Practical 10B : Disk Quota

Practice 1: Implementing Quotas

Scenario: One of your user has been over-utilizing available disk space causing problems for other users and need to be restricted.

Deliverable: User lim that cannot use more than 512k of space in /media/Primary2

System setup: This practical assumes you have created the user named lim. The practice is on a second hard disk (/dev/sdb) partition (/dev/sdb2) that is mounted to /media/Primary2). If your setup is different, adapt the commands accordingly. Create the user account and/or the additional hard disk if necessary.

Instructions:

1. Login to the RHEL 6 Server as root.

```
[root@server ~]#
```

2. Activate user quotas for /media/Primary2

   a. We shall set disk quota on a partition Primary2 (/dev/sdb2) on a second hard disk (see Figure 1 below). The partition is mounted to /media/Primary2. If your setup is different, adapt the commands accordingly.

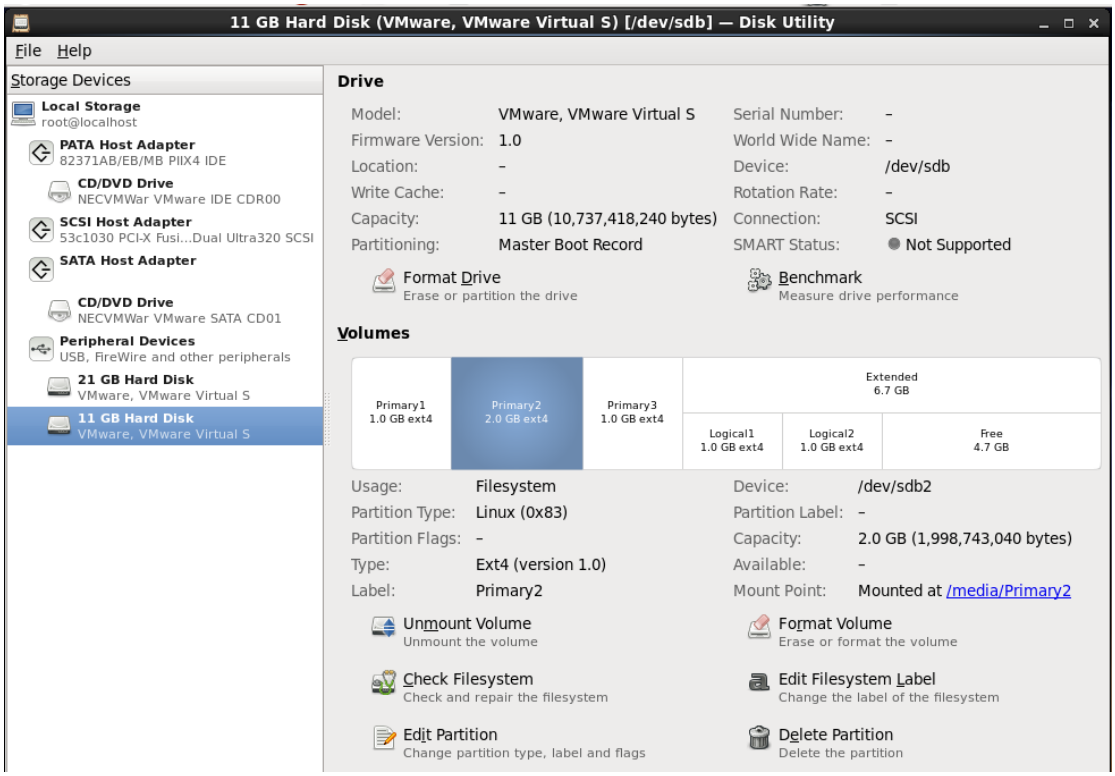


Figure 1

b. Using nano editor, edit the /etc/fstab to change the mount options for /media/Primary2 to include usrquota after defaults. In the Terminal window, you can type **nano /etc/fstab** file to edit it (you can only change it as root user). Make a copy of fstab in case you mess things up. Copy fstab to ofstab.

```
[root@server ~]# cp /etc/fstab /etc/ofstab
[root@server ~]# nano /etc/fstab
```

Add the following line at the bottom and save the file.

```
/dev/sdb2   /media/Primary2   ext4   defaults,usrquota,grpquota 1 2
```

```
UUID=97d20545-d36b-46b8-9b91-e4aacef1efdc /                       ext4    defaults        1 1
UUID=ebd0abca-4cf2-4626-81ed-5ae4e60ef513 /boot                   ext4    defaults        1 2
UUID=68469cb4-63dd-4ccd-b17f-26f8a11ca61f swap                    swap    defaults        0 0
tmpfs                   /dev/shm                tmpfs   defaults        0 0
devpts                  /dev/pts                devpts  gid=5,mode=620  0 0
sysfs                   /sys                    sysfs   defaults        0 0
proc                    /proc                   proc    defaults        0 0
/dev/sdb2               /media/Primary2         ext4    defaults,usrquota,grpquota      1 2
```

c. Activate the new mount option.

```
[root@server ~]# mount -o remount, rw /media/Primary2
[root@server ~]# mount
```

d. **Restart the server**. Log in as root again.

e. While we would normally drop down to single user mode, to ensure correct quota calculation, we will skip this since we know there are no other users on this system.
Run **setenforce 0** to disable SELinux first (0 is a zero).
Run **quotacheck** command to create the quota file.

```
[root@server ~]# setenforce 0
[root@server ~]# quotacheck -cugfm /media/Primary2
```

Two files should be created in /media/Primary2 – aquota.group and aquota.user

f. You can check if the disk quota has been activated by issuing the below command (if you do not get below results, it may mean some of above steps were performed incorrectly).

```
[lim@server ~]$ mount | grep /media/Primary2
/dev/sdb2 on /media/Primary2 type ext4 (rw,usrquota,grpquota)
```

g. Enable Quota enforcing.

```
[root@server ~]# quotaon /media/Primary2
```

3. Set the soft block quota of user lim to 256 2k blocks and the hard limit to 512 2k blocks.

```
[root@server ~]# setquota -u lim 256 512 0 0 /media/Primary2
```

4. Verify the restrictions.

a) Run the following commands:

```
[root@server ~]# su - lim
Password:
[lim@server ~]$ quota
Disk Quota for user lim……
```

```
[lim@server ~]$ quota
Disk quotas for user lim (uid 502): none
```

Above message indicates that particular user or group has not used any quota resources (block size or inode) to display. If you get a different display, just continue.

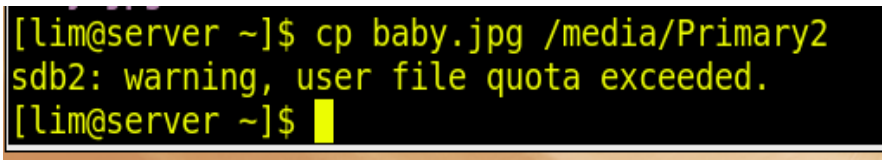
b) Switch back to root and modify the directory permission of /media/Primary2 so that user lim can copy a file to it.

```
[lim@server ~]$ su -
Password: redhat
[root@server ~]# chmod 777 /media/Primary2
[root@server ~]#
```

c) Find a large file (see Appendix A). Change the owner of it to lim. Copy it to /home/lim directory. Here, we have a picture file **baby.jpg**

```
[root@server ~]# chown lim baby.jpg
[root@server ~]# cp baby.jpg /home/lim
[root@server ~]#
```

d) Switch to lim account and copy the baby.jpg to /media/Primary2. You should get a warning as lim's disk quota is exceeded.



e) Check lim's quota again with this command: **$ quota**

f) View disk quota report using below command as root.

```
[root@server ~]# repquota -a
[root@server ~]#
```

5. When done, close terminal windows.

References

1) https://www.computernetworkingnotes.com/rhce-study-guide/how-to-manage-disk-quota-in-linux-step-by-step.html

2) https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/6/html/storage_administration_guide/ch-disk-quotas

3) https://www.howtogeek.com/howto/38125/htg-explains-what-is-the-linux-fstab-and-how-does-it-work/

APPENDIX A – How to find large file

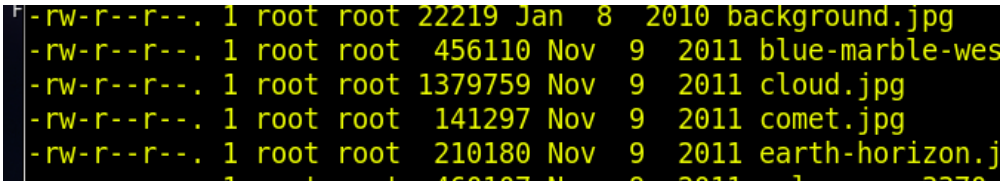
a) List all jpg files and save output to /tmp/a.out

```
[root@server ~]# cd /
[root@server ~]# ls -lR | grep ".jpg" > /tmp/a.out
[root@server ~]#
```

b) Use nano or gedit to view the /tmp/a.out file

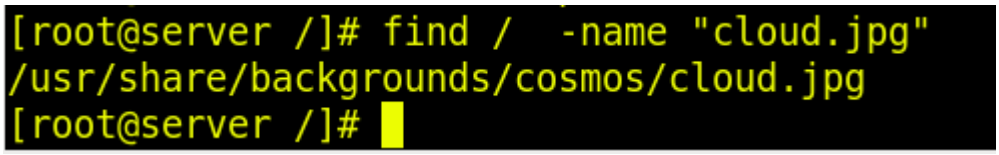
```
[root@server ~]# nano /tmp/a.out
[root@server ~]#
```

c) We shall select the cloud.jpg file as it is quite large.



d) We need to find the location of the cloud.jpg file.

```
[root@server ~]# find / -name "cloud.jpg"
```



e) We copy the cloud.jpg to user lim /home directory.

```
[root@server ~]# cp
/usr/share/backgrounds/cosmos/cloud.jpg /home/lim
```

Note: there are other ways to do the above.

[THE END]