

Passthrough Physical Disk to Virtual Machine (VM)

By adding the raw physical device to the Virtual machine, you can test installers and other disk repair tools that work with disk controllers like `ddrescue`, Clonezilla or Ubuntu Rescue Remix.

NOTE: This guide is meant for QEMU/KVM based Virtual Machines, **not** for Container. For the latter see <https://forum.proxmox.com/threads/container-with-physical-disk.42280/#post-203292>

As the disk is attached to the physical and virtual host, this will also prevent Virtual Machine live migration. A second side effect is host system IO wait, when running `ddrescue`, other VM's running on the host can stutter.

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Attach Pass Through Disk

Identify Disk

Before adding a physical disk to host make note of vendor, serial so that you'll know which disk to share in `/dev/disk/by-id/`

lshw

`lshw` is not installed by default on Proxmox VE (see `lsblk` for that below), you can install it by executing `apt install lshw`

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```
lshw -class disk -class storage

...
*-disk
  description: ATA Disk
  product: ST3000DM001-1CH1
  vendor: Seagate
  physical id: 0.0.0
  bus info: scsi@3:0.0.0
  logical name: /dev/sda
  version: CC27
  serial: Z1F41BLC
  size: 2794GiB (3TB)
  configuration: ansiversion=5 sectorsize=4096
...
```

Note that device names like `/dev/sdc` should never be used, as this can change between reboots. Use the stable `/dev/disk/by-id` paths instead. Check by listing all of that directory then look for the disk added by matching serial number from `lshw` and the physical disk:

```
ls -l /dev/disk/by-id/ata-ST3000DM001-1CH166_Z1F41BLC
lrwxrwxrwx 1 root root 9 Jan 21 10:10 /dev/disk/by-id/ata-ST3000DM001-1CH166_Z1F41BLC -> ../../sda
```

or try

```
ls -l /dev/disk/by-id | grep Z1F41BLC
```

List disk by-id with lsblk

The `lsblk` is pre-installed, you can print and map the serial and WWN identifiers of attached disks using the following two commands:

```
lsblk -o +MODEL,SERIAL,WWN
ls -l /dev/disk/by-id/
```

You can also use an extended one liner to get the path directly:

```
lsblk | awk 'NR==1{print $0" DEVICE-ID(S)}NR>1{dev=$1;printf $0" ";system("find /dev/disk/by-id -lname \"**dev\" -printf \"%p\"");print ""}}|grep -v -E 'part|lvm'
```

NAME	MAJ:MIN	RM	SIZE	RO	TYPE	MOUNTPPOINT	DEVICE-ID(S)
sda	8:0	0	7.3T	0	disk	/dev/disk/by-id/wwn-0x5000c500c35cd719	
/dev/disk/by-id/ata-ST8000DM004-2CX188_ZCT1DNY1							
sdb	8:16	1	29G	0	disk	/dev/disk/by-id/usb-Generic_STORAGE_DEVICE-0:0	
sdc	8:32	0	931.5G	0	disk	/dev/disk/by-id/usb-	
JMicron_Generic_0123456789ABCDEF-0:0							
sdd	8:48	0	1.8T	0	disk	/dev/disk/by-id/wwn-0x5000c500661eeebd	
/dev/disk/by-id/ata-ST2000DX001-1CM164_Z1E783H2							

[make-lsblk-list-devices-by-id \(https://unix.stackexchange.com/questions/387855/make-lsblk-list-devices-by-id\)](https://unix.stackexchange.com/questions/387855/make-lsblk-list-devices-by-id)

Short List

```
find /dev/disk/by-id/ -type l|xargs -I{} ls -l {}|grep -v -E '[0-9]$\ ' |sort -k11|cut -d' ' -f9,10,11,12
```

```
/dev/disk/by-id/ata-ST8000DM004-2CX188_ZCT1DNY1 -> ../../sda  
/dev/disk/by-id/wwn-0x5000c500c35cd719 -> ../../sda  
/dev/disk/by-id/usb-Generic_STORAGE_DEVICE-0:0 -> ../../sdb  
/dev/disk/by-id/usb-JMicron_Generic_0123456789ABCDEF-0:0 -> ../../sdc  
/dev/disk/by-id/ata-ST2000DX001-1CM164_Z1E783H2 -> ../../sdd  
/dev/disk/by-id/wwn-0x5000c500661eeebd -> ../../sdd
```

Update Configuration

Hot-Plug/Add physical device as new virtual SCSI disk

```
qm set 592 -scsi2 /dev/disk/by-id/ata-ST3000DM001-1CH166_Z1F41BLC
```

```
update VM 592: -scsi2 /dev/disk/by-id/ata-ST3000DM001-1CH166_Z1F41BLC
```

Hot-Unplug/Remove virtual disk

```
qm unlink 592 --idlist scsi2
```

```
update VM 592: -delete scsi2
```

Check Configuration File

```
grep Z1F41BLC /etc/pve/qemu-server/592.conf
```

```
scsi2: /dev/disk/by-id/ata-ST3000DM001-1CH166_Z1F41BLC,size=2930266584K
```

Stop and Restart KVM Virtual Machine

You may need to configure the guest operating system now that the disk is available.

Tutorial

[Example with screenshots \(https://dannyda.com/2020/08/26/how-to-passthrough-hdd-ssd-physical-disks-to-vm-on-proxmox-vepve/\)](https://dannyda.com/2020/08/26/how-to-passthrough-hdd-ssd-physical-disks-to-vm-on-proxmox-vepve/)

Disk Recovery Tools

1. Ubuntu Rescue Remix - how to use Ubuntu Rescue Remix and Ddrescue (<http://www.geekyprojects.com/storage/how-to-recover-data-even-when-hard-drive-is-damaged/>)
2. ddrescue
3. gnu ddrescue
4. Clonezilla
5. TestDisk
6. PhotoRec
7. Recuva
8. Foremost
9. Parted Magic
10. SpinRite - Low Cost Commercial - Smartctl tutorial for Proxmox VE planned

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