

CYSE 270: Linux System for Cybersecurity

Lab 7 – Manage Local Storage

Part I— Check your file system (30 points).

Submit the screenshot for All the three steps.

Step 1. Execute the `ls /dev/sd*` command to see the current hard disk devices. [use `sudo`]

```
(marshall@kali)-[~]
$ sudo ls /dev/sd*
[sudo] password for marshall:
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb /dev/sdb1

(marshall@kali)-[~]
$
```

Step 2. Execute the `fdisk -l` command to list the current hard disk partitions. [use `sudo`]

```
(marshall@kali)-[~]
$ sudo fdisk -l
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 sectors
Disk model: VBOX HARDDISK
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: 0x4932e964

Device Boot Start End Sectors Size Id Type
/dev/sda1 * 2048 50427903 50425856 24G 83 Linux
/dev/sda2 50429950 52426751 1996802 975M f W95 Ext'd (LBA)
/dev/sda5 50429952 52426751 1996800 975M 82 Linux swap / Solar

Disk /dev/sdb: 300.3 MiB, 314887168 bytes, 615014 sectors
Disk model: VBOX HARDDISK
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: 0x753d7334

Device Boot Start End Sectors Size Id Type
/dev/sdb1 2048 615013 612966 299.3M 83 Linux

(marshall@kali)-[~]
```

Step 3. Execute the **parted -l** command to list the current hard disk partition table. [use sudo]

```
(marshall@kali)-[~]
$ sudo parted -l
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
  1      1049kB  25.8GB  25.8GB  primary  ext4         boot
  2      25.8GB  26.8GB  1022MB  extended lba
  5      25.8GB  26.8GB  1022MB  logical  linux-swap(v1) swap

Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 315MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

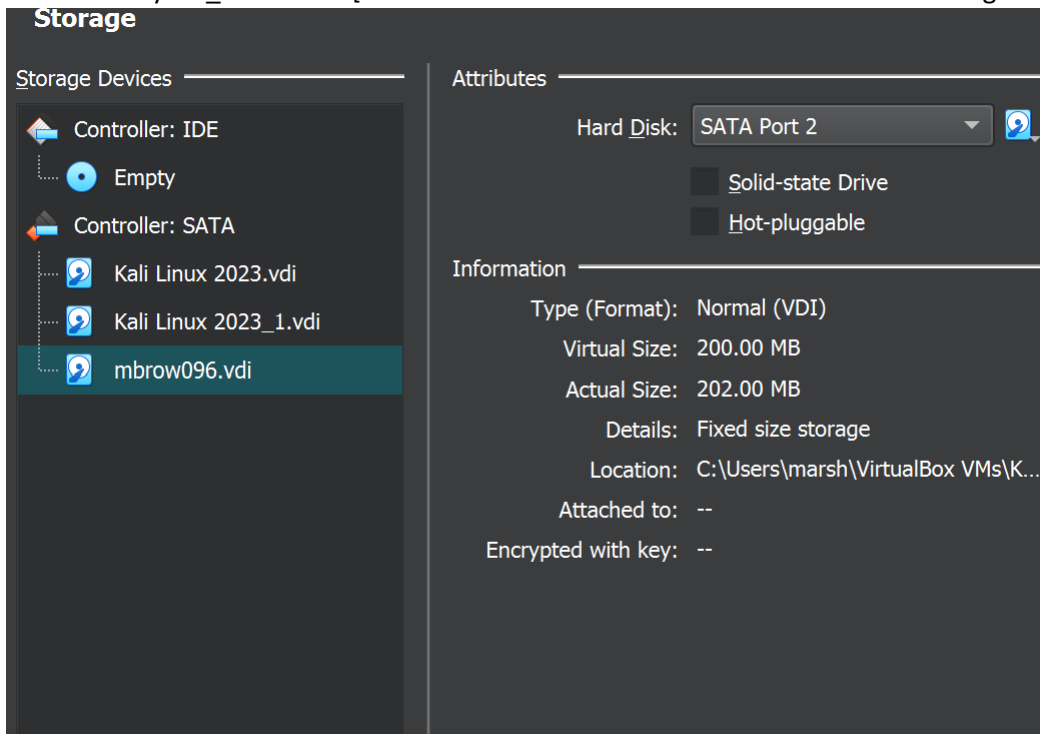
Number  Start   End     Size    Type     File system  Flags
  1      1049kB  315MB   314MB   primary  ext4
```

```
(marshall@kali)-[~]
$
```

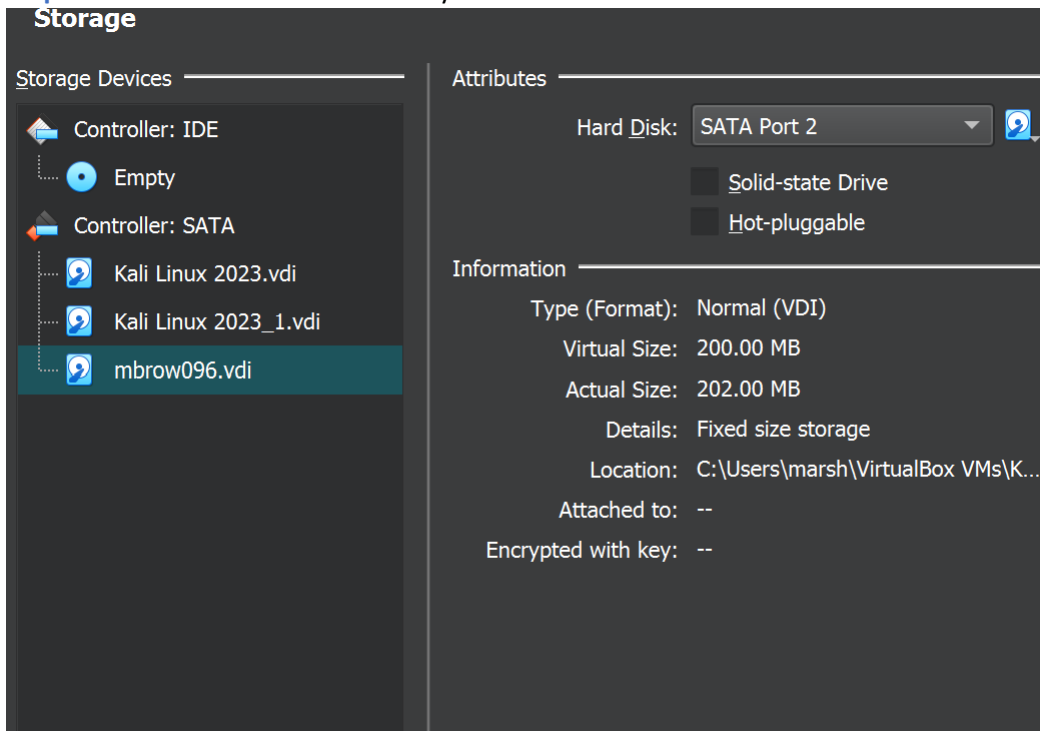
Part II– Create a new virtual disk (30 points)

Submit the screenshot for All the three steps.

Step 1. In the VM setting, attach a new virtual hard disk with the size of 200 MB to our current Linux VM. Name it as “your_midas.vdi” [**HINT:** Please refer to the slides and discussion during the class for week 7]



Step 2. Load this virtual hard disk to your virtual machine.



Step 3. Repeat the steps in Part I and **highlight the differences** after adding the new virtual hard disk.

```
marshall@kali: ~  
File Actions Edit View Help  
(marshall@kali)-[~]  
$ sudo ls /dev/sd*  
[sudo] password for marshall:  
/dev/sda /dev/sda2 /dev/sdb /dev/sdc  
/dev/sda1 /dev/sda5 /dev/sdb1  
(marshall@kali)-[~]  
$
```

```
(marshall@kali)-[~]  
$ sudo fdisk -l  
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 sectors  
Disk model: VBOX HARDDISK  
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: 0x4932e964  
  
Device Boot Start End Sectors Size Id Type  
/dev/sda1 * 2048 50427903 50425856 24G 83 Linux  
/dev/sda2 50429950 52426751 1996802 975M f W95 Ext'd (LBA)  
/dev/sda5 50429952 52426751 1996800 975M 82 Linux swap / Sola  
  
Disk /dev/sdc: 200 MiB, 209715200 bytes, 409600 sectors  
Disk model: VBOX HARDDISK  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
  
Disk /dev/sdb: 300.3 MiB, 314887168 bytes, 615014 sectors  
Disk model: VBOX HARDDISK  
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
```

```
(marshall@kali)-[~]  
$ sudo parted -l  
Model: ATA VBOX HARDDISK (scsi)  
Disk /dev/sda: 26.8GB  
Sector size (logical/physical): 512B/512B  
Partition Table: msdos  
Disk Flags:  
  
Number Start End Size Type File system Flags  
1 1049kB 25.8GB 25.8GB primary ext4 boot  
2 25.8GB 26.8GB 1022MB extended lba  
5 25.8GB 26.8GB 1022MB logical linux-swaps(v1) swap  
  
Model: ATA VBOX HARDDISK (scsi)  
Disk /dev/sdb: 315MB  
Sector size (logical/physical): 512B/512B  
Partition Table: msdos  
Disk Flags:  
  
Number Start End Size Type File system Flags  
1 1049kB 315MB 314MB primary ext4  
  
Error: /dev/sdc: unrecognised disk label  
Model: ATA VBOX HARDDISK (scsi)  
Disk /dev/sdc: 210MB  
Sector size (logical/physical): 512B/512B  
Partition Table: unknown  
Disk Flags:
```

Part III – Creating Partitions and Filesystems (60 points)

Submit the screenshot for All the three eight steps.

Step 1. Use the **fdisk** command to create a new primary partition on the new virtual hard disk attached in Part II.

```
(marshall@kali)-[~]
$ sudo fdisk /dev/sdc

Welcome to fdisk (util-linux 2.39.2).
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.
Created a new DOS (MBR) disklabel with disk identifier 0x2938da3a.

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 (2048-409599, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-409599, default 409599):

Created a new partition 1 of type 'Linux' and of size 199 MiB.

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

(marshall@kali)-[~]
$
```

Step 2. Use the correct command to **create an ext4 filesystem** on the new partition.

```
(marshall@kali)-[~]
$ sudo mkfs.ext4 /dev/sdc
mke2fs 1.47.0 (5-Feb-2023)
Found a dos partition table in /dev/sdc
Proceed anyway? (y,N) y
Creating filesystem with 204800 1k blocks and 51200 inodes
Filesystem UUID: 32b5201f-f7bb-4430-be39-1e8c61988863
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

(marshall@kali)-[~]
$
```

Step 3. Repeat the steps in Part I and highlight the differences.

```
(marshall@kali)-[~]
$ sudo fdisk -l
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 sectors
Disk model: VBOX HARDDISK
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: 0x4932e964

Device      Boot    Start        End    Sectors    Size Id Type
/dev/sda1   *          2048    50427903    50425856    24G 83 Linux
/dev/sda2             50429950    52426751    1996802    975M  f W95 Ext'd (LBA)
/dev/sda5             50429952    52426751    1996800    975M  82 Linux swap / Solaris

Disk /dev/sdc: 200 MiB, 209715200 bytes, 409600 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/sdb: 300.3 MiB, 314887168 bytes, 615014 sectors
Disk model: VBOX HARDDISK
```

```
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdc: 210MB
Sector size (logical/physical): 512B/512B
Partition Table: loop
Disk Flags:

Number  Start   End     Size    File system  Flags
  1      0.00B   210MB   210MB   ext4
```

Step 4. Make a new directory named **/cyse**. And **mount** the new partition under this directory.

```
(marshall@kali)-[~]
$ sudo mkdir /cyse

(marshall@kali)-[~]
$ sudo mount /dev/sdc /cyse

(marshall@kali)-[~]
$
```


Step 5. Use the **df** command to check the mounting point of the new partition.

```
(marshall@kali)-[~]
$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            5.4G   0    5.4G   0% /dev
tmpfs           1.1G  1.1M   1.1G   1% /run
/dev/sda1       24G   14G   8.5G  63% /
tmpfs           5.4G   0    5.4G   0% /dev/shm
tmpfs           5.0M   0    5.0M   0% /run/lock
tmpfs           1.1G  116K   1.1G   1% /run/user/1000
/dev/sdc        182M   14K   168M   1% /cyse

(marshall@kali)-[~]
$
```

Step 6. Create a new file named for **YourMIDAS.txt** (replace YourMIDAS with your MIDAS ID) in the directory **/cyse** and put your name in that file.

```
(marshall@kali)-[/cyse]
$ sudo gedit mbrow096.txt

(gedit:11159): tepl-WARNING **: 19:05:
'Kali-Dark' default style scheme.

(gedit:11159): tepl-WARNING **: 19:05:
ur installation.

(marshall@kali)-[/cyse]
$
```

Step 7. **Unmount** **/cyse** directory.

```
(marshall@kali)-[~]
$ sudo umount /cyse

(marshall@kali)-[~]
$
```


Step 8. Check the contents in /cyse directory. What do you find? There was my file I created earlier and a “lost+found” directory in there as well. But now it’s empty:



```
(marshall@kali)-[~]  
$ ls /cyse  
  
(marshall@kali)-[~]  
$
```