PROXMOX VE

Installation Guide

PICO PC®

MNHO-043
MNHO-048
MNHO-073

1.   Pre-requisites

Before proceeding to the installation, the intended user should know that in order to install Proxmox on mini PC the following steps should be followed.

- USB flash drive 2.0 or 3.0, minimum 4 GB or 8 GB (recommended).

- Proxmox stable release.
  You can download Proxmox VE from their website using the following URL:
 https://www.proxmox.com/en/downloads

- Utility that helps create bootable USBs for example etcher etc.

- A keyboard, mouse and multiport USB hub.

2.   Preparing for Installation

- The installation image file downloaded previously must be transferred to the USB flash drive. The usual copying of image directly to the drive is not the answer.

- Appropriate utility is required to make the flash drive bootable.

- We'll be using "Etcher" which is a free utility to make bootable USB flash drives. You can also use other utilities as well.

- If you haven't downloaded Etcher yet then you can download it from https://www.balena.io/etcher

www.pondesk.com

3.   Writing the image

- Make sure the USB flash drive is blank and formatted as once the image is written all previous contents will be deleted.

- Run the program as administrator.
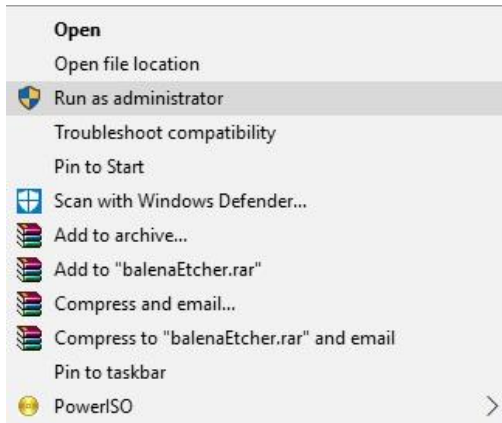
- Now plug in the USB flash drive.

- Please specify the location of the ISO image for Proxmox VE and select USB flash drive.

- You are ready burn the image to the USB flash drive.
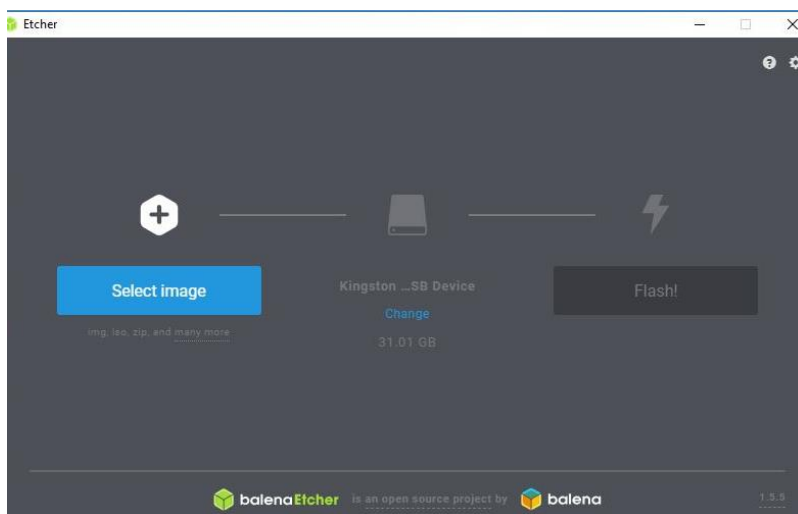
- The process will take a minute or two to complete.

4. Installation

- Assuming the image has been written to the USB flash drive it's time to plug it in on any of the two available USB ports on the mini PC and simply power it up.

- Plug in the multiport USB hub on the other port then connect keyboard and mouse.

- The installation requires a keyboard and a mouse.

- Once you view the "Winston Marriot" splash screen press "CTRL +S" and it will take to the Proxmox booting process and land on the installation screen.


- Select "Install Proxmox VE" and press "enter".

- You will be presented with the "Proxmox License Agreement" screen. Select "I agree" and proceed.

- Now you will be prompted to specify the disk on which the Proxmox OS will be installed. This will only happen if you have more than one drive installed. For this tutorial I have two SSDs (128 GB) installed. You can select the drive from "Options".
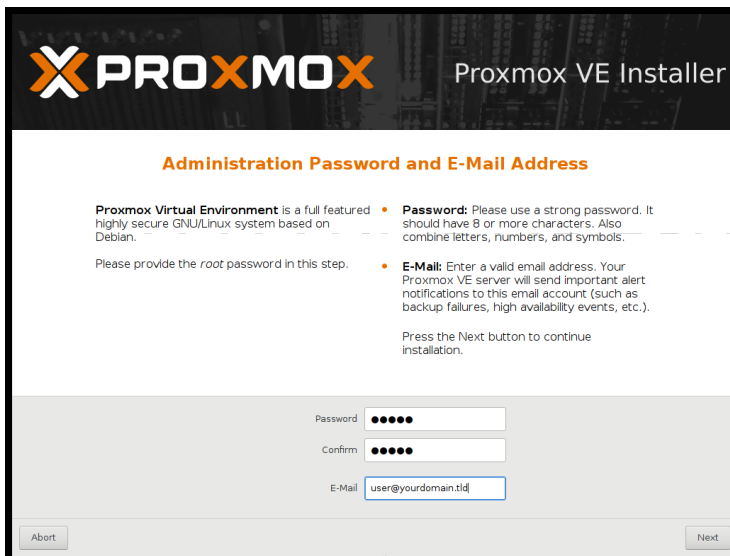
- We'll be installing Proxmox VE on the first SSD drive and reserve the other drive for virtual machines and ISO image files storage.

- There are multiple file systems to choose from
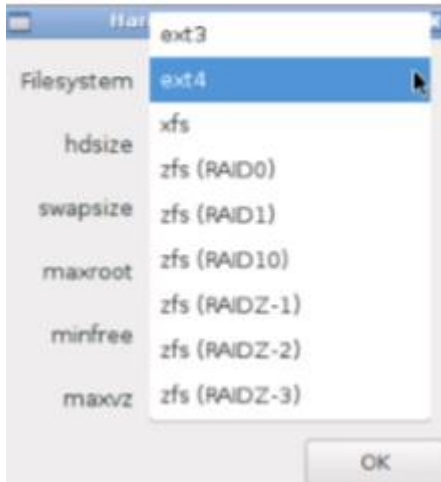
- The **ext4** is the default file system selected when installing Proxmox VE. please leave that one to default.

- Depending upon your requirement you can choose appropriate file system.

- ZFS is an advance filing system but requires two identical disk types to work and minimum RAM requirement is 8 GB ECC. For more information please refer to https://pve.proxmox.com/wiki/ZFS_on_Linux

- Next up is to specify the "time zone, location and keyboard layout". Specify as per your location and proceed.
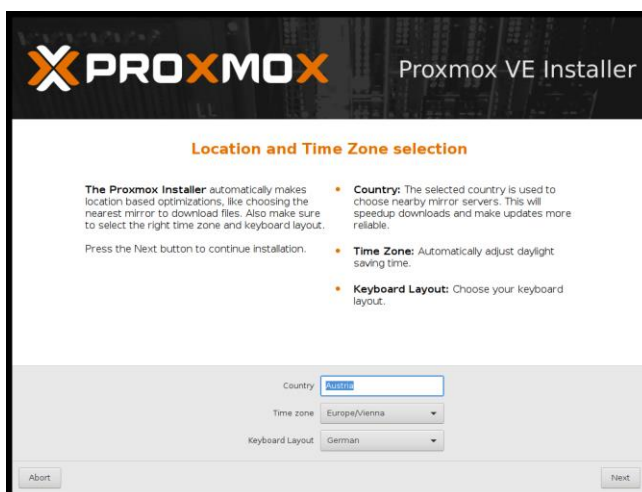
- Now you need to specify the password. This is root level password and we suggest that you make it a strong one and make sure to write it down for future references.

  1. The password must have at least 5 characters, but we highly recommend to use stronger passwords.
  2. Use a minimum password length of 12 to 14 characters.
  3. Include lowercase and uppercase alphabetic characters, numbers and symbols.
  4. Avoid character repetition, keyboard patterns, dictionary words, letter or number sequences, usernames, relative or pet names, romantic links (current or past) and biographical information (e.g., ID numbers, ancestors' names or dates).

- The email address is required to send notification to the system administrator, for example:

  1. Information about available package updates.
  2. Error messages from periodic CRON jobs.
  3. All those notification mails will be sent to the specified email address.

- The last step is the network configuration. You can specify the interface used for management of Proxmox VE.

- The mini pc has 4 LAN ports available by default and you can specify any of the 4 for management. we use the "enp3s0" which is first LAN port on mini pc. The second LAN port is "en4so" and so on.
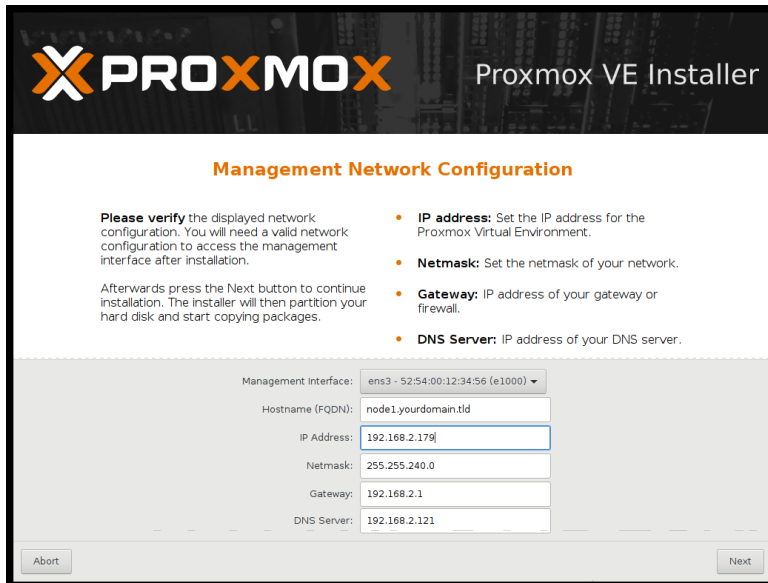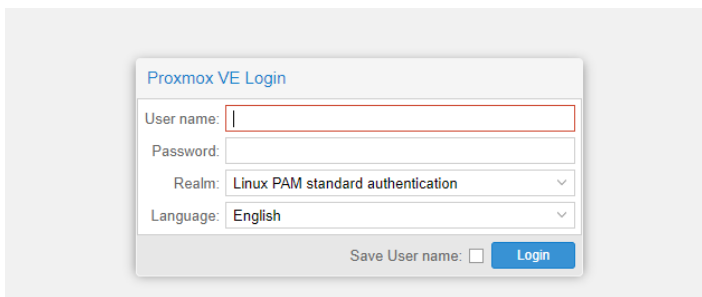

- Specify the hostname or "FQDN".

- Specify the IP address, subnet mask, gateway and DNS server.

- If you are going to deploy it as a server then we recommend that you set the IP as static, this will help in remotely managing Proxmox VE.

- Select "Next" and proceed with the installation.

- Once the installation is finished you will be prompted to reboot and provided with the URL to access Proxmox via GUI.

- Remember that you can't just use the IP address along with HTTPS as for security reasons it requires a port number "8006" to be used.

- https://192.168.x.x:8006

- Once you are prompted to reboot please remove the USB flash drive then proceed.

Mounting Secondary Drive in Proxmox

- Since our secondary drive (128 GB SSD) is available which we mentioned that we'll use for storing VMs and ISO images which are required to be uploaded before creating VMs.

- Access the Proxmox VE Web GUI by typing "https://192.168.x.x:8006". You will be prompted to enter the username and password.
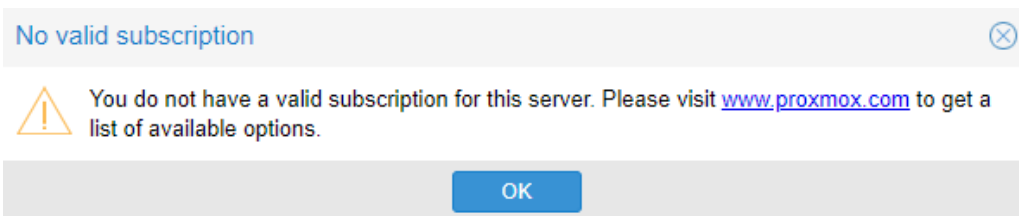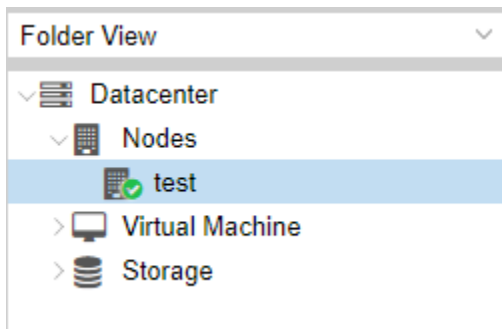
- Enter the username "root" and the password your setup during the time of installation and login.

- There will be a prompt of "No valid subscription" since we don't have a subscription. If you go for a subscription then you won't be prompted by that message.

- In order to mount the disk, we need to first check whether Proxmox VE has detected the drive or not. This can be done at the time of installation when selecting the drive for installation or via web GUI after the installation.
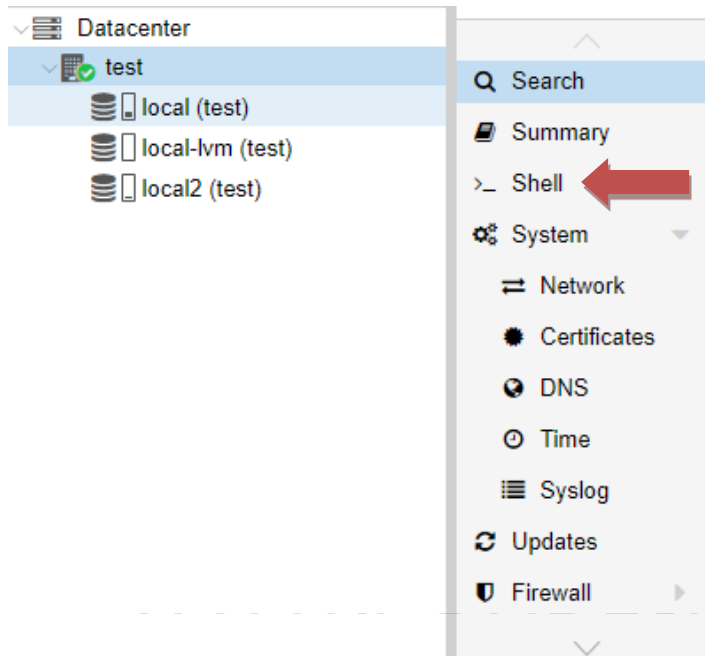
- Select the Node "test" that we have created.

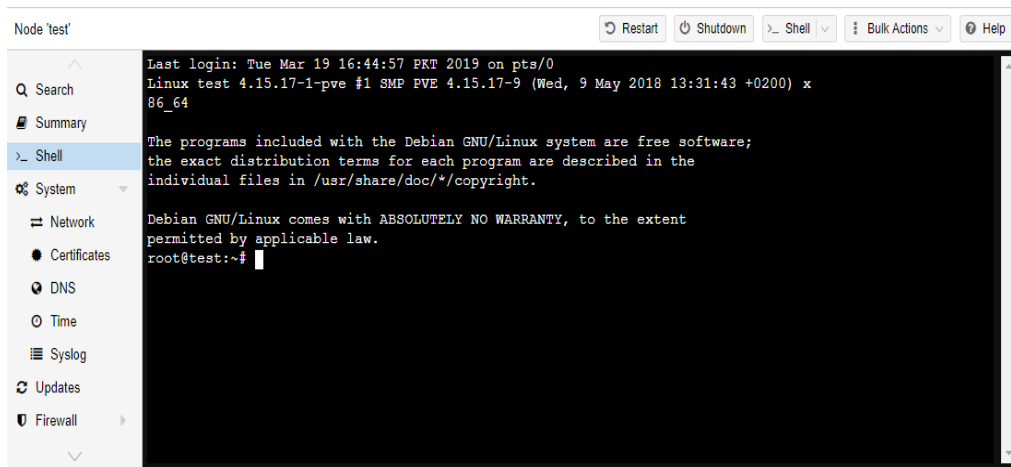- Now select "Disks" from the right-hand section.
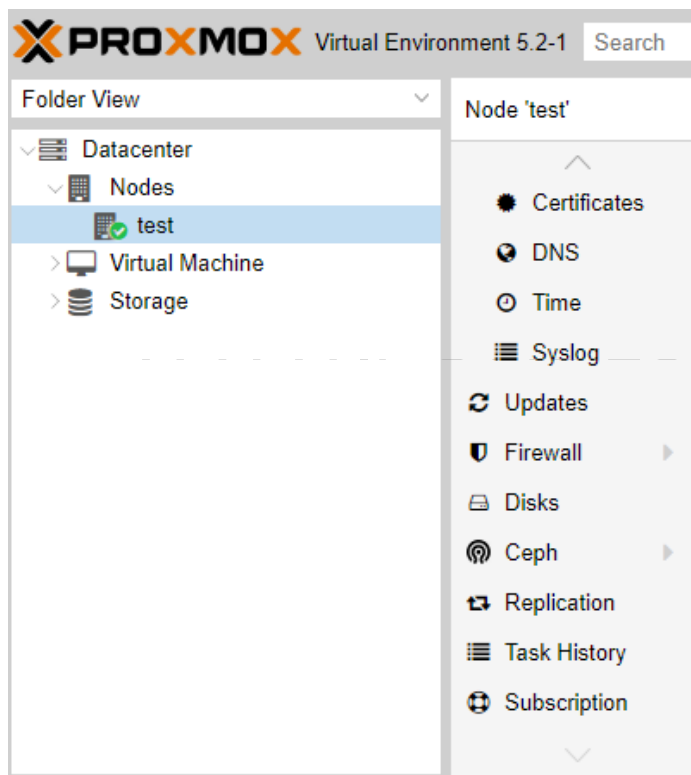
- You will see the secondary disk visible with its stats.

- Our secondary drive is available as "/dev/sdb".

- Now what we need to do is to access CLI via "shell" to get started. Since the node "test" is already selected then from the right side.

- You will be taken to the CLI straightaway.

- Run the "fdisk -l" command. It will give you information about all of the drives present. We'll go for our drive and see more information about it.

- As you can see that our target disk is "/dev/sdb".

- Now we need to partition the disk using "cfdisk" followed by our drive name and press "enter".

- Now we select the label type as "GPT" press enter.

- Select "New" from the options then "Primary". Afterwards we need to "Write" the partition to the disk. Once done select "Quit" and proceed.

- Specify the size that you want but I use the whole disk.

- Now the partition is created.

▪ The partition needs to be written to the disk.

```
                              Disk: /dev/sdb
                 Size: 119.2 GiB, 128035676160 bytes, 250069680 sectors
                 Label: gpt, identifier: F86A88F0-41BA-4689-8418-1F725D7B68FA

   Device                   Start            End          Sectors          Size Type
>> /dev/sdb1                 2048        250069646        250067599         119.2G Linux filesystem




















  Partition UUID: E3987253-8814-44CB-9E13-2246D79D9F7B
  Partition type: Linux filesystem (0FC63DAF-8483-4772-8E79-3D69D8477DE4)

              [ Delete ]  [  Quit  ]  [  Type  ]  [  Help  ]  [  Write  ]  [  Dump  ]

                       Write partition table to disk (this might destroy data)
```

▪ Once the partition is written you can quit the utility.

▪ Once this is out of the way we need to format our newly partitioned disk. We'll be using the "ext3" file system.

```
root@test:~# cfdisk /dev/sdb

Syncing disks.
root@test:~# mkfs.ext3 /dev/sdb
mke2fs 1.43.4 (31-Jan-2017)
Found a gpt partition table in /dev/sdb
Proceed anyway? (y,N) y
Discarding device blocks: done
Creating filesystem with 31258710 4k blocks and 7815168 inodes
Filesystem UUID: a11cf52b-71c3-4ab2-817b-766d92c26fc5
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@test:~# 
```

▪ Once formatting is completed, we need to mount our drive to a new folder. "/disk2" is the folder that we have created. You can choose any name so that you can identify your secondary drive in future.

```
root@test:~# mkdir /disk2
```

- Now we need to mount the disk.

```
root@test:~# mkdir /disk2
root@test:~# mount -t ext3 /dev/sdb /disk2
root@test:~#
```

- We are done for now but this configuration is only good until you reboot Proxmox VE and it will revert.

- In order to make sure the disk is mounted every time you reboot is to write a line of code that will take care of that for you "/dev/sdb1 /disk2 ext3 defaults,errors=remount-ro 0 1".

- This code must be written in the "fstab" file and the location is "/etc/fstab".

```
root@test:~# mkdir /disk2
root@test:~# mount -t ext3 /dev/sdb /disk2
root@test:~# pico /etc/fstab
```

- Once in "fstab" environment simply paste the code here and press "CTRL+D" to write out and save the configuration then exit. Now you are good to go.

- End result is that our disk is now successfully mounted.

Device	Type	Usage	Size	GPT	Vendor	Model	Serial	S.M.A.R.T.	Wearout
/dev/sda	SSD	mounted	119.24 GiB	Yes	ATA	Hocdisk_SSD	K1TMC9A21210730	PASSED	N/A
/dev/sdb	SSD	mounted	119.24 GiB	No	ATA	Hocdisk_SSD	K1TMC9A21210745	PASSED	N/A

Finalizing Newly Added Storage

- Now that we have setup our secondary drive it is time to set it up for storage.

- Select Datacenter view and go for "storage".
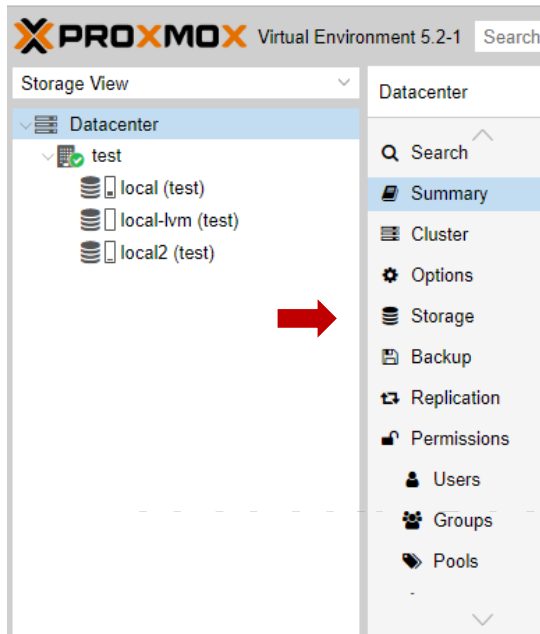
- Once you select "storage" then you will be redirected to a new page here select "local".

- Since our primary drive (SSD) is smaller as compared to the secondary drive we can't afford to lose space by installing VMs, storing iso images, backups etc on this drive. We'll reserve our secondary drive for that particular purpose.

- Select "edit". We'll uncheck iso image, disk image and VZDump backup file by simply clicking on them one by one.
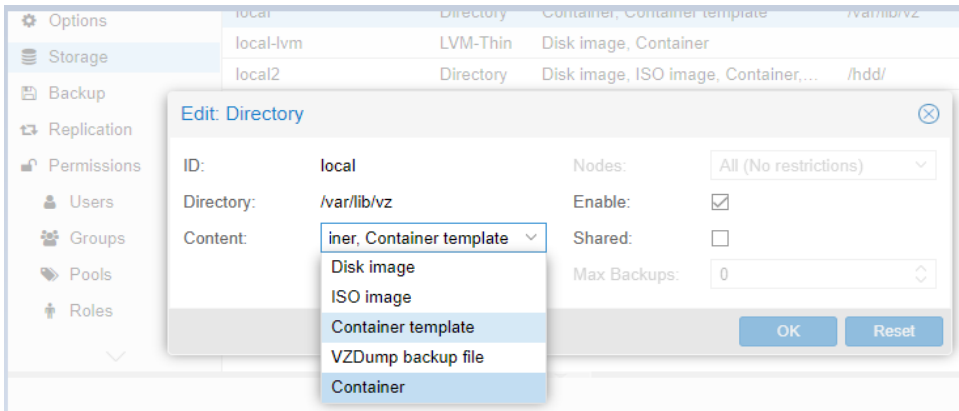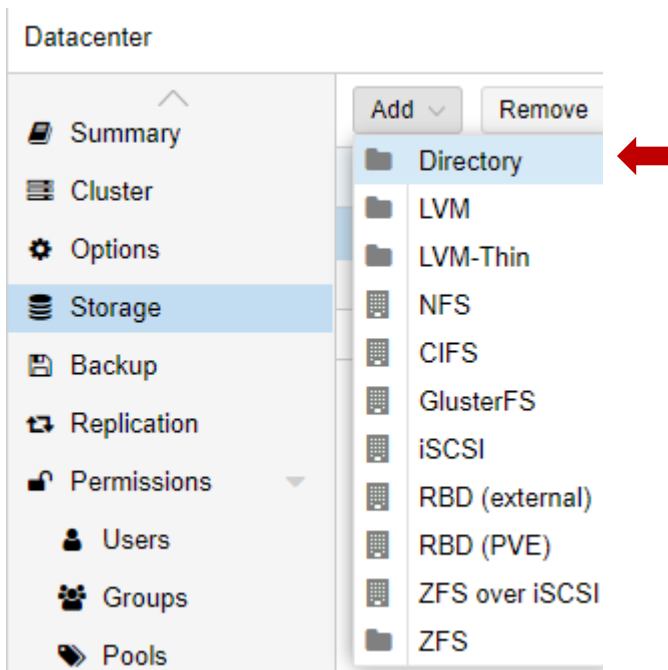
- Then select "OK" afterwards. We are only doing this as a technical exercise so that our users who are new to Proxmox can work with it without any problems and expect our tech savvy users to be right at home with Proxmox.

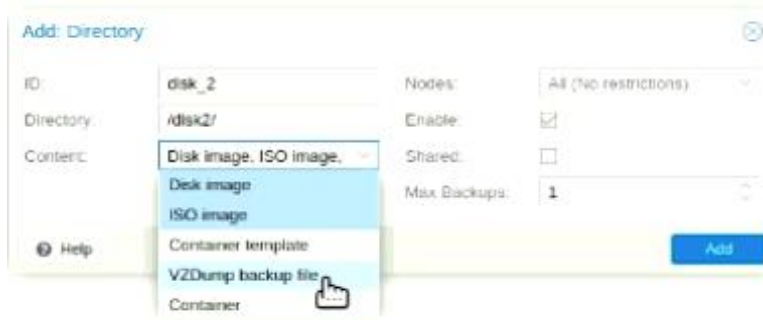- Now select "Directory" from the "Add" drop down menu.

- From the drop-down menu select "Directory".

- Now you need to specify the "ID" name could be any, "Directory" name as "/disk2/" or any and afterwards from content drop down menu select "Disk Image, ISO Image and VZDump backup file". Depending upon the number of backups you wish to store, a limit can be set here in the "Max Backups" section.

- Select "Add" afterwards.

- One last thing to do is to reboot the Proxmox VE to see if the secondary disk mounts automatically or not. End result will be successful mounting of the secondary disk.

THANK YOU

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https://www.pondesk.com