Linux

An introduction

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Linux ?
Somewhere on the baie-lgf, are some Linux books.
Linux ? A kernel...

- 1991: released by Linus Torvalds, for fun
- 1993: 100 developers working on it
- 1996: version 2
- 1998-99: graphical interfaces: KDE, Gnome
- 2000: Dell is 2\textsuperscript{nd} provider of linux based system
- 2011: version 3
- 2013: Android (based on linux) has 75% of the market
• Supplied programs: web, mail, images...
• A shell: the command line! Bash, zsh, tcsh
• X/Wayland: graphical system. Because sometimes it’s better with a mouse. Sometimes.
In practice: a “distro”

- Put together, they make a Linux distribution
  - Ubuntu
  - OpenSuse
  - Fedora
  - And more
  - Much, much more...
At EMSE: Ubuntu

- On 16.04: desktop is Unity
- Default shell: bash
- Access it during boot:
  - Power up the computer
  - A menu appears: GRUB bootloader
  - Select Ubuntu
  - Problem starts already
The users

• **root: the all powerful admin, called the superuser**

• **The rest of common mortals:**
  • Limited access by default
  • Can be local account, created by an admin
  • Or/and, in our case at EMSE, a distant account, enable by the LDAP, which acts like a telephone dictionary
    • You can login with your mail id without the @ part, for instance, aurelien.villani
    • That is, in theory...
The services

On any OS, there are background tasks running, called daemons, started when the computer starts.

• Systemd : d, for daemons. Or just for systemd...

  sudo systemctl status cups.service

  cups.service - CUPS Printing Service
  Loaded: loaded (/usr/lib/systemd/system/cups.service; enabled; vendor preset: enabled)
  Active: active (running) since mer. 2018-01-24 13:11:15 CET; 2h 44min ago
  Main PID: 1806 (cupsd)
  Tasks: 1 (limit: 512)
  CGroup: /system.slice/cups.service
    └─1806 /usr/sbin/cupsd -f

Systemd: example

```
sudo systemctl [start/stop/status/enable/disable] stuff.service
```

- **sudo**: superuser do. If you can, run following command as root
- **systemctl**: the control command for systemd
- **start/stop/status/enable/disable**
- **Name.service**: usually, system services are named this way, and live in `/etc/systemd/system`
- I’ll explain the filesystem structure in a moment
Back to our login problem

- We need to login as root.
- Then open a terminal
- And restart the service dealing with the ldap:
  - systemctl restart ...
  - Or sometimes, the old way works: service lwsmd restart
- Logout
- Try to login with your own
Install stuff

Software are most of the time fetched from repositories

On Ubuntu:
- GUI: synaptic, not installed by default

With command line:
- `sudo apt-get update`
- `sudo apt-cache search synaptic`
- `sudo apt-get install synaptic`
The filesystem

```
/  
|   |
|   |
|   |
|   |
|   |

bin  etc  home  var  usr
```

```
|   |
|   |
|   |

dan  lisa  bin  lib
```
The shell

• The desktop is nothing particular compared to Windows and MacOs, we will not cover it

• The shell (bash in most cases) is much more interesting. Try:
  • ls
  • touch mytralala
  • ls
  • mv mytralala mydingdingdong
  • ls
  • echo foo > mydingdingdong
  • cp mydingdingdong bar
  • rm mydingdingdong
  • ls
  • cat bar
The shell

Hidden files:
• Touch .findmeifyoucan
• ls
• ls -a
Permissions

Show them with `ls -l`

- read, write, execute
- for (current) user, group, others

Others, please don’t read my file:

- `chmod o-r myfile`
Environment variables

Exists like on windows.

Starts with $

- echo $SHELL
- whoami
- echo $USER
- (( 1==1 )); echo $?
- (( $USER==whoami )); echo $?
- echo $FOO
- export FOO=BAR
- echo $FOO
Directly in shell:
- while true; do echo "Navy: hey, listen !" && sleep 1; done;
- when you are bored, press Ctrl+c

In a script:
- gedit foo.sh &
- chmod +x foo.sh
- ./foo.sh navy 5

```bash
#!/bin/bash

echo "My name is $1 and I'm an annoying fairy"
for i in `seq 1 $2`
do
    echo "Hey, listen !"
sleep 0.5
done
```
Compile stuff
And more

ssh, etc