

GlusterFS - dispersed Type Volume

GFS Volume Features - Dispersed Volume

GFS Volume type

HW RAID

- Distribute Volume (RAID 0)
- Replicate Volume (RAID 1)
- Distribute + Replicate Volume (RAID 0+1)
- **Dispersed Volume (RAID 5,6)**
- Dispersed + Replicate Volume (RAID 50 , 60)

Dispersed Volume?

HW RAID Level

RAID 5 6

3

Brick
가

가

(Redundancy)

RAID 5

Replicate 가

Distribute

?

Distribute

Brick

Dispersed erasure coding ()
Brick

Create Command

e.x)

```
$ gluster volume create NEW-VOLNAME [disperse-data COUNT]  
[redundancy COUNT] [transport tcp | rdma | tcp,rdma] NEW-  
BRICK...
```

disperse-data COUNT : 가 Brick

redundancy COUNT : 가 .
Brick 가 가 Failed

RAID 5가 1 . RAID 6 2 가
disperse-data COUNT 가 .

RMW(Read-Modify-Write)
I/O Brick
(e.x DISPERSE 6 REDUNDANCY 2)

GFS Volume Create

100GB * 3 Brick Redundancy 1 (RAID 5)

Peer Probe
Node01)

gluster peer probe 211.239.151.197
gluster peer probe 211.239.151.198
gluster peer status

Volume Create
100GB

gluster volume create data disperse-data 2 redundancy 1
transport tcp 211.239.151.196:/gfs_node
211.239.151.197:/gfs_node 211.239.151.198:/gfs_node force

check
volume create: data: success: please start the volume to
access data

gluster volume info

stop
gluster volume start
volume start: data: success

gluster volume status

Status of volume: data

Gluster process		TCP Port	RDMA
Port Online Pid			

Brick 211.239.151.196:/gfs_node		49152	0
Y 65695			
Brick 211.239.151.197:/gfs_node		49152	0
Y 13261			
Brick 211.239.151.198:/gfs_node		49152	0
Y 13513			
Self-heal Daemon on localhost		N/A	N/A
Y 65712			
Self-heal Daemon on 211.239.151.198		N/A	N/A
Y 13530			
Self-heal Daemon on 211.239.151.197		N/A	N/A
Y 13278			

Task Status of Volume data


```
#  
(All Node)  
brick 2 1 redundancy( ) .
```

```
mount -t glusterfs gfs-node01:/data /mnt  
df -h /mnt  
Filesystem      Size  Used Avail Use% Mounted on  
gfs-node01:/data 200G  2.1G  198G   2% /mnt
```

```
# fstab
```

```
echo "gfs-node01:data /mnt glusterfs defaults,_netdev 0 0" >>  
/etc/fstab
```

Node Fail-over TEST

```
( )  
** 1 node down
```

Node Poweroff 1 가

gluster status volume

** 2 node down

Redundancy 가 1 2 가

[root@node01 mnt]# ll

ls: cannot open directory .: Transport endpoint is not connected

()

** 1 node up

2 가

up

[root@node01 mnt]# ll

ls: cannot open directory .: Transport endpoint is not connected

[root@node01 mnt]# ll

total 0

-rw-r--r--. 1 root root 0 Jan 13 10:42 a

-rw-r--r--. 1 root root 0 Jan 13 10:44 b

-rw-r--r--. 1 root root 0 Jan 13 10:44 c

[root@node01 mnt]# gluster volume status

Status of volume: data

Gluster process	TCP Port	RDMA
Port Online Pid		

Brick 211.239.151.196:/gfs_node	49152	0
---------------------------------	-------	---

Y 67046

Brick 211.239.151.197:/gfs_node	49153	0
---------------------------------	-------	---

Y 3551

Self-heal Daemon on localhost	N/A	N/A
-------------------------------	-----	-----

Y 67063

Self-heal Daemon on 211.239.151.197	N/A	N/A
-------------------------------------	-----	-----

Y 3108

Task Status of Volume data

```
** 2 node up
```

```
** 3 ( all ) node up
```

```
online .
```

Volume Expansion (ADD-BRICK)

```
# node03 100GB Brick 3EA 가 ..  
Dispersed 3(1 ) Brick  
6(2 ) 가 .  
- GFS Volume  
-
```

```
# Check now
```

```
[root@node02 ~]# gluster volume info | egrep -iE "brick|t  
ype"
```

```
Type: Disperse
```

```
Number of Bricks: 1 x (2 + 1) = 3
```

```
Transport-type: tcp
```

```
Bricks:
```

```
Brick1: 211.239.151.196:/gfs_node
```

```
Brick2: 211.239.151.197:/gfs_node
```

```
Brick3: 211.239.151.198:/gfs_node
```

```
# 가 BRICK ( sdc , sdd , sde 3 )
```

```
fdisk /dev/sdc <<EOF
```

```
n
```

```
p
```

```
w
```

```
EOF
```

```
mkfs.xfs -i size=512 /dev/sdc1
```

```
mkdir -p /add_brick1
```

```
mount /dev/sdc1 /add_brick1
```

```
echo "/dev/sdc1 /add_brick1 xfs defaults  
0 0" >> /etc/fstab
```

```

# check
[root@node03 ~]# df -h | grep brick
/dev/sdc1          100G   33M  100G   1% /add_bric
1
/dev/sdd1          100G   33M  100G   1% /add_bric
2
/dev/sde1          100G   33M  100G   1% /add_bric
3

# Volume ADD issue
3          가          가
[root@node03 ~]# gluster volume add-brick data gfs-
node03:/add_brick1
volume add-brick: failed: Incorrect number of bricks supplied
1 with count 3

Peer (          ) 가          Brick
[root@node03 ~]# gluster volume add-brick data gfs-
node03:/add_brick1      gfs-node03:/add_brick2      gfs-
node03:/add_brick
3
volume add-brick: failed: Multiple bricks of a disperse volume
are present on the same server. This setup is not optimal.
Bricks should be on different nodes to have best fault
tolerant configuration. Use 'force' at the end of the command
if you want to override this behavior.

force
volume add-brick: success

# Volume brick check
6          2 가
[root@node03 ~]# gluster volume info | egrep -iE "brick"
Number of Bricks: 2 x (2 + 1) = 6
Bricks:
Brick1: 211.239.151.196:/gfs_node
Brick2: 211.239.151.197:/gfs_node
Brick3: 211.239.151.198:/gfs_node
Brick4: gfs-node03:/add_brick1
Brick5: gfs-node03:/add_brick2
Brick6: gfs-node03:/add_brick3

```

```
# Volume Size Check
brick 가 volume size .
[root@node03 ~]# df -h | grep mnt
gfs-node01:data          400G  4.2G  396G   2% /mnt
```

```
# Rebalance
가 Brick
gluster volume rebalance data start
volume rebalance: data: success: Rebalance on data has been
started successfully. Use rebalance status command to check
status of the rebalance process.
ID: 9782e187-6cda-4e2b-aae9-0b78746d69fa
```

```
# check
1) status
Task Status of Volume data
-----
```

```
Task           : Rebalance
ID             : 9782e187-6cda-4e2b-aae9-0b78746d69fa
Status        : completed
```

```
2)          가 brick          가
[root@node03 add_brick3]# ll (          )
total 0
[root@node03 add_brick3]# ll (          )
total 8
-rw-r--r--. 2 root root 512 Jan 13 14:57 d
[root@node03 add_brick3]#
```

[Setting Up Volumes - Gluster Docs](#)

Apache vhost

<Directory>

1. <Directory>
- 2.

Directory

1. <Directory>
2. <DirectoryMatch>
3. <Files> <FilesMatch>
4. <Location>

< >

```
# DocumentRoot /home/web VHOST
<Directory> All grants 가
```

```
<Directory /home/web>
    AllowOverride All
    Require all granted
</Directory>
```

```
<VirtualHost *:80>
    ServerAdmin admin-bmi
    DocumentRoot "/home/web"
    ServerName bmitest.co.kr
    ServerAlias www.bmitest.co.kr
    ErrorLog "/home/web/logs/bmitest.co.kr-error_log"
    CustomLog "/home/web/logs/bmitest.co.kr" common
</VirtualHost>
```

```
#
[root@CentOS7-CT01 conf]# curl http://localhost/
```

BMI!


```
# /home/web/logs/accesstest File
[root@CentOS7-CT01 conf]# curl
http://localhost/logs/accesstest
oops. This Page must No view!
```

```
# Directory DirectoryMatch
<Directory "/home/web/">
    AllowOverride All
    Require all granted
</Directory>

<DirectoryMatch "^/.*logs/"> # DocumentRoot/Logs
    Order deny,allow
    Deny from all
</DirectoryMatch>

<VirtualHost *:80>
    ServerAdmin admin-bmi
    DocumentRoot "/home/web"
    ServerName bmitest.co.kr
    ServerAlias www.bmitest.co.kr
    ErrorLog "/home/web/logs/bmitest.co.kr-error_log"
    CustomLog "/home/web/logs/bmitest.co.kr" common
</VirtualHost>
```

```
# 403
[root@CentOS7-CT01 conf]# curl
http://localhost/logs/accesstest
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>403 Forbidden</title>
</head><body>
<h1>Forbidden</h1>
<p>You don't have permission to access this resource.</p>
</body></html>
```

```
#
<Directory> 가. URL 가 .
```

ErrorDocument 403 "No No NO!"

```
#  
[root@CentOS7-CT01          conf]#          curl  
http://localhost/logs/accesstest  
No No NO!
```

Ubuntu 22.04 Zabbix-agent

Zabbix Server Proxy 4.x Syntax 가
가 .

```
#  
Ubuntu 18.04 Default Repository Zabbix-Agent  
3.0.12  
Ubuntu 20.04 Default Repository Zabbix-Agent  
4.0.17  
22.04 Default Repository Zabbix-Agent 5.0.17 .
```

```
#  
sudo apt-cache madison zabbix-agent
```

```
#          Repo deb  
apt remove zabbix-agent #          repo  
apt autoremove
```

```
wget  
https://repo.zabbix.com/zabbix/4.0/ubuntu/pool/main/z/zabbix-r  
elease/zabbix-release_4.0-4+ubuntu22.04_all.deb
```

```
dpkg -i zabbix-release_4.0-4+ubuntu22.04_all.deb
```

```
apt update  
apt install zabbix-agent
```

```
zabbix_agentd -V #
apt-mark hold zabbix-agent #
```

growpart

```
growpart ( ) 가
/home (80G) (50G) 가
```

```
가 / growpart
가 OS Disk 가 /
```

cloud-utils-growpart

FlexCloud



HDD 100G -> 150G

1. 가 /

(> HDD 가,)

```
# lsblk
```

```
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
```

```
fd0      2:0    1    4K  0 disk
sda      8:0    0  150G  0 disk
sda1    8:1    0   20G  0 part /
sda2    8:2    0   80G  0 part /home
```

```
# fdisk -l
```

```
Disk /dev/sda: 161.1 GB, 161061273600 bytes, 314572800 sectors
```

```
Units = sectors of 1 * 512 = 512 bytes
```

```
Sector size (logical/physical): 512 bytes / 4096 bytes
```

```
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
```

```
Disk label type: dos
```

```
Disk identifier: 0x000822ad
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1	*	2048	41943039	20970496	83	Linux
/dev/sda2		41943040	209715199	83886080	83	Linux

2.

```
growpart /home 가 .
```

```
[root@localhost ~]# growpart /dev/sda 2
```

```
CHANGED: partition=2 start=41943040 old: size=167772160
end=209715200 new: size=272629727 end=314572767
```

```
[root@localhost ~]#
```

```
lsblk 가 .
```

```
[root@localhost ~]# lsblk
```

NAME	MAJ:MIN	RM	SIZE	RO	TYPE	MOUNTPOINT
fd0	2:0	1	4K	0	disk	
sda	8:0	0	150G	0	disk	
□□sda1	8:1	0	20G	0	part	/
□□sda2	8:2	0	130G	0	part	/home

```
df -h /home 가 ..
```

```
[root@localhost ~]# df -h
```

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/sda1	20G	1.5G	19G	8%	/
devtmpfs	905M	0	905M	0%	/dev
tmpfs	915M	0	915M	0%	/dev/shm
tmpfs	915M	8.7M	906M	1%	/run
tmpfs	915M	0	915M	0%	/sys/fs/cgroup
/dev/sda2	80G	35M	80G	1%	/home

```
3. .
```

blkid

```
[root@localhost ~]# blkid
```

```
/dev/sda1:      UUID="67966418-a410-4461-8aba-fb45131b4737"  
TYPE="xfs"
```

```
/dev/sda2:      UUID="ab5b8818-676a-448f-a827-0686fb4e7122"  
TYPE="xfs"
```

```
ext4            resize2fs
```

```
xfs             xfs_growfs
```

```
                xfs             xfs_growfs                .
```

```
[root@localhost ~]# xfs_growfs -d /home
```

```
meta-data=/dev/sda2            isize=512    agcount=4,  
agsize=5242880 blks
```

```
                =                sectsz=4096  attr=2,  
projid32bit=1
```

```
                =                crc=1        finobt=0  
spinodes=0
```

```
data        =                bsize=4096   blocks=20971520,  
imaxpct=25
```

```
                =                sunit=0     swidth=0 blks
```

```
naming      =version 2        bsize=4096   ascii-ci=0
```

ftype=1

log =internal bsize=4096 blocks=10240,
version=2

= sectsz=4096 sunit=1 blks,
lazy-count=1

realtime =none extsz=4096 blocks=0,
rtextents=0

data blocks changed from 20971520 to 34078715

[root@localhost ~]#

4. /home

[root@localhost ~]# df -h

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/sda1	20G	1.5G	19G	8%	/
devtmpfs	905M	0	905M	0%	/dev
tmpfs	915M	0	915M	0%	/dev/shm
tmpfs	915M	8.7M	906M	1%	/run
tmpfs	915M	0	915M	0%	/sys/fs/cgroup
/dev/sda2	130G	35M	130G	1%	/home
tmpfs	183M	0	183M	0%	/run/user/0

LVM

LVM (20G) 가 /home (70G) 가 .

1.

(sdb) 가 가 (20G) 가 가 .

```
# lsblk
NAME                MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
fd0                  2:0    1    4K  0 disk
sda                  8:0    0  100G  0 disk
sda1                 8:1    0    1G  0 part /boot
sda2                 8:2    0   30G  0 part /
sda3                 8:3    0   69G  0 part
vg--home-lv--home 253:0    0   69G  0 lvm  /home
sdb                  8:16   0   20G  0 disk
```

2.

```
/dev/sdb sdb1 Linux LVM .
# fdisk /dev/sdb
```

Welcome to fdisk (util-linux 2.23.2).
Changes will remain in memory only, until you decide to write them.

Be careful before using the write command.

Device does not contain a recognized partition table

Building a new DOS disklabel with disk identifier 0x49a98a24.

The device presents a logical sector size that is smaller than the physical sector size. Aligning to a physical sector (or optimal

I/O) size boundary is recommended, or performance may be impacted.

Command (m for help):

Command (m for help): n

Partition type:

p primary (0 primary, 0 extended, 4 free)
e extended

Select (default p): p

Partition number (1-4, default 1):

First sector (2048-41943039, default 2048):

Using default value 2048

Last sector, +sectors or +size{K,M,G} (2048-41943039, default 41943039):

Using default value 41943039

Partition 1 of type Linux and of size 20 GiB is set

Command (m for help): p

Disk /dev/sdb: 21.5 GB, 21474836480 bytes, 41943040 sectors

Units = sectors of 1 * 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 4096 bytes

I/O size (minimum/optimal): 4096 bytes / 4096 bytes

Disk label type: dos

Disk identifier: 0x49a98a24

Device	Boot	Start	End	Blocks	Id	System
/dev/sdb1		2048	41943039	20970496	83	Linux

Command (m for help):

Command (m for help): t

Selected partition 1

Hex code (type L to list all codes): 8e

Changed type of partition 'Linux' to 'Linux LVM'

Command (m for help): p

Disk /dev/sdb: 21.5 GB, 21474836480 bytes, 41943040 sectors

Units = sectors of 1 * 512 = 512 bytes

Sector size (logical/physical): 512 bytes / 4096 bytes

I/O size (minimum/optimal): 4096 bytes / 4096 bytes

Disk label type: dos

Disk identifier: 0x49a98a24

Device	Boot	Start	End	Blocks	Id	System
--------	------	-------	-----	--------	----	--------

```
/dev/sdb1          2048    41943039    20970496    8e    Linux
LVM
```

```
Command (m for help): w
The partition table has been altered!
Calling ioctl() to re-read partition table.
Syncing disks.
```

3. PV

```
pvcreate          pvdisplay          .
[root@localhost ~]# pvcreate /dev/sdb1
Physical volume "/dev/sdb1" successfully created.
```

```
[root@localhost ~]# pvdisplay
```

```
--- Physical volume ---
```

```
PV Name          /dev/sda3
VG Name          vg-home
PV Size          <69.00 GiB / not usable 3.00 MiB
Allocatable     yes (but full)
PE Size          4.00 MiB
Total PE        17663
Free PE          0
Allocated PE     17663
PV UUID          dFUFjg-ETp6-aCkV-UHpw-HpP7-e40T-7L00p3
"/dev/sdb1" is a new physical volume of "<20.00 GiB"
```

```
--- NEW Physical volume ---
```

```
PV Name          /dev/sdb1
VG Name
PV Size          <20.00 GiB
Allocatable     NO
PE Size          0
Total PE        0
Free PE          0
Allocated PE     0
PV UUID          VjYTMM-ECCZ-GWrd-WpNS-0xMI-qYns-pnEr9x
```

4. VG

```
vgextend
```

```
# vdisplay
```

```
--- Volume group ---
```

```
VG Name          vg-home
System ID
Format           lvm2
Metadata Areas   1
Metadata Sequence No 2
VG Access        read/write
VG Status        resizable
MAX LV           0
Cur LV          1
Open LV          1
Max PV           0
Cur PV          1
Act PV           1
VG Size          <69.00 GiB
PE Size          4.00 MiB
Total PE         17663
Alloc PE / Size  17663 / <69.00 GiB
Free PE / Size   0 / 0
VG UUID          MESw3F-j0gs-yz0o-bwR9-34nn-u0dP-qHOHEC
```

가

```
[root@localhost ~]# vgextend vg-home /dev/sdb1
```

```
Volume group "vg-home" successfully extended
```

```
[root@localhost ~]# vdisplay
```

```
--- Volume group ---
```

```
VG Name          vg-home
```

```

System ID
Format                lvm2
Metadata Areas        2
Metadata Sequence No  3
VG Access              read/write
VG Status              resizable
MAX LV                0
Cur LV                1
Open LV                1
Max PV                 0
Cur PV                2
Act PV                 2
VG Size                88.99 GiB
PE Size                4.00 MiB
Total PE               22782
Alloc PE / Size       17663 / <69.00 GiB
Free PE / Size        5119 / <20.00 GiB
VG UUID                MESw3F-j0gs-yz0o-bwR9-34nn-u0dP-qHOHEC

```

5. LV (lvextend)

```

lvdisplay .

# lvdisplay

--- Logical volume ---

LV Path                /dev/vg-home/lv-home
LV Name                lv-home
VG Name                vg-home
LV UUID                AY0b7g-L0pN-DrTm-Lhgb-vqU5-
T2W1-0cFe4e
LV Write Access        read/write
LV Creation host, time localhost.localdomain, 2022-05-11
16:20:59 +0900
LV Status                available
# open                  1
LV Size                <69.00 GiB
Current LE              17663
Segments                1
Allocation              inherit
Read ahead sectors      auto

```

- currently set to 8192
Block device 253:0

6. (resize2fs)

```
[root@localhost ~]# df -h
Filesystem                Size      Used Avail Use% Mounted on
/dev/sda2                  30G       1.3G   29G   5% /
devtmpfs                   484M          0  484M   0% /dev
tmpfs                      493M          0  493M   0% /dev/shm
tmpfs                      493M       19M   474M   4% /run
tmpfs                      493M          0  493M   0%
/sys/fs/cgroup
/dev/sda1                  1014M     140M   875M  14% /boot
/dev/mapper/vg--home-lv--home 68G       55M   65G   1% /home
```

```
xfsmount                -> xfs_growfs
ext4                    -> resize2fs
```

```
[root@localhost ~]# blkid /dev/vg-home/lv-home
```

```
/dev/vg-home/lv-home: UUID="c29e7a45-dc2f-46b0-9f9a-62aa7e17ad07" TYPE="ext4"
```

```
[root@localhost ~]# resize2fs /dev/vg-home/lv-home
```

```
resize2fs 1.42.9 (28-Dec-2013)
```

```
Filesystem at /dev/vg-home/lv-home is mounted on /home; on-line resizing required
```

```
old_desc_blocks = 9, new_desc_blocks = 12
```

```
The filesystem on /dev/vg-home/lv-home is now 23328768 blocks long.
```

```
[root@localhost ~]# resize2fs /dev/vg-home/lv-home
```

resize2fs 1.42.9 (28-Dec-2013)

Filesystem at /dev/vg-home/lv-home is mounted on /home; on-line resizing required

old_desc_blocks = 9, new_desc_blocks = 12

The filesystem on /dev/vg-home/lv-home is now 23328768 blocks long.

7.

/home 가 .

[root@localhost ~]# df -h

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/sda2	30G	1.3G	29G	5%	/
devtmpfs	484M	0	484M	0%	/dev
tmpfs	493M	0	493M	0%	/dev/shm
tmpfs	493M	19M	474M	4%	/run
tmpfs		493M	0	493M	0%
/sys/fs/cgroup					
/dev/sda1	1014M	140M	875M	14%	/boot
/dev/mapper/vg--home-lv--home	88G	59M	84G	1%	/home

UFW

systemctl status ufw

```
# systemctl stop ufw && systemctl disable ufw
```

```
# systemctl status ufw
root:~# ufw status
Status: active
```

To	Action	From
--	-----	----
Anywhere	ALLOW	111.111.111.111

```
# ufw
ufw enable
```

```
# ufw
ufw disable
```

```
cat /etc/ufw/user.rules
```

```
( ) IP
```

```
# Inbound ( ! )
ufw default deny incoming
```

```
# Outbound
ufw default allow outgoing
```

```
#
ufw allow 3306/tcp
```

```
#
ufw allow from 111.111.111.111/32
```

```
# 80
ufw allow from 111.111.111.111/32 to any port 80 proto tcp
```

```
#
ufw enable
```

```
# ufw startup ( enable )
update-rc.d -f ufw defaults
```

```
### ( inactive )
ufw reset
```

```
# journalctl 가
```

```
journalctl -xe
```

```
Aug 03 09:41:39 Docker-host kernel: [UFW BLOCK] IN=ens18 OUT=
MAC=be:45:a7:40:2f:02:76:d6:83:3e:ba:d3:08:00
SRC=211.239.150.48 >
```

```
Aug 03 09:41:40 Docker-host kernel: [UFW BLOCK] IN=ens18 OUT=
MAC=be:45:a7:40:2f:02:76:d6:83:3e:ba:d3:08:00
SRC=211.239.150.48
```

mysql8 xtrabackup (Docker) /

Container Mysql8 xtrabackup Full Backup / Restore

, Docker DB DB (Full Backup)
Host machine , OOM 가
,
"xtrabackup"
mysqldump / ,
xtrabackup ?
- Mysql / Mariadb
- xtrabackup /
- mysqldump xtrabackup
- :
Backup Server

xtrabackup

xtrabackup *Host* *Mysql Container* ,
(*OS / Host OS*)
가 *docker / docker-compose / mysql container*



* *mysql docker-compose.yml*

xtrabackup *mysql* 가 가
, *logrotate* .

`docker-compose up -d`

- `mysql8 container` (`-d :`)

`docker ps`

- Container ID

`docker exec -it [Container ID] /bin/bash`

- Container



`apt update -y && apt upgrade -y`

-



`apt install -y wget lsb-release`

-
- `wget : xtrabackup` (.deb) 가
- `lsb-release : OS`



```
# lsb_release -a
```

- OS



- xtrabackup

URL : <https://www.percona.com/downloads/Percona-XtraBackup-LATEST/>



- mysql8 , xtrabackup 8

```
wget
```

```
https://downloads.percona.com/downloads/Percona-XtraBackup-LATEST/Percona-XtraBackup-8.0.28-21/binary/debian/buster/x86\_64/percona-xtrabackup-80\_8.0.28-21-1.buster\_amd64.deb
```

- 가 .



```
# dpkg -i percona-xtrabackup-80_8.0.28-21-1.buster_amd64.deb
```

```
# apt install -f -y //
```

```
# dpkg -i percona-xtrabackup-80_8.0.28-21-1.buster_amd64.deb
```



```
# xtrabackup //
```



xtrabackup

가 Full backup .

```
# xtrabackup -backup -target-dir=/home/bak/xtra/
```

-
- 가 .



completed OK!

xtrabackup

Host Machine .

exit // .

docker-compose down // docker compose

du -sh /home/data/var/lib/mysql //

183G /home/data/var/lib/mysql

rm -rf /home/data/var/lib/mysql/ //



xtrabackup -prepare -target-dir=/home/data/bak/xtra

- (-prepare)



[Xtrabackup] completed OK!

xtrabackup -copy-back -target-dir=/home/data/bak/xtra/
-datadir=/home/data/var/lib/mysql/

-
- -copy-back , -move-back
.(-move-back
.)



[Xtrabackup] completed OK! //

▪

```
# docker-compose up -d //
# docker exec -it [Container ID] /bin/bash //
# du -sh /var/lib/mysql //
183G /var/lib/mysql //
```



```
# mysql -u root -p // mysql
# show databases; // test db
# use zabbix;
# select * from users; //
```



가

MariaDB 10.1 Xtrabackup Mariabackup

MariaDB 10.3 Xtrabackup 가 ,

Mariabackup .

- Mariabackup , MariaDB

Xtrabackup .

- URL :

<https://mariadb.com/kb/en/percona-xtrabackup-overview/#compatibility-with-mariadb-103-and-later>

[Linux]

Ubuntu 20.04 LTS Ubuntu 22.04 LTS

2022 4 21 Ubuntu 22.04 LTS(Jelly Fish)

5.15

5 2027 4 21 , ESM(Extended Security
Maintenance) 2032 4 21 . ESM
3 가 .



Ubuntu 22.04 LTS PHP 8.1.2 PHP
가 **PHP** 가 **PHP 8.1**
) .(



Ubuntu 20.04 LTS가 VM .(
20.04 LTS 21.10 .)



1. **apt update && apt full-upgrade -y && apt dist-upgrade**



2. **apt -y autoremove**



3. **init 6**



4. apt install -y update-manager-core



5. do-release-upgrade -d

OS



OS

가

-d

do-release-upgrade

6.

SSH

가

Y

가

ssh

1022

```
Continue running under SSH?
```

```
This session appears to be running under ssh. It is not recommended to perform a upgrade over ssh currently because in case of failure it is harder to recover.
```

```
If you continue, an additional ssh daemon will be started at port '1022'.
```

```
Do you want to continue?
```

```
Continue [yN] y
```

7.

가

sshd

가 1022

1022 Port가

Open

Enter

```
Starting additional sshd
```

```
To make recovery in case of failure easier, an additional sshd will be started on port '1022'. If anything goes wrong with the running ssh you can still connect to the additional one.
```

```
If you run a firewall, you may need to temporarily open this port. As this is potentially dangerous it's not done automatically. You can open the port with e.g.:
```

```
'iptables -I INPUT -p tcp --dport 1022 -j ACCEPT'
```

```
To continue please press [ENTER]
```

8. sources.list

```
Enter
```

```
Third party sources disabled
```

```
Some third party entries in your sources.list were disabled. You can re-enable them after the upgrade with the 'software-properties' tool or your package manager.
```

```
To continue please press [ENTER]
```

9.

```
.y
```

```
Do you want to start the upgrade?
```

```
49 packages are going to be removed. 189 new packages are going to be installed. 720 packages are going to be upgraded.
```

```
You have to download a total of 745 M. This download will take about 3 minutes with your connection.
```

```
Installing the upgrade can take several hours. Once the download has finished, the process cannot be canceled.
```

```
Continue [yN] Details [d]y
```

10.

```
. Yes
```



11. /etc/systemd/resolved.conf

Y I

N O

D

Z

```
Configuration file '/etc/systemd/resolved.conf'
==> Modified (by you or by a script) since installation.
==> Package distributor has shipped an updated version.
What would you like to do about it? Your options are:
  Y or I : install the package maintainer's version
  N or O : keep your currently-installed version
  D      : show the differences between the versions
  Z      : start a shell to examine the situation
The default action is to keep your current version.
*** resolved.conf (Y/I/N/O/D/Z) [default=N] ? Y
```

12. /etc/sysctl.conf

11

```
Configuration file '/etc/sysctl.conf'
==> Modified (by you or by a script) since installation.
==> Package distributor has shipped an updated version.
What would you like to do about it? Your options are:
  Y or I : install the package maintainer's version
  N or O : keep your currently-installed version
  D      : show the differences between the versions
  Z      : start a shell to examine the situation
The default action is to keep your current version.
*** sysctl.conf (Y/I/N/O/D/Z) [default=N] ? Y
```

13. openssh-server



14.

```
Remove obsolete packages?  
  
114 packages are going to be removed.  
  
Removing the packages can take several hours.  
  
Continue [yN] Details [d]y█
```

15.

.y

```
System upgrade is complete.  
  
Restart required  
  
To finish the upgrade, a restart is required.  
If you select 'y' the system will be restarted.  
  
Continue [yN] █
```

16. OS가 Ubuntu 22.04 LTS



Ubuntu 20.04 LTS

Ubuntu 22.04 LTS



[Linux] LVM

- 1

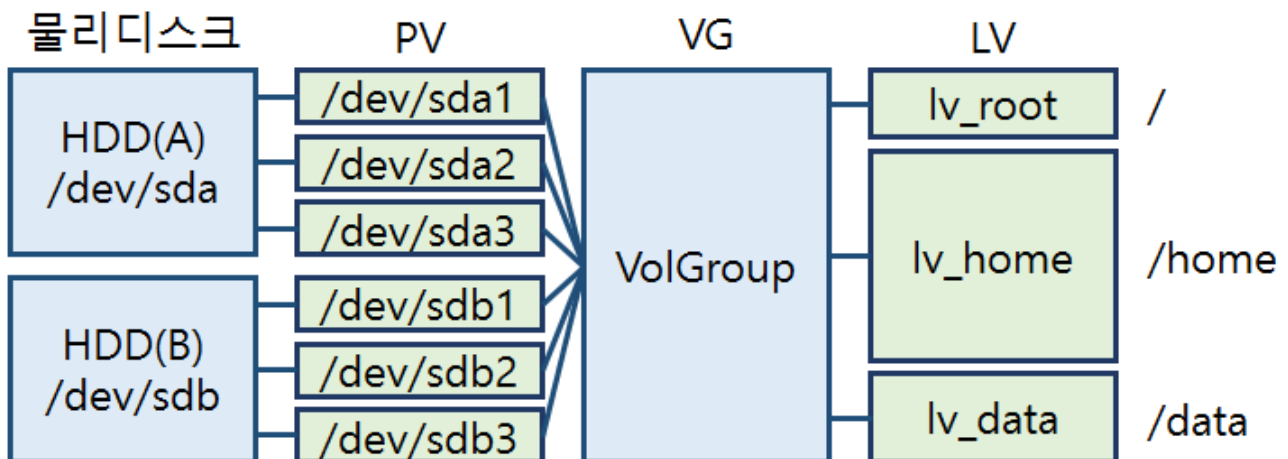
1. LVM ?

HDD

1.

LVM

)



2. LVM

1) LVM

LVM

2) PV(Physical Volume) :

/dev/sda1, /dev/sdb1, /dev/sdc1

LVM

LVM

PV

(PV PE(Physical Extent))

- PE(Physical Extent) :

PV

4MB

3) VG (Volume Group) :

Physical Volume (PE가 ?)

PV

PV

VG

LV

4) LV (Logical Volume) :

Volume Group 가

3. LVM

/home

LVM

/home

가

df -Th

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda2	xfs	30G	1.3G	29G	5%	/
/dev/sda1	xfs	1014M	140M	875M	14%	/boot
/dev/sda3	ext4	68G	55M	65G	1%	/home

1) LVM

-

rpm -qa |grep lvm

```
-  
# yum install lvm2
```

```
-  
# systemctl enable lvm2-monitor
```

2)

```
LVM .( fdisk -l /dev/sda )
```

```
          LVM          LVM          .  
          /dev/sda3 (/home)          LVM
```

```
-  
# fdisk -l /dev/sda
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1	*	2048	2099199	1048576	83	Linux
/dev/sda2		2099200	65013759	31457280	83	Linux
/dev/sda3		65013760	209715199	72350720	8e	Linux

```
-  
# fdisk /dev/sda  
Command (m for help): **p**  
Disk /dev/sda: 107.4 GB, 107374182400 bytes, 209715200 sectors  
Units = sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 4096 bytes  
I/O size (minimum/optimal): 4096 bytes / 4096 bytes  
Disk label type: dos  
Disk identifier: 0x000c8e42
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1	*	2048	2099199	1048576	83	Linux
/dev/sda2		2099200	65013759	31457280	83	Linux
/dev/sda3		65013760	209715199	72350720	83	Linux

```
Command (m for help): **t**
Partition number (1-3, default 3): **3**
Hex code (type L to list all codes): **8e**
Changed type of partition 'Linux' to 'Linux LVM'
```

```
Command (m for help): **p**
```

```
Disk /dev/sda: 107.4 GB, 107374182400 bytes, 209715200 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disk label type: dos
Disk identifier: 0x000c8e42
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1	*	2048	2099199	1048576	83	Linux
/dev/sda2		2099200	65013759	31457280	83	Linux
/dev/sda3		65013760	209715199	72350720	8e	Linux LVM

```
Command (m for help): **w**
```

3) **(PV)**

LVM

PE(Physical Extent) : PV LVM2
4MB

3-1) PV (pvcreate)

```
# pvcreate /dev/sda3
WARNING: ext4 signature detected on /dev/sda3 at offset 1080.
Wipe it? [y/n]: y Wiping ext4 signature on /dev/sda3. Physical
volume "/dev/sda3" successfully created.
```

```
# pvcreate /dev/sda3
WARNING: ext4
signature detected on /dev/sda3 at offset 1080.
Wipe it? [y/n]: y
Wiping ext4 signature on /dev/sda3.
Physical volume "/dev/sda3" successfully created.
```

```
pvcreate /dev/sda3
WARNING: ext4 signature detected on /dev/sda3 at offset 1080.
Wipe it? [y/n]: y
Wiping ext4 signature on /dev/sda3.
Physical volume "/dev/sda3" successfully created.
```

3-2) PV

```
# pvs
PV VG Fmt Attr PSize  PFree
/dev/sda3  lvm2 --- <69.00g <69.00g

# pvscan PV /dev/sda3
lvm2 [<69.00 GiB]Total: 1 [<69.00 GiB] / in use: 0 [0 ] / in
no VG: 1 [<69.00 GiB]

# pvdisplay
VG NamePV Size          <69.00 GiB
Allocatable          NO
PE Size              0
Total PE             0
Free PE              0
Allocated
PE                  0
PV UUID              dFUFjg-ETp6-aCkV-UHpw-HpP7-e40T-7L00p3
```

3-3) (VG)

```
# (VG) /dev/VG_NAME
- VG

# vgcreate [ ] [ ]

vgcreate vg-home /dev/sda3Volume group "vg-home" successfully
created

- VG

# vgs
VG #PV #LV #SN Attr VSize VFreevg-home 1 0 0 wz--n-
<69.00g <69.00g
```

```
# vgscan
Reading volume groups from cache.Found volume group "vg-home"
using metadata type lvm2
```

```
# vgsdisplay
--- Volume group ---
VG Name          vg-home
System
IDFormat         lvm2
Metadata Areas   1
Metadata Sequence No 1
VG Access        read/write
VG Status        resizable
MAX LV           0
Cur LV          00
pen LV           0
Max PV           0
Cur PV          1
Act PV           1
VG Size          <69.00 GiB
PE Size          4.00 MiB
Total PE         17663
Alloc PE / Size  0 / 0
Free PE / Size   17663 / <69.00 GiB
VG UUID          MESw3F-j0gs-yz0o-bwR9-34nn-u0dP-qH0HEC
```

4)

```
#                               (Logical Volumes)
- LV

# lvcreate -n data1v L 70GB testvg --> testvg 70G data1v

# lvcreate -n lv-home -l +100%FREE vg-home --> lv-
home
# lvcreate

lvcreate -n lv-home -l +100%FREE vg-homeLogical volume "lv-
home" created.

- LV          (lvs, lvdisplay, lvscan)

# lvs
```

```
LV   VG   Attr   LSize   Pool Origin Data% Meta% Move Log
Cpy%Sync Convert
lv-home vg-home -wi-ao---- <69.00g
```

```
# lvscan
```

```
ACTIVE          '/dev/vg-home/lv-home' [<69.00 GiB] inherit
```

```
# lvdiskdisplay
```

```
--- Logical volume ---
```

```
LV Path          /dev/vg-home/lv-home
```

```
LV Name          lv-home
```

```
VG Name          vg-home
```

```
LV UUID          AY0b7g-L0pN-DrTm-Lhgb-vqU5-T2W1-0cFe4W
```

```
LV Write Access  read/write
```

```
LV Creation host, time localhost.localdomain, 2022-05-11
16:20:59 +0900
```

```
LV Status        available
```

```
# open           0
```

```
LV Size          <69.00 GiB
```

```
Current LE       17663
```

```
Segments         1
```

```
Allocation       inheritRead ahead sectors    auto
```

```
- currently set to 8192
```

```
Block device     253:0
```

5)

5-1) **LV**

```
# lvdiskdisplay          LV Path  ext4
```

```
/home
```

```
**
```

```
# mkfs.ext4 /dev/vg-home/lv-home
```

```
**mke2fs 1.42.9 (28-Dec-2013)Discarding
```

```
device blocks: done
```

```
Filesystem label=OS
```

```
type: LinuxBlock
```

```
size=4096 (log=2)Fragment size=4096 (log=2)Stride=0 blocks,
Stripe width=0 blocks4521984 inodes, 18086912 blocks904345
blocks (5.00%) reserved for the super userFirst data
block=0Maximum filesystem blocks=2166358016552 block
groups32768 blocks per group, 32768 fragments per group8192
```



```

inodes per groupSuperblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632,
2654208,      4096000, 7962624, 11239424 Allocating group
tables: done
Writing inode tables: done
Creating journal (32768 blocks): doneWriting superblocks and
filesystem accounting information: done

```

```

**# mount -t ext4 /dev/vg-home/lv-home /home**

```

```

**# df -Th

```

```

**Filesystem

```

```

Type      Size Used Avail Use% Mounted on/dev/sda2
xfs       30G 1.3G  29G   5% /devtmpfs          devtmpfs 484M   0
484M  0%
/devtmpfs                tmpfs   493M   0 493M   0%
/dev/shmtmpfs            tmpfs   493M  13M 480M   3%
/runtmpfs                tmpfs   493M   0 493M   0%
/sys/fs/cgroup/dev/sda1          xfs    1014M 140M 875M  14%
/boottmpfs               tmpfs   99M   0 99M   0% /run/user/0*
/dev/mapper/vg--home-lv--home ext4    68G  53M 65G   1% /home*

```

```

5-2)          /etc/fstab          .

```

```

# /etc/fstab

```

```

/dev/vg-home/lv-home    /home          ext4 defaults    1 2

```

PXE

PXE

Preboot execution environment ,

OS 가

PXE

Virtualbox , Host-only Adapter .

Virtualbox - File - Host Network Manager

IPv4 Address: 10.0.0.254/24

DHCP Server: None

CentOS 07 VM PXE:

NIC 2EA (/)

CentOS 07 VM Client:

NIC 1EA ()

PXE

Public

```
cat << EOF | sudo tee /etc/sysconfig/network-scripts/ifcfg-  
enp0s3
```

TYPE=Ethernet

BOOTPROTO=dhcp

DEFROUTE=yes

NAME=enp0s3

DEVICE=enp0s3

ONBOOT=yes

EOF

Private

```
cat << EOF | sudo tee /etc/sysconfig/network-scripts/ifcfg-  
enp0s8
```

TYPE=Ethernet

BOOTPROTO=none

DEFROUTE=no

NAME=enp0s8

DEVICE=enp0s8

ONBOOT=yes

IPADDR=10.0.0.11

PREFIX=24

EOF

```
sudo systemctl restart network
sudo systemctl status network
```

PXE DHCP

```
sudo yum install -y dhcp
```

```
sudo mkdir /etc/dhcp/dhcpd.d/
```

```
cat << EOF | sudo tee /etc/dhcp/dhcpd.conf
```

```
option domain-name-servers        10.0.0.11;
## 10.0.0.11 -> PXE                IP
```

```
default-lease-time 600;
max-lease-time 7200;
```

```
authoritative;
## DHCPNAK send enable
```

```
filename                "pxelinux.0";
next-server             10.0.0.11;
## tftp                 IP
```

```
subnet 10.0.0.0 netmask 255.255.255.0 {
    range dynamic-bootp 10.0.0.200 10.0.0.253;
    option broadcast-address 10.0.0.255;
```

```
    # option routers 10.0.0.11;
    ## Client 가                 Gateway IP
```

```
    ##
}
```

EOF

```
sudo systemctl enable --now dhcpd
sudo systemctl status dhcpd
```

PXE TFTP

tftp

```
sudo yum install -y syslinux tftp tftp-server
sudo cp /usr/share/syslinux/pxelinux.0 /var/lib/tftpboot/

sudo systemctl enable --now tftp
sudo systemctl status tftp

tftp
(to) 10.0.0.11
tftp> verbose
tftp> trace
tftp> get pxelinux.0

PXE      ISO

wget
http://mirror.navercorp.com/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-2009.iso

sudo mkdir /var/lib/tftpboot/centos7

sudo mount CentOS-7-x86_64-Minimal-2009.iso /mnt
## sudo mount -t iso9660 -o loop CentOS-7-x86_64-Minimal-2009.iso /mnt

sudo cp /mnt/images/pxeboot/vmlinuz /var/lib/tftpboot/centos7/
sudo cp /mnt/images/pxeboot/initrd.img /var/lib/tftpboot/centos7/
sudo cp /usr/share/syslinux/menu.c32 /var/lib/tftpboot/

sudo mkdir /var/lib/tftpboot/pxelinux.cfg/

cat << EOF | sudo tee /var/lib/tftpboot/pxelinux.cfg/default
timeout 100
default menu.c32

menu title ##### PXE Boot Menu #####
label 1
    menu label ^1) Install CentOS 7
    kernel centos7/vmlinuz
        append          initrd=centos7/initrd.img
method=http://10.0.0.11/iso devfs=nomount
```

```
label 2
  menu label ^2) Boot from local drive
  localboot
EOF
```

```
sudo yum install -y httpd
```

```
cat << EOF | sudo tee /etc/httpd/conf.d/pxeboot.conf
Alias /iso /mnt
<Directory /mnt>
  Require ip 127.0.0.1 10.0.0.0/24
</Directory>
EOF
```

```
sudo systemctl enable --now httpd
sudo systemctl disable --now firewalld
```

```
PXE      ISO
```

```
Virtualbox - VM - Settings
```

```
      NIC      dhcpd      NIC      .
(      NIC      .)
```

```
VM Start -      F12 - Boot Manager - 1) LAN (      L      )
```

```
CentOS      .
```

```
PXE
```

```
PXE      PC      CentOS      가
      .      initrd(=      )      CentOS
(kickstart) 가      nfs      가      PXE
      가      .
```