Advanced Linux System Administration: Lab Exam (Final)	

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

     http://www.ce.unican.es/OCW/SI/Eval/2014-15/ExamenFinal.zip

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

Exercise 1.(2.5p). Power on the machine from snapshot "**Ejercicio1**". Perform the required tasks to repair the boot process of the O.S. After this step, install a GRUB-type bootloader and protect it (access and edition) with the following password: test1.

Exercise 2.(2.5p). Power on the machine from snapshot "**Ejercicio2**". Log in as the user alumno, with password "temporal". Making use of the program "John the ripper" (*jumbo version*) obtain the root password. Once obtained, enable the module cracklib of PAM. For command passwd, force new passwords to be at least 8 characters long, containing at least 2 digits. Change the root password to "exam2015".

Exercise 3.(2.5p). Add three SATA disks to your virtual machine, type VDI and dynamically reserved size, named Disk1, Disk2 and Disk3. Power on the machine from snapshot "**Ejercicio3**". Implement a RAID5 system with the 3 new disks, creating on top of it a logical volume (VL0) of the maximum available size and ext4 file system.

Mount VL0 permanently in the directory /home/users. Create, manually (without commands such as adduser/useradd) two users with the configuration described here. Do the necessary changes to limit each user to employ half of the VL0 capacity, limiting also the maximum number of files each user can create to 15. Open a new terminal, logging in as one of the new users and check that the limits work.

     Use name: userX, (X= user order [1,2]).
     Password: userX
     Directory: $HOME: /home/users/userX
     UID: 1000+X
     GID: 5000

Exercise 4.(2.5p). Power on the machine from snapshot "**Ejercicio4**". Update every system package to their most recent version available. Modify the service sshd to make it work in debug mode. Every message generated by this service must be written in the file /var/log/ssh_debug.log. Configure the log rotation of that file to be compressed, weekly and store the information of the last year in a directory named /var/log/ssh_debug_old/. Also do the required changes for sending a mail to the root user every time a rotation is performed.

Once you have finished the exam, copy the following files to the device provided by the teacher:
     -ExamenFinal.vbox
     -Snapshots (whole folder)
     -Disk1.vdi, Disk2.vdi, Disk3.vdi