UD 06.
LINUX: FILE MANAGEMENT
Activities

Computer Systems
CFGS DAW

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2022/2023
Version:221114.0727

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Nomenclature

Throughout this unit different symbols will be used to distinguish important elements within the content. These symbols are:

 Important

 Attention

 Interesting

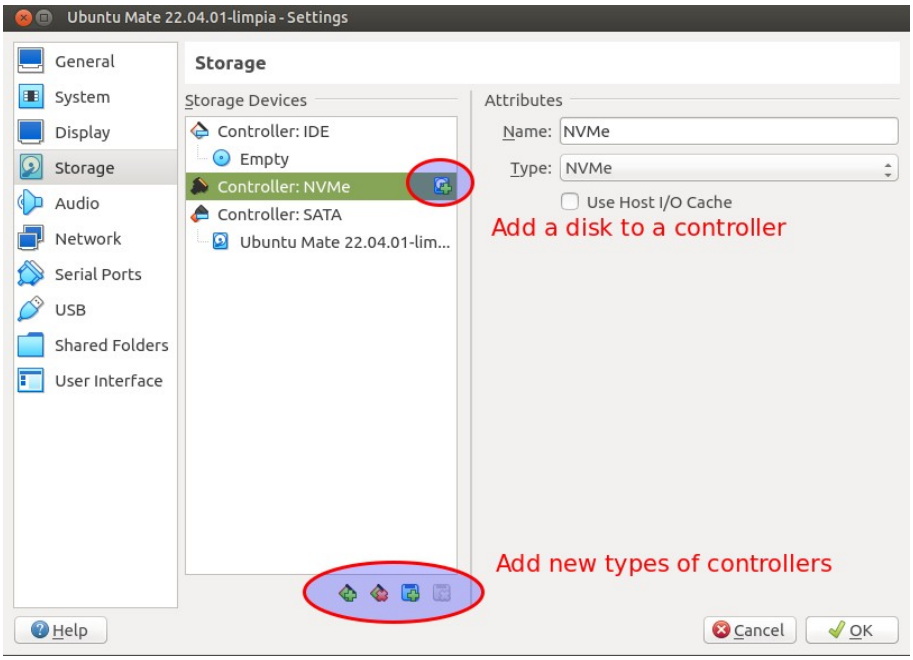
UT 06. LINUX: FILE MANAGEMENT

ACTIVITIES

In those exercises we will be working with an Ubuntu Mate 22.04 machine with a single disk. It's recommended that you use VirtualBox and work with a virtual machine. Remember that you can make clones of an already working machine.

It can be useful to make a snapshot of the virtual machine before attempting the exercises: if something goes wrong, you can restore the snapshot and you won't need to install or clone a new machine.

In this unit, you will need to add controllers and/or disks to your virtual machines. You can do it on the Settings/Storage page of the machine's configuration. You will need to shut down the machine first:



You will need to install Oracle VM VirtualBox Extension Pack to work with NVMe disks.

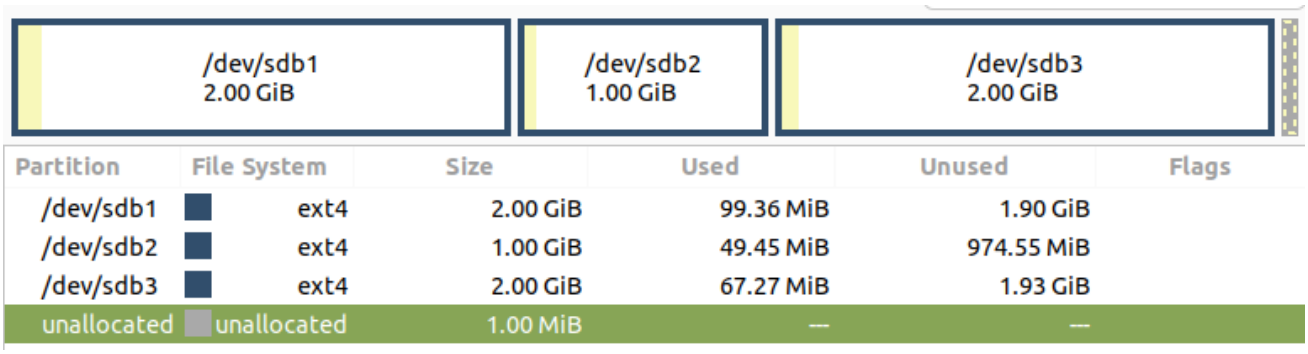
1. EXERCISE 1

1. Attach a new disk to a virtual machine. Using gparted, create a single partition and format it using an exFat file system. Remember that you will need to install exFat support with `sudo apt install ....`)
2. Attach another disk to the machine and do the same, but this time through the command line.

2. Exercise 2

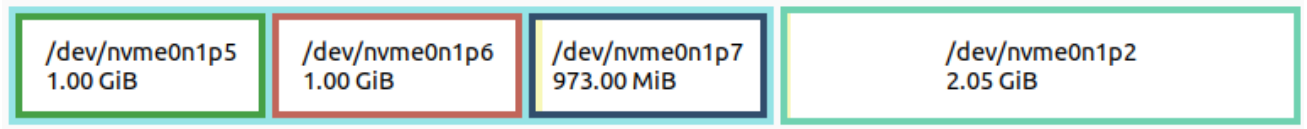
Attach a NVMe and a SATA disk to a virtual machine.

1. Create this partition structure for the SATA disk. Do the same using the command line:



Partition	File System	Size	Used	Unused	Flags
/dev/sdb1	ext4	2.00 GiB	99.36 MiB	1.90 GiB	
/dev/sdb2	ext4	1.00 GiB	49.45 MiB	974.55 MiB	
/dev/sdb3	ext4	2.00 GiB	67.27 MiB	1.93 GiB	
unallocated	unallocated	1.00 MiB	---	---	

2. Create this partition structure in the nvme disk using gparted. Do the same using the command line:



Partition	File System	Mount Point	Size	Used	Unused	Flags
/dev/nvme0n1p1	extended		2.95 GiB	---	---	
/dev/nvme0n1p5	fat32	/mnt/fat	1.00 GiB	2.02 MiB	1021.98 MiB	
/dev/nvme0n1p6	linux-swap		1.00 GiB	0.00 B	1.00 GiB	
/dev/nvme0n1p7	ext4	/ext4	973.00 MiB	32.52 MiB	940.48 MiB	
/dev/nvme0n1p2	ntfs	/mnt/ntfs	2.05 GiB	10.98 MiB	2.04 GiB	

3. Mount the partitions of the NVMe disk in the mount points specified. Modify `fstab` so `/mnt/fat` and `/mnt/nfts` are mounted at system startup.

Maybe you will need to install `mtools` to remove a warning from gparted.

3. Exercise 3

1. Using the command line, create a directory inside your user's home directory named `exercise3`. Create the following directory structure inside it:

```
.
├── exercises
│   ├── problems
│   └── questions
├── pictures
│   ├── black and white
│   └── color
└── videos
    └── family
```

You must use only one command per level, i. e. `exercises`, `pictures` and `videos` must be created using a single command, and the rest of the directories using another command. Display the resulting directory structure using `tree`.

2. Create the files `question1.txt` and `question2.txt` inside exercises/questions. The contents of the files must be `"Prove that any even number greater than 2 can be written as a sum of two prime numbers. 3 points."` and `"Prove that there are infinite pairs of twin primes. 5 points."`.
3. Create an empty file named `landscape.jpg` inside `pictures/black and white`

4. Exercise 4

You must perform the steps in this exercise **using relative paths** from the specified directory using the command line. You must have already completed the previous exercise.

1. From your home folder, copy the entire contents of `exercise3` to `exercise4`. You will be working with `exercise4` folder for this exercise. We will assume that exercise4 is the root directory, so `/videos` will refer to `/home/<user>/exercise4/videos`
2. Navigate to `/pictures/color`. From there, move `question1.txt` to `/videos/family`
3. From the same directory create the file `/pictures/color/beach.png`
4. Navigate to `/pictures/black and white`. Make a copy of `beach.png` to `/videos`
5. From the same directory, copy `/pictures` to `/pictures2` with all its contents
6. Copy the contents of `exercise4` to `exercise4_backup` from `/exercises/questions`
7. Delete the `exercise4` folder with a single command

5. Exercise 5

Create a directory `exercise5` inside your home folder. You will be working in that directory for this exercise.

- Create a directory named `original`
- Inside that directory, create a file with the contents of `ls -l /etc` named `listing.txt`

In `exercise5` folder:

- Create a hard link of `listing.txt` named `listing_hard.txt`
- Create a soft link of `listing.txt` named `listing_soft.txt`
- Create a soft link of `original` folder named `copy`
- Delete `original` folder
- Display the contents of `listing_hard.txt`
- Display the contents of `listing_soft.txt`
- Navigate to `copy` folder
- Display the contents of `listing_hard.txt`
- Display lines 3 to 7 of `listing_hard.txt`