Project

INFO-F-309 - Systems Administration

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The task of a system administrator is not only to install and
maintenance of machines and services. It is also and above all about making choices think about it, compare the alternatives, and above all document what has been done.

As part of this project, I ask you to study in detail a subject, similar to those
from the list below. You will analyze both the theoretical questions and the details of the deployment, and produce a full report on the subject.

2 Topics

Here are some examples of topics that could be covered. It is mainly about
widely used open source services or tools, including in business. **Do not hesitate to take a subject that is not in the list!** You must consult me before you start
in a subject 1 .

- Distributed installation: FAI, Windows
- Version management: Subversion / Mercurial / Git
- Collaborative suite: Exchange, Zimbra
- Content management: Joomla, Wordpress, Sharepoint
- IP telephony: Asterix
- Load Balancing
- E-mail: SpamAssassin, Sendmail, Exchange
- Authentication: PAM, Kerberos, RADIUS
- Apache, IIS, ...
- Virtualization: Xen, Cloud computing

These topics have in common the need to install an OS on a server, install

software and their dependencies, set up a configuration and document the whole.
You must choose a topic as well as come up with a plausible scenario for use. The project is done in 3 phases: scenario, analysis, implementation. Each phase will be the subject of a feedback which must be taken into account for subsequent phases.

1. For obvious reasons, it is not allowed to take a subject treated by another group. If a subject chosen is too close, we will arrange for the scenario to be very different ...

3 Deliverables

Imagine that you are the system administrator responsible for deploying one of these business services. As a professional, you will of course study all the
aspects. The project will take place in 3 phases:

Phase 1: **group and subject** , including:

- the exhaustive list of the members of your group
- a plausible scenario over ten lines, of a business situation necessitating

both the establishment of a service by a system administrator.

Attention, at this stage, it is a question of stating in the scenario a problem, but not yet
of solution. Do not indicate the chosen solution in your subject. For example, if you have to install a web server, it is only after the analysis that you will decide whether Apache, IIS, or Nginx is the most suitable for your situation.

Phase 2: **analysis report for your supervisor** presenting:

- a summary of the problem to be solved (we do not install a service for nothing)
- a detailed description of the subject treated and the choices made (what, why, how) - a clear comparison of the different alternatives, if any
- the work to be done to implement the technology

- servers required
- choice of OS
- detailed list of the different phases and planning

Remember that you are talking to your employer, who a priori has no training advanced computer science. You will therefore focus on the challenges of your work, features offered, the reasons for choosing the product, etc.

I insist on the fact that this part of the work requires an effort of popularization. Ex- pose the various points in a scientific and precise way, but understandable for the non-computer scientist.

Phase 3: **implementation report** for you and your fellow administrators same container:

- the list of choices made (what is installed, on which machine, ...) - a description of the technical aspects

- name of configuration files and description of their content - useful commands
- process running in memory when your service is running
- ports used

- startup scripts
- a **detailed** list of the implementation steps (from the packages to be installed or

compile, up to the files to modify)
- any maintenance operations to be carried out and a clear procedure for

subsequent changes (e.g .: how to stop / restart the service)
- the corresponding **commented** configuration files , as well as any scripts

developed by you.

This report must make it possible to reinstall the service in a minimum of time, to know quickly where to look when something is broken, and what to do if you are
asks to adapt the functioning of the service to a new situation.

4 Implementation

To test the installation and to check your configuration files, it is essential carry out the various installation operations and test the functional system. You can do this either via a virtual image available at NO3 / NO4, or on your computer. personal torment. I will not ask for a demo, but instead the configuration files
and other technical documents will be attached to the project.

Note that VMWare Player and VirtualBox are free software that you can
install at home to avoid having to reinstall a complete operating system to
do your tests. The VMWare site directly offers preinstalled images (VMTN),
including among others Ubuntu Server. Virtualbox is another free virtualization software that will also be suitable for this job.

5 Example

Here is an example, very simplified and condensed, to show you the type of project expected. Let us assume that you have chosen the subject "Version control system".

5.1 Scenario

A company of 45 developers is faced with an increasing amount of files to
store, version and backup management problems, etc. The boss of the company
so asked you to find a solution. He insists that the developers are
assigned to certain projects, and that they should not go to modify the files of others. Some of the company's products are not open source, so you must also ensure that only some projects are visible "from the outside".

5.2 Structure of the analysis

After comparing different alternatives (Git, Mercurial, CVS), you choose to
set up a Subversion server to store the C ++ code of their different
collaborative projects. Although the other options have definite advantages, you have noticed that the IDE used by the company's developers integrates better with Subversion, what motivates your choice. This solution also allows you to specify rights, to manage access to the various projects, and therefore corresponds to the company's expectations.

You also propose to set up secure web access, so that you can
view the source code from a simple browser. Finally, as an informed professional, you offer a backup solution to non-company storage, to deal with anything problem.

Finally, you propose a schedule of the various stages of implementation: purchase of a server, installation of the OS, installation of the service and the backup procedure, training users.

6 Practical Modalities

The project is to be carried out in groups of minimum 3 and maximum 5 students. In- see an e-mail with the composition of your group as well as your scenario at

sebastien.collette@ulb.ac.be 2 for Wednesday October 7 at the latest. The groups who will not be trained by this date will not be able to defend their project.

The project analysis report must be submitted before the start of the
Wednesday, November 18, and the project implementation report is expected before the start

of the course on Wednesday 12 December.
For each phase, the various documents must be sent by e-

mail (a single ZIP containing reports, configuration files ...) to
sebastien.collette@ulb.ac.be. It is not necessary to produce a paper version. A acknowledgment of receipt will be sent to you, do not hesitate to contact me if I do not confirm the good reception of your project.

Finally, keep in mind that this is the year project and that the groups are relatively
big; also I will be uncompromising as to the quality of the reports provided. Written in French or in English, they must cover all the interesting aspects concerning the subject studied.
The points mentioned above are only a working basis, do not hesitate to add
additional **relevant** information .

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2. The topic will be assigned to the first person requesting it.