

Laporan Praktikum 7

Administrasi Sistem

Manajemen Partisi dan Filesystem



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Manajemen Partisi dan Filesystem

Partisi disk merupakan mekanisme membagi sebuah media hard disk drive menjadi beberapa logical storage units. Filesystem merupakan metode dan struktur data yang digunakan oleh sistem operasi untuk mengakses blok-blok logikal pada penyimpanan untuk melacak file pada disk atau partisi, mengontrol bagaimana data disimpan dan diperoleh kembali dalam komputasi.

Berikut merupakan **implementasi dari manajemen partisi dan filesystem** dan sistem operasi yang digunakan adalah **Ubuntu 16.04 LTS** :

Lab 7.1 Melihat daftar hard disk pada komputer

1. Untuk menampilkan atau melihat disk atau media penyimpanan yang terdapat pada komputer Anda, dapat menggunakan perintah berikut:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk -l  
[sudo] password for mazharrasyad:  
Disk /dev/sda: 298,1 GiB, 320072933376 bytes, 625142448 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  
Disklabel type: dos  
Disk identifier: 0x6cfdbe18  
  
Device      Boot      Start        End    Sectors    Size Id Type  
/dev/sda1                2046  207998975  207996930    99,2G  5 Extended  
/dev/sda2      207998976  209022975    1024000     500M  7 HPFS/NTFS/exFAT  
/dev/sda3      209022976  457371647  248348672   118,4G  7 HPFS/NTFS/exFAT  
/dev/sda4      457371648  625141759  167770112     80G  83 Linux  
/dev/sda5          2048    7999487    7997440     3,8G  82 Linux swap / Solaris  
/dev/sda6      8001536  203804671  195803136    93,4G  83 Linux  
  
Partition 1 does not start on physical sector boundary.  
Partition table entries are not in disk order.  
  
mazharrasyad@mazharrasyad:~$
```

2. Coba perhatikan berapa ukuran disk Anda ?

- Ukuran disk sekitar 298,1 GB

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk -l  
[sudo] password for mazharrasyad:  
Disk /dev/sda: 298,1 GiB, 320072933376 bytes, 625142448 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  
Disklabel type: dos  
Disk identifier: 0x6cfdbe18
```

Lab 7.2 Membuat partisi baru

1. Buatlah sebuah partisi disk baru pada komputer Anda, dengan tool fdisk. Langkah-langkahnya sebagai berikut:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk /dev/sda  
  
Welcome to fdisk (util-linux 2.27.1).  
Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.  
  
Command (m for help):
```

2. Kemudian tekan tombol 'm' untuk mendapatkan bantuan

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): m  
  
Help:  
  
DOS (MBR)  
a toggle a bootable flag  
b edit nested BSD disklabel  
c toggle the dos compatibility flag  
  
Create a new label  
g create a new empty GPT partition table  
G create a new empty SGI (IRIX) partition table  
o create a new empty DOS partition table  
s create a new empty Sun partition table  
  
Command (m for help):
```

3. Jika Anda sudah paham, coba tekan tombol 'p' untuk menampilkan daftar susunan partisi disk, dan perhatikan outputnya.

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): p  
Disk /dev/sda: 298,1 GiB, 320072933376 bytes, 625142448 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  
Disklabel type: dos  
Disk identifier: 0x6cfdbe18  


| Device    | Boot | Start     | End       | Sectors   | Size   | Id | Type                 |
|-----------|------|-----------|-----------|-----------|--------|----|----------------------|
| /dev/sda1 |      | 2046      | 207998975 | 207996930 | 99,2G  | 5  | Extended             |
| /dev/sda2 |      | 207998976 | 209022975 | 1024000   | 500M   | 7  | HPFS/NTFS/exFAT      |
| /dev/sda3 |      | 209022976 | 457371647 | 248348672 | 118,4G | 7  | HPFS/NTFS/exFAT      |
| /dev/sda4 |      | 457371648 | 625141759 | 167770112 | 80G    | 83 | Linux                |
| /dev/sda5 |      | 2048      | 7999487   | 7997440   | 3,8G   | 82 | Linux swap / Solaris |
| /dev/sda6 |      | 8001536   | 203804671 | 195803136 | 93,4G  | 83 | Linux                |

  
Partition 1 does not start on physical sector boundary.  
Partition table entries are not in disk order.  
Command (m for help):
```

4. Kemudian untuk membuat partisi disk yang baru tekan tombol 'n'

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): n  
All primary partitions are in use.  
Adding logical partition 7  
First sector (203806720-207998975, default 203806720):
```

5. Selanjutnya tentukan nilai sector/cylinder awal. Gunakan saja nilai default, dengan menekan tombol enter.

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): n  
All primary partitions are in use.  
Adding logical partition 7  
First sector (203806720-207998975, default 203806720):  
Last sector, +sectors or +size{K,M,G,T,P} (203806720-207998975, default 207998975):
```

6. Lanjutkan dengan menentukan sector/cylinder akhir, atau ukuran kapasitas partisi disk yang diinginkan, misal Anda menginginkan membuat partisi baru dengan kapasitas 100M, maka ketikkan nilai ukuran/kapasitas +100M ← jangan lupa formatnya +ukuran{M,G}

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): n  
All primary partitions are in use.  
Adding logical partition 7  
First sector (203806720-207998975, default 203806720):  
Last sector, +sectors or +size{K,M,G,T,P} (203806720-207998975, default 207998975): +100M  
  
Created a new partition 7 of type 'Linux' and of size 100 MiB.  
Command (m for help):
```

- Tekan tombol p untuk melihat partisi yang telah dibuat

```
mazharrasyad@mazharrasyad: ~
Command (m for help): p
Disk /dev/sda: 298,1 GiB, 320072933376 bytes, 625142448 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
Disklabel type: dos
Disk identifier: 0x6cfdbe18
```

Device	Boot	Start	End	Sectors	Size	Id	Type
/dev/sda1		2046	207998975	207996930	99,2G	5	Extended
/dev/sda2		207998976	209022975	1024000	500M	7	HPFS/NTFS/exFAT
/dev/sda3		209022976	457371647	248348672	118,4G	7	HPFS/NTFS/exFAT
/dev/sda4		457371648	625141759	167770112	80G	83	Linux
/dev/sda5		2048	7999487	7997440	3,8G	82	Linux swap / Solaris
/dev/sda6		8001536	203804671	195803136	93,4G	83	Linux
/dev/sda7		203806720	204011519	204800	100M	83	Linux

```
Partition 1 does not start on physical sector boundary.
Partition table entries are not in disk order.
Command (m for help):
```

7. Kemudian ubah id partisi nya dengan id partisi 'b' (W95 FAT32). Untuk mengetahui daftar partisi id , tekan tombol " l " (el).

```
mazharrasyad@mazharrasyad: ~
Command (m for help): l
```

0	Empty	24	NEC DOS	81	Minix / old Lin	bf	Solaris
1	FAT12	27	Hidden NTFS Win	82	Linux swap / So	c1	DRDOS/sec (FAT-
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

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

- Selanjutnya untuk mengubah partisi id tekan tombol "t".

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): t  
Partition number (1-7, default 7):
```

- Kemudian tentukan nomor partisinya.

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): t  
Partition number (1-7, default 7): 7  
Partition type (type L to list all types):
```

- Dan selanjutnya tulis kode hexa partisi idnya , untuk W95 FAT32 tekan tombol 'b'.

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): t  
Partition number (1-7, default 7): 7  
Partition type (type L to list all types): b  
  
Changed type of partition 'Linux' to 'W95 FAT32'.  
Command (m for help):
```

8. Jika sudah, maka tekan tombol 'w' untuk menyetujui/menulis perubahan susunan partisi.

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): w  
The partition table has been altered.  
Calling ioctl() to re-read partition table.  
Re-reading the partition table failed.: Device or resource busy  
  
The kernel still uses the old table. The new table will be used at the next reboot or after you run partprobe(8) or kpartx(8).  
mazharrasyad@mazharrasyad:~$
```


9. Kemudian periksa kembali dengan menekan tombol 'p', apakah partisi baru sudah berhasil terbentuk.

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk /dev/sda  
  
Welcome to fdisk (util-linux 2.27.1).  
Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.  
  
Command (m for help): p  
Disk /dev/sda: 298,1 GiB, 320072933376 bytes, 625142448 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  
Disklabel type: dos  
Disk identifier: 0x6cfdbe18  
  
Device      Boot      Start          End      Sectors      Size Id Type  
/dev/sda1                2046 207998975 207996930    99,2G  5 Extended  
/dev/sda2      207998976 209022975    1024000     500M  7 HPFS/NTFS/exFAT  
/dev/sda3      209022976 457371647 248348672   118,4G  7 HPFS/NTFS/exFAT  
/dev/sda4      457371648 625141759 167770112     80G  83 Linux  
/dev/sda5                2048    7999487    7997440     3,8G  82 Linux swap / Solaris  
/dev/sda6      8001536 203804671 195803136    93,4G  83 Linux  
/dev/sda7      203806720 204011519    204800     100M  b W95 FAT32  
  
Partition 1 does not start on physical sector boundary.  
Partition table entries are not in disk order.  
Command (m for help):
```

10. Untuk keluar dari fdisk tekan tombol 'q'.

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): q  
mazharrasyad@mazharrasyad:~$
```

11. Kemudian restart komputer agar sistem operasi mengenal partisi baru

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ reboot
```

12. Lakukan sekali lagi untuk membuat partisi baru dengan ukuran 120M, tetapi tentukan id partisinya adalah "Linux swap"

- Masuk kedalam software manajemen partisi (contoh : fdisk)

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk /dev/sda  
  
Welcome to fdisk (util-linux 2.27.1).  
Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.  
  
Command (m for help):
```

- Tekan n untuk membuat partisi baru kemudian sector default dan tulis +120M

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): n  
All primary partitions are in use.  
Adding logical partition 8  
First sector (204013568-207998975, default 204013568):  
Last sector, +sectors or +size{K,M,G,T,P} (204013568-207998975, default 207998975): +120M  
  
Created a new partition 8 of type 'Linux' and of size 120 MiB.  
Command (m for help):
```

- Tekan l dan cari code hexa Linux swap

```
mazharrasyad@mazharrasyad: ~  
Command (m for help): l  


|    |                 |    |                 |    |                 |    |                 |
|----|-----------------|----|-----------------|----|-----------------|----|-----------------|
| 0  | Empty           | 24 | NEC DOS         | 81 | Minix / old Lin | bf | Solaris         |
| 1  | FAT12           | 27 | Hidden NTFS Win | 82 | Linux swap / So | c1 | DRDOS/sec (FAT- |
| 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             |

  
Command (m for help):
```


- Tekan p untuk memeriksa berapa nomor partisi yang baru dibuat

```
mazharrasyad@mazharrasyad: ~
Command (m for help): p
Disk /dev/sda: 298,1 GiB, 320072933376 bytes, 625142448 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
Disklabel type: dos
Disk identifier: 0x6cfdbe18
```

Device	Boot	Start	End	Sectors	Size	Id	Type
/dev/sda1		2046	207998975	207996930	99,2G	5	Extended
/dev/sda2		207998976	209022975	1024000	500M	7	HPFS/NTFS/exFAT
/dev/sda3		209022976	457371647	248348672	118,4G	7	HPFS/NTFS/exFAT
/dev/sda4		457371648	625141759	167770112	80G	83	Linux
/dev/sda5		2048	7999487	7997440	3,8G	82	Linux swap / Solaris
/dev/sda6		8001536	203804671	195803136	93,4G	83	Linux
/dev/sda7		203806720	204011519	204800	100M	b	W95 FAT32
/dev/sda8		204013568	204259327	245760	120M	83	Linux

```
Partition 1 does not start on physical sector boundary.
Partition table entries are not in disk order.
Command (m for help):
```

- Tekan t dan pilih partisi no 8 dengan code hexa 82

```
mazharrasyad@mazharrasyad: ~
Command (m for help): t
Partition number (1-8, default 8): 8
Partition type (type L to list all types): 82
Changed type of partition 'Linux' to 'Linux swap / Solaris'.
Command (m for help):
```

- Tekan w untuk menulis perubahan yang terjadi dan keluar dari fdisk

```
mazharrasyad@mazharrasyad: ~
Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Re-reading the partition table failed.: Device or resource busy

The kernel still uses the old table. The new table will be used at the next reboot or after you run partprobe(8) or kpartx(8).
mazharrasyad@mazharrasyad:~$
```

- Kemudian restart komputernya

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ reboot
```

- Berikut partisi yang baru saja dibuat

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk -l  
Disk /dev/sda: 298,1 GiB, 320072933376 bytes, 625142448 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  
Disklabel type: dos  
Disk identifier: 0x6cfdbe18  
  
Device      Boot      Start        End    Sectors    Size Id Type  
/dev/sda1                2046  207998975  207996930    99,2G  5 Extended  
/dev/sda2          207998976  209022975    1024000     500M  7 HPFS/NTFS/exFAT  
/dev/sda3          209022976  457371647  248348672   118,4G  7 HPFS/NTFS/exFAT  
/dev/sda4          457371648  625141759  167770112     80G  83 Linux  
/dev/sda5              2048    7999487    7997440     3,8G  82 Linux swap / Solaris  
/dev/sda6          8001536  203804671  195803136   93,4G  83 Linux  
/dev/sda7          203806720  204011519     204800     100M  b W95 FAT32  
/dev/sda8          204013568  204259327     245760     120M  82 Linux swap / Solaris  
  
Partition 1 does not start on physical sector boundary.  
Partition table entries are not in disk order.  
  
mazharrasyad@mazharrasyad:~$
```

Lab 7.3 Memberi filesystem

1. Partisi disk baru yang telah dibuat , selanjutnya diberi file system yaitu Partisi disk pertama yang berukuran 100M tadi , coba Anda ubah id partisinya dengan id 'Linux' (83). Gunakan perintah:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk /dev/sda  
Welcome to fdisk (util-linux 2.27.1).  
Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.  
  
Command (m for help): t  
Partition number (1-8, default 8): 7  
Partition type (type L to list all types): 83  
  
Changed type of partition 'W95 FAT32' to 'Linux'.  
  
Command (m for help): w  
The partition table has been altered.  
Calling ioctl() to re-read partition table.  
Re-reading the partition table failed.: Device or resource busy  
  
The kernel still uses the old table. The new table will be used at the next reboot or after you run partprobe(8) or kpartx(8).  
mazharrasyad@mazharrasyad:~$
```

2. Kemudian Anda format dengan filesystem ext3, dengan perintah berikut:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo mkfs.ext3 /dev/sda7  
mke2fs 1.42.13 (17-May-2015)  
Creating filesystem with 102400 1k blocks and 25688 inodes  
Filesystem UUID: b8931b3d-2831-43dd-97a6-aaf5e01cb7ca  
Superblock backups stored on blocks:  
8193, 24577, 40961, 57345, 73729  
  
Allocating group tables: done  
Writing inode tables: done  
Creating journal (4096 blocks): done  
Writing superblocks and filesystem accounting information: done  
mazharrasyad@mazharrasyad:~$
```

3. Lakukan hal yang sama dengan partisi baru yang berukuran 120M,
 - Ubah id partisi nya dari "Linux Swap" menjadi "Linux"

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk /dev/sda  
Welcome to fdisk (util-linux 2.27.1).  
Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.  
  
Command (m for help): t  
Partition number (1-8, default 8): 8  
Partition type (type L to list all types): 83  
  
Changed type of partition 'Linux swap / Solaris' to 'Linux'.  
  
Command (m for help): w  
The partition table has been altered.  
Calling ioctl() to re-read partition table.  
Re-reading the partition table failed.: Device or resource busy  
  
The kernel still uses the old table. The new table will be used at the next rebo  
ot or after you run partprobe(8) or kpartx(8).  
mazharrasyad@mazharrasyad:~$
```

- Kemudian format dengan filesystem ext3

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo mkfs.ext3 /dev/sda8  
mke2fs 1.42.13 (17-May-2015)  
Creating filesystem with 122880 1k blocks and 30720 inodes  
Filesystem UUID: 1348fd26-61dd-4ae9-b24e-49c0ec7de03e  
Superblock backups stored on blocks:  
      8193, 24577, 40961, 57345, 73729  
  
Allocating group tables: done  
Writing inode tables: done  
Creating journal (4096 blocks): done  
Writing superblocks and filesystem accounting information: done  
mazharrasyad@mazharrasyad:~$
```

Lab 7.4 Memetakan (mounting) filesystem

1. Kedua partisi disk baru (100M dan 120M) kini telah memiliki format filesystem ext3. Agar kedua partisi disk baru tersebut dapat diakses untuk dibaca dan ditulis maka lakukan pemetaan (mounting) filesystem keduanya pada suatu direktori. Selanjutnya buat direktori /mnt/data1 dan /mnt/data2

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo mkdir /mnt/{data1,data2}  
mazharrasyad@mazharrasyad:~$ ls /mnt  
BEB4CB8FB4CB491B  BootInfo  boot-sav  data1  data2  E4206331206309BE  
mazharrasyad@mazharrasyad:~$
```

2. Kemudian mounting filesystem yang berukuran 100M ke direktori /mnt/data1 dengan perintah berikut:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo mount /dev/sda7 /mnt/data1  
mazharrasyad@mazharrasyad:~$
```

3. Lakukan pemeriksaan apakah filesystem tersebut berhasil di mounting atau tidak dengan perintah berikut:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ df -h  
Filesystem      Size  Used Avail Use% Mounted on  
udev            1,7G   0    1,7G   0% /dev  
tmpfs           389M  6,4M  383M   2% /run  
/dev/sda6       92G   68G   20G   78% /  
tmpfs           1,9G  240K   1,9G   1% /dev/shm  
tmpfs           5,0M   4,0K   5,0M   1% /run/lock  
tmpfs           1,9G   0    1,9G   0% /sys/fs/cgroup  
cgmanagerfs    100K   0    100K   0% /run/cgmanager/fs  
tmpfs           389M   56K   389M   1% /run/user/1000  
/dev/sda7       93M   1,6M   87M   2% /mnt/data1  
mazharrasyad@mazharrasyad:~$
```

4. Jika berhasil di mounting, coba Anda salin file /etc/passwd dan direktori /boot ke filesystem tersebut dengan perintah berikut:
 - Menyalin file passwd

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo cp /etc/passwd /mnt/data1  
mazharrasyad@mazharrasyad:~$
```

- Menyalin isi direktori /boot

```
mazharrasyad@mazharrasyad: ~
mazharrasyad@mazharrasyad:~$ sudo cp -rf /boot /mnt/data1
cp: error writing '/mnt/data1/boot/initrd.img-4.4.0-140-generic': No space left on device
cp: error writing '/mnt/data1/boot/initrd.img-4.19': No space left on device
cp: error writing '/mnt/data1/boot/initrd.img-4.4.0-141-generic': No space left on device
cp: error writing '/mnt/data1/boot/config-4.19.0.old': No space left on device
cp: error writing '/mnt/data1/boot/initrd.img-4.15.0-43-generic': No space left on device
cp: error writing '/mnt/data1/boot/vmlinuz-4.4.0-141-generic': No space left on device
cp: error writing '/mnt/data1/boot/vmlinuz-4.15.0-39-generic': No space left on device
cp: cannot create regular file '/mnt/data1/boot/config-4.15.0-39-generic': No space left on device
cp: cannot create regular file '/mnt/data1/boot/vmlinuz-4.15.0-39-generic': No space left on device
mazharrasyad@mazharrasyad:~$
```

5. Perhatikan apakah proses copy berhasil ?

- Pada saat menyalin file passwd berhasil dilakukan tetapi saat menyalin isi direktori boot tidak berhasil karena ruang penyimpanan yang tidak mencukupi
- Berikut ukuran direktori /boot adalah 854M

```
mazharrasyad@mazharrasyad: ~
mazharrasyad@mazharrasyad:~$ du -h /boot
2,3M    /boot/grub/fonts
140K    /boot/grub/locale
2,5M    /boot/grub/i386-pc
7,2M    /boot/grub
2,3M    /boot/grub.bak/fonts
2,5M    /boot/grub.bak/i386-pc
4,8M    /boot/grub.bak
854M    /boot
mazharrasyad@mazharrasyad:~$
```

- Sementara ukuran direktori /mnt/data1 adalah 93M

```
mazharrasyad@mazharrasyad: ~
mazharrasyad@mazharrasyad:~$ df -h /mnt/data1
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda7        93M   93M    0 100% /mnt/data1
mazharrasyad@mazharrasyad:~$
```


6. Ulangi langkah yang sama seperti diatas untuk melakukan mounting file system yang kedua (berukuran 120M) ke direktori /mnt/data2
- Mounting /dev/sda8 ke /mnt/data2

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo mount /dev/sda8 /mnt/data2  
mazharrasyad@mazharrasyad:~$
```

- Memeriksa apakah berhasil atau tidak mountingnya

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ df -h  
Filesystem      Size  Used Avail Use% Mounted on  
udev            1,7G   0    1,7G   0% /dev  
tmpfs           389M   6,4M  383M   2% /run  
/dev/sda6       92G    68G   20G   78% /  
tmpfs           1,9G   40M   1,9G   3% /dev/shm  
tmpfs           5,0M   4,0K   5,0M   1% /run/lock  
tmpfs           1,9G   0     1,9G   0% /sys/fs/cgroup  
cgfs            100K   0     100K   0% /run/cgmanager/fs  
tmpfs           389M   60K   389M   1% /run/user/1000  
/dev/sda7       93M    93M   0     100% /mnt/data1  
/dev/sda8       113M   1,6M  105M   2% /mnt/data2  
mazharrasyad@mazharrasyad:~$
```

- Menyalin file /etc/passwd ke /mnt/data2

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo cp /etc/passwd /mnt/data2  
mazharrasyad@mazharrasyad:~$
```

- Menyalin isi direktori /boot ke /mnt/data2

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo cp -rf /boot /mnt/data2  
cp: error writing '/mnt/data2/boot/initrd.img-4.19': No space left on device  
cp: error writing '/mnt/data2/boot/initrd.img-4.4.0-141-generic': No space left  
on device  
cp: error writing '/mnt/data2/boot/config-4.19.0.old': No space left on device  
cp: error writing '/mnt/data2/boot/initrd.img-4.15.0-43-generic': No space left  
on device  
cp: error writing '/mnt/data2/boot/vmlinuz-4.4.0-141-generic': No space left on  
device  
cp: cannot create regular file '/mnt/data2/boot/System.map-4.15.0-39-generic': N  
o space left on device  
cp: cannot create regular file '/mnt/data2/boot/retpoline-4.15.0-39-generic': No  
space left on device  
cp: cannot create regular file '/mnt/data2/boot/config-4.15.0-39-generic': No sp  
ace left on device  
cp: cannot create regular file '/mnt/data2/boot/vmlinuz-4.15.0-39-generic': No s  
pace left on device  
mazharrasyad@mazharrasyad:~$
```

- Melihat isi dari /mnt/data1 dan /mnt/data2 apakah berhasil atau tidak

```
mazharrasyad@mazharrasyad: ~
mazharrasyad@mazharrasyad:~$ ls /mnt/data1
boot  lost+found  passwd
mazharrasyad@mazharrasyad:~$ ls /mnt/data2
boot  lost+found  passwd
mazharrasyad@mazharrasyad:~$
```

Lab 7.5 Mengatur file /etc/fstab

1. Agar partisi partisi baru yang telah Anda buat dapat secara otomatis di-mounting oleh sistem saat proses boot, maka Anda harus mengatur konfigurasi pada file /etc/fstab. Tambahkan baris berikut ini pada akhir baris file /etc/fstab. (/dev/sdX dan /dev/sdY Anda ubah dan sesuaikan dengan nomor partisi yang baru Anda buat)
- Ketikkan perintah berikut untuk membuka file /etc/fstab

```
mazharrasyad@mazharrasyad: ~
mazharrasyad@mazharrasyad:~$ sudo nano /etc/fstab
```

- Jika sudah maka akan muncul isi dari file /etc/fstab

```
mazharrasyad@mazharrasyad: ~
GNU nano 2.5.3      File: /etc/fstab
# /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/sda6 during installation
UUID=0b8d6de4-5d55-45ec-ad69-1ccb6c6b4215 /                ext4      errors=remoun$
# swap was on /dev/sda5 during installation
UUID=95994d3b-0356-455b-9fba-41e19429dc8e none              swap      sw          $
/dev/disk/by-uuid/BEB4CB8FB4CB491B /mnt/BEB4CB8FB4CB491B auto nosuid,nodev,nofa$
/dev/disk/by-uuid/E4206331206309BE /mnt/E4206331206309BE auto nosuid,nodev,nofa$
[ Read 13 lines ]
^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify   ^C Cur Pos
^X Exit      ^R Read File ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

- Scroll ke bawah hingga baris akhir

```
mazharrasyad@mazharrasyad: ~
GNU nano 2.5.3      File: /etc/fstab      Modified

# / was on /dev/sda6 during installation
UUID=0b8d6de4-5d55-45ec-ad69-1ccb6c6b4215 /          ext4    errors=remoun$
# swap was on /dev/sda5 during installation
UUID=95994d3b-0356-455b-9fba-41e19429dc8e none        swap    sw        $
/dev/disk/by-uuid/BEB4CB8FB4CB491B /mnt/BEB4CB8FB4CB491B auto nosuid,nodev,nofa$
/dev/disk/by-uuid/E4206331206309BE /mnt/E4206331206309BE auto nosuid,nodev,nofa$

^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify   ^C Cur Pos
^X Exit      ^R Read File ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

- Kemudian ketikkan perintah berikut dan simpan

```
mazharrasyad@mazharrasyad: ~
GNU nano 2.5.3      File: /etc/fstab      Modified

# / was on /dev/sda6 during installation
UUID=0b8d6de4-5d55-45ec-ad69-1ccb6c6b4215 /          ext4    errors=remoun$
# swap was on /dev/sda5 during installation
UUID=95994d3b-0356-455b-9fba-41e19429dc8e none        swap    sw        $
/dev/disk/by-uuid/BEB4CB8FB4CB491B /mnt/BEB4CB8FB4CB491B auto nosuid,nodev,nofa$
/dev/disk/by-uuid/E4206331206309BE /mnt/E4206331206309BE auto nosuid,nodev,nofa$

/dev/sda7      /mnt/data1     ext3    defaults    0          0
/dev/sda8      /mnt/data2     ext3    defaults    0          0

^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify   ^C Cur Pos
^X Exit      ^R Read File ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

2. Selanjutnya restart komputer Anda

```
mazharrasyad@mazharrasyad: ~
mazharrasyad@mazharrasyad:~$ reboot
```

3. Kemudian perhatikan apakah kedua partisi yang baru tersebut saat ini telah otomatis di mounting ? Gunakan perintah berikut:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ df -h  
Filesystem      Size  Used Avail Use% Mounted on  
udev            1,7G   0    1,7G   0% /dev  
tmpfs           389M   6,4M  383M   2% /run  
/dev/sda6       92G   68G   20G   78% /  
tmpfs           1,9G   184K   1,9G   1% /dev/shm  
tmpfs           5,0M   4,0K   5,0M   1% /run/lock  
tmpfs           1,9G   0     1,9G   0% /sys/fs/cgroup  
/dev/sda8       113M  113M   0 100% /mnt/data2  
/dev/sda7       93M   93M   0 100% /mnt/data1  
cgmfs           100K   0     100K   0% /run/cgmanager/fs  
tmpfs           389M   48K   389M   1% /run/user/1000  
mazharrasyad@mazharrasyad:~$
```

Lab 7.6 Membuat partisi untuk swap

1. Lakukan hal yang sama seperti lab.7.2 , untuk membuat partisi baru dengan ukuran 100M, dan jangan lupa ubah id partisinya dengan id "Linux Swap"

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo fdisk /dev/sda  
[sudo] password for mazharrasyad:  
  
Welcome to fdisk (util-linux 2.27.1).  
Changes will remain in memory only, until you decide to write them.  
Be careful before using the write command.  
  
Command (m for help): n  
All primary partitions are in use.  
Adding logical partition 9  
First sector (204261376-207998975, default 204261376):  
Last sector, +sectors or +size{K,M,G,T,P} (204261376-207998975, default 207998975): +100M  
  
Created a new partition 9 of type 'Linux' and of size 100 MiB.  
  
Command (m for help): t  
Partition number (1-9, default 9): 9  
Partition type (type L to list all types): 82  
  
Changed type of partition 'Linux' to 'Linux swap / Solaris'.  
  
Command (m for help): w  
The partition table has been altered.  
Calling ioctl() to re-read partition table.  
Re-reading the partition table failed.: Device or resource busy  
  
The kernel still uses the old table. The new table will be used at the next reboot or after you run partprobe(8) or kpartx(8).  
mazharrasyad@mazharrasyad:~$
```

2. Kemudian jadikan partisi tersebut untuk swap, dengan perintah setup area partisi baru tersebut sebagai area untuk linux swap, dengan perintah berikut:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo mkswap /dev/sda9  
[sudo] password for mazharrasyad:  
Setting up swspace version 1, size = 100 MiB (104853504 bytes)  
no label, UUID=4b6db46b-d4d1-456e-9418-c65d253eaf18  
mazharrasyad@mazharrasyad:~$
```

3. Amati terlebih dahulu ukuran swap saat ini dengan perintah :

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo free -m  
              total        used        free      shared  buff/cache   available  
Mem:           3885          670         2192          192         1022         2765  
Swap:              0              0              0  
mazharrasyad@mazharrasyad:~$
```

4. Kemudian aktifkan swap baru dengan perintah berikut:

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo swapon /dev/sda9  
mazharrasyad@mazharrasyad:~$
```

5. Dan sekarang perhatikan kembali apakah ukuran swap bertambah ?

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo free -m  
              total        used        free      shared  buff/cache   available  
Mem:           3885          674         2158          217         1052         2735  
Swap:             99              0             99  
mazharrasyad@mazharrasyad:~$
```

6. Jika ukuran swap bertambah sebesar +/- 100M artinya proses pembuatan partisi baru untuk swap berhasil. Selanjutnya agar swap baru secara otomatis diaktifkan saat sistem boot, tambahkan entri baris berikut pada akhir baris file /etc/fstab:

```
mazharrasyad@mazharrasyad: ~  
GNU nano 2.5.3      File: /etc/fstab      Modified  
# <file system> <mount point> <type> <options>      <dump> <pass>  
# / was on /dev/sda6 during installation  
UUID=0b8d6de4-5d55-45ec-ad69-1ccb6c6b4215 /          ext4      errors=remoun$  
# swap was on /dev/sda5 during installation  
#UUID=95994d3b-0356-455b-9fba-41e19429dc8e none          swap      sw          $  
/dev/disk/by-uuid/BEB4CB8FB4CB491B /mnt/BEB4CB8FB4CB491B auto nosuid,nodev,nofa$  
/dev/disk/by-uuid/E4206331206309BE /mnt/E4206331206309BE auto nosuid,nodev,nofa$  
  
/dev/sda7          /mnt/data1        ext3      defaults    0          0  
/dev/sda8          /mnt/data2        ext3      defaults    0          0  
/dev/sda9          swap              swap      defaults    0          0  
  
^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify     ^C Cur Pos  
^X Exit          ^R Read File    ^_ Replace      ^U Uncut Text  ^T To Spell    ^_ Go To Line
```

7. Restart komputer Anda dan amati ukuran swap !

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ reboot
```

- Ukuran swap setelah komputer direstart

```
mazharrasyad@mazharrasyad: ~  
mazharrasyad@mazharrasyad:~$ sudo free -m  
[sudo] password for mazharrasyad:  
Mem:          total        used        free        shared    buff/cache   available  
Swap:          99           0          99
```

----- Selesai -----

Referensi

- Modul praktikum Administrasi sistem dan jaringan – STT NF (Disusun oleh: Henry Saptono, S.Si, M.Kom)