

CYSE 270: Linux System for Cybersecurity

Lab 7 – Manage Local Storage

CYSE 270: Linux System for Cybersecurity

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]

```
(jahmire@kali)~  
└─$ sudo ls /dev/sd*  
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5
```

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

```
(jahmire@kali)~  
└─$ sudo fdisk -l  
[sudo] password for jahmire:  
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: 0x7a1b082e  
  
Device      Boot    Start      End  Sectors  Size Id Type  
/dev/sda1  *           2048 49641471 49639424 23.7G 83 Linux  
/dev/sda2              49643518 52426751 2783234  1.3G  f W95 Ext'd (LBA)  
/dev/sda5              49643520 52426751 2783232  1.3G 82 Linux swap / Solaris
```

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

```
(jahmire@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  25.4GB  25.4GB  primary  ext4         boot
  2      25.4GB  26.8GB  1425MB  extended lba
  5      25.4GB  26.8GB  1425MB  logical  linux-swap(v1) swap
```

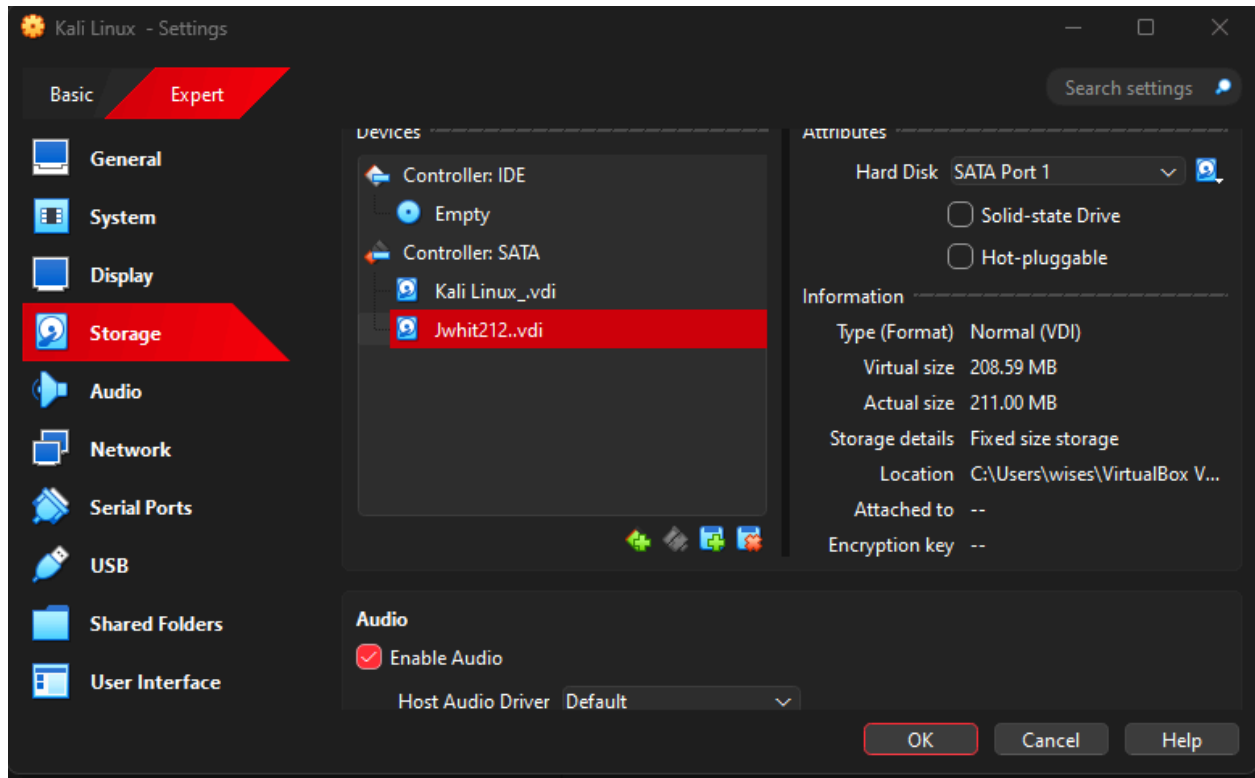
Part II– Create a new virtual disk (30 points)

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]

Jwhit212..vdi	208.59 MB	211.00 MB
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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.

```
(jahmire@kali)-[~]
└─$ ls /dev/sd*
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb
```

```
(jahmire@kali)-[~/]
```

```
$ sudo fdisk -l
```

```
[sudo] password for jahmire:
```

```
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: 0x7a1b082e
```

Device	Boot	Start	End	Sectors	Size	Id	Type
/dev/sda1	*	2048	49641471	49639424	23.7G	83	Linux
/dev/sda2		49643518	52426751	2783234	1.3G	f W95	Ext'd (LBA)
/dev/sda5		49643520	52426751	2783232	1.3G	82	Linux swap / Solaris

```
Disk /dev/sdb: 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: 0x7a2c1e22
```

Device	Boot	Start	End	Sectors	Size	Id	Type
/dev/sdb1		2048	52428799	52426752	25G	83	Linux

```
(jahmire@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  25.4GB  25.4GB  primary  ext4         boot
  2      25.4GB  26.8GB  1425MB  extended lba
  5      25.4GB  26.8GB  1425MB  logical  linux-swap(v1) swap

Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
  1      1049kB  26.8GB  26.8GB  primary  ext4
```

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.

DOS (MBR)

- a toggle a bootable flag
- b edit nested BSD disklabel
- c toggle the dos compatibility flag

Generic

- d delete a partition
- F list free unpartitioned space
- l list known partition types
- n add a new partition
- p print the partition table
- t change a partition type
- v verify the partition table
- i print information about a partition
- e resize a partition
- T discard (trim) sectors

Misc

- m print this menu
- u change display/entry units
- x extra functionality (experts only)

Script

- I load disk layout from sfdisk script file
- O dump disk layout to sfdisk script file

Save & Exit

- w write table to disk and exit
- q quit without saving changes

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 MBR (DOS) partition table
- s create a new empty Sun partition table

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 (2048-52428799, default 2048):

Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-52428799, default 52428799):

Created a new partition 1 of type 'Linux' and of size 25 GiB.

Command (m for help): w

The partition table has been altered.

Calling ioctl() to re-read partition table.

Syncing disks.

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

```

(jahmire@kali)-[~]
└─$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.47.2 (1-Jan-2025)
Creating filesystem with 6553344 4k blocks and 1638400 inodes
Filesystem UUID: 6cdbcae8-ad99-4176-bf99-4771b4bbff4f
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

```

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

```

(jahmire@kali)-[~/]
└─$ ls /dev/sd*
/dev/sda /dev/sda1 /dev/sda2 /dev/sda5 /dev/sdb /dev/sdb1

```

```

(jahmire@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  25.4GB  25.4GB  primary ext4          boot
  2       25.4GB  26.8GB  1425MB  extended
  5       25.4GB  26.8GB  1425MB  logical linux-swap(v1) swap

Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sdb: 26.8GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number   Start   End     Size    Type    File system  Flags
  1       1049kB  26.8GB  26.8GB  primary ext4

```

```

(jahmire@kali)-[/]
└─$ sudo fdisk -l
Disk /dev/sda: 25 GiB, 26843545600 bytes, 52428800 sectors
Disk model: VBOX HARDDISK
Units: sectors of 1 * 512 = 512 bytes
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Disklabel type: dos
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Device     Boot      Start         End      Sectors  Size Id Type
/dev/sda1  *                2048  49641471  49639424  23.7G 83 Linux
/dev/sda2                49643518  52426751   2783234    1.3G  f W95 Ext'd (LBA)
/dev/sda5                49643520  52426751   2783232    1.3G 82 Linux swap / Solaris

Disk /dev/sdb: 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: 0x7a2c1e22

Device     Boot      Start         End      Sectors  Size Id Type
/dev/sdb1                2048  52428799  52426752   25G 83 Linux

```

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

```

(jahmire@kali)-[/]
└─$ sudo mkdir /cyse

```

```

(jahmire@kali)-[/cyse]
└─$ sudo mount /dev/sdb1 /cyse

```

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

```
(jahmire@kali) ~ [cyse]
└─$ df
Filesystem      1K-blocks      Used Available Use% Mounted on
udev            942832         0    942832   0% /dev
tmpfs           202136         0    202136   1% /run
/dev/sda1       24253528 14792832  8203328  65% /
tmpfs           1010664         4    1010660   1% /dev/shm
tmpfs           5120           0         5120   0% /run/lock
tmpfs           1024           0         1024   0% /run/credentials/systemd-journald.service
tmpfs           1010668        348    1010320   1% /tmp
tmpfs           1024           0         1024   0% /run/credentials/getty@tty1.service
tmpfs           202132         116    202016   1% /run/user/1000
/dev/sdb1       25625828       2072  24296704   1% /cyse
```

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.

```
(jahmire@kali) ~ [cyse]
└─$ sudo touch Jwhit212.txt
```

```
(jahmire@kali) ~ [cyse]
└─$ cat Jwhit212.txt
Jahmire Whitehurst
```

Step 7. Unmount /cyse directory.

```
(jahmire@kali) ~ [ ]
└─$ sudo umount /dev/sdb1 /cyse
```

Step 8. Check the contents in /cyse directory. What do you find?

The file

```
(jahmire@kali) ~ [cyse]
└─$ ls
Jwhit212.txt
```