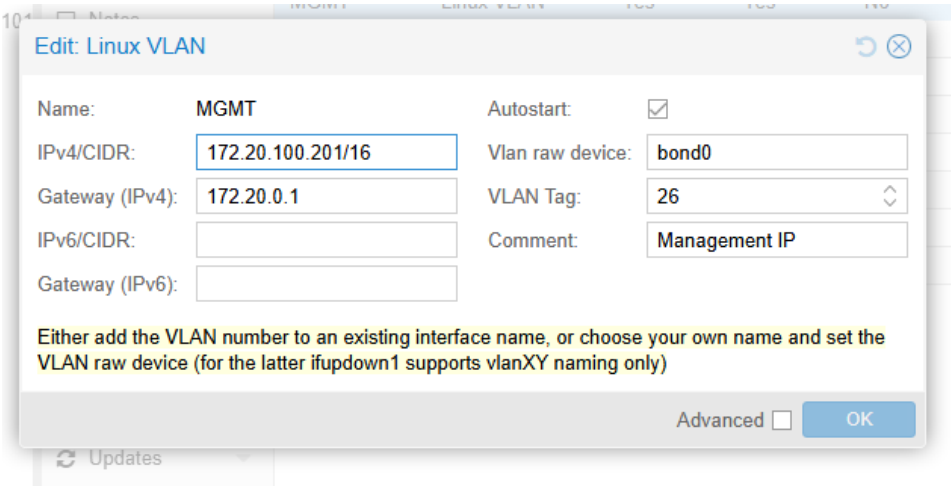
4. Now we'll add a Bond so that we can specify load-balancing

a. 

b. Set the Bond to use all TRUNKED ports available and name it

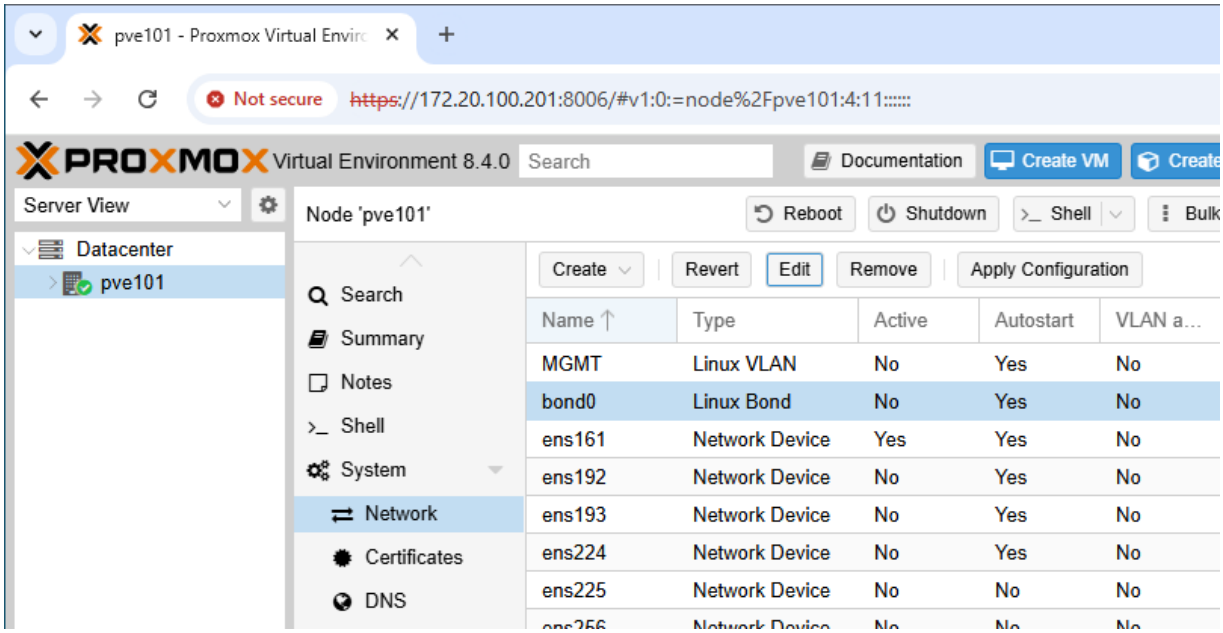
c. 

5. Next we'll create a Linux VLAN (IP) on the bond for management
   a. 

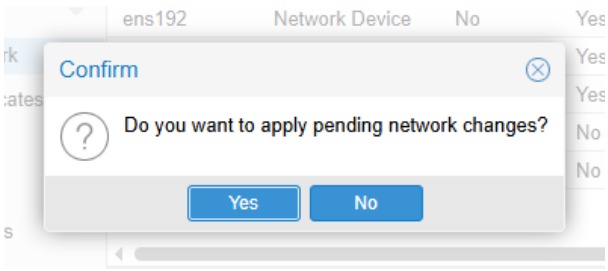
   b. Specify a name, IP, Gateway, bond and VLAN as shown
   c. 

6. Now Apply Configuration

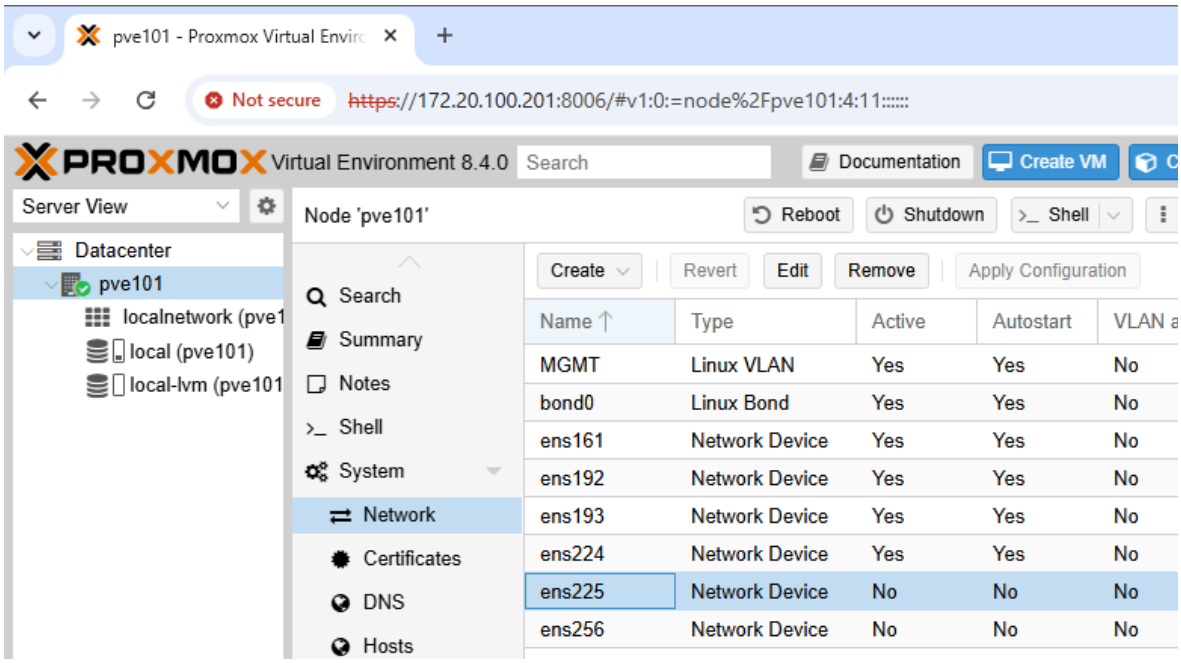
a.

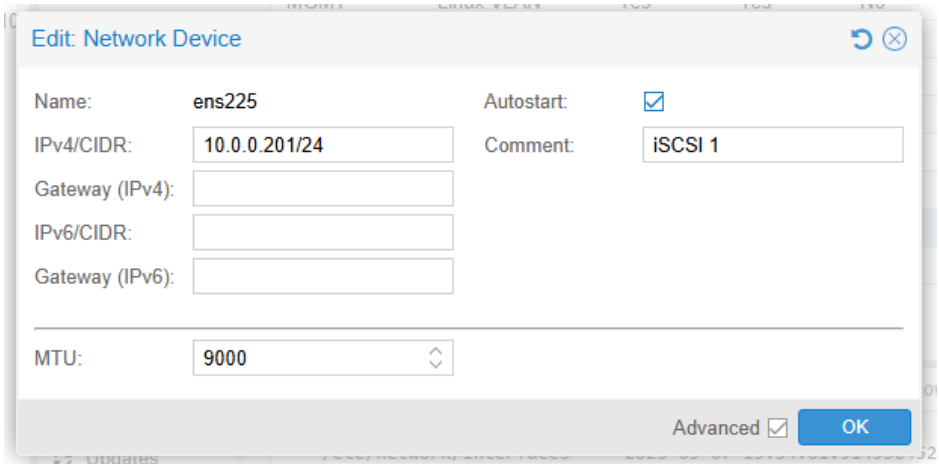


b.

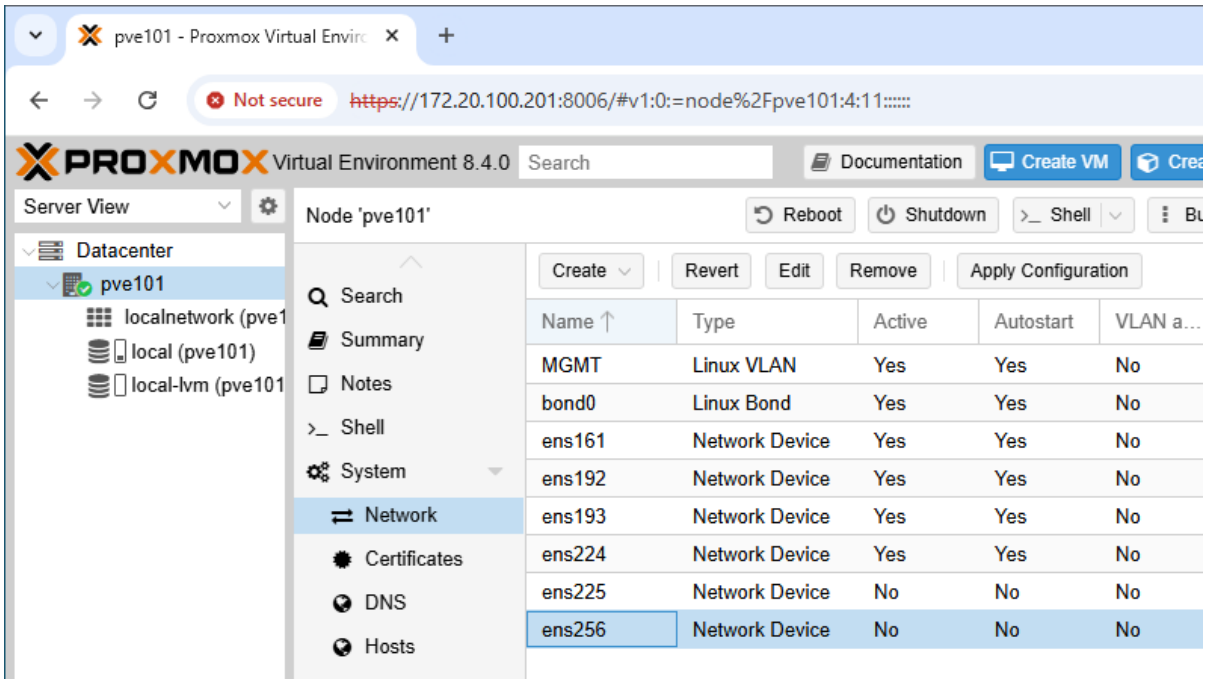


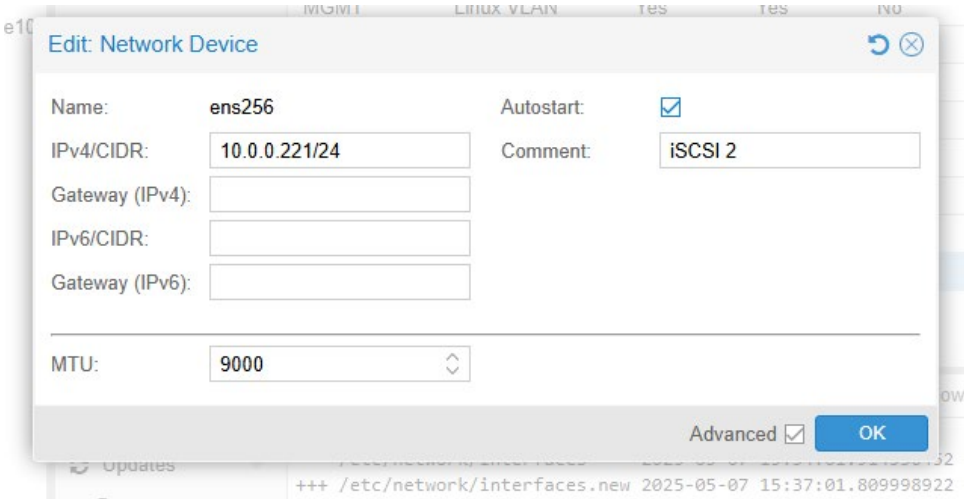
GUI iSCSI Config for PVE

1. We are going to set up networking for iSCSI. Choose an iSCSI interface and select Edit.
   a. 

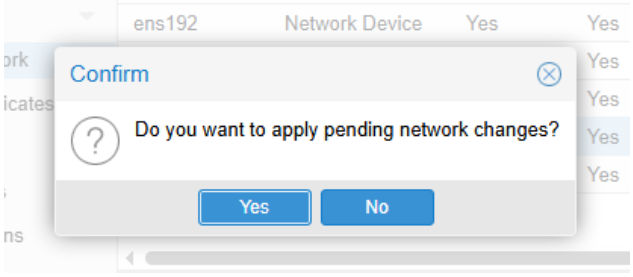
   b. Give the iSCSI interface an appropriate IP on your storage network, set MTU and name it.
   c. 

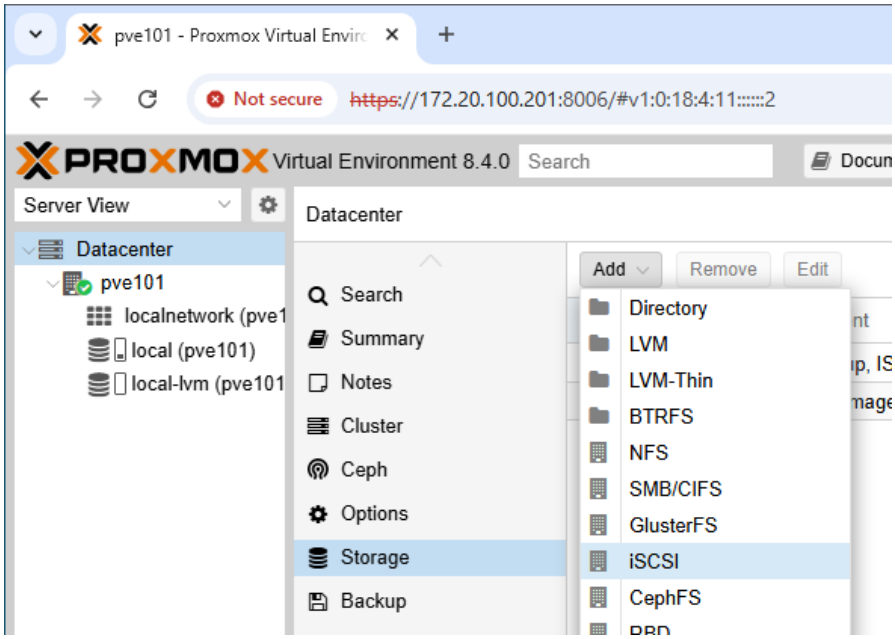
2. If you have more than one iSCSI interface, do the same for all of them,

a. 

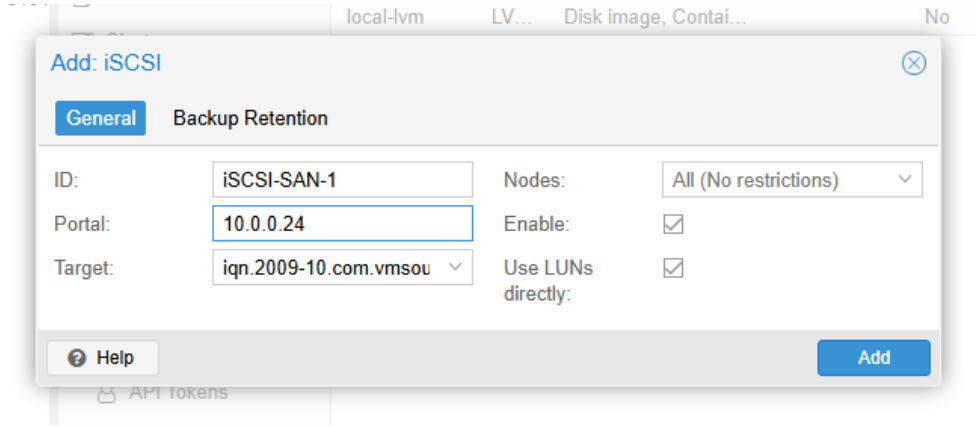
b. 

c. Apply changes.

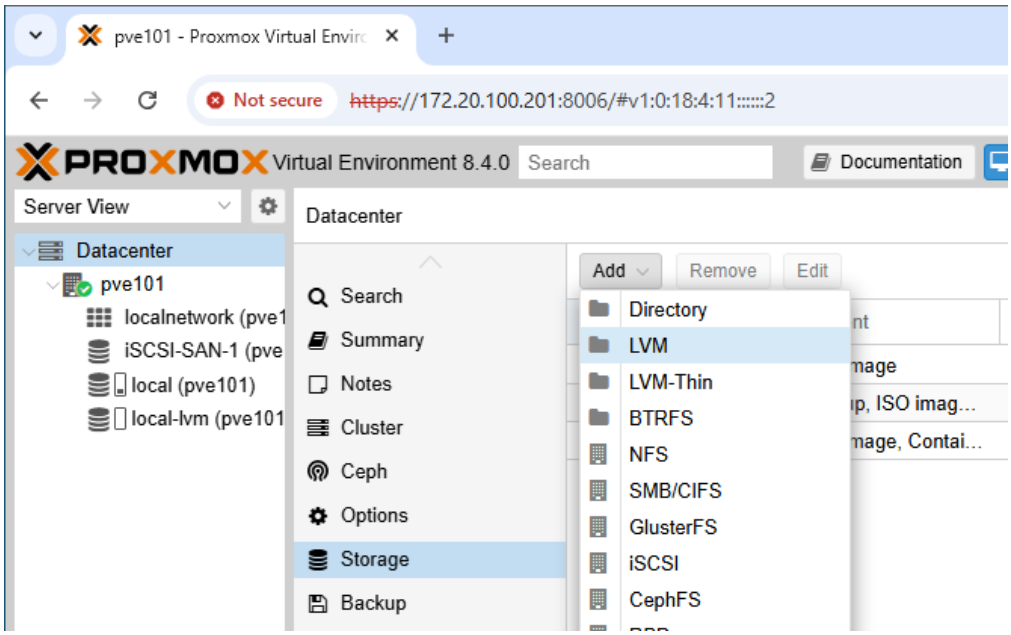
d. 

3. Now we are going to connect to the SAN: Datacenter > Storage > Add > iSCSI
   a. 

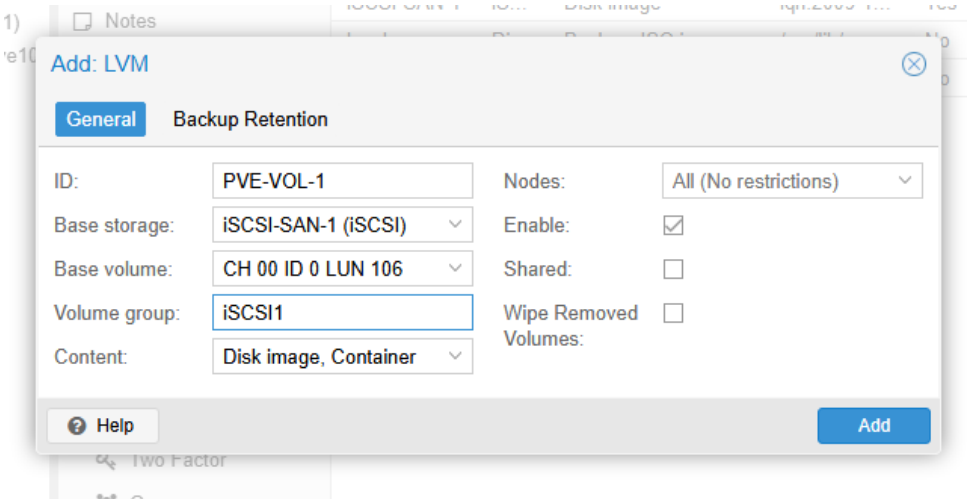
   b. Name the SAN (ID) set the SAN discovery IP (Portal) and then your SANs IQN should show up (Target). If your SAN has more than one IQN, select the appropriate one for PVE.



4. Now go to: Datacenter > Storage > Add > LVM (NOTE: LVM is only one of the ways to use iSCSI in PVE)

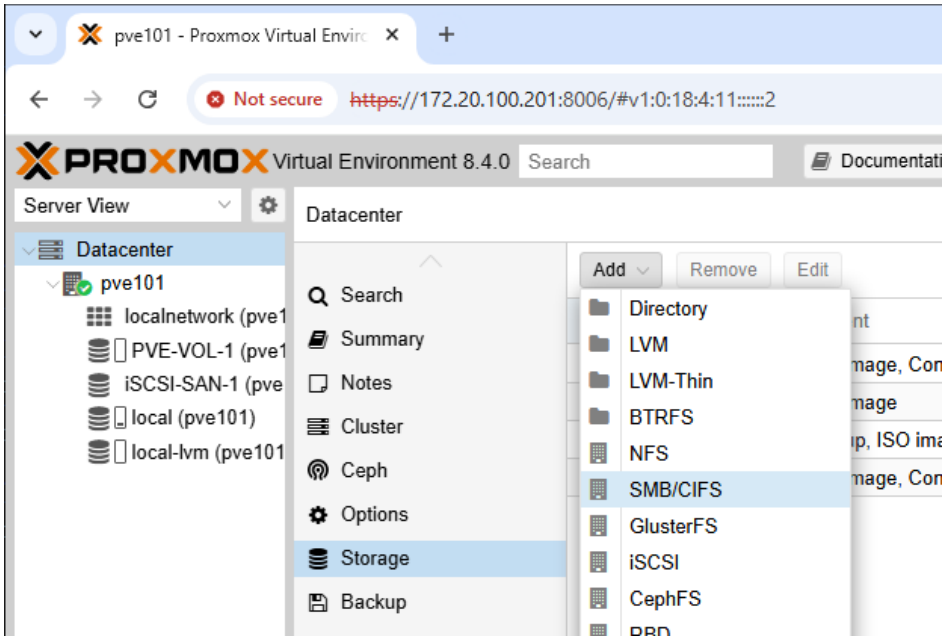
a. 

b. Set the name for your volume (ID), Choose the SAN (Base storage), select the SAN LUN (Base Volume), name the (Volume group) and select Add. **NOTE: Do not use a SAN LUN (Base Volume) that contains any valid or in-use data as this process will overwrite the SAN LUN which you have chosen.**

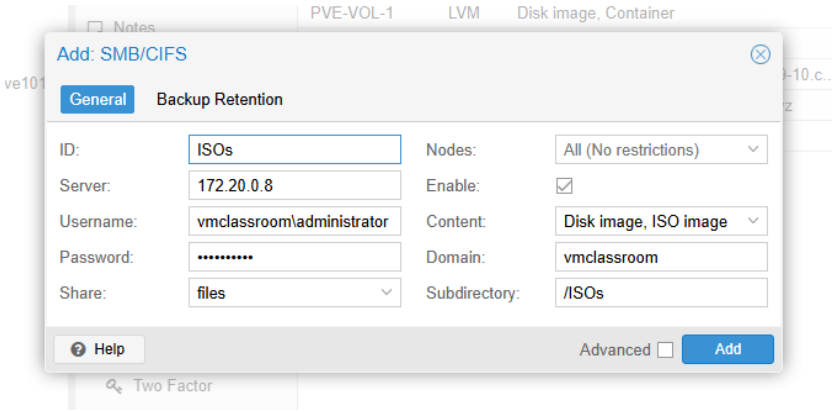
c. 

GUI SMB/CIFS for ISO Images

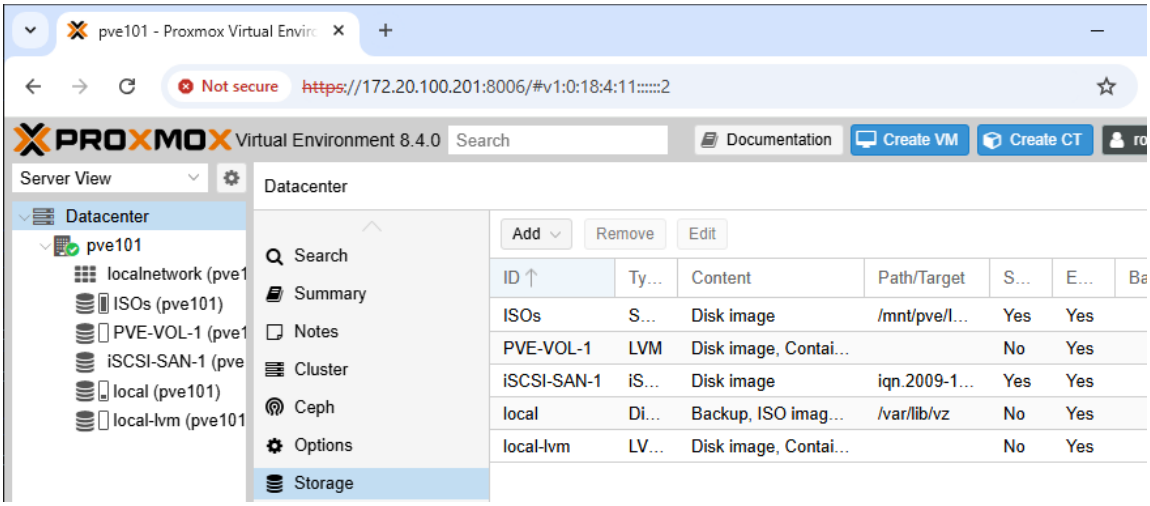
1. Now we are going to set up a SMB share as a source for ISO images: Datacenter > Storage > Add > SMB/CIFS

a. 

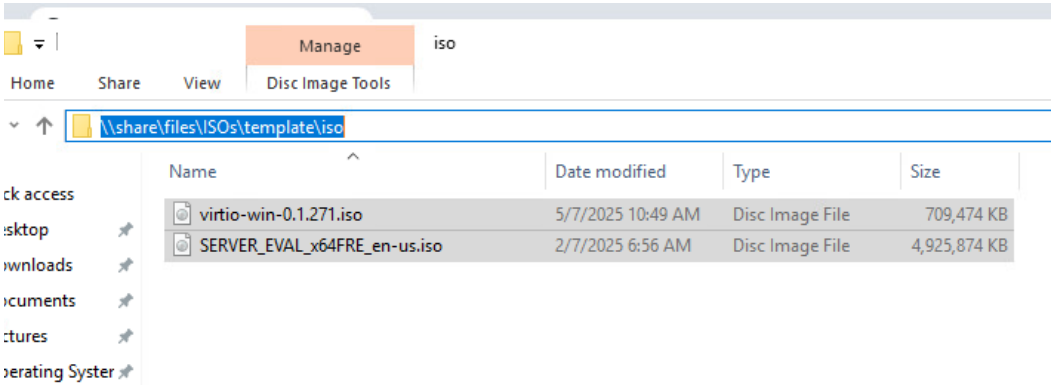
b. Specify the SMB parameters > Add



c. Complete

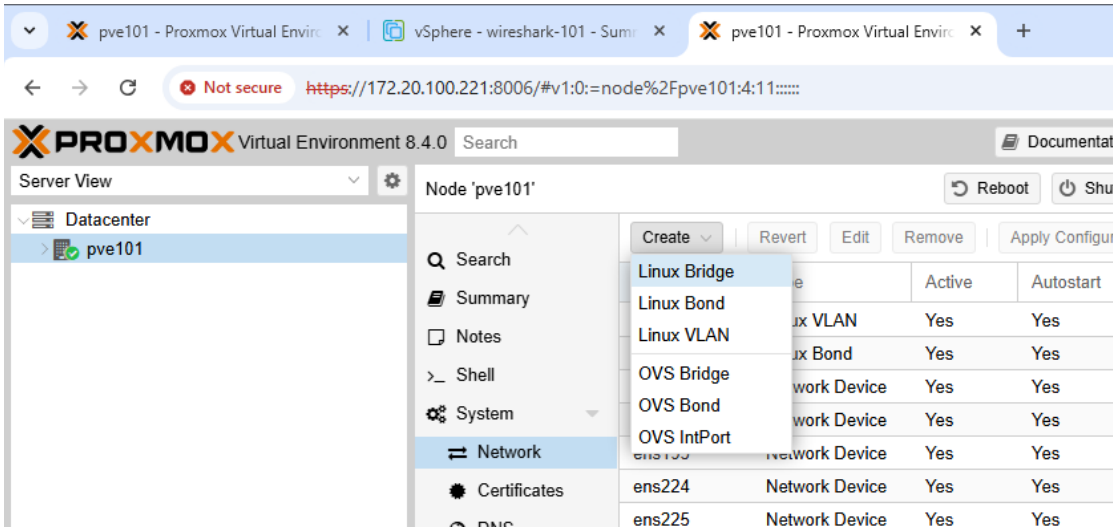
d. 

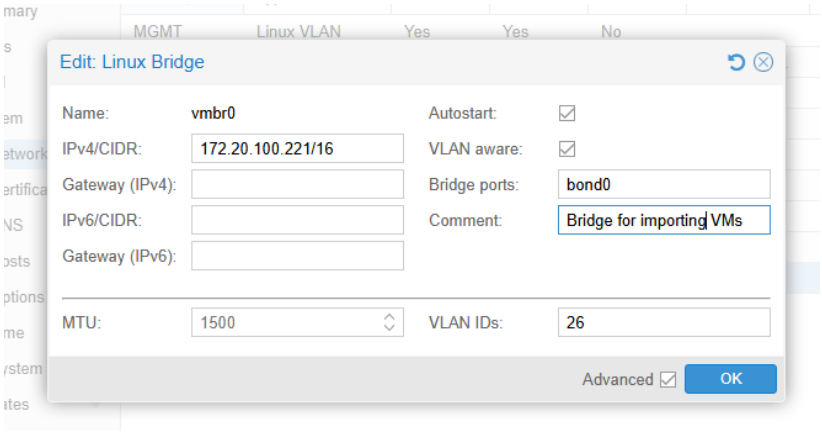
2. PVE will create folders on your SMB/CIFS Share, you need to put the ISOs in the correct folder: <FOLDERNAME>\template\iso

a. 

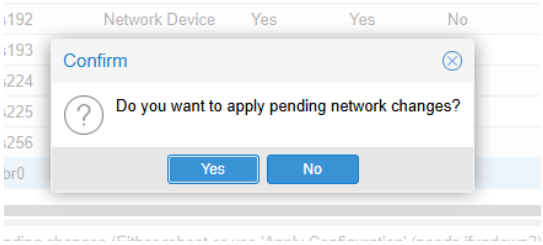
Migrate VMs from ESXi

1. To migrate VMs, we'll need a Bridge: Host > Network > Create > Linux Bridge

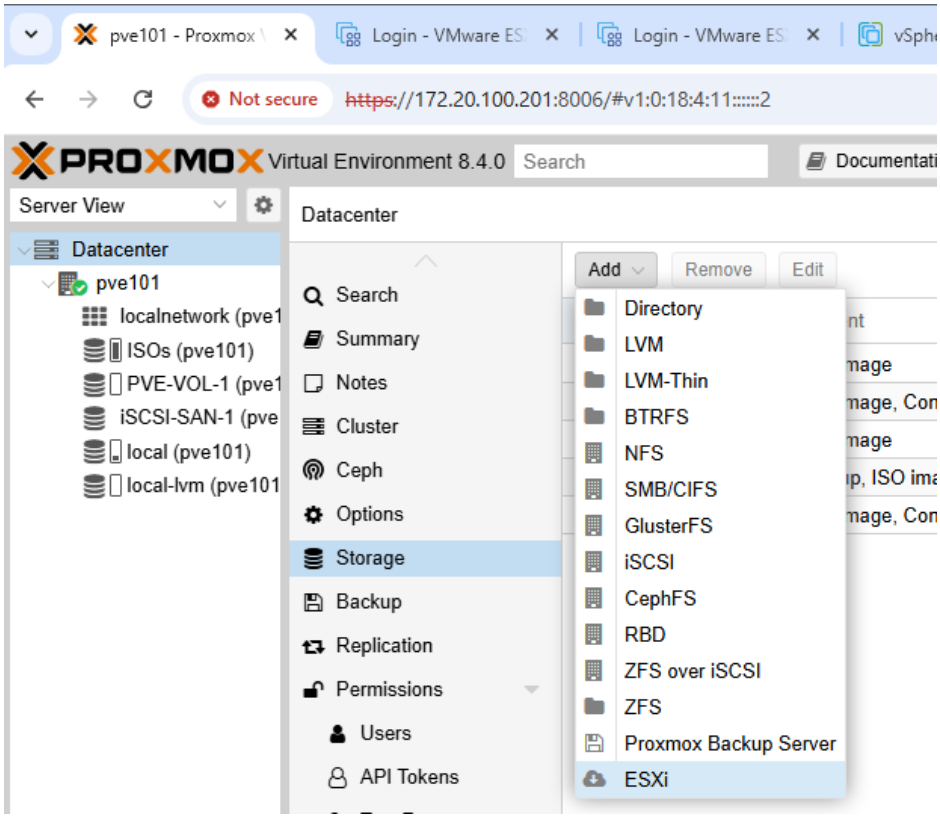
a. 

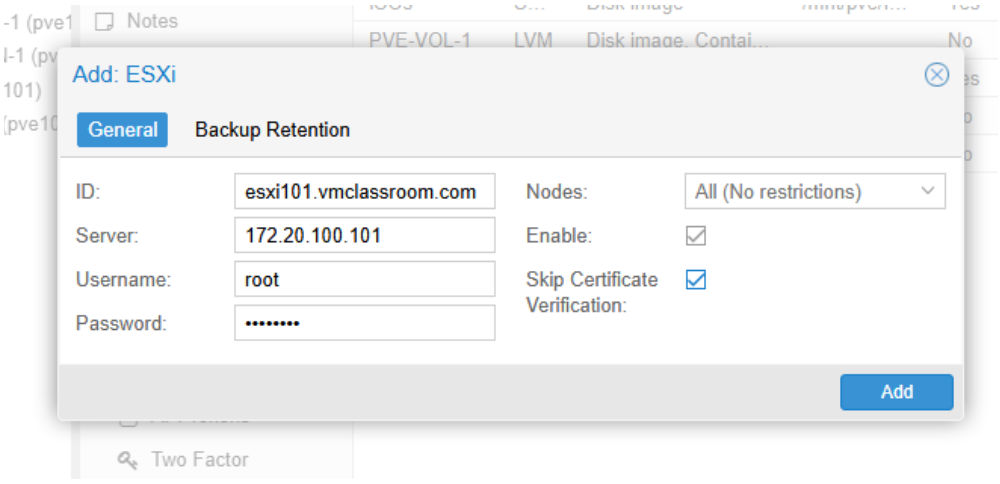
b. 

c. Don't forget to apply configuration

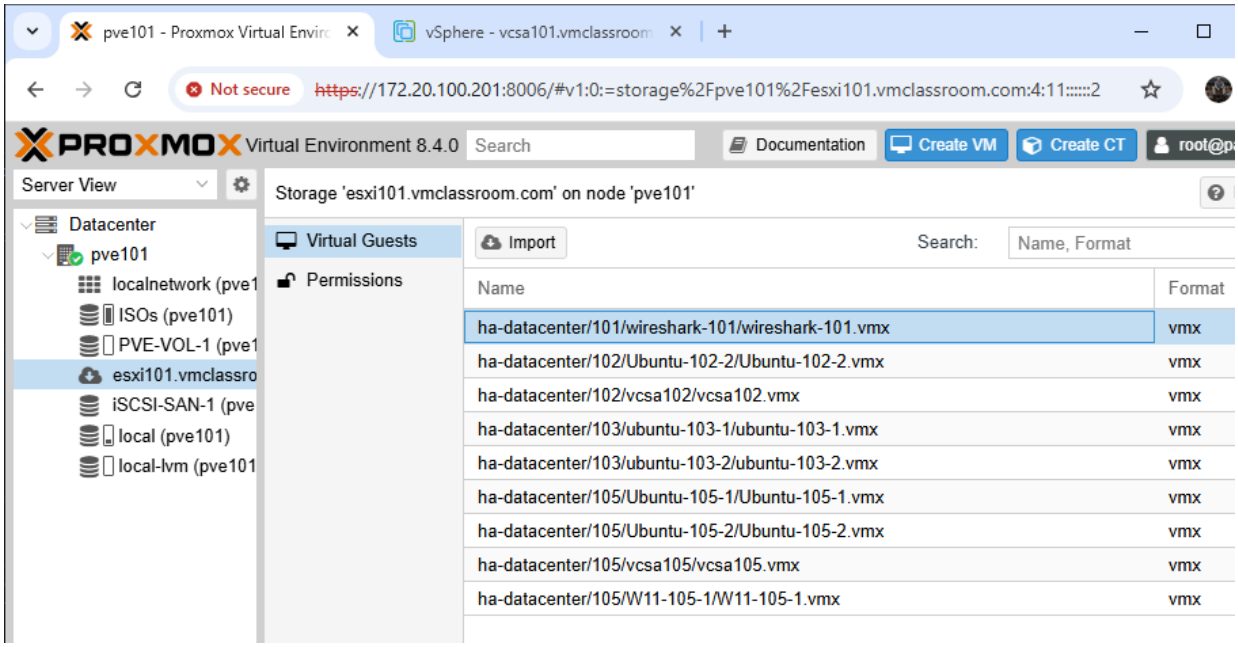
d. 

2. Now we can add our ESXi host(s): Datacenter > Storage > Add > ESXi

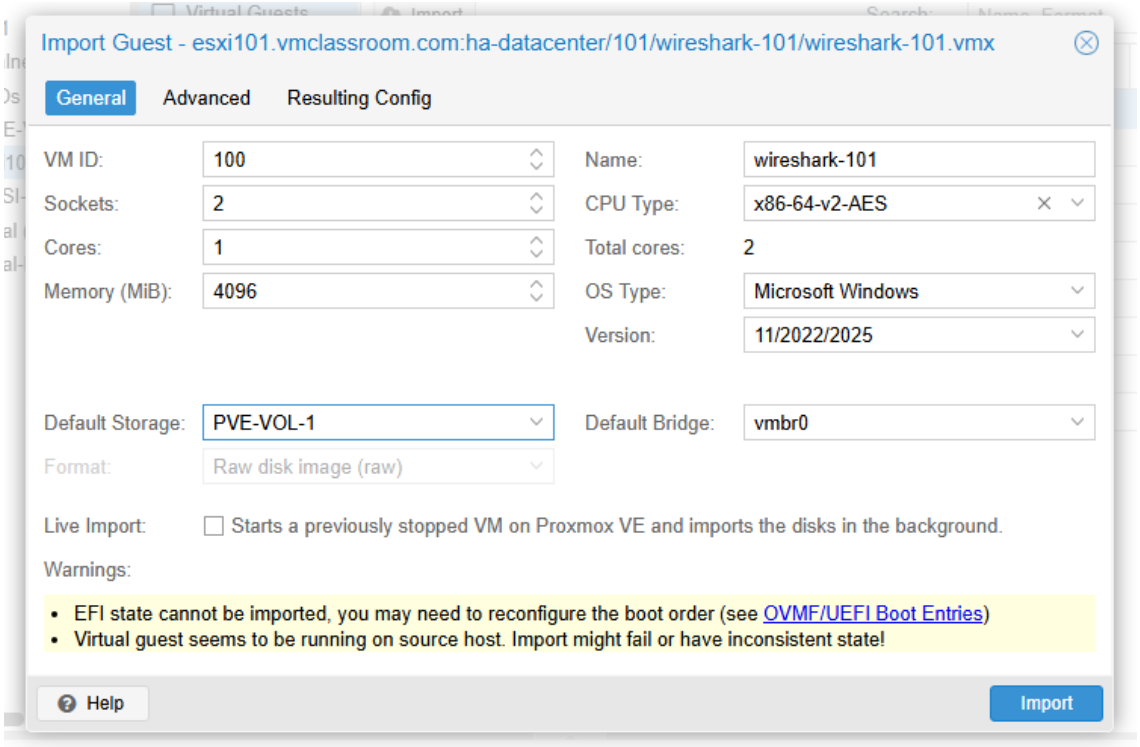
a. 

b. 

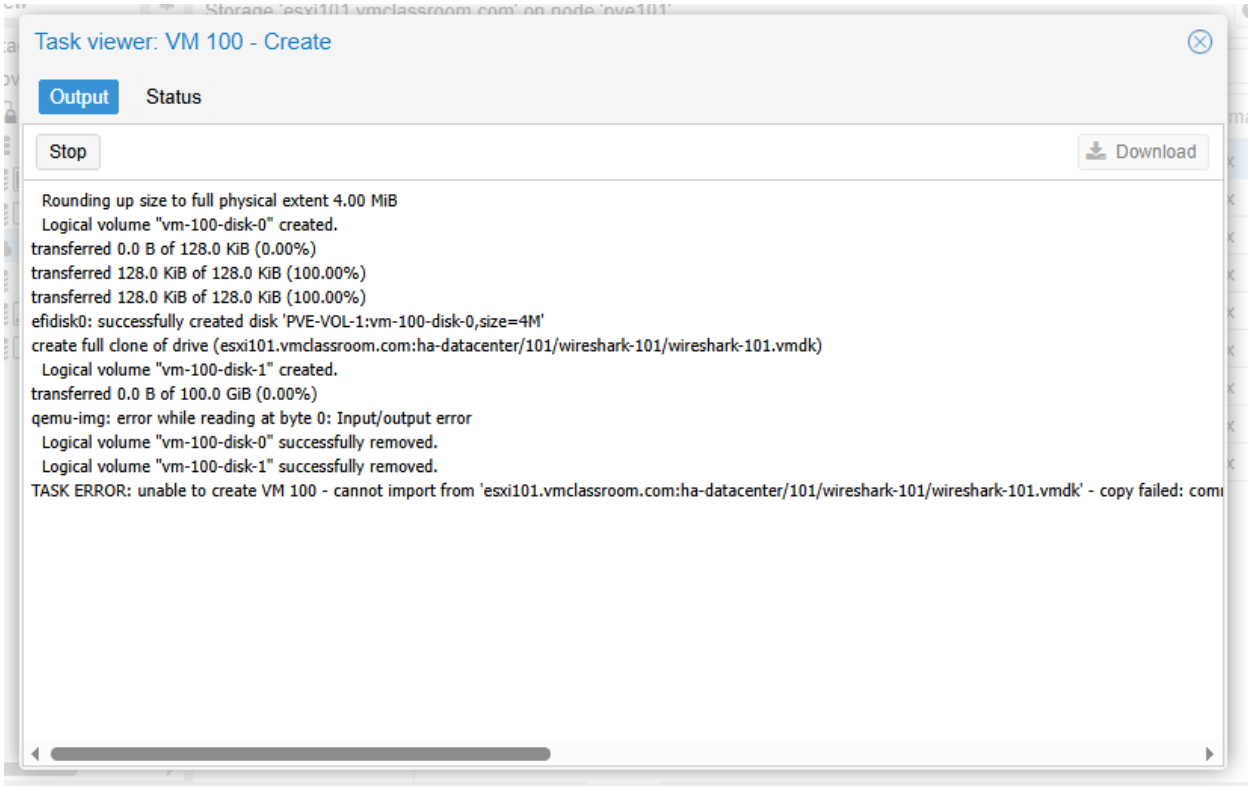
3. At this point we are ready to import VMs from ESXi: PVE Host > ESXi > Import



4. Set the parameters, especially destination storage > Import

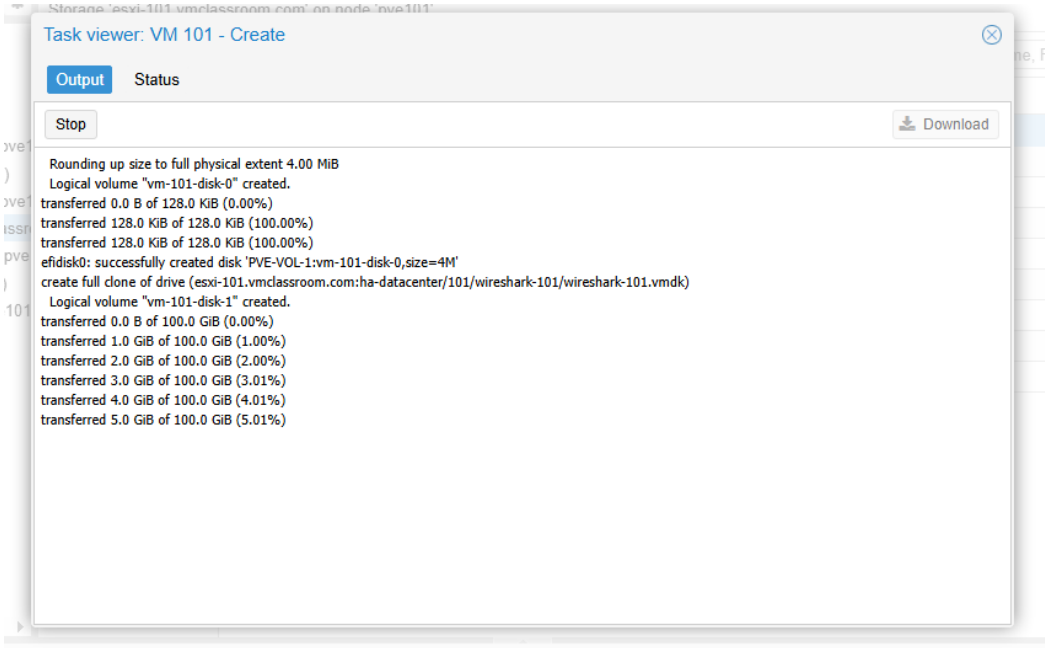


a. If you get an error, the source VM may be powered-on

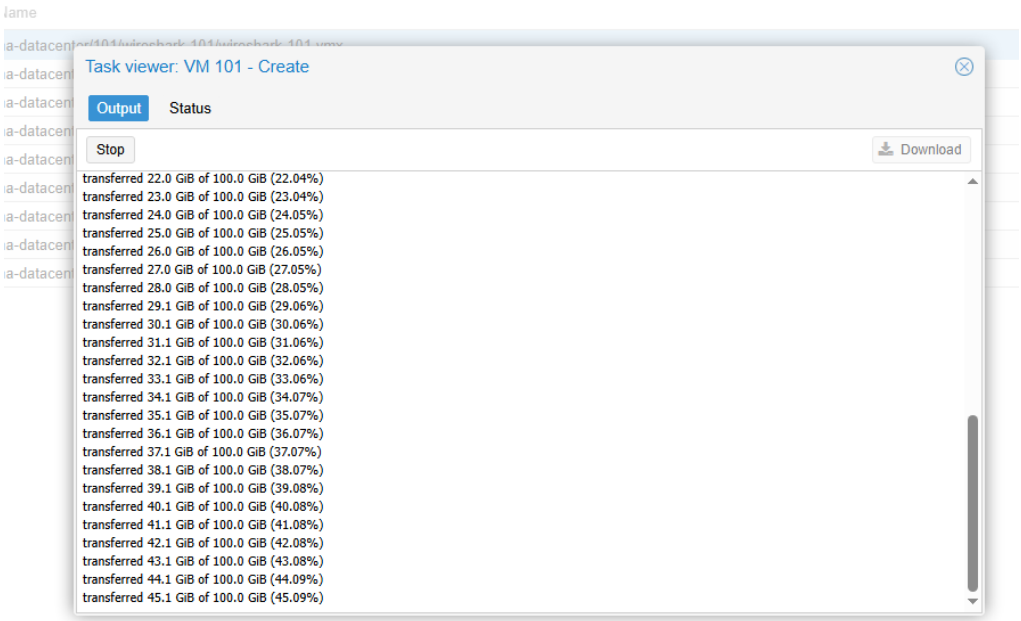


b.

c. This is what it should look like



d.

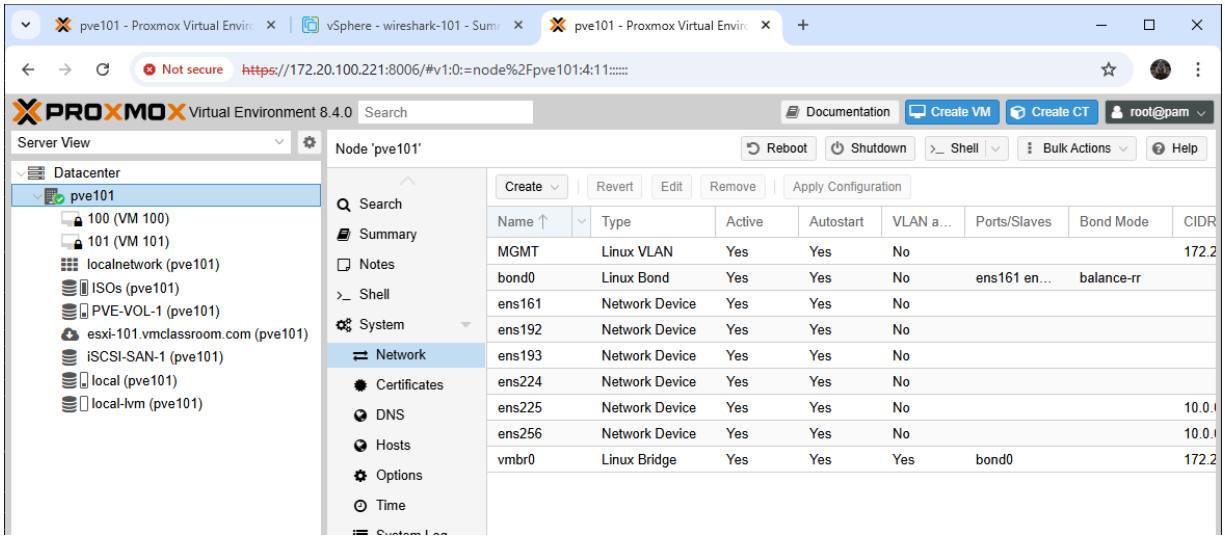


e.

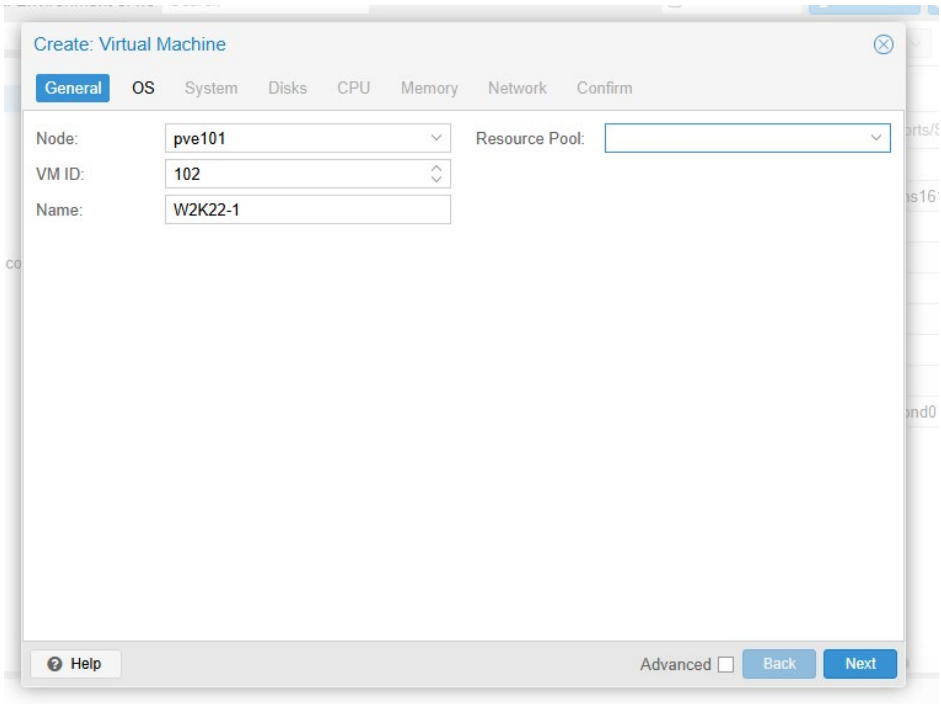
5. Once the VM is fully imported, you will need to add or assign the CD/DVD to the VirtIO ISO in the SMB share you created earlier and install the VirtIO Tools for Windows (if it is a Windows VM)

Building a VM

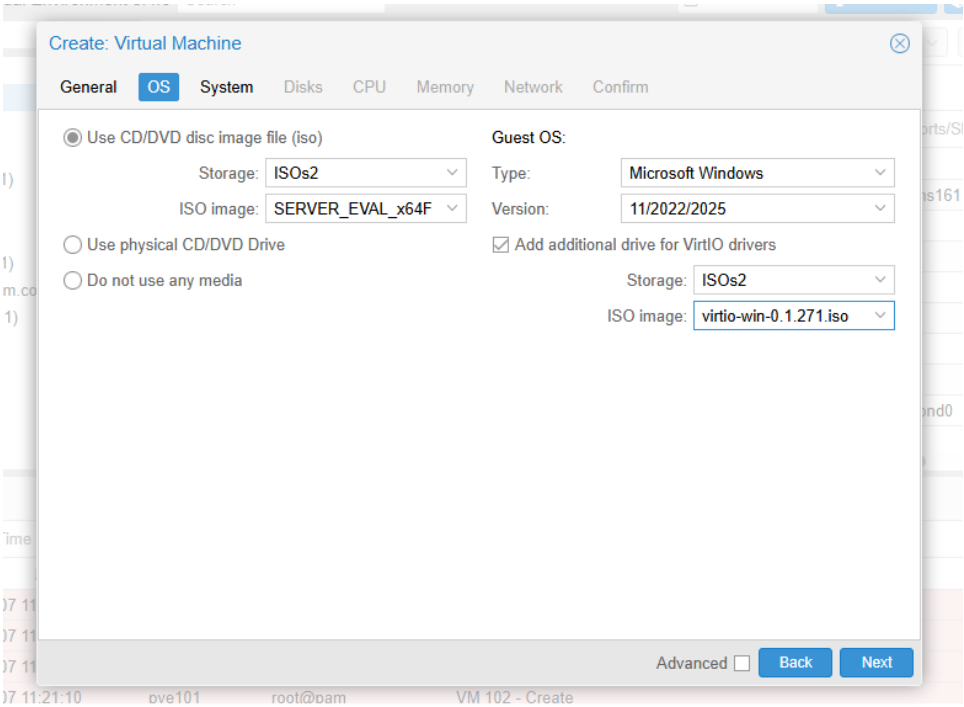
1. Click on > Create VM

a. 

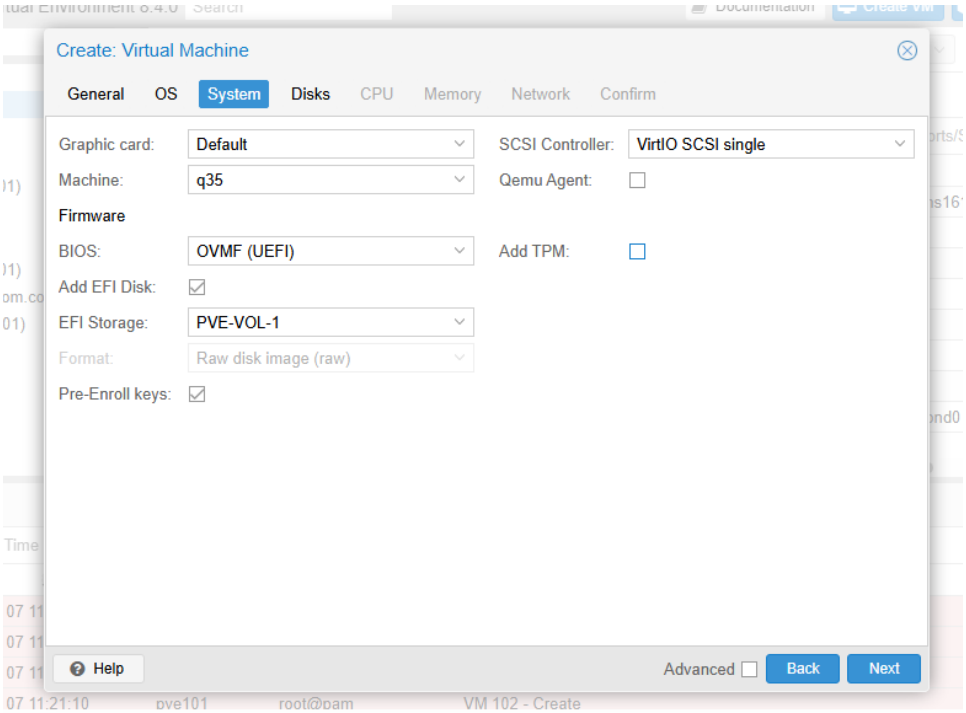
2. Set the VM friendly name

a. 

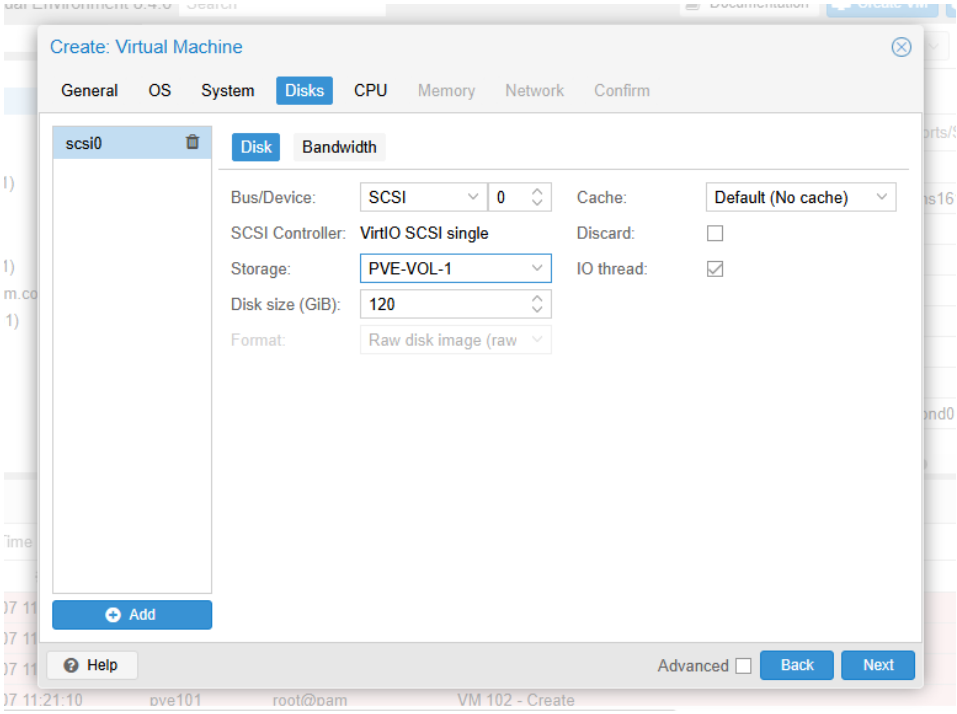
3. Choose the source for the ISO and select your ISO. Then add an additional disk for VirtIO drivers and choose the VirtIO ISO

a. 

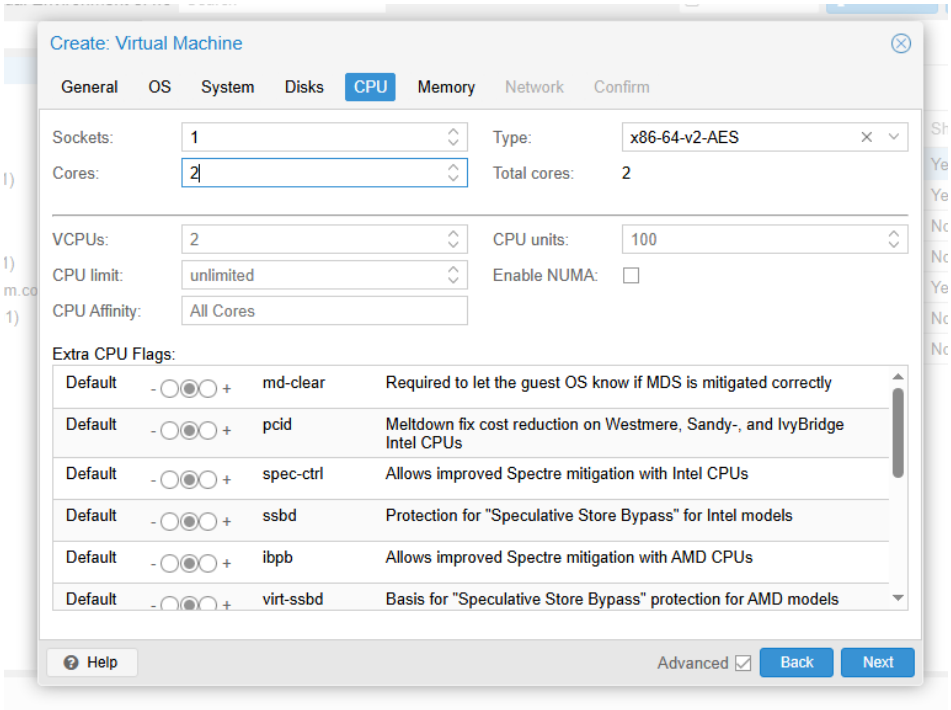
4. Choose EFI Storage (presumably iSCSI SAN volume)

a. 

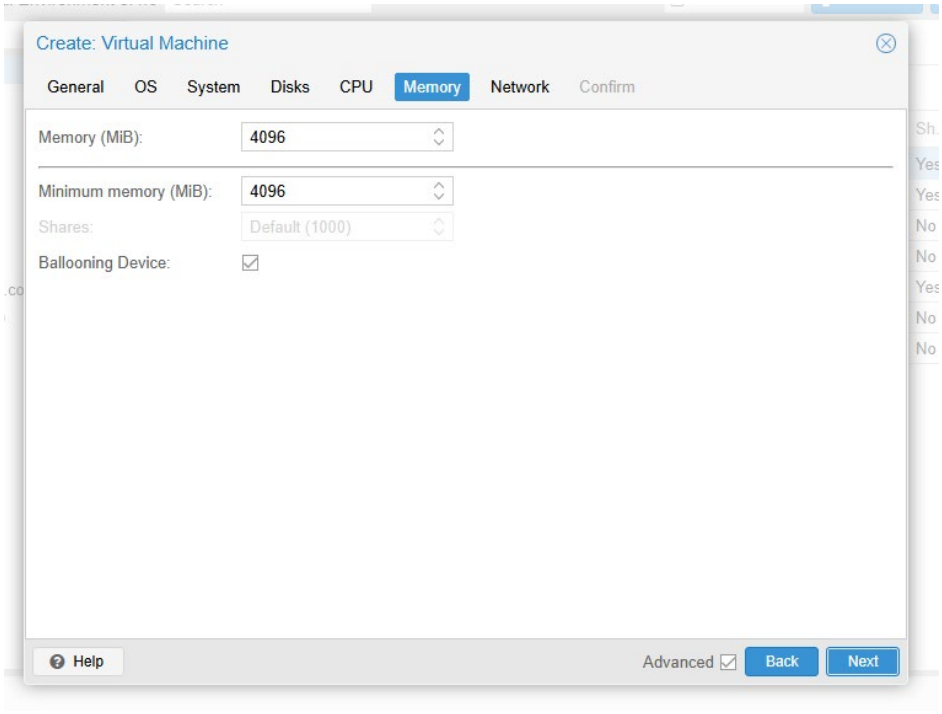
5. Choose disk storage (presumably iSCSI SAN volume)

a. 

6. Set CPU

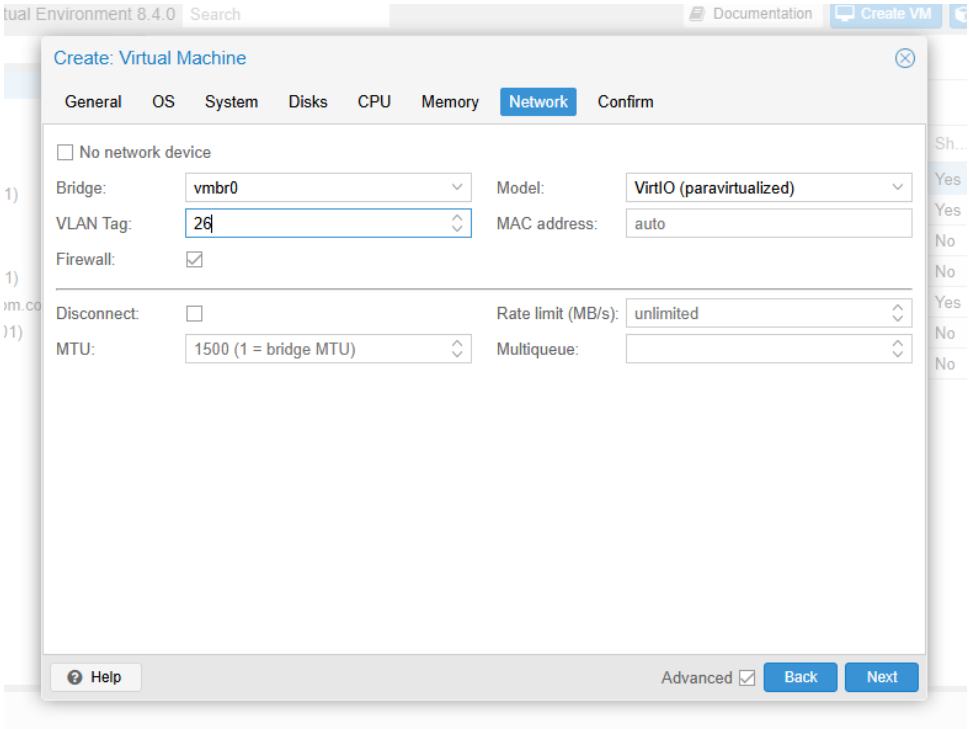
a. 

7. Set memory



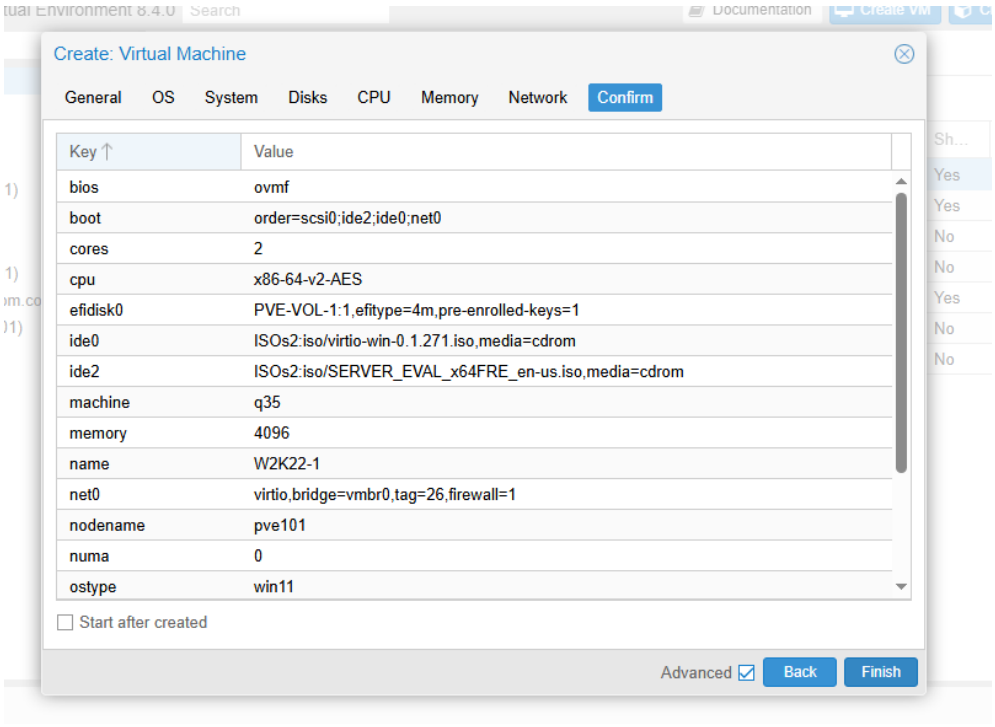
a.

8. Provide a VLAN if required

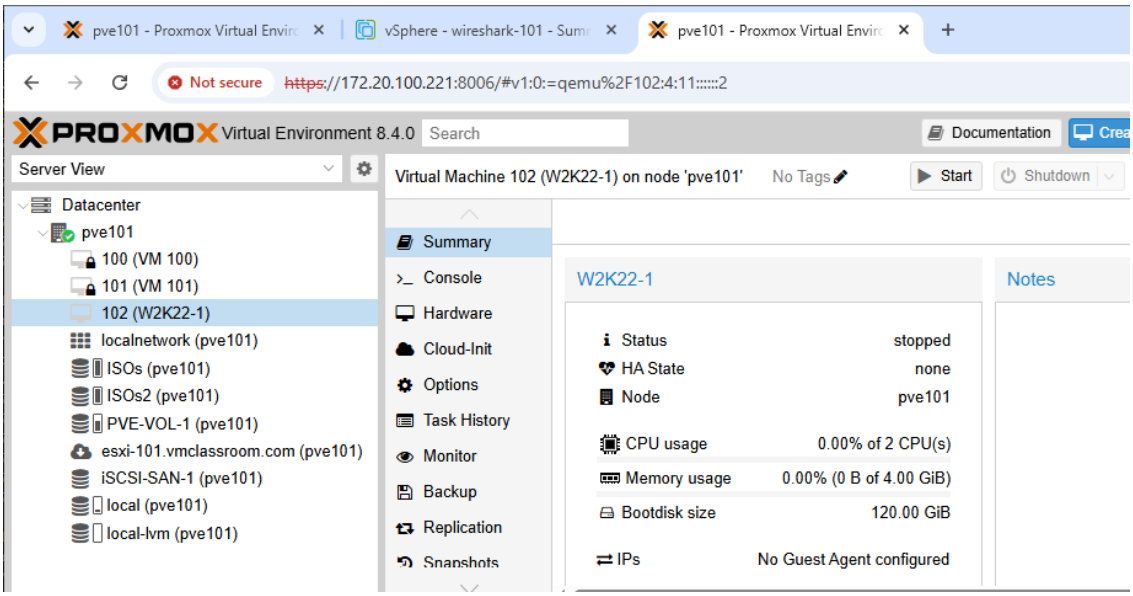


a.

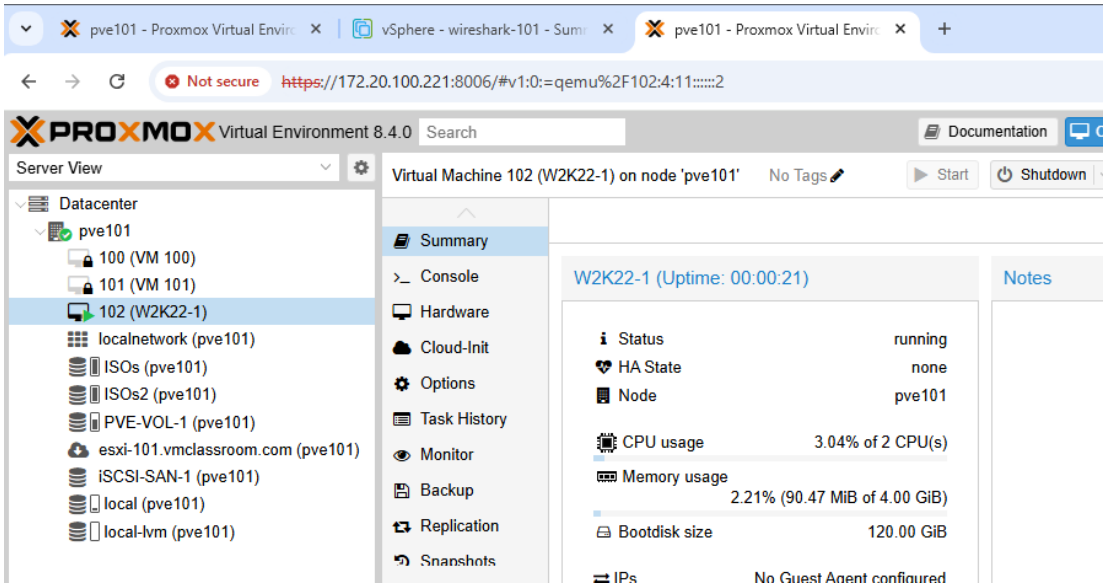
9. Click finish

a. 

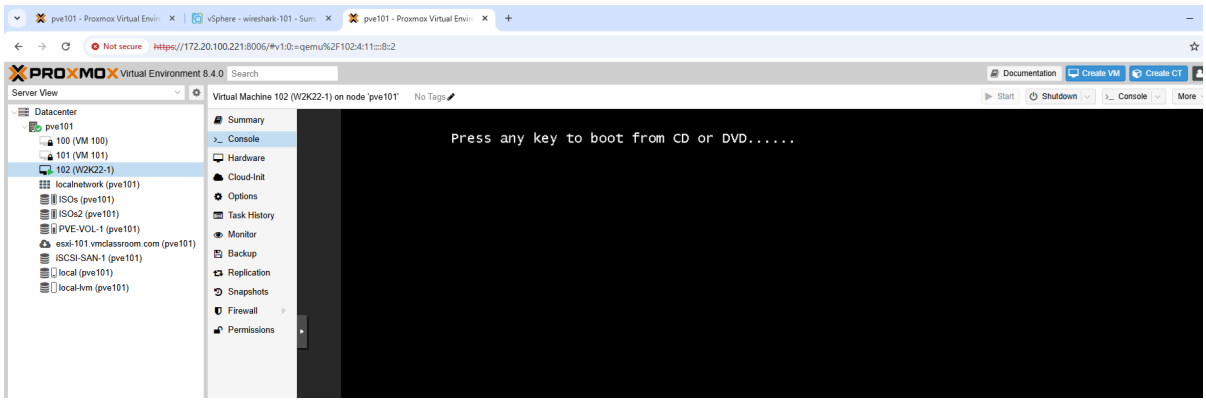
10. Wait for the VM to create and click Start

a. 

11. VM is now on

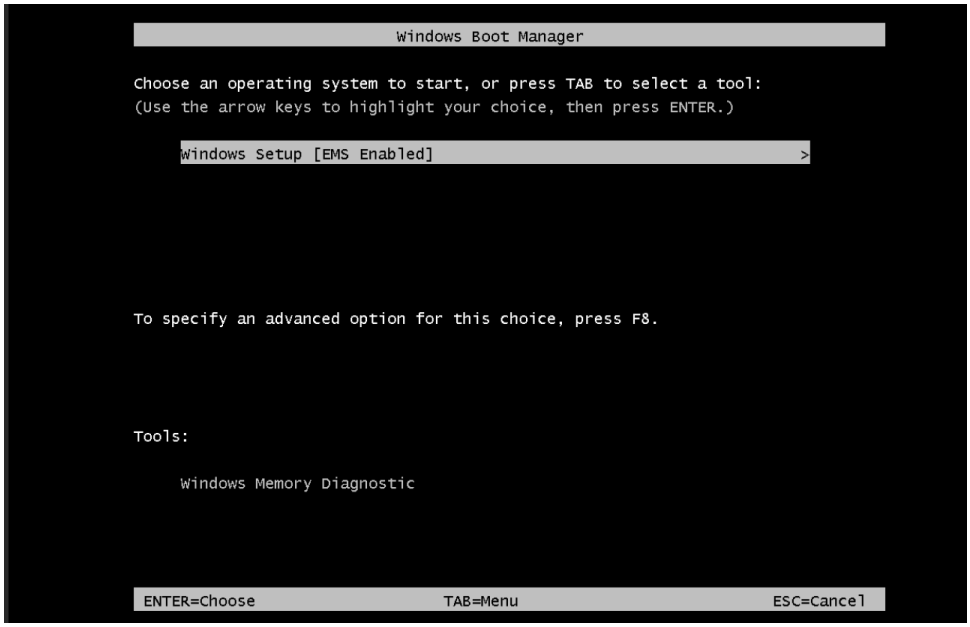
a. 

12. Click your VM > Console. You may need to reset if boot has timed-out and you find yourself at UEFI. Follow standard OS Installation.

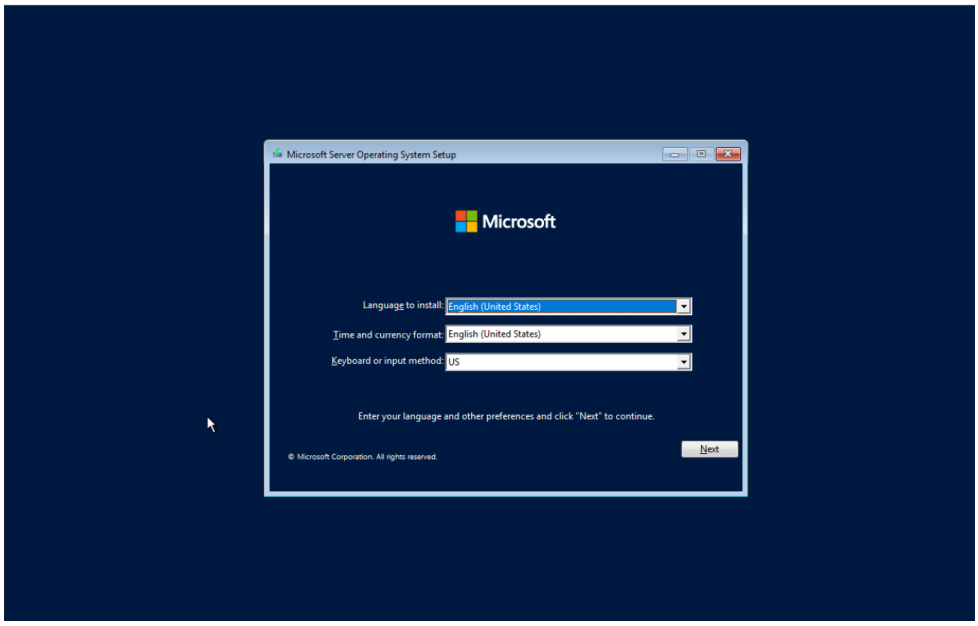
a. 

b. 

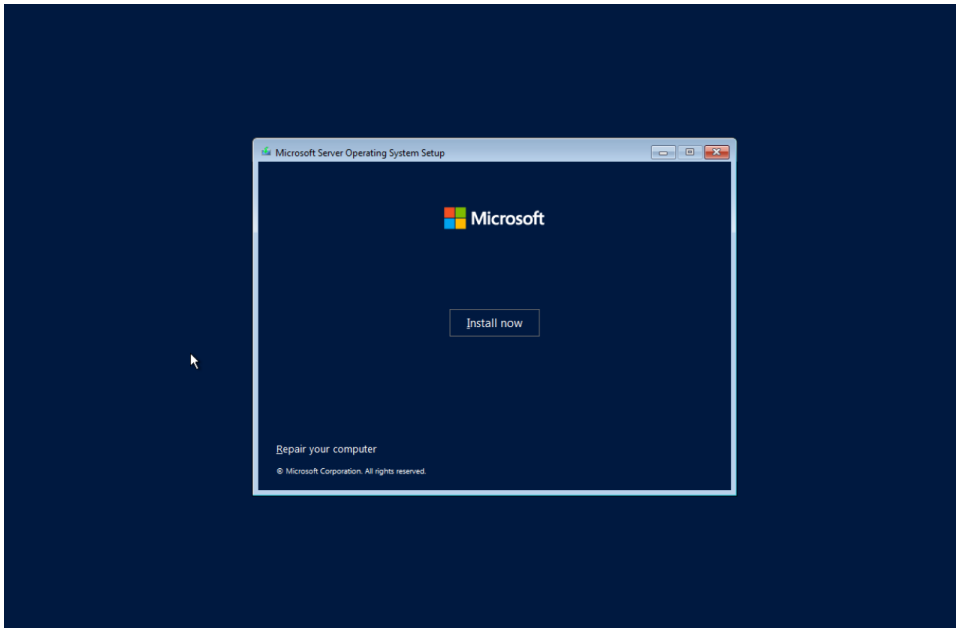
c.


Windows Boot Manager
Choose an operating system to start, or press TAB to select a tool:
(Use the arrow keys to highlight your choice, then press ENTER.)
Windows Setup [EMS Enabled]
To specify an advanced option for this choice, press F8.
Tools:
Windows Memory Diagnostic
ENTER=Choose
TAB=Menu
ESC=Cancel

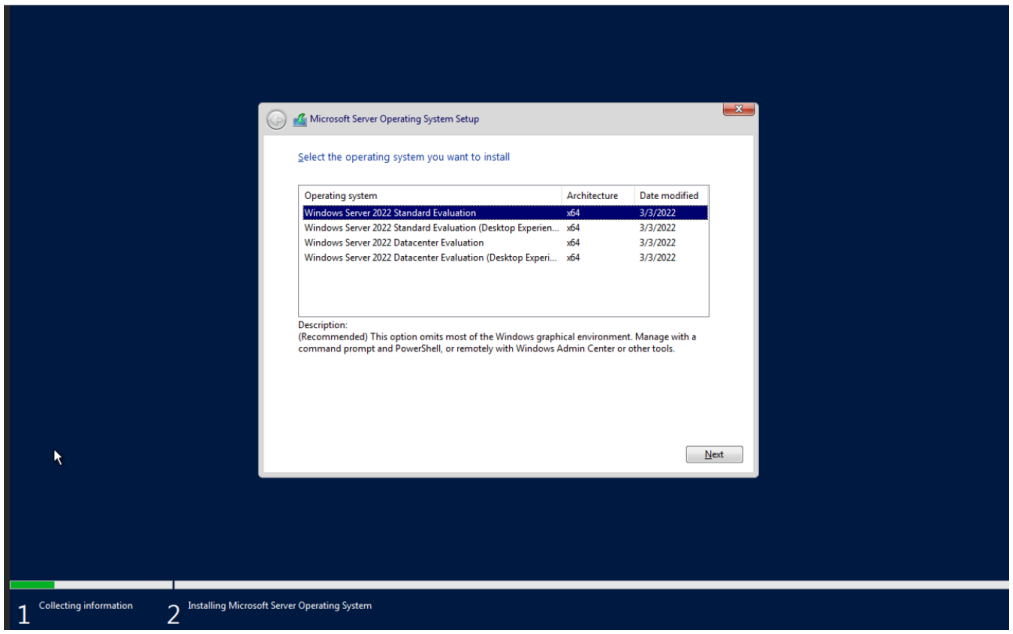
d.

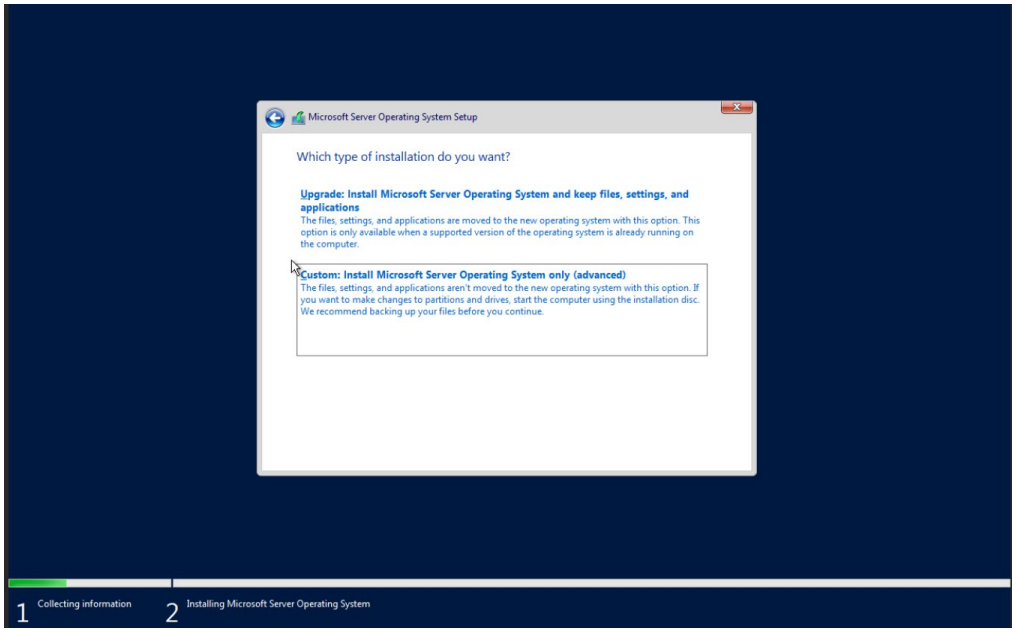

Microsoft Server Operating System Setup
Microsoft
Language to install: English (United States)
Time and currency format: English (United States)
Keyboard or input method: US
Enter your language and other preferences and click "Next" to continue.
© Microsoft Corporation. All rights reserved.
Next

e.

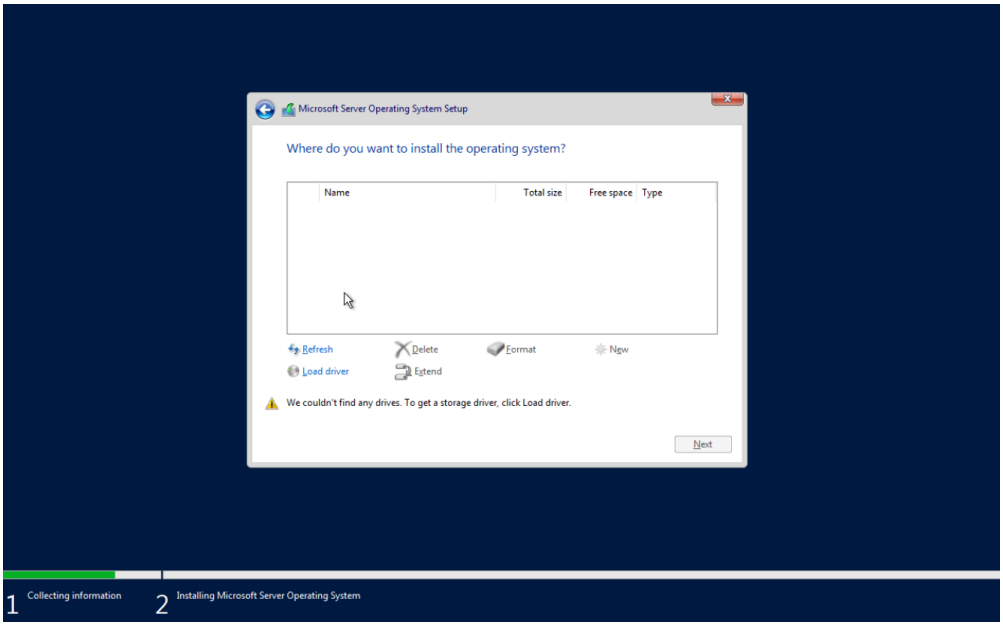

Microsoft Server Operating System Setup
Microsoft
Install now
Repair your computer
© Microsoft Corporation. All rights reserved.

f.

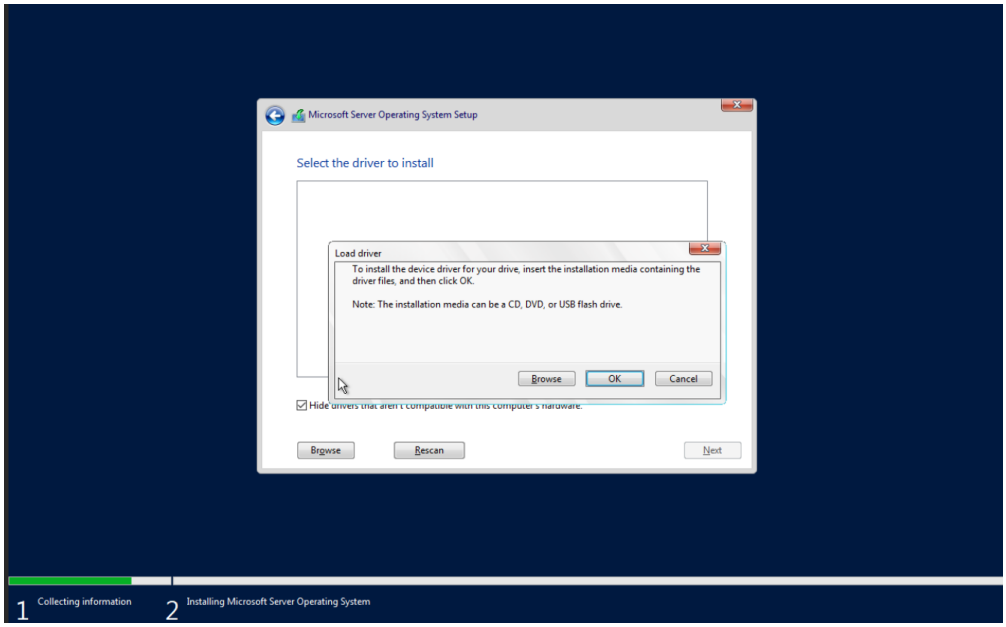

Microsoft Server Operating System Setup
Select the operating system you want to install
Operating system
Architecture
Date modified
Windows Server 2022 Standard Evaluation
x64
3/3/2022
Windows Server 2022 Standard Evaluation (Desktop Experien...
x64
3/3/2022
Windows Server 2022 Datacenter Evaluation
x64
3/3/2022
Windows Server 2022 Datacenter Evaluation (Desktop Experi...
x64
3/3/2022
Description:
(Recommended) This option omits most of the Windows graphical environment. Manage with a command prompt and PowerShell, or remotely with Windows Admin Center or other tools.
Next
1 Collecting information
2 Installing Microsoft Server Operating System

g. 

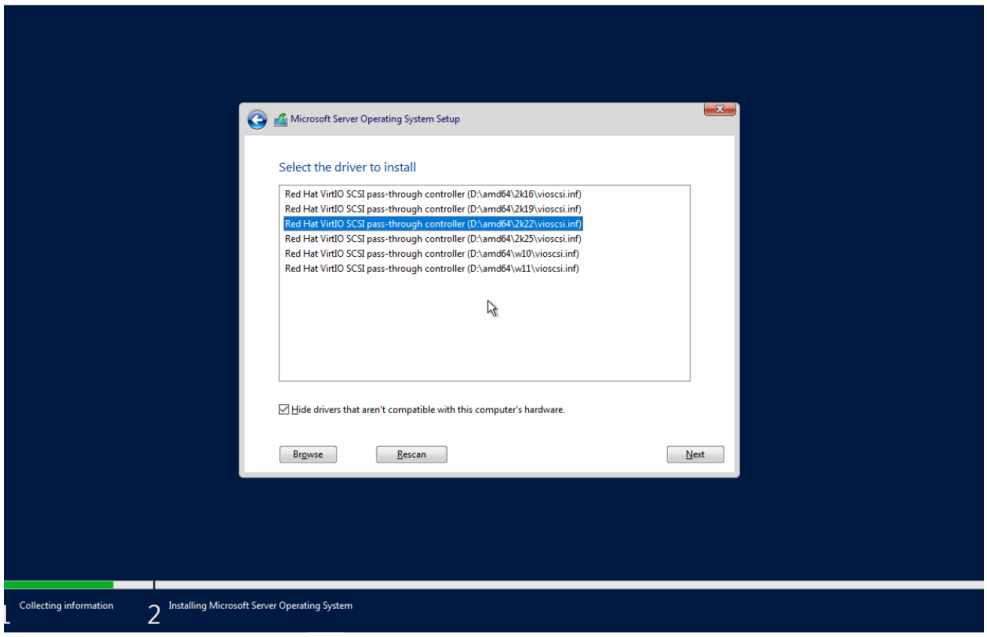
h. When you get to this screen, there is no disk shown because the VirtIO SCSI driver is not loaded > Load Driver

i. 

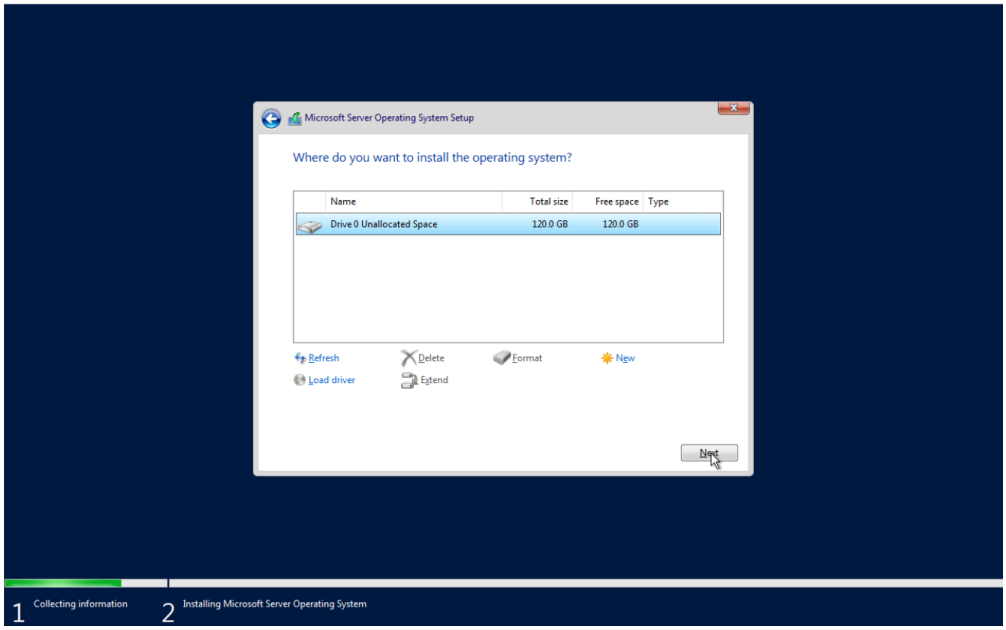
13. OK

a. 

b. Select the VirtIO driver for your OS

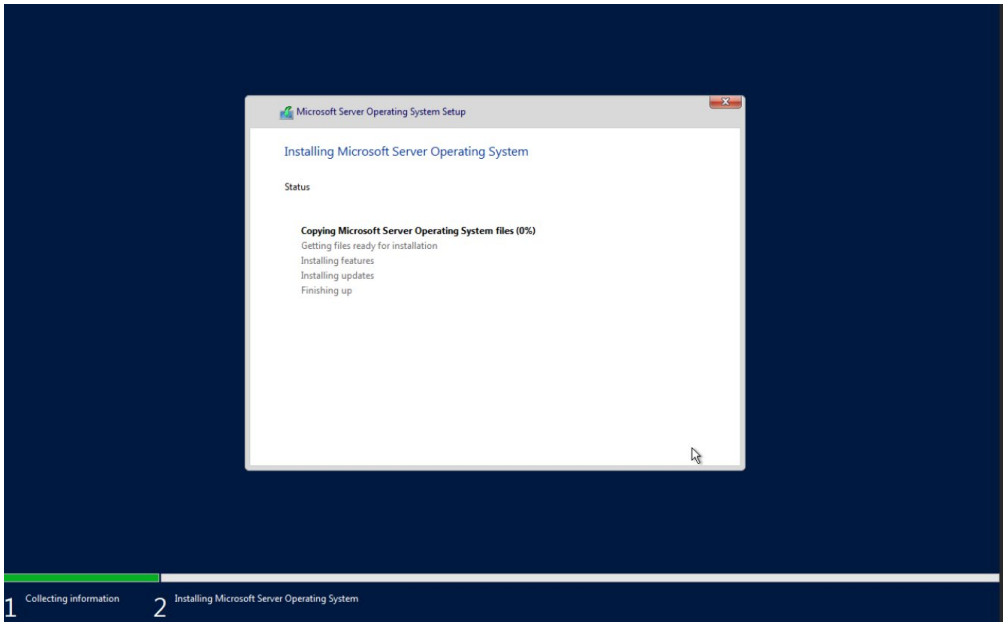


c. Now you see your disk



d. Install begin

e.



f. Install complete

g.