



# Installation

We will use Multipath for link HA and improved performance. Install the needed packages first:

```
root@proxmox01:~# apt-get install open-iscsi multipath-tools
```

```
root@proxmox02:~# apt-get install open-iscsi multipath-tools
```

Then we discover the target and login on both proxmox nodes:

```
root@proxmox01:~# systemctl start open-iscsi.service
```

```
root@proxmox01:~# iscsiadm -m discovery -t st -p 192.168.0.180
192.168.0.180:3260,1 iqn.2016-02.local.virtual:virtual.vg1
10.20.1.180:3260,1 iqn.2016-02.local.virtual:virtual.vg1

root@proxmox01:~# iscsiadm -m node --login

root@proxmox01:~# iscsiadm -m node
10.20.1.180:3260,1 iqn.2016-02.local.virtual:virtual.vg1
192.168.0.180:3260,1 iqn.2016-02.local.virtual:virtual.vg1

root@proxmox02:~# iscsiadm -m session -P 1
Target: iqn.2016-02.local.virtual:virtual.vg1 (non-flash)
Current Portal: 10.20.1.180:3260,1
Persistent Portal: 10.20.1.180:3260,1
*****
Interface:
*****
Iface Name: default
Iface Transport: tcp
Iface Initiatorname: iqn.1993-08.org.debian:01:674b46a9745
Iface IPaddress: 10.20.1.186
Iface HWaddress: <empty>
Iface Netdev: <empty>
SID: 1
iSCSI Connection State: LOGGED IN
iSCSI Session State: LOGGED_IN
Internal iscsid Session State: NO CHANGE
Current Portal: 192.168.0.180:3260,1
Persistent Portal: 192.168.0.180:3260,1
*****
Interface:
*****
Iface Name: default
Iface Transport: tcp
Iface Initiatorname: iqn.1993-08.org.debian:01:674b46a9745
Iface IPaddress: 192.168.0.186
Iface HWaddress: <empty>
Iface Netdev: <empty>
SID: 2
iSCSI Connection State: LOGGED IN
iSCSI Session State: LOGGED_IN
Internal iscsid Session State: NO CHANGE
```

```
root@proxmox01:~# ls SCSI
[0:0:0:0] cd/dvd QEMU QEMU DVD-ROM 1.4 /dev/sr0
[2:0:0:0] disk SCST_FIO VDISK-LUN01 311 /dev/sdb
[3:0:0:0] disk SCST_FIO VDISK-LUN01 311 /dev/sda
```

We can see two new SCSI block devices have been introduced to the system, /dev/sda and /dev/sdb. Next is Multipathing setup. First we find the WWID of the new device:

```
root@proxmox01:~# /lib/udev/scsi_id -g -d /dev/sda
23238363932313833
```

```
root@proxmox01:~# /lib/udev/scsi_id -g -d /dev/sdb
```



23238363932313833

that we then use in the Multipath config file /etc/multipath.conf that we create, for both proxmox nodes:

```
defaults {
    find_multipaths yes
    user_friendly_names    yes
    polling_interval       2
    path_selector           "round-robin 0"
    path_grouping_policy    multibus
    path_checker            readsector0
    getuid_callout          "/lib/udev/scsi_id -g -u -d /dev/%n"
    rr_min_io              100
    failback               immediate
    no_path_retry           queue
}
blacklist {
    wwid .*
}
blacklist_exceptions {
    wwid "23238363932313833"
    property "(ID SCSI_VPD|ID_WWN|ID_SERIAL)"
}
multipaths {
    multipath {
        wwid "23238363932313833"
        alias mylun
    }
}
```

and after loading Multipath kernel modules on both proxmox nodes:

```
root@proxmox02:~# modprobe -v dm_multipath
insmod /lib/modules/4.2.6-1-pve/kernel/drivers/scsi/device_handler/scsi_dh.ko
insmod /lib/modules/4.2.6-1-pve/kernel/drivers/md/dm-multipath.ko

root@proxmox02:~# modprobe -v dm_round_robin
insmod /lib/modules/4.2.6-1-pve/kernel/drivers/md/dm-round-robin.ko
```

and restarting Multipath service/daemon for both proxmox nodes:

```
root@proxmox01:~# systemctl stop multipath-tools.service
root@proxmox01:~# systemctl start multipath-tools.service
root@proxmox02:~# systemctl status -l multipath-tools.service
multipath-tools.service - LSB: multipath daemon
Loaded: loaded (/etc/init.d/multipath-tools)
Active: active (running) since Fri 2016-03-04 17:40:44 AEDT; 6s ago
Process: 8177 ExecStop=/etc/init.d/multipath-tools stop (code=exited, status=0/SUCCESS)
Process: 8191 ExecStart=/etc/init.d/multipath-tools start (code=exited, status=0/SUCCESS)
CGroup: /system.slice/multipath-tools.service
└─8195 /sbin/multipathd

Mar 04 17:40:44 proxmox02 multipath-tools[8191]: Starting multipath daemon: multipathd.
Mar 04 17:40:44 proxmox02 multipathd[8195]: sda: using deprecated getuid callout
Mar 04 17:40:44 proxmox02 multipathd[8195]: sdb: using deprecated getuid callout
Mar 04 17:40:44 proxmox02 multipathd[8195]: mylun: load table [0 41934848 multipath 1
queue_if_no_path 0 1 1 round-robin 0 2 1 8:0 1 8:16 1]
Mar 04 17:40:44 proxmox02 multipathd[8195]: mylun: event checker started
Mar 04 17:40:44 proxmox02 multipathd[8195]: path checkers start up
```

we can see the multipath device mylun created:

```
root@proxmox01:~# multipath -ll
mylun (23238363932313833) dm-1 SCST_FIO,VDISK-LUN01
size=20G features='1 queue_if_no_path' hwhandler='0' wp=rw
`-+- policy='round-robin 0' prio=1 status=active
```



```
| - 2:0:0:0 sdb 8:16 active ready running
`- 3:0:0:0 sda 8:0  active ready running
```

```
root@proxmox01:~# dmsetup ls
pve-swap      (251:3)
pve-root      (251:0)
mylun         (251:1)
pve-data      (251:4)
vg_drbd0-vm--107--disk--1 (251:5)
vg_proxmox-lv_proxmox      (251:2)
```

Next we create the volume group on one proxmox node only:

```
root@proxmox01:~# pvcreate /dev/mapper/mylun
```

```
root@proxmox01:~# vgcreate vg_iscsi /dev/mapper/mylun
```

**Finally, using the PVE web GUI, we add new LVM storage using the newly created vg\_iscsi volume group in the Datacenter and set it as Active and Shared.**

The screenshot displays the Proxmox VE 5.2-10 web interface. On the left, the 'Server View' sidebar shows a tree structure under 'Datacenter' with a list of nodes including 'gamora' and various VMs. The main panel is titled 'Datacenter' and features a search bar and a list of storage-related options: Summary, Cluster, Options, Storage (highlighted), Backup, Replication, Permissions, Users, Groups, Pools, Roles, Authentication, HA, Firewall, and Support. A dropdown menu is open over the 'Storage' option, showing a list of storage types: Directory, LVM (highlighted), LVM-Thin, NFS, CIFS, GlusterFS, iSCSI, RBD, ZFS over iSCSI, and ZFS. To the right of this menu, a table lists existing storage configurations with columns for Type and Content. Below the main panel, a modal window titled 'Add: LVM' is open, allowing the user to configure a new LVM storage. The fields are: ID (yondu), Nodes (All (No restrictions)), Base storage (Existing volume groups), Volume group (yondu\_iscsi), Content (Disk image, Container), Enable (checked), and Shared (checked). An 'Add' button is at the bottom right of the modal.

| Type      | Content       |
|-----------|---------------|
| Directory | VZDump bac    |
| Directory | VZDump bac    |
| Directory | Disk image, ( |
| NFS       | VZDump bac    |
| Directory | Disk image, I |
| NFS       | VZDump bac    |
| NFS       | VZDump bac    |
| LVM       | Disk image, ( |

**Add: LVM**

ID:  Nodes:

Base storage:  Enable: ☒

Volume group:  Shared: ☒

Content:

At the end, in order to log in and establish the sessions to the iSCSI targets on reboot we set the startup mode to automatic in the



iscsi initiator config file /etc/iscsi/iscsid.conf on both proxmox nodes:

```
[...]
node.startup = automatic
[...]
```

### Importante

Usare questo comando dopo aver riavviato il Proxmox server e le iscsi non vengono montate.

```
iscsiadm -m node --login
```

## Aggiungere nuovo target iscsi

**Tutte le operazioni vanno fatte in tutti i nodi.**

1. Trova il nuovo target e ripeti per tutti gli IP in caso non riconosce tutte automaticamente aggiungendo solo uno. Tutte le operazioni vanno fatte in tutti i nodi.

```
iscsiadm -m discovery -t st -p indirizzo_IP
```

```
iscsiadm -m discovery -t st -p indirizzo_IP
```

2. Fai la login

```
iscsiadm -m node --login
```

3. Controlla se si sono aggiunti gli sdx

```
ls SCSI
```

4. Trova il wwid. E' uguale per le sdx che si sono appena aggiunte:

```
/lib/udev/scsi_id -g -d /dev/sdx
```

5. Aggiungi il wwid in exception list ed aggiungi il nuovo multipath:

```
vim /etc/multipath.conf
```

```
defaults {
    find_multipaths yes
    user_friendly_names yes
    polling_interval 2
    path_selector "round-robin 0"
    path_grouping_policy multibus
    path_checker readsector0
    getuid_callout "/lib/udev/scsi_id -g -u -d /dev/%n"
    rr_min_io 100
    failback immediate
    no_path_retry queue
}
blacklist {
    wwid .*
}
blacklist_exceptions {
    wwid "23238363932313833"
    wwid "23238363932313834"
    property "(ID SCSI VPD|ID WWN|ID SERIAL)"
}
multipaths {
    multipath {
        wwid "23238363932313833"
        alias mylun
    }
    multipath {
        wwid "23238363932313834"
        alias mylun1
    }
}
```

6. Fai il reload del multipath:

```
systemctl reload multipath-tools.service
```

7. Controlla i multipath se ci sono:

```
multipath -ll
```



8. Creare i volume group:

```
pvccreate /dev/mapper/mylun1
```

```
vgcreate vg_iscsi /dev/mapper/mylun1
```

9. Ora puoi creare lo storage LVM dal web del proxmox scegliendo il vg\_iscsi creato.