**Linux Basics**

***Project 1***

Information about the project:

* All changes should be permanent ( available at reboot )
* Documentation: Received documentation, Google
* Points will be given also if you respect the names given to files/servers/directories
* Handover date: 4-6 September 2017

1. Install CentOS 7 on your vmware client. ( you will have 2 images on your laptop ) 3p
   1. Download the lastest iso image from the internet

-use this image to install 2 virtual machines

* 1. Download image from the atos repository

-location: 155.45.173.41 -> /transfer/emea/\_public/zflorentiu/CentOS-7-x86\_64-DVD-1611.iso

(if the image is not present contact me:florentiu.ilie@atos.net)

1. Hostname configuration: 5p
   1. Set the hostname for the first server: server1.test
   2. Set the hostname for the 2nd server: server2.test
   3. Set the hostnames permanent
   4. Set the hostnames in /etc/hosts ( both entries for server1 and server2 should be present on each server )
   5. IPs should be set through dhcp
2. Disk configuration: 14p

( either add a vmdk disk that sums all of the disks bellow, or add a separate vmdk disk for each disk mentioned bellow )

* 1. Add 6 disks: 2x100M, 3x200M, 500M on server1.test
  2. Add 3 disks: 500M, 1G, 2G on server2.test
  3. On server1.test
     1. create a filesystem with lvm -> name of the logical volume: raid\_sentinels ( 1G )
     2. create a filesystem with lvm -> name of the device raid\_undead ( 200Mb )
     3. create a simple partition with the remaining space
     4. mount the filesystems:
        1. raid\_sentinels in /sentinels
        2. raid\_undead in /undead
        3. the partition from point iii) mount in /neutrals
  4. On server2.test create
     1. LVM -> size: 1,5G -> name: lv\_sentinels
     2. LVM -> size: 1G -> name: lv\_undead
     3. Create a swap partition from the remaining space on the LVM
  5. All of the configurations above must be permanent ( available at reboot ) *– (2p)*

1. User configuration: ( same on both servers ) 10p
   1. Set the password for root: unix123!@#
   2. Please ensure that the ssh-keys are set between the servers ( user: root ). You should be able to login from one server to the other through ssh-keys ( the root ssh-keys ). The key is empty, no passphrase.
   3. Create the following users:
      1. Thrall, Jaina, Mortred, Rikimaru, Roshan
      2. Set the password for them: dota123
      3. UID of Thrall: 500, Jaina: 600, Mortred: 700, Rikimaru:800, Roshan: 900
   4. Create the following groups:
      1. GID of: Sentinels: 1000, Undead: 2000, Neutral:3000, Orcs: 4000
      2. Jaina is part of the Sentinels ( primary group )
      3. Mortred and Rikimaru are part of the Undead ( secondary group )
      4. Roshan is part of Neutral ( primary group )
      5. Thrall is part of the Orcs group ( primary group )
   5. The home directories for these users will be:
      1. Users from sentinel group in /sentinels/*[user\_name]*
      2. Users from undead group in /undead/*[user\_name]*
      3. NFS: export from server1.test the /neutrals directory to server2.test. ( make it permanent )
      4. Roshan will be in /neutrals/user\_name
2. File permissions: 10p
   1. The owner of /sentinels is Jaina, group: sentinels
   2. The owner of /undead is Mortred, group: undead
   3. The permissions for /sentinels and /undead directories are: rwx for owner and group, nothing for others ---
   4. The users that are part of the Orcs group have access ( read and execute ) to the /neutrals directory
   5. Please create 3 files ( file{1,2,3}*username* ) and 1 directory dir\_*username* in each user in its own home directory.
   6. User Thrall can read the files from the roshan home directory, undead do not have access to the roshan home directory, sentinels have full rights.
   7. No one can delete roshan’s files, only roshan
   8. Every new file and directory created in the directory /neutrals/roshan/dir\_roshan with have the same group permissions and group as the parent directory
3. Repository: 5p
   1. Create a repository from the lastest iso image you downloaded from the internet on both servers -> filename: local.repo ---- ( mentioned on point 1a )
   2. Install apache, telnet, bind, screen, ksh.
   3. Update the kernel
   4. Create a repository from with the second image ( mentioned on point 1b ) -> filename: old.repo
4. Job schedule: ( on server1.test ) 4p
   1. User: root; location of files: /root/jobs/files; location of scripts: /root/jobs/scripts
   2. Create a crontab that creates a file at every 5 minutes; file name: file-‘date of creation’
   3. Create a crontab that arhives every day at 23:00 the files older than 1h since current date
   4. Create a crontab that moves arhives that are older than 2h, crontab should run at 18:00 every Monday and Friday move them to /root/jobs/arhives
5. Profiles: ( both servers ) 5p
   1. For user root create an alias to show the percent that indicates how much space is free of the /neutrals filesystem
   2. The prompt for the system should be: username@servername-[date]
   3. Histsize for all users: 5000
   4. Timezone on the servers should be EET local time ( both servers )
   5. Create 2 bash scripts:
      1. ihavethedate.sh – it shows the date; location: /root/scripts
      2. ihavethecalendar.sh – it shows the calendar; location: /root/scripts
      3. scripts should be accessible from anywhere on the server without the need to write the whole path
6. Kernel/Startup: 4p
   1. Set the old kernel to boot ( only for server1.test )
   2. Set the kernel variable ( make it permanent for both servers )
      1. Shmmax= 147483648
      2. file-max= 65536
      3. ip\_local\_port\_range= 1024 65000
   3. Apache, ntp, nfs services should start at boot ( both servers )
   4. Create a script that will be present at startup and shutdown
      1. Name of the script: test.sh
      2. Content: outputs the date command in the /root/output/output\_date file
      3. Must be present in specific startup and shutdown runlevels