Back To Basics: a linux server and its administration

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<2016-11-19 sam.> System Security

1 Setting up a linux Apache server in VirtualBox

Installing your linux server trains you on several basic aspects:

- Services start and stop (boot, systemd)
- Software management (installation, configuration)
- Right management (Users)
- Persistent storage balancing (Disk)

This part will probably take the 3 hours, but with long waiting time. The other sections proposes exercices in the mean time.

1.1 Install a Linux server in VirtualBox

1. Create a virtual box image to set up a Debian Install (testing flavor)
2. Install a *Debian Testing* image and boot it
   - *Hint*: you should download CD-1 to avoid mirror reading
   - Set up separate partitions for `/home` and `/var`
   - **Bonus**: set up separate Brtfs partitions, instead of ext4fs, for `/home` and `/var` and configure a snapshot of the Btrfs `/home` every night at 23h00 local
3. Set up a ssh server, log locally (in the virtualbox), log remotely (from Ubuntu)

4. Install Apache web server, configure it for a one page website
    - test it locally
    - **Advanced bonus** install PHP, configure it and test it in the one page site
5. **Bonus** Install and set up minimal HTTPS with self-signed certificate
    - **Advanced Bonus**: install *Let's encrypt*
6. **Bonus** Install an LDAP server and configure the Linux authentication to use it
    - Add a user in it. Verify that it is possible to log in ssh with this user.

2 Back to basics: Environment management

These parts could be done partially in your Ubuntu, during the waiting time of the install.

2.1 Do you know basic Unix ? How to write a shell ?

2.1.1 Exercice for UNIX beginners only

If you need to train you for UNIX, the following page (In French) may help you: `http://ensiwiki.ensimag.fr/index.php/Stage_Unix_de_rentr%C3%A9e` (Depuis `http://ensiwiki.ensimag.fr` ⇒ "Première année" ⇒ "Stage Unix de rentrée") It provides:

- a web (HTML) page with a unix introduction (Ensimag parts must be skipped)
- a *Treasure Hunt* to check your knowledge (Two treasure hunts: basic and advanced)

You should complete it anyways before next week.

2.1.2 Exercice

1. create a script to fill a log file with the list of current logged users running firefox
    - the name of the file should include the date and hour of the probe

2. The log file should be created in a fixed repository in `/var/log`
3. run the script every quarter of an hour
    - with `at`
    - then with `crontab`

2.2 Systemd

Obviously this part required Systemd (default in recent Debian system, thus in your image)

2.2.1 start/stop services with `systemdctl`

- start and stop Apache

2.2.2 display the journal with `journalctl`

1. Exercice:
    - How many lines in the journal from the kernel ?
    - How many lines in the journal from the `systemd` itself ?
    - How many line from Apache ?
    - what is the name of the (virtual) graphic card ? the network card ?

2.2.3 Keep the journal from boot to boot

1. Exercice
    - make the journal persistent (`man journald.conf`)
    - reboot the Debian and check that two boots are kept
    - limit the size to avoid filling the partition

2.3 Logger (Advanced Bonus)

Coodinate with others groups to centralize the log of your *firefox user* script on a single machine. We advise you to use `logger`.