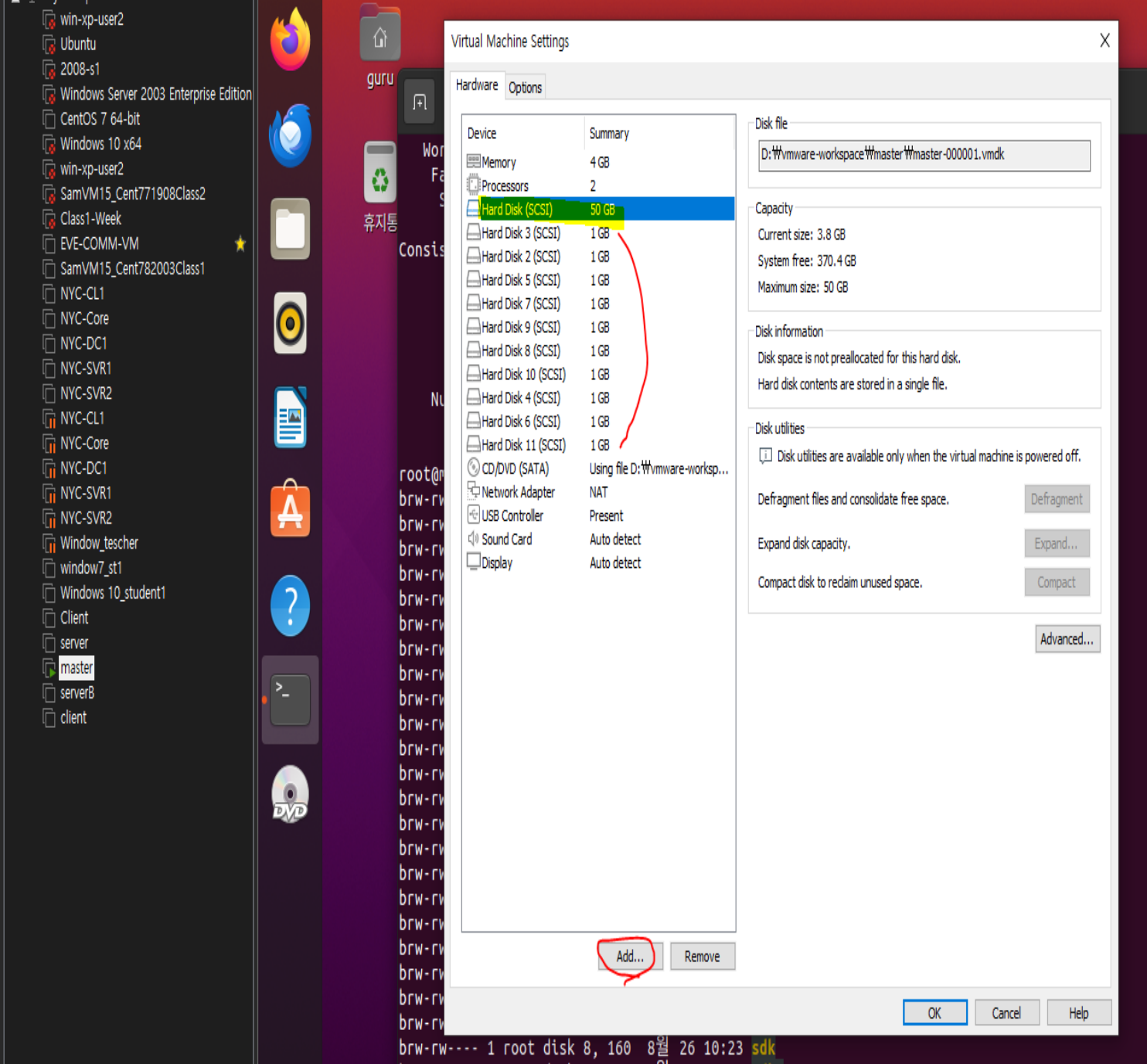


20240826

리눅스

리눅스RAID,LVM설정



settings 화면창에서
Hard Disk에서 add부분 입력후
single file로 1GB HardDisk 9개 를생성한다

```
root@master: /dev
guru@master:~/바탕화면$ cd
guru@master:~$ sudo -i
[sudo] guru 암호:
root@master:~# cd /dev
root@master:/dev# ls -l sd*
brw-rw---- 1 root disk 8,  0  8월 26 09:34 sda
brw-rw---- 1 root disk 8,  1  8월 26 09:34 sda1
brw-rw---- 1 root disk 8,  2  8월 26 09:34 sda2
brw-rw---- 1 root disk 8,  5  8월 26 09:34 sda5
brw-rw---- 1 root disk 8, 16  8월 26 09:34 sdb
brw-rw---- 1 root disk 8, 32  8월 26 09:34 sdc
brw-rw---- 1 root disk 8, 48  8월 26 09:34 sdd
brw-rw---- 1 root disk 8, 64  8월 26 09:34 sde
brw-rw---- 1 root disk 8, 80  8월 26 09:34 sdf
brw-rw---- 1 root disk 8, 112 8월 26 09:34 sdh
brw-rw---- 1 root disk 8, 128 8월 26 09:34 sdi
brw-rw---- 1 root disk 8, 144 8월 26 09:34 sdj
root@master:/dev# fdisk/dev/sdb
-bash: fdisk/dev/sdb: 그런 파일이나 디렉터리가 없습니다
root@master:/dev# fdisk /dev/sdb

Welcome to fdisk (util-linux 2.34).
Changes will remain in memory only, until you decide to write them.
```

관리자 모드 접속후
cd /dev 입력
ls -l sd* 입력
확인

확인 후

fdisk /dev /sdb 입력

```
root@master: /dev

Welcome to fdisk (util-linux 2.34).
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.
Created a new DOS disklabel with disk identifier 0x2e554cbe.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-2097151, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-2097151, default 2097151):

Created a new partition 1 of type 'Linux' and of size 1023 MiB.

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

Command : n
Select : p (enter입력)
Partition number : enter
First sector : enter
Last sector : enter
Command : w (저장)
입력

```
root@master: /dev
crw-rw-rw- 1 root root 1, 5 8월 26 09:34 zero
crw----- 1 root root 10, 249 8월 26 09:34 zfs
root@master:/dev# ls -l sd*
brw-rw---- 1 root disk 8, 0 8월 26 09:34 sda
brw-rw---- 1 root disk 8, 1 8월 26 09:34 sda1
brw-rw---- 1 root disk 8, 2 8월 26 09:34 sda2
brw-rw---- 1 root disk 8, 5 8월 26 09:34 sda5
brw-rw---- 1 root disk 8, 16 8월 26 09:37 sdb
brw-rw---- 1 root disk 8, 17 8월 26 09:37 sdb1
brw-rw---- 1 root disk 8, 32 8월 26 09:34 sdc
brw-rw---- 1 root disk 8, 48 8월 26 09:34 sdd
brw-rw---- 1 root disk 8, 64 8월 26 09:34 sde
brw-rw---- 1 root disk 8, 80 8월 26 09:34 sdf
brw-rw---- 1 root disk 8, 96 8월 26 09:34 sdg
brw-rw---- 1 root disk 8, 112 8월 26 09:34 sdh
brw-rw---- 1 root disk 8, 128 8월 26 09:34 sdi
brw-rw---- 1 root disk 8, 144 8월 26 09:34 sdj
root@master:/dev# fdisk sdb1^C
root@master:/dev# ^C
root@master:/dev# fdisk /dev/sbc

Welcome to fdisk (util-linux 2.34).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
```

ls -l sd* 입력후
sdb1 이 생성되었는지 확인

생성이 되었다면
sdc ~ sdj 까지 앞순서대로 생성한다.

Linear Raid생성

- mdadm 명령을 사용해서 RAID 구성
- mdadm -create /dev/md9 --level=linear -raid devices=2 /dev/sdb1 /dev/sdc1 (입력 RAID 생성)

mdadm --detail --scan (RAID확인)

/dev/md9은 임의로지정한 이름

Linear Raid생성

- `--create /dev/md9` → md9 장치에 RAID 생성
- `--level=linear` → Linear RAID 지정 0은 RAID 0 1은 RAID1등으로 지정
- `--raid-devices=2 /dev/sdb1 dev/sdc1` → 2개의 하드디스크사용 이어서 장치이름

자주사용되는 명령

`mdadm --stop /dev/md9` → RAID 장치인 /dev/md9 중지

`mdadm --run /dev/md9` → 중지된 RAID 장치가동

`mdadm --detail /dev/md9` → /dev/md9 장치의 상세내역출력

Linear Raid생성

- `mkfs.ext4 /dev/md9` 입력
- `mkdir /linear` (임의이름) 생성
- `mount /dev/md9 /linear` 명령으로 마운트 시킨다
- `df`명령으로 확인


```
root@master: /etc/mdadm

/dev/sda5      50771456 11457548 36702452 24% /
tmpfs          1984472    0 1984472 0% /dev/shm
tmpfs           5120     4   5116 1% /run/lock
tmpfs          1984472    0 1984472 0% /sys/fs/cgroup
/dev/loop0      128      128    0 100% /snap/bare/5
/dev/loop1     64896    64896    0 100% /snap/core20/1828
/dev/loop2     65536    65536    0 100% /snap/core20/2318
/dev/loop3     354688    354688    0 100% /snap/gnome-3-38-2004/119
/dev/loop4      76160    76160    0 100% /snap/core22/1564
/dev/loop5     517248    517248    0 100% /snap/gnome-42-2204/176
/dev/loop6      47104    47104    0 100% /snap/snap-store/638
/dev/loop7     358144    358144    0 100% /snap/gnome-3-38-2004/143
/dev/loop8      13312    13312    0 100% /snap/snap-store/1113
/dev/loop9      93952    93952    0 100% /snap/gtk-common-themes/1535
/dev/loop10     51072    51072    0 100% /snap/snapd/18357
/dev/loop11     39808    39808    0 100% /snap/snapd/21759
/dev/sda1       523248     4 523244 1% /boot/efi
/dev/md1        1011148    24 942416 1% /raid1
/dev/md9        2021288    24 1900228 1% /linear
/dev/md0        2019240    24 1898284 1% /raid0
/dev/md5        2019240    24 1898284 1% /raid5
tmpfs           396892    20 396872 1% /run/user/1000
/dev/sr0        4249476 4249476    0 100% /media/guru/Ubuntu 20.04.6 LTS amd64
root@master: /etc/mdadm#
```

linear 레이드가 생성되었다

RAID0 생성

- `mdadm --create /dev/md0 --level=0 --raid devices=2 /dev/sdd1 /dev/sde1` (입력 RAID 생성)
- `mkfs.ext4 /dev/md0` 입력
- `mkdir /raid0` (임의이름) 생성
- `mount /dev/md0 /raid0` 명령으로 마운트 시킨다
- `df`명령으로 확인

RAID1 생성

- `mdadm --create /dev/md1 --level=1 --raid devices=2 /dev/sdf1 /dev/sdg1` (입력 RAID 생성)
- `mkfs.ext4 /dev/md1` 입력
- `mkdir /raid1` (임의이름) 생성
- `mount /dev/md1 /raid1` 명령으로 마운트 시킨다
- `df`명령으로 확인

오류발생

```
mdadm: /dev/ does not appear to be an md device
root@master:/dev# mdadm -D /dev/md1
/dev/md1:
    Version : 1.2
    Creation Time : Mon Aug 26 10:44:30 2024
    Raid Level : raid1
    Array Size : 1046528 (1022.00 MiB 1071.64 MB)
    Used Dev Size : 1046528 (1022.00 MiB 1071.64 MB)
    Raid Devices : 2
    Total Devices : 2
    Persistence : Superblock is persistent

    Update Time : Mon Aug 26 10:46:16 2024
    State : clean
    Active Devices : 2
    Working Devices : 2
    Failed Devices : 0
    Spare Devices : 0

    Consistency Policy : resync

    Name : master:1 (local to host master)
    UUID : cedf08f9:8bcfc077:db6f4642:87464994
    Events : 17

    Number Major Minor RaidDevice State
       0       8       81        0     active sync  /dev/sdf1
       1       8       97        1     active sync  /dev/sdg1
root@master:/dev# mdadm /dev/md1 -f /dev/sdg1
mdadm: set /dev/sdg1 faulty in /dev/md1
root@master:/dev# mdadm -D /dev/md1
/dev/md1:
    Version : 1.2
```

```

UUID : cedf08f9:8bcfc077:db6f4642:87464994
Events : 17

Number Major Minor RaidDevice State
0 8 81 0 active sync /dev/sdf1
1 8 97 1 active sync /dev/sdg1

@master:/dev# mdadm /dev/md1 -f /dev/sdg1
m: set /dev/sdg1 faulty in /dev/md1
@master:/dev# mdadm -D /dev/md1
/md1:

Version : 1.2
Creation Time : Mon Aug 26 10:44:30 2024
Raid Level : raid1
Array Size : 1046528 (1022.00 MiB 1071.64 MB)
Used Dev Size : 1046528 (1022.00 MiB 1071.64 MB)
Raid Devices : 2
Total Devices : 2
Persistence : Superblock is persistent

Update Time : Mon Aug 26 10:51:49 2024
State : clean, degraded
Active Devices : 1
Working Devices : 1
Failed Devices : 1
Spare Devices : 0

Consistency Policy : resync

Name : master:1 (local to host master)
UUID : cedf08f9:8bcfc077:db6f4642:87464994
Events : 19

Number Major Minor RaidDevice State
0 8 81 0 active sync /dev/sdf1
- 0 0 1 removed

1 8 97 - faulty /dev/sdg1

@master:/dev# ls -l /dev/sdg1
crw-rw-r-- 1 root disk 8, 97 8월 26 10:44 /dev/sdg1

```

mdadm /dev/md1 -f /dev/sdg1
 (-f 강제오류발생 sdg1을 강제오류 시킨다.)

mdadm -D /dev/md1 (확인)

faulty /dev/sdg1 상태가 되어있다.

RAID5 생성

- mdadm --create /dev/md5 --level=5 --raid devices=3 /dev/sdh1 /dev/sdi1 /dev/sdj1 (입력 RAID 생성)
- mkfs.ext4 /dev/md5 입력
- mkdir /raid5 (임의이름) 생성
- mount /dev/md1 /raid5 명령으로 마운트 시킨다
- df명령으로 확인

Mount란

윈도우시스템 운영체제가 사용자를 대신해서 마운트작업을 할 뿐이죠.

물론 리눅스에서도 PnP기능을 지원하지만 하드디스크 추가작업 시, 또는 CD-ROM등과 같은 장치들은 시스템 부팅후에 수동으로 마운트(mount)라는 작업을 해서 사용해야 합니다.

그리고 특정장치(CD-ROM등)는 사용후에 반드시 마운트해제(umount)를 시켜주셔야 합니다.

쉽게 설명해서 마운트는 특정 디바이스(device)를 사용하기 위해 하드웨어장치와 특정 디렉토리를 연결하는 작업을 의미합니다.

예를 들어 하드웨어 중의 하나인 하드디스크의 장치명이 /dev/hda라고 한다면 이 장치명을 지정된 마운트포인트(디렉토리위치)와 연결하는 작업이 마운트(mount)입니다.

필자가 할 수 있는 가장 쉬운 방법으로 마운트의 의미를 설명한다면 “마운트란 특정 장치(device)를 하나의 디렉토리처럼 사용하기 위해 수행하는 작업”이라고 할 수 있습니다.

리눅스서버에 입문한 초보관리자들에게는 mount라는 개념이 다소 어려울 수 있습니다.

하지만 mount라는 개념을 정확하게 이해하고 자기 것으로 만들려면 직접 사용해보는 방법 외에는 없습니다.

따라서 필자는 리눅스에서 mount명령어를 이용하여 사용할 수 있는 거의 모든 실무 예들을 이번 장에 실어 두었습니다.

```
root@master: /dev

Number Major Minor RaidDevice State
 0      8     81        0 active sync  /dev/sdf1
-      0      0        1 removed

 1      8     97        - faulty   /dev/sdg1

root@master:/dev# ls -l /dev/sdg1
brw-rw---- 1 root disk 8, 97  8월 26 10:44 /dev/sdg1
root@master:/dev# mdadm /dev/md1 -r /dev/sdg1
mdadm: hot removed /dev/sdg1 from /dev/md1
root@master:/dev# mdadm /dev/md1 -a /dev/sdg1
mdadm: added /dev/sdg1
root@master:/dev# mdadm -D /dev/md1
/dev/md1:
    Version : 1.2
  Creation Time : Mon Aug 26 10:44:30 2024
    Raid Level : raid1
    Array Size : 1046528 (1022.00 MiB 1071.64 MB)
  Used Dev Size : 1046528 (1022.00 MiB 1071.64 MB)
    Raid Devices : 2
  Total Devices : 2
 Persistence : Superblock is persistent

    Update Time : Mon Aug 26 10:53:32 2024
      State : clean
  Active Devices : 2
 Working Devices : 2
 Failed Devices : 0
  Spare Devices : 0

Consistency Policy : resync

    Name : master:1 (local to host master)
   UUID : cedf08f9:8bcfc077:db6f4642:87464994
  Events : 39

Number Major Minor RaidDevice State
 0      8     81        0 active sync  /dev/sdf1
 2      8     97        1 active sync  /dev/sdg1

root@master:/dev#
```

mdadm /dev/md1 -r /dev/sdg1
(sdg1을 remove 한다.)

mdadm /dev/md1 -a /dev/sdg1
(sdg1을 새로생성한다.)

active sync /dev/sdg1 상태 확인

RAID5 구성

- 컴퓨터를 켤 때 언제든지 `/dev/md5` 장치가 `/raid5` 디렉터리에 마운트되어 있도록 설정

1. 관리자모드 접속후

2. `cd /etc` 입력

3. `vi fstab` 입력

```
root@master: /etc/mdadm
root@master:~# lsblk --fs /dev/md*
lsblk: /dev/md: not a block device
NAME FSTYPE LABEL UUID                                FSAVAIL FSUSE% MOUNTPOINT
md0  ext4      6a0bad9a-c7a2-45c4-b615-fa55e3496c48    1.8G    0% /raid0
md1  ext4      f1fae2cc-3ad6-495c-bc08-ecd79ac67b19    920.3M    0% /raid1
md5  ext4      1b58fbc5-2b14-43b9-91c5-a7b060e9ffa6    1.8G    0% /raid5
md9  ext4      6756a665-72c2-4ebe-b369-ffb59cd8e7d5    1.8G    0% /linear
root@master:~# lsblk --fs /dev/md* >> /etc/mdadm/mdadm.conf
lsblk: /dev/md: not a block device
root@master:~# cd /etc/madadm
-bash: cd: /etc/madadm: 그런 파일이나 디렉터리가 없습니다
root@master:~# cd /etc
root@master:/etc# cd /mdadm
-bash: cd: /mdadm: 그런 파일이나 디렉터리가 없습니다
root@master:/etc# cd mdadm
root@master:/etc/mdadm# vi mdadm.conf
root@master:/etc/mdadm#
```

lsblk (블랙된 디바이스를 전부다 표시해주는 명령문)

lsblk --fs 파티션경로표시

lsblk --fs /dev/md* >> /etc/fstab
(화면에 mdadm.conf부분은 잘못된경로)
fstab부분에 md*로 끝나는 파티션경로를 복사하기

fstab 화면창에 색칠된부분 추가

```
root@master: /etc
# /etc/fstab: static file system information.  ## Use 'blkid' to print the universally unique identifier for a # device; this may
# be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sda5 during installation
UUID=b8710e31-d093-467c-b548-0a50acd26f3e / ext4 errors=remount-ro 0 1
# /boot/efi was on /dev/sda1 during installation
UUID=C492-E644 /boot/efi vfat umask=0077 0 1
/swapfile none swap sw 0 0
#UUID=6756a665-72c2-4ebe-b369-ffb59cd8e7d5 /linear ext4 defaults 0 0
#UUID=6a0bad9a-c7a2-45c4-b615-fa55e3496c48 /raid0 ext4 defaults 0 0
#UUID=f1fae2cc-3ad6-495c-bc08-ecd79ac67b19 /raid1 ext4 defaults 0 0
#UUID=1b58fbc5-2b14-43b9-91c5-a7b060e9ffa6h /raid5 ext4 defaults 0 0
/dev/md9 /linear ext4 defaults 0 0
/dev/md0 /raid0 ext4 defaults 0 0
/dev/md1 /raid1 ext4 defaults 0 0
/dev/md5 /raid5 ext4 defaults 0 0
```

RAID5 구성

- `update-initramfs -u` 설정내용 저장
- `reboot` 재부팅
- `df -h` 확인

RAID5 구성 두번째방법 p374참조

- mdadm --detail --scan 입력
- 4개의 ARRAY내용을 복사
- gedit /etc/mdadm/mdadm.conf 설정파일을 열고
제일아래부분에 붙여넣기
- name=server:숫자 부분은 삭제하기
- 저장
- update-initramfs -u 설정명령 저장
- reboot명령 재부팅
- df -h 로 확인

LVM

- 물리볼륨 Physical Volume : /dev/sdk1 , /dev/sdl1 등의 파티션
- 볼륨 그룹 (Volume Group) : 물리 볼륨을 합쳐서 1개의 볼륨그룹으로 생성
- 논리그룹(Logical Volume):볼륨그룹을 1개이상으로 나눈것
- 예제)
 - 하드디스크에서 2기가 3기가 각각생성
 - apt -y install lvm2 명령으로 관련 패키지를 생성

```
root@master: /dev

Partition number (1-4, default 1):
First sector (2048-6291455, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-6291455, default 6291455):

Created a new partition 1 of type 'Linux' and of size 3 GiB.

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/sdl: 3 GiB, 3221225472 bytes, 6291456 sectors
Disk model: VMware Virtual S
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x7aeccdfd

Device      Boot Start      End Sectors  Size Id Type
/dev/sdl1           2048 6291455 6289408    3G 8e Linux LVM

Command (m for help): w
```

fdisk /dev/sdk1 , /dev/sdl1
파티션 생성

Command : n
Select : p (enter입력)
Partition number : enter
First sector : enter
Last sector : enter
Command : t
Hex code : 8e (리눅스 lvm 타입)

Command : w
저장


```
root@master: /dev

2  XENIX root      39  Plan 9          83  Linux          c4  DRDOS/sec (FAT-
3  XENIX usr       3c  PartitionMagic  84  OS/2 hidden or c6  DRDOS/sec (FAT-
4  FAT16 <32M      40  Venix 80286     85  Linux extended c7  Syrinx
5  Extended        41  PPC PReP Boot  86  NTFS volume set da Non-FS data
6  FAT16           42  SFS            87  NTFS volume set db CP/M / CTOS / .
7  HPFS/NTFS/exFAT 4d  QNX4.x         88  Linux plaintext de  Dell Utility
8  AIX             4e  QNX4.x 2nd part 8e  Linux LVM      df  BootIt
9  AIX bootable    4f  QNX4.x 3rd part 93  Amoeba         e1  DOS access
a  OS/2 Boot Manag 50  OnTrack DM     94  Amoeba BBT     e3  DOS R/O
b  W95 FAT32       51  OnTrack DM6 Aux 9f  BSD/OS         e4  SpeedStor
c  W95 FAT32 (LBA) 52  CP/M          a0  IBM Thinkpad hi ea  Rufus alignment
e  W95 FAT16 (LBA) 53  OnTrack DM6 Aux a5  FreeBSD        eb  BeOS fs
f  W95 Ext'd (LBA) 54  OnTrackDM6     a6  OpenBSD        ee  GPT
10 OPUS           55  EZ-Drive      a7  NeXTSTEP       ef  EFI (FAT-12/16/
11 Hidden FAT12    56  Golden Bow    a8  Darwin UFS     f0  Linux/PA-RISC b
12 Compaq diagnost 5c  Priam Edisk    a9  NetBSD         f1  SpeedStor
14 Hidden FAT16 <3 61  SpeedStor     ab  Darwin boot    f4  SpeedStor
16 Hidden FAT16    63  GNU HURD or Sys af  HFS / HFS+     f2  DOS secondary
17 Hidden HPFS/NTF 64  Novell Netware b7  BSDI fs        fb  VMware VMFS
18 AST SmartSleep  65  Novell Netware b8  BSDI swap      fc  VMware VMKCORE
1b Hidden W95 FAT3 70  DiskSecure Mult bb  Boot Wizard hid fd  Linux raid auto
1c Hidden W95 FAT3 75  PC/IX         bc  Acronis FAT32 L fe  LANstep
1e Hidden W95 FAT1 80  Old Minix     be  Solaris boot   ff  BBT

Hex code (type L to list all codes):
```

Hex code : 타입들


```
root@master: /dev
brw-rw---- 1 root disk 8, 113 8월 26 14:20 sdh1
brw-rw---- 1 root disk 8, 128 8월 26 14:20 sdi
brw-rw---- 1 root disk 8, 129 8월 26 14:20 sdi1
brw-rw---- 1 root disk 8, 144 8월 26 14:20 sdj
brw-rw---- 1 root disk 8, 145 8월 26 14:20 sdj1
brw-rw---- 1 root disk 8, 160 8월 26 14:24 sdk
brw-rw---- 1 root disk 8, 161 8월 26 14:24 sdk1
brw-rw---- 1 root disk 8, 176 8월 26 14:25 sdl
brw-rw---- 1 root disk 8, 177 8월 26 14:25 sdl1
root@master:/dev# pcreate /dev/sdk1

명령어 'pcreate' 을(를) 찾을 수 없습니다. 그러나 다음을 통해 설치할 수 있습니다:
apt install pbuilder-scripts

root@master:/dev# pcreate /dev/sdk1
Physical volume "/dev/sdk1" successfully created.
root@master:/dev# pcreate /dev/sdl1
Physical volume "/dev/sdl1" successfully created.
root@master:/dev# vgcreate /dev/myVG /dev/sdk1 dev/sdl1
Device dev/sdl1 not found.
root@master:/dev# vgcreate /dev/myVG /dev/sdk1 /dev/sdl1
Volume group "myVG" successfully created
root@master:/dev#
```

pvcreate /dev/sdk1
pvcreate /dev/sdl1
물리적인 볼륨 생성

vgcreate /dev/myVG /dev/sdk1
/dev/sdl1 명령으로 물리볼륨을 묶어서 볼륨그룹 생성

vgdisplay로 생성확인

```
root@master: /dev
Volume group "myVG" successfully created
root@master:/dev# vgdisplay
--- Volume group ---
VG Name                myVG
System ID
Format                 lvm2
Metadata Areas         2
Metadata Sequence No   1
VG Access               read/write
VG Status               resizable
MAX LV                 0
Cur LV                 0
Open LV                 0
Max PV                 0
Cur PV                 2
Act PV                 2
VG Size                 4.99 GiB
PE Size                 4.00 MiB
Total PE                1278
Alloc PE / Size         0 / 0
Free PE / Size          1278 / 4.99 GiB
VG UUID                 4g1VZ2-L07k-Dt3s-04eL-N0IK-iCRi-IpVdtj

root@master:/dev#
```

```
root@master: /dev

PE Size          4.00 MiB
Total PE         1278
Alloc PE / Size  0 / 0
Free PE / Size   1278 / 4.99 GiB
VG UUID          4g1VZ2-L07k-Dt3s-04eL-N0IK-iCRI-IpVdtj

root@master:/dev# lvcreate --size 1G --name myLG1 myVG
Logical volume "myLG1" created.
root@master:/dev# lvcreate --size 3G --name myLG2 myVG
Logical volume "myLG2" created.
root@master:/dev# lvcreate --extends 100%FREE --name myLG3 myVG
lvcreate: 인식할 수 없는 옵션 '--extends'
Error during parsing of command line.
root@master:/dev# lvcreate --extens 100%FREE --name myLG3 myVG
lvcreate: 인식할 수 없는 옵션 '--extens'
Error during parsing of command line.
root@master:/dev# lvcreate --extents 100%FREE --name myLG3 myVG
Logical volume "myLG3" created.
root@master:/dev# ls -l /dev/my*
합계 0
lrwxrwxrwx 1 root root 7 8월 26 14:29 myLG1 -> ../dm-0
lrwxrwxrwx 1 root root 7 8월 26 14:29 myLG2 -> ../dm-1
lrwxrwxrwx 1 root root 7 8월 26 14:30 myLG3 -> ../dm-2
root@master:/dev#
```

일반적인 하드디스크 파티션을 생성할 때는 fdisk 명령을 사용했지만 볼륨그룹 파티션 생성시에는 lvcreate 명령을 사용한다

볼륨그룹(/dev/myVG)을 myLG1과 myLG2, myLG3으로 나눠서 논리그룹 파티션을 생성

lvcreate --size 1G --name myLG1 myVG
-> myVG 아래 myLG1을 1GB 크기로 생성

lvcreate --extents 100%FREE --name myLG3 myVG
-> 나머지 용량을 모두 할당


```
root@master: /
root@master:/dev/myVG# cd .
root@master:/dev/myVG# cd /
root@master:/# mkdir myLG1
root@master:/# mkdir myLG2
root@master:/# mkdir myLG3
root@master:/# mount /dev/myVG/myLG1 /myLG1
root@master:/# mount /dev/myVG/myLG2 /myLG2
root@master:/# mount /dev/myVG/myLG3 /myLG3
root@master:/# df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            1.9G   0    1.9G   0% /dev
tmpfs           388M  1.9M  386M   1% /run
/dev/sda5       49G   11G   35G  24% /
tmpfs           1.9G   0    1.9G   0% /dev/shm
tmpfs           5.0M  4.0K  5.0M   1% /run/lock
tmpfs           1.9G   0    1.9G   0% /sys/fs/cgroup
/dev/loop1      64M   64M    0 100% /snap/core20/1828
/dev/loop0     128K  128K    0 100% /snap/bare/5
/dev/loop2      64M   64M    0 100% /snap/core20/2318
/dev/loop3      75M   75M    0 100% /snap/core22/1564
/dev/loop4     347M  347M    0 100% /snap/gnome-3-38-2004/119
/dev/loop5     350M  350M    0 100% /snap/gnome-3-38-2004/143
/dev/loop7      92M   92M    0 100% /snap/gtk-common-themes/1535
/dev/loop6     506M  506M    0 100% /snap/gnome-42-2204/176
```

mkfs.ext4 /dev/myVG/myLG1
mkfs.ext4 /dev/myVG/myLG2
mkfs.ext4 /dev/myVG/myLG3
파일 생성후

mkdir /myLG1 /myLG2 /myLG3 디렉터리 생성

mount /dev/myVG/myLG1 /myLG1
mount /dev/myVG/myLG2 /myLG2
mount /dev/myVG/myLG3 /myLG3
디렉터리에 마운트

df -h 확인

컴퓨터를 켤 때 언제든지 /dev/myVG/myLG1~3 장치가 /myLG1~3에 마운트되도록 설정하기.

/etc/fstab 파일에 추가하고 재부팅후 확인

```
root@master: /etc
# /etc/fstab: static file system information.  ## Use 'blkid' to print the universally unique identifier for a # device; this may
# be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point>  <type>  <options>          <dump>  <pass>
# / was on /dev/sda5 during installation
UUID=b8710e31-d093-467c-b548-0a50acd26f3e /          ext4      errors=remount-ro 0          1
# /boot/efi was on /dev/sda1 during installation
UUID=C492-E644 /boot/efi  vfat      umask=0077        0          1
/swapfile                                none      swap          0          0
#UUID=6756a665-72c2-4ebe-b369-ffb59cd8e7d5 /linear   ext4      defaults          0          0
#UUID=6a0bad9a-c7a2-45c4-b615-fa55e3496c48 /raid0    ext4      defaults          0          0
#UUID=f1fae2cc-3ad6-495c-bc08-ecd79ac67b19 /raid1    ext4      defaults          0          0
#UUID=1b58fbc5-2b14-43b9-91c5-a7b060e9ffa6h /raid5    ext4      defaults          0          0

/dev/md9      /linear   ext4      defaults          0          0
/dev/md0      /raid0    ext4      defaults          0          0
/dev/md1      /raid1    ext4      defaults          0          0
/dev/md5      /raid5    ext4      defaults          0          0

/dev/myVG/myLG1 /myLG1    ext4      defaults          0          0
/dev/myVG/myLG2 /myLG2    ext4      defaults          0          0
/dev/myVG/myLG3 /myLG3    ext4      defaults          0          0

~
~
~
~
~
~
```