Contents

Idea (Quota)

- Quota allows you to specify limits on two aspects of disk storage:
  - The number of disk blocks that may be allocated to a user or a group of users.
  - The number of inodes a user or a group of users may possess.

- Debian: s'ha d'instal·lar el paquet `quota`

```
# apt-get install quota
```

Creating a user (`joan`)

1. `# useradd joan`

2. `# chown -R joan:joan /home/joan`

   // set the `/home/joan` owner and group to `joan`

3. `# passwd joan` // set the passwd

4. Edit `/etc/passwd` and `/etc/shadow` to see if all is correct.

5. `# userdel joan` to erase user `joan`

Creating a group (`students`)

1. `# groupadd students`

2. Edit `/etc/group` and modify the line:

   `students:x:504:joan,arqui`

3. Edit `/etc/gshadow` and modify the line:

   `students:::joan,arqui`

4. `# groupdel students` to erase group `students`

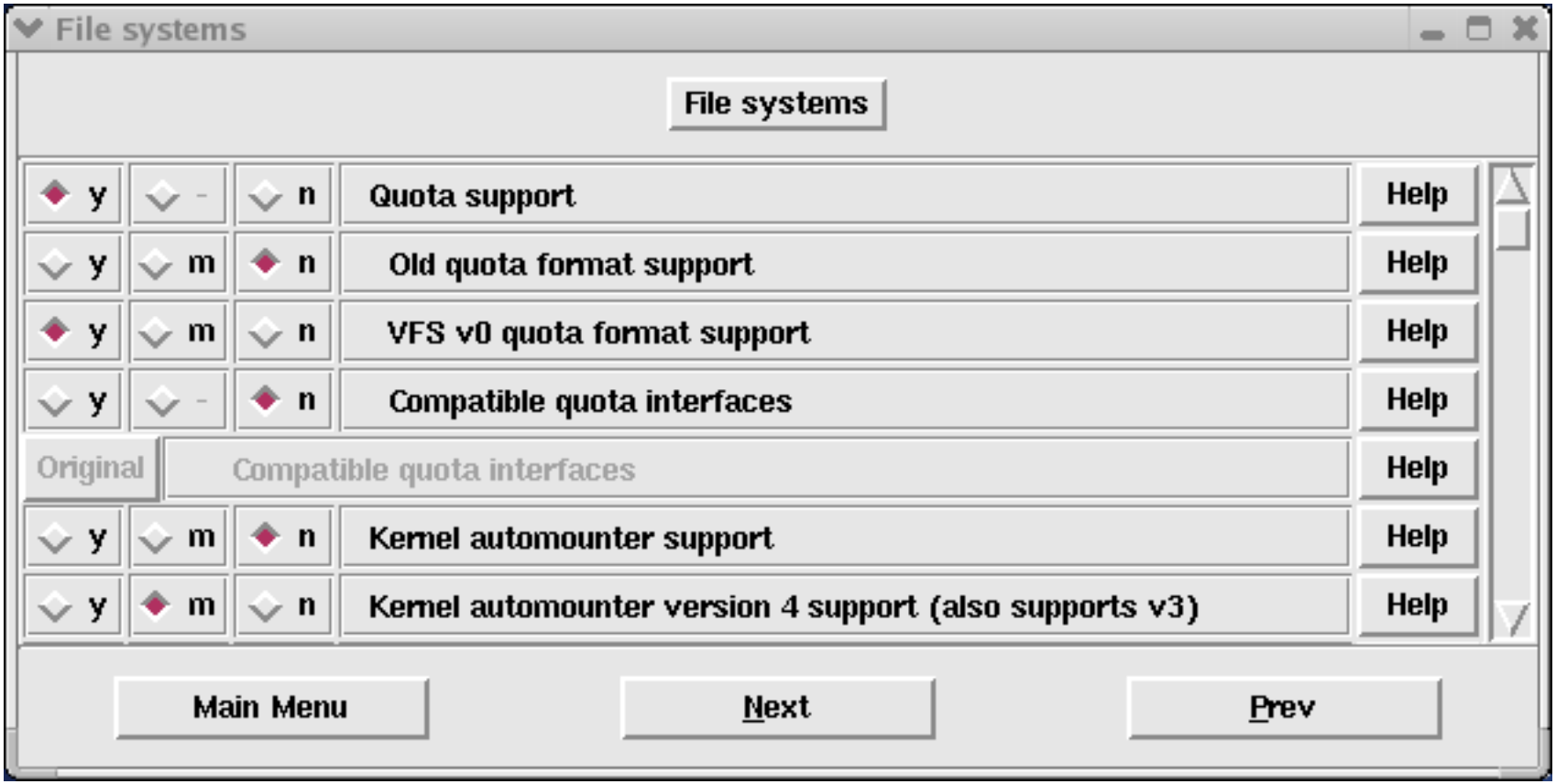
Activate the quota system

- Compile the kernel with Quota support.
- Activate the quota software. You have to reboot the system.
- The new kernel with quota support will be loaded and the startup script

  Red Hat (**`/etc/rc.d/rc.sysinit`**) or Debian (**`/etc/init.d/quota`**) will execute:

  - `quotacheck`: updates quota databases.
  - `quotaon`: turns on quota accounting. `quotaoff`: turns it off.
- The filesystems with quota support are specified in **`/etc/fstab`**.

Kernel Configuration



File `/etc/init.d/quota`

```
# Aquest fitxer conté algo paregut a:
if [ -x /usr/sbin/quotacheck ]   # true (0) if file exists and is executable
then
        echo "Checking quotas. This may take some time. “
        /usr/sbin/quotacheck
        echo " Done."
fi
if [ -x /usr/sbin/quotaon ]
then
        echo "Turning on quota."
        /usr/sbin/quotaon -a
fi
```

Enabling user or group quota support - file `/etc/fstab` -

- To enable user quota support on a file system, add "`usrquota`":

```
/dev/hda2        /         ext2  defaults           0  1
/dev/hdb1   /home/arqui    ext2  defaults,usrquota  0  1
/dev/hdb2    /home/joan    ext2  defaults,usrquota  0  1
```

- If you need group quota support on a file system, add "`grpquota`":

```
/dev/hda2     /      ext2  defaults           0  1
 /dev/hdb   /home    ext2  defaults,grpquota  0  1
```

soft and hard limits; grace period

- "**soft limit**" indicates the maximum amount of disk usage a quota user has on a partition. Combined with ***grace period***, when passed (the soft limit), the user is informed with a quota violation warning.

- "**hard limit**" It specifies the absolute limit on the disk usage.

- "**grace period**" if the soft limit is passed, the grace period will be the elapsed time before deny to write. **Viewing/modifying** grace periods:

```
# edquota -t
Grace period before enforcing soft limits for users:
Time units may be:  days, hours, minutes, or seconds
 Filesystem  Block grace period  Inode grace period
 /dev/hdb1          7days                7days
 /dev/hdb2          7days                7days
```

Assigning quota for user `joan`

- `cd /home; touch aquota.user`

  Creates the file `/home/aquota.user`

- `# quotacheck -u`

- **Edit** quotas for `joan` [in a particular filesystem]

  ```
  # edquota -u joan [-f /home/joan]
  Disk quotas for user joan (uid 502):
   Filesystem  blocks  soft   hard   inodes  soft  hard
   /dev/hdb1      0      0      0       0      0     0
   /dev/hdb2     76   8000  96000      15      0     0
  ```

  Note: "`# edquota`" takes me into the `vi` editor (change editor with the `$EDITOR` environment variable). "**blocks**" are in KB. There are 76 blocks and and 15 inodes assigned to user joan in hdb2.

Assigning quota for user `arqui`

- One of both:

1. `# edquota -u arqui`

```
Disk quotas for user arqui (uid 503):
 Filesystem  blocks  soft  hard  inodes  soft  hard
 /dev/hdb1      72  7000  8000      14     0     0
 /dev/hdb2       0     0     0       0     0     0
```

2. Assigning `joan`'s quota to the remaining users:

```
# edquota -p joan arqui [francesc ....]
```

Assigning quota for group `students`

- `cd /home`
- `touch aquota.group`
- `# quotacheck -g`
- **Edit** quotas for `students` [in a particular filesystem]
- `# edquota -g students`

```
Disk quotas for group students (gid 504):
 Filesystem  blocks  soft   hard   inodes  soft  hard
 /dev/hdb1      72   9500  10000     14     0     0
 /dev/hdb2      76   9500  10000     15     0     0
```

Note: takes me again into the vi editor

quotacheck and quota

- quotacheck updates the quota accounting (updates files aquota.user and aquota.group in each filesystem with quota activated).

```
# quotaoff   // turn quota accounting off
# quotacheck -u  // for users only in all filesystems
# quotacheck -g   // for users and groups in all filesystems
# quotaon -a   // turn quota accounting on
```

- **See** joan's quota information

```
# quota -u joan
Disk quotas for user joan (uid 502):
Filesystem  blocks  quota  limit  grace  files  quota  limit  grace
/dev/hdb2     76     8000   9600           15      0      0
```

Note: inodes and files are equivalent terms

repquota 1/2

- repquota producing a summarized **user** quota information.

```
# repquota -u

*** Report for user quotas on device /dev/hdb1

Block grace time:  7days; Inode grace time:  7days

                        Block limits                File limits
 User        used  soft  hard  grace  used  soft  hard  grace
 root - -    16     0     0             2     0     0
 arqui - -   72   7000  8000           14     0     0

*** Report for user quotas on device /dev/hdb2

Block grace time:  7days; Inode grace time:  7days

                        Block limits                File limits
 User        used  soft  hard  grace  used  soft  hard  grace
 root - -    16     0     0             2     0     0
 joan - -    76   8000  9600           15     0     0
```

repquota 2/2

- repquota producing a summarized **group** quota information.

```
# repquota -g

*** Report for group quotas on device /dev/hdb1

Block grace time:  7days; Inode grace time:  7days

                        Block limits                File limits
 Group          used  soft   hard   grace  used  soft  hard  grace
 root - -         16     0      0              2     0     0
 students - -     72  9500  10000             14     0     0

*** Report for group quotas on device /dev/hdb2

Block grace time:  7days; Inode grace time:  7days

                        Block limits                File limits
 User           used  soft   hard   grace  used  soft  hard  grace
 root - -         16     0      0              2     0     0
 students - -     76  9500  10000             15     0     0
```

crond 1/3

- **Idea**: daemon which executes commands periodically. P.e.: `quotacheck`

- File `/etc/crontab`:

```
# setting environment variables

SHELL=/bin/bash

PATH=/sbin:/bin:/usr/sbin:/usr/bin

MAILTO=root HOME=/

# run-parts

0 * * * * root run-parts /etc/cron.hourly

0 1 * * * root run-parts /etc/cron.daily

0 1 * * 0 root run-parts /etc/cron.weekly

0 2 1 * * root run-parts /etc/cron.monthly
```

cron.* are directories containing scripts to be executed hourly, daily, weekly or monthly

Note: `run-parts` execute all the scripts in a directory

crond 2/3

`/etc/crontab` contains 8 fields:

#	description	range
1	minute	0-59
2	hour	0-23
3	day of month	1-31
4	month	1-12
5	day of week 0-6	0 or 6 (Sun)
6	user	
7	reserved word run-parts or command	
8	scripting directory or empty	

- Matching:
  - A field may be an asterisk (*), which always stands for “first-last”.

crond 3/3

- Example (running `quotacheck` weekly). One of both:
  1. add the following script in the directory `/etc/cron.weekly`:
     ```
     /sbin/quotacheck -g && exit 0
     ```
  2. add the following line in `/etc/crontab`:
     ```
     0 1 * * 0 root /sbin/quotacheck -g
     ```