

<b>Advanced Linux System Administration. Lab exam (Topics 6-11)</b>	

**Prior Instructions:**

In the following link you will find a file named ExamenParcial.zip. Download it to a local folder, uncompress the file and add the machine to Virtualbox.

<http://www.ce.unican.es/OCW/SI/Eval/2015-16/ExamenParcial2.zip>

Each Exercise has its own snapshot as a starting point, named Ej<X>Begin. After booting the machine, log in as root user: login=root / password=root. **After finishing each exercise, power off the virtual machine and create a snapshot labeled Ej<X>Result (replace <X> with the exercise number).**

**Exercise 1 (3p).** Power on the machine from snapshot Ej1Begin. Your work consists of the creation of a script named Exercise1.sh in /root. This script must perform the following tasks:

1. Read the file "newUsers.txt" line by line. At each line you will find multiple user fields, with the following structure: Column 1: user name, Column 2: UID, Column 3: GID, Column 4: Shell. For each line, the script must create a new user in the system with the assigned values (command adduser), without password assignation and with gecocos field empty (--gecos "").
2. Making use of the logger command, for each user generated correctly a log message must be generated with the following text: "User <user-name> generated correctly". Employ the Facility "local3" and the priority level "info".
3. For each generated user, assign the password "temporal", through command **chpasswd**.

After creating the script, you must program its execution to be carried out every working day at 12:05 PM. Finally, configure the logging system to store the generated messages in the file /var/log/userlogging.log and keep track of them, with a monthly rotation, for the last 12 months.

**Exercise 2 (2.5p)** Power on the machine from snapshot Ej2Begin. In this machine, one of the auxiliary hard disks of the system has failed. Check out which one it is and carry out the recuperation process, replacing the harmed disk by a new one of the same features (size) without losing any information (Create the new disk making use of VirtualBox menu).

Once repaired, reduce the size of the only logical volume to 400 Mb (including the file system it contains). In the new available space, create a new ext3 logical volume. In this volume you must store a level-0 backup for the file system under directory /home.

**Exercise 3 (2.5p)** Power on the machine from the snapshot Ej3Begin. Perform the following tasks:

1. Improve the system security for password generation forcing its length to be at least 10 characters, two of them being numeric.
2. Do the necessary changes to allow the user test to perform software installations from Debian repositories.
3. Log in the system as user test (login: test, passwd: temporal) from another terminal and run the command "stress", stressing only the CPU. From the root terminal, minimize the priority to all the processes from user test. Make use of the command ps (with the appropriate options) to check that the priority has changed, redirecting its standard output to the file testprio.txt.
4. Duplicate the available swap in the system.
5. Obtain the PID of the rsyslogd application. With this number, check the following information: arguments employed for its execution and files in use.
6. Check the operation frequency and cache size of the processor of your system.
7. Find out the dependencies with other modules for the kernel module ext3.ko

**Exercise 4 (2p).** Perform the required changes to the virtual machine to enable the correct internet access. Check that your network works properly running the command “apt-get update”.

**Once you have finished the exam, copy the following files to the device provided by the teacher:**

- ExamenParcial2.vbox
- Disk4.dvi (or the name you have chosen)
- Snapshots (whole folder)