



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 contains a search bar, a list of navigation items (Summary, Cluster, Options, Storage, Backup, Replication, Permissions, Users, Groups, Pools, Roles, Authentication, HA, Firewall, Support), and an 'Add' button. A dropdown menu is open from the 'Add' button, showing options: Directory, LVM (highlighted), LVM-Thin, NFS, CIFS, GlusterFS, iSCSI, RBD, ZFS over iSCSI, and ZFS. To the right of the dropdown, a table lists existing storage configurations with columns for Type and Content.

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, (

Below the main panel, a modal window titled 'Add: LVM' is open. It contains the following fields:

- ID: yondu
- Nodes: All (No restrictions)
- Base storage: Existing volume groups
- Volume group: yondu_iscsi
- Content: Disk image, Container
- Enable: ☒
- Shared: ☒

An 'Add' button is located at the bottom right of the modal.

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.