

# Disk Quotas Version 2, Linux 2.6

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## 1 Introduction

One of the why we introduced disk quotas is to protect `gauss:/home` filesystem from being accidentally filled-up. Sometimes a user would dump the entire contents of an iPod or laptop hard disk into their home on `gauss` and this can easily result in “disk full” situation where users won’t be able to receive e-mail or even log in. A dedicated partition `gauss:/z` is now provided for such a temporary storage.

## 2 Enabling disk quotas

### 2.1 Support in Linux kernel

Quota support has to be enabled in Linux kernel (version 2.6):

```
CONFIG_QUOTA=y  
CONFIG_QUOTACTL=y
```

### 2.2 Debian packages

Install quota management tools:

```
apt-get install quota
```

The package provides utilities for quota initialization, editing and monitoring.

## 2.3 Preparing a filesystem

Any filesystem, for which quotas are imposed, has to be mounted with `usrquota` and/or `grpquota` mount options (for user and group quotas respectively). For example, here is `/etc/fstab` entry on `gauss` for `/home` filesystem:

```
# <file system> <mount point> <type> <options> <dump> <pass>
/dev/hda5 /home ext3 defaults,usrquota,grpquota 0 2
```

After modifying `/etc/fstab` the filesystem has to be remounted with the new options. To minimize the risk of data loss this should be done while in single-user mode (`# init 1`; back to multi-user mode on Debian: `# init 2`):

```
# mount -o remount /home
```

The root of the filesystem must have quota configuration files. The files will have binary contents and will be edited using `edquota` utility. Empty files are created for now:

```
# touch /home/aquota.user
# touch /home/aquota.group
```

Now quota table has to be initialized (verbose, all filesystems, users, groups, don't remount):

```
# quotacheck -vaugm
```

## 2.4 Setting quotas

Quotas are set for individual users or groups:

```
# edquota <user>
# edquota -g <group>
```

`edquota` will invoke the `vi` (or whatever text editor is in `$EDITOR`) with the contents similar to this

```
# edquota sarunas
```

Disk quotas for user `sarunas` (uid 1234):

Filesystem	blocks	soft	hard	inodes	soft	hard
/dev/hda5	453356	0	0	2769	0	0

Quota can be set by editing `soft` and `hard` values (1 kilobyte blocks) and “saving”, i.e. exit the text editor with the usual `Save and Exit`. `edquota` will do the necessary conversion and save to `aqquota.user` file. Users can exceed `soft` limit temporarily during “grace” period, which defaults to 7 days). `hard` limit can never be exceeded. The same grace period applies to all the users and can be edited by `edquota -t`.

As of May 2006 `soft` and `hard` limits on `gauss:/home` are 1000000 and 1300000 (roughly 1GB and 1.3GB) respectively.

## 3 Living with quotas

### 3.1 Checking manually

To check your own quota(s):

```
$ quota
Disk quotas for user sarunas (uid 1234):
Filesystem blocks quota limit grace files quota limit grace
/dev/hda5 453356 1000000 1300000 2769 0 0
```

root can check any other user's quota(s):

```
# quota sarunas
Disk quotas for user sarunas (uid 1234):
    Filesystem  blocks    quota   limit   grace   files   quota   limit   grace
    /dev/hda5  453356  1000000 1300000           2769     0     0
```

Report on all users for /home filesystem:

```
# repquota /home
*** Report for user quotas on device /dev/hda5
Block grace time: 7days; Inode grace time: 7days
      Block limits                File limits
User      used  soft  hard  grace  used  soft  hard  grace
-----
jjf      --   1556 1000000 1300000           93   0   0
chance   --   9920 1000000 1300000          292   0   0
ftp      -- 1428488 2300000 2500000         4356   0   0
... ..

```

Check quotas and send e-mail notices to users, who are over quota:

```
# warnquota

Configuration options for e-mail notifications are in /etc/warnquota.conf.
```

### 3.2 Automated checks

Debian installer configures a daily cron job `/etc/cron.daily/quota`, which runs `warnquota`.

### 3.3 Changing quotas

Quotas are added, changed and removed by using `edquota <user>`. The same quota can be applied to many users by `edquota -p joe 'cat list-of-users'`. The latter will copy joe's quota to users listed in `list-of-users` file. All quotas can be instantly disabled by:

```
# quotaoff -v /home
```

And re-enabled again by:

```
# quotaon -v /home
```