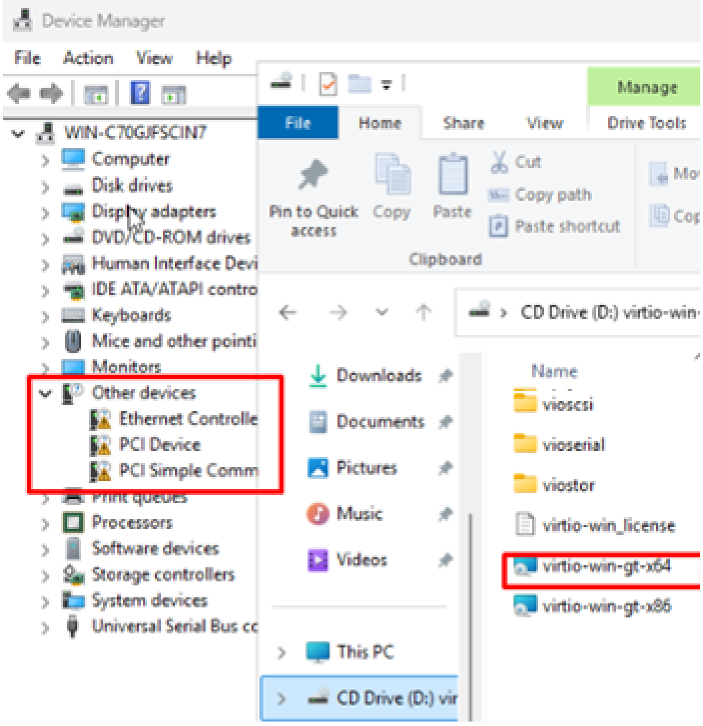
Create a Windows Server VM on Proxmox (Step-by-Step)

woshub.com/create-windows-vm-proxmox

July 7, 2025



This article explains how to create and configure a Windows virtual machine on a Proxmox VE hypervisor. We will examine the key recommendations and best practices for configuring optimal virtual machine settings, installing a Windows Server guest OS, and running it in a Proxmox VM.

Preparatory steps:

- Download the ISO image with VirtIO drivers for Windows guests (virtio-win.iso).
- Download the Windows installation ISO image (*Windows Server 2025* in this example).

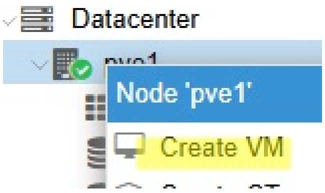
Log in to the Proxmox web interface (https://proxmox-ip:8006) and upload the ISO images to the Proxmox storage (**ISO images –>** click **Upload** -> specify the path to the ISO image file).

By default, ISO images on Proxmox hosts are stored in the `/var/lib/vz/templates/iso` directory.

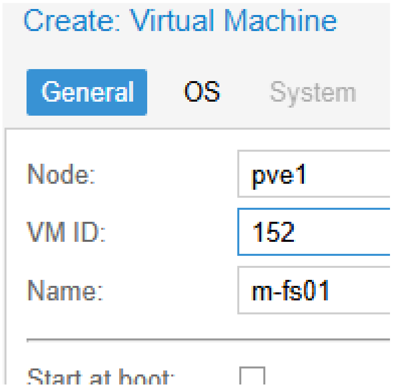
Configure a Windows Server Virtual Machine on Proxmox

The next step is to create a new virtual machine on the Proxmox host for the Windows Server guest.

1. Right-click on the Proxmox host and select **Create VM**



2. On the **General** tab, specify a meaningful Name and ID for the virtual machine. You can leave the suggested ID or manually enter another one. For example, you can use the last octet of the VM IP address as VMID.



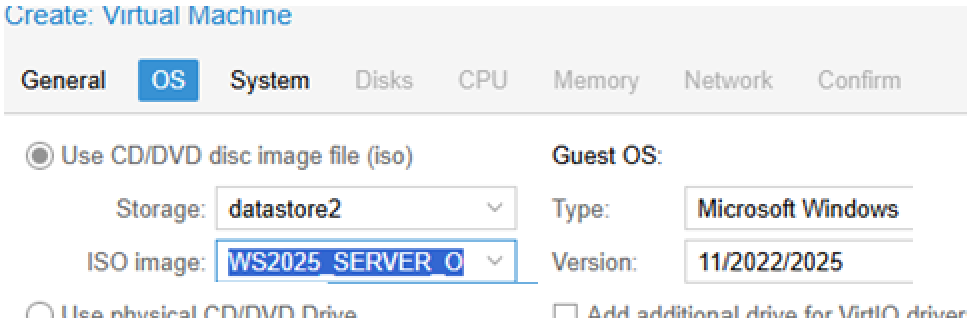
Node: pve1

VM ID: 152

Name: m-fs01

Start at boot: □

3. On the **OS** tab, select the guest operating system type (**Microsoft Windows 11/2022/2025**) and the Windows installation ISO image that was uploaded to the Proxmox storage.



● Use CD/DVD disc image file (iso)

Storage: datastore2

ISO image: WS2025_SERVER_O

○ Use physical CD/DVD Drive

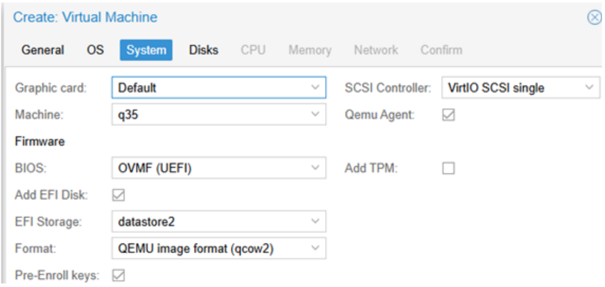
Guest OS:

Type: Microsoft Windows

Version: 11/2022/2025

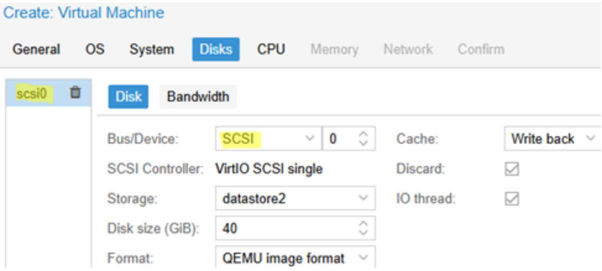
□ Add additional drive for VirtIO driver

4. Configure the following settings on the **System** tab:
   Firmware: OVMF (UEFI) – it is the recommended platform type for modern versions of Windows. *SeaBIOS* can be used for legacy systems.
   Add EFI Disk: Enable. Choose the storage for the EFI disk. Leave the disk type as the default, **qcow2**.
   Pre-Enroll keys: Enable (add the standard Microsoft Secure Boot keys.)
   Disk Controller type: VirtIO SCSI single
   Qemu Agent: Enable
   TPM: check this option if you need virtual TPM support in a virtual machine (TPM 2.0 is a mandatory requirement for Windows 11)



Graphic card: Default
Machine: q35
Firmware
BIOS: OVMF (UEFI)
Add EFI Disk: ☑
EFI Storage: datastore2
Format: QEMU image format (qcow2)
Pre-Enroll keys: ☑
SCSI Controller: VirtIO SCSI single
Qemu Agent: ☑
Add TPM: □

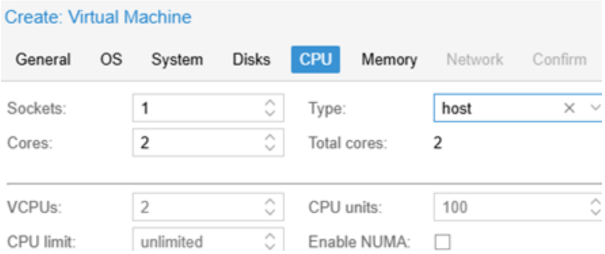
5. On the **Disks** tab, add a **SCSI** disk instead of an IDE (the SCSI protocol is faster and more efficient than the IDE or SATA). Set the disk size (for Windows, at least 40 GB).
6. Select the disk image format: **RAW** (has the minimum features but the best performance), **VMDK** (compatible with VMware), or **QCOW2** (advanced disk format with snapshot support). The qcow2 format is used by default (leave it as is).
7. Enable the **Discard** option to use disk space more efficiently (it works similarly to the TRIM function on SSDs by clearing deleted data and freeing up space). To improve performance, use the **Write Back** mode as the caching type. If caching is disabled (Default (no cache)), this mode provides better protection against data loss in the event of an unexpected shutdown of the host or VM, but it may result in slower disk performance. The **Write through** mode is optimal for high read loads.



Bus/Device: SCSI 0
SCSI Controller: VirtIO SCSI single
Storage: datastore2
Disk size (GiB): 40
Format: QEMU image format
Cache: Write back
Discard: ☑
IO thread: ☑

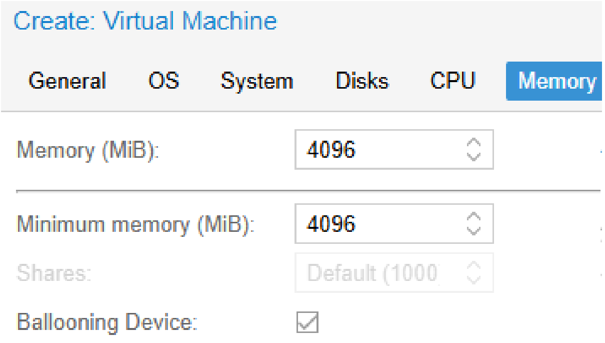
8. Set the number of cores to allocate for the VM on the **CPU** tab (at least 2 cores of the **host** type for Windows). Add additional CPU sockets and enable NUMA support for high-performance Windows VMs.

   The **host** type of CPU allows the VM to access all the capabilities of the physical CPU without using emulation. This mode allows nested virtualization to work in guest Windows. This allows both the Hyper-V and Windows Subsystem for Linux (WSL2) to be run in a Proxmox virtual machine.


Create: Virtual Machine

Sockets: 1
Type: host
Cores: 2
Total cores: 2
VCPUs: 2
CPU units: 100
CPU limit: unlimited
Enable NUMA: □

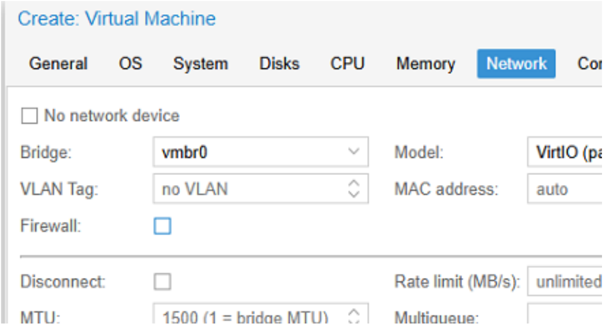
9. On the **Memory** tab, specify how much RAM to allocate to the VM. The recommended minimum is 4096 MB for Windows VM. You can reserve RAM for a VM by using the “**Minimum memory**” option. The “**Ballooning mode**” allows the hypervisor to reclaim unused memory from the VM when the amount of RAM used by the host exceeds a high threshold (typically above 80%).


Create: Virtual Machine

Memory (MiB): 4096
Minimum memory (MiB): 4096
Shares: Default (1000
Ballooning Device: ☑

10. In the **Network** tab, choose the **VirtIO (paravirtualized)** virtual network card model instead of the Intel E1000. Select the network bridge through which you want to expose your VM. In this example, vmbr0 is connected to the Proxmox host’s physical network interface.

11. To prevent Proxmox firewall rules from being applied to the VM, disable the **Firewall** option. In this case, it is assumed that the built-in Windows Defender Firewall in the guest OS of the virtual machine will be used.



Create: Virtual Machine

☐ No network device

Bridge: vmbr0

Model: VirtIO (pa

VLAN Tag: no VLAN

MAC address: auto

Firewall: ☐

Disconnect: ☐

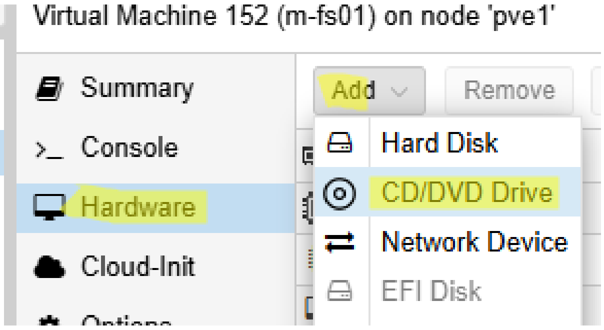
Rate limit (MB/s): unlimited

MTU: 1500 (1 = bridge MTU)

Multiqueue:

12. Review the settings on the next tab, and then click **Finish** to start creating the VM.

Once the VM has been created, add an additional virtual CD/DVD drive in its settings. Select **VM** -> **Hardware** tab -> **Add** -> **CD/DVD drive**.

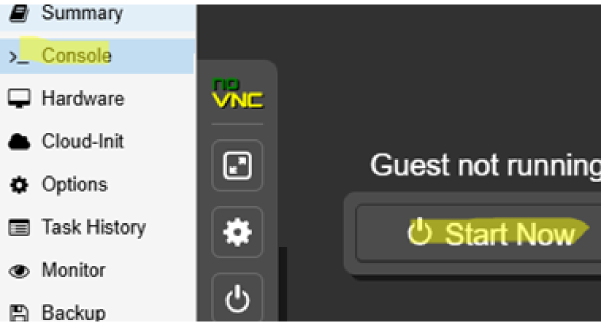


Virtual Machine 152 (m-fs01) on node 'pve1'

Mount the ISO image with the VirtIO drivers into the virtual drive. Everything is ready to install the guest Windows into the Proxmox virtual machine.

Installing Windows Server Guest on Proxmox VM

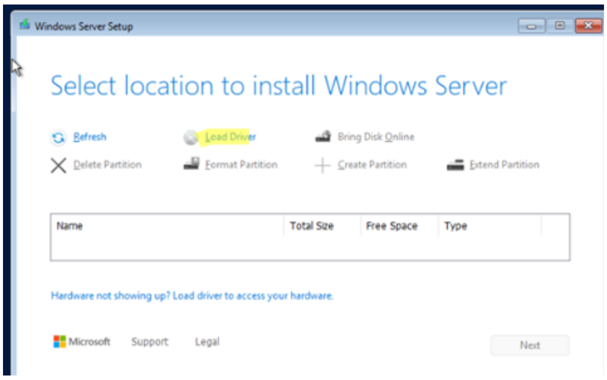
In the VM settings, go to the **Console** tab and click **Start Now** to run the VM.



Press any key to begin the Windows installation process. Next, the Windows Setup wizard will launch, where you will need to select language settings, Windows Server edition, etc.

On the screen where you need to select a disk to install the OS, you will see that Windows Setup did not detect your virtual hard disk. The problem is that the Windows image does not include drivers for the VirtIO SCSI controller.

Click the **Load Driver** button to load the disk controller driver in WinPE mode.



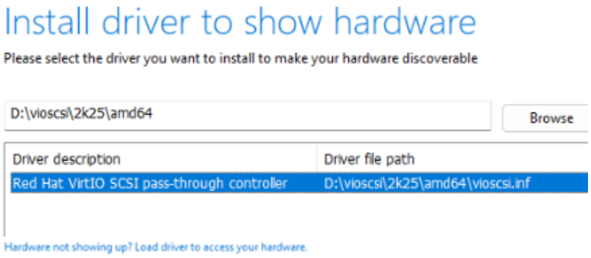
Windows Server Setup

Select location to install Windows Server

Name	Total Size	Free Space	Type

Hardware not showing up? Load driver to access your hardware.

Specify the folder containing the **Red Hat VirtIO SCSI pass-through controller driver** on the mounted ISO with VirtIO drivers (`d:\vioscsi\2k25\amd64`). Install the driver.



Install driver to show hardware

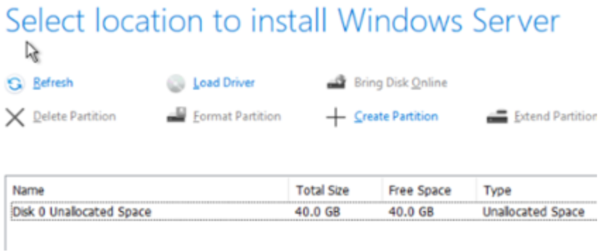
Please select the driver you want to install to make your hardware discoverable

D:\vioscsi\2k25\amd64

Driver description	Driver file path
Red Hat VirtIO SCSI pass-through controller	D:\vioscsi\2k25\amd64\vioscsi.inf

Hardware not showing up? Load driver to access your hardware.

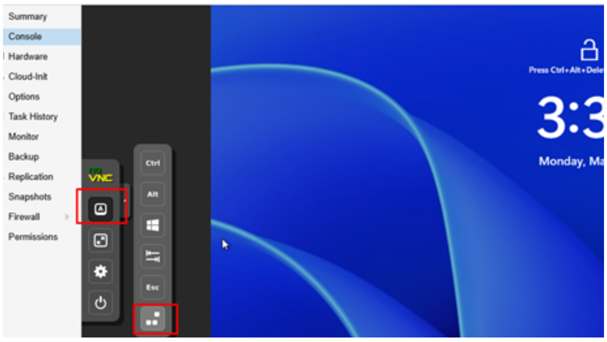
The unpartitioned local disk should now be visible to the Windows Setup. Select it to continue the installation.



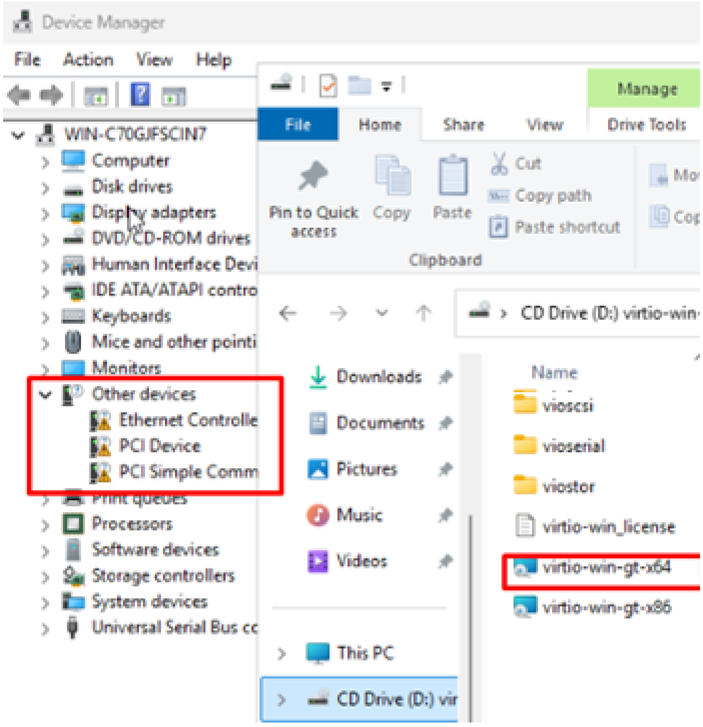
Select location to install Windows Server

Name	Total Size	Free Space	Type
Disk 0 Unallocated Space	40.0 GB	40.0 GB	Unallocated Space

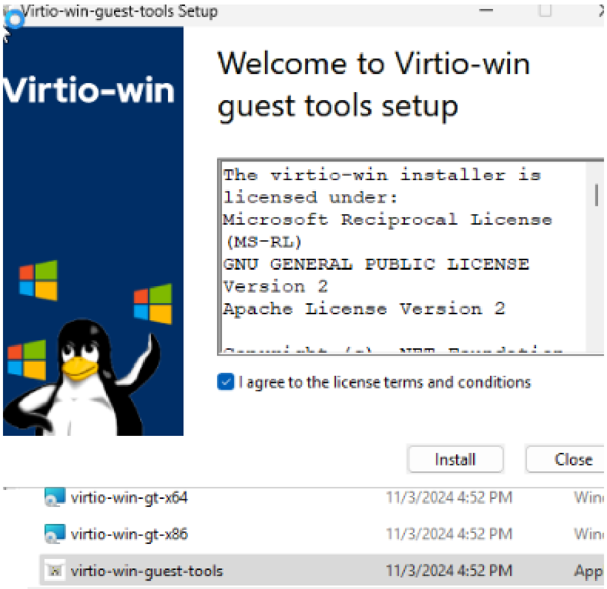
Once the Windows installation is complete, log in to the guest OS via the Proxmox console. To send the `Ctrl+Alt+Del` combination to the console and log on with the Windows administrator account, select **Show Extra Keys** in the left panel, then send the required key combination.



Open the Windows Device Manager (`devmgmt.msc`) . As you can see, several device drivers are missing and need to be installed from the VirtIO driver image. Run the **virtio-win-gt-x64.msi** installer from the ISO and install it with default settings.



During Windows 11 installation, which requires internet access, the guest OS may not detect the Red Hat VirtIO Ethernet virtual network adapter. To fix this, manually load the network driver from the `\NetKVM\w2k5\amd64` directory at the Windows Setup screen. Then, install the QEMU Guest Agent by running the **virtio-win-guest-tools.exe** file.


Virtio-win-guest-tools Setup

Welcome to Virtio-win guest tools setup

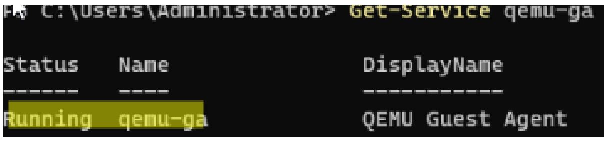
The virtio-win installer is licensed under:
Microsoft Reciprocal License (MS-RL)
GNU GENERAL PUBLIC LICENSE Version 2
Apache License Version 2

☑ I agree to the license terms and conditions

Virtio-win
Install
Close
virtio-win-gt-x64 11/3/2024 4:52 PM Win
virtio-win-gt-x86 11/3/2024 4:52 PM Win
virtio-win-guest-tools 11/3/2024 4:52 PM App

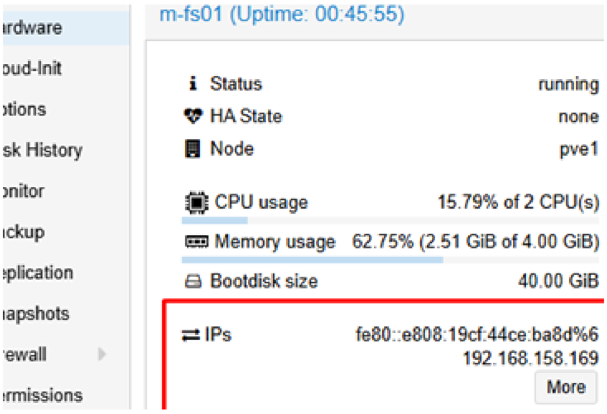
In the Windows guest, check that the QEMU agent service is running.

```
Get-Service QEMU-GA
```


```
PS C:\Users\Administrator> Get-Service qemu-ga

Status   Name               DisplayName
------   ----               -----------
Running  qemu-ga            QEMU Guest Agent
```

After installing the QEMU guest integration tools, the **Summary** tab in the Proxmox console will show the IP address obtained from the guest OS.



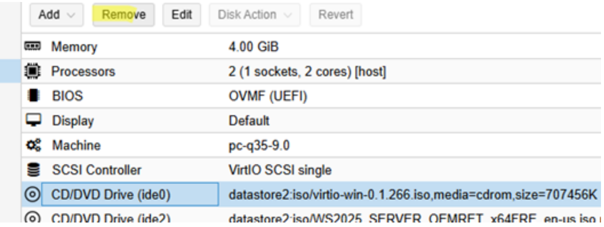
m-fs01 (Uptime: 00:45:55)

Status	running
HA State	none
Node	pve1
CPU usage	15.79% of 2 CPU(s)
Memory usage	62.75% (2.51 GiB of 4.00 GiB)
Bootdisk size	40.00 GiB
IPs	fe80::e808:19cf:44ce:ba8d%6 192.168.158.169

You can check the presence of the Qemu agent in the VM from the Proxmox host console.

```
qm agent <vmid> ping
```

Once the installation is complete, remove the VirtIO driver disk from the VM's virtual hardware.



Memory	4.00 GiB
Processors	2 (1 sockets, 2 cores) [host]
BIOS	OVMF (UEFI)
Display	Default
Machine	pc-q35-9.0
SCSI Controller	VirtIO SCSI single
CD/DVD Drive (ide0)	datastore2:iso/virtio-win-0.1.266.iso,media=cdrom,size=707456K
CD/DVD Drive (ide2)	datastore2:iso/WS2025_SERVER_OEMRET_x64FRE_en-us.iso

Complete the Windows installation and basic configuration in the guest machine: set the computer hostname, configure the static IP (if applicable), change the time and time zone, enable RDP, install Windows updates, add the necessary roles and features, etc.

Refer to the guide for basic commands to configure Windows Server without a graphical interface (Server Core).