

# Quotas

## Introduction

Most modern versions of Unix give you a flexible way of establishing and administering disk-usage quotas on a per-user basis. Linux is no different: quotas are installed as a part of the standard installation.

## See Also

ls (1), quota (1), repquota (8), edquota (8), quotaon (8), quotaoff (8), quotacheck (8), su (8)  
p.335, Frisch

## The Task

In this exercise you will set up disk quotas for individual Linux users as well as groups. You will need to be root for this exercise.

## Initial Setup

Quotas are part of the standard Linux installation (although this is not true of all other Unix varieties). You can see how Linux initializes the quota system by looking at the file `/etc/rc.d/rc.sysinit`.

For the purposes of this session, you will make a special user account—`quot`—for testing purposes. You will also make a special group—`limited`—with the `quot` user as a member. Execute the following sequence of commands:

```
# groupadd -g 9876 limited
# useradd quot -G limited
# passwd quot
(give the user 'quot' a password)
```

## Establishing Quotas

First, add the `usrquota` and `grpquota` attributes to the entry for `/home` in `/etc/fstab` (the exact device entry used for *device* is specific to your system, of course):

```
| /dev/device /home ext2 defaults,grpquota,usrquota 1 2
```

Next you should create the quota database files:

```
| # touch /home/quota.user /home/quota.group
| # chmod 600 /home/quota.user /home/quota.group
```

You can now establish quota limits for the `'quot'` user:

```
| # edquota quot
```

In the editor window that appears, you should give this user the following limits:

- block
  - hard: 10, soft: 15
- inode
  - hard: 5, soft: 10

You should then establish group limits for the `'limited'` group using the following command:

```
| # edquota -g limited
```

## Quotas

For this exercise, you should use these limits:

- block
  - hard: 5, soft: 10
- inode
  - hard: 2, soft: 5

Next, you should establish time limits for users:

```
| # edquota -t
```

Set limits of 1 day and 3 days for the block and file (inode) limits.

Now do the same but for groups:

```
| # edquota -tg
```

Set limits of 5 days and 10 days for the block and file (inode) limits.

You should now turn on the quota control system (as mentioned earlier, this is usually done 'automagically' at system startup):

```
| # quotaon /home
```

You should now run the following command to ensure that the quota databases are created correctly:

```
| # quotacheck -v /home
```

### Viewing The Quotas

Use the following command to see the current state of the /home filesystem:

```
| # repquota -vug /home
```

### Testing The Quota System

You should assume the 'persona' of the 'quot' user to test the quota system. Execute the following command:

```
| # su - quot
```

Once you have assumed the persona of the 'quot' user, you should test the block quota limit. Try the following command:

```
| % cp /usr/dict/words ~
```

You will see an error occur very quickly...to find out why, run:

```
| % ls -l
```

As *root* (perhaps in another window, or on another virtual console), execute:

```
| # repquota -vug /home
```

It should now be clear why the user 'quot' cannot copy this big file!

*Be sure to remove the fragment of the 'words' file before continuing!*

# Quotas

To test the inode quota limit, create the following shell script, called inode.sh:

```
for i in 1 2 3 4 5 6 7 8 9 10 ; do
    echo $i
    touch $i
done
```

You will see a series of errors when this script is executed:

```
% sh inode.sh
```

As before you should run the commands (remember to run the first command as the 'quot' user and the second as root):

```
% ls -l
# repquota /home
```

Make sure that you understand the results...

You can also test the group quota mechanism. Try the following commands as the 'quot' user:

```
% newgrp limited
% cp /usr/dict/words ~
```

You should now know how to find out what is happening...

## Cleanup

For the purposes of this course, you do not need quota controls in place. As root, run the command:

```
# quotaoff /home
# rm /home/quota.{group,user}
```

Be sure also to remove the quot user from the system after you have finished this exercise:

```
# groupdel limited
# groupdel quot
# userdel -r quot
```