1.114.3
Setup user level security
Weight 1
Linux Professional Institute Certification — 102

Geoffrey Robertson ge@ffrey.com Nick Urbanik nicku@nicku.org

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Outline

Context
Objective
Enabling Quotas
  Initialising Quotas when booting
  Check quotas regularly with cron
Quota Limits
  Hard Limit—User
  Hard Limit—Group
  Soft Limit—User
  Soft Limit—Group
Grace Period

Configuring Quotas with edquota
Viewing quotas with quota
Turning quotas on and off with repquota

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1.114.3  Setup user level security [1]
Candidate should be able to configure user level security. Tasks include limits on user logins, processes, and memory usage.
Key files, terms, and utilities include:

1.114.3 Setup user level security [1]

quota — display disk usage and limits
usermod — can modify expiry date of an account, and can disable an account
Set and View Disk Quotas

Enabling Quotas

► Add the `userquota` and `grpquota` options in `/etc/fstab`:

```
/dev/hda2  /home  ext3  defaults,usrquota,grpquota  1  2
```

► Create the `quota.user` and `quota.group` files:

```
fehung:~# touch /home/quota.user /home/quota.group
fehung:~# chmod 600 /home/quota.user /home/quota.group
```

► Initialise the `quota.*` files as databases by running `quotacheck`:

```
fehung:/home# quotacheck -augv
Cannot get exact used space... Results might be inaccurate.
quotacheck: Scanning /dev/hda2 [/home] done
quotacheck: Checked 143 directories and 689 files
```
Set and View Disk Quotas

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Set and View Disk Quotas
Enabling Quotas

- Confirm that the databases have actually been initialised by making sure that the `quota.*` files are larger than 0.
- Run `quotaon` to enable the quota system:
  ```bash
  fehung:/home# quotaon -a
  ```
- There are two further things to deal with:
  1. Turn on quota is turned at boot time. (details next slide)
  2. Check the data base regularly. (details next slide)
- The filesystem (in this case `/home`) is now ready to accept quotas on a per user or group basis.
Set and View Disk Quotas

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Set and View Disk Quotas

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ctd...

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1.1.14.3
Setup user level
security
Weight 1

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Hard Limit—User
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Turning quotas on and off
repquota

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To ensure quota is turned on upon system boot, add the following to the system’s initialisation script (/etc/rc.d/rc.sysinit or similar):

```bash
if [ -x /sbin/quotacheck ]; then
    echo "Checking quotas."
    /sbin/quotacheck -auvg
    echo "Done."
fi

if [ -x /sbin/quotaon ]; then
    echo "Enabling quotas."
    /sbin/quotaon -avug
fi
```
Outline

Context
Objective

Enabling Quotas
- Initialising Quotas when booting
- Check quotas regularly with `cron`

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- Hard Limit—User
- Hard Limit—Group

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Soft Limit—Group
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Configuring Quotas with `edquota`
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Turning quotas on and off with `repquota`

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To ensure that the databases are checked regularly, add a script to one of the crontab system directories, (such as /etc/cron.weekly/) to run quotacheck:

```
#!/bin/bash
/sbin/quotacheck -auvg
```

or a job in crontab to achieve the same thing.
There are five types of quota limits that can be enforced:

- Per-user hard limit
- Per-group hard limit
- Per-user soft limit
- Per-group soft limit
- Grace Period
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Configuring Quotas with *edquota*
Viewing quotas with *quota*
Turning quotas on and off *repquota*

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Quota Limits—Per-user hard limit

- absolute maximum of a user’s allocated space
- user cannot write anything else to the filesystem when reached
- write to current file is truncated
- user can free space and save file if program has a copy of the file in memory
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Quota Limits—Per-group hard limit

- absolute maximum of a group’s allocated space
- members of the group cannot write anything else to the filesystem when reached
- write to current file is truncated
- user in the group can free space and save file if program has a copy of the file in memory
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Quota Limits—Per-user soft limit

- Less than hard limit
- When reached, user enters *grace period*
- User gets warnings on terminal that quota has been exceeded
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Quota Limits—Per-group soft limit

- Less than hard limit
- When reached, group enters *grace period*
- Members of the group get warnings on terminal that quota has been exceeded
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Quota Limits—Grace Period

- Grace period is a time before the hard limit is enforced
- regardless of whether the hard limit is reached
- ... unless the user gets their quota down below the soft limit in that time
The next move is to edit the quota reference for each user. We can get around this with scripts, but essentially this is not nice :)

We can actually edit the quota of a typical user on our system and then copy the attributes of that users quota to other users, as follows:

```
fehung:/home/greebo# edquota greebo
```

This edits the quota for user greebo, in this file we change the soft and hard limits to whatever we choose, example:

```
Disk quotas for user greebo (uid 1000):
Filesystem blocks soft hard inodes soft hard
/dev/hda2 538 29000 30000 689 0 0
```
Set and View Disk Quotas

Configuring Quotas

- The first soft and hard values are relevant to blocks and the second to inodes, here the user has a block soft and hard limit but no inode limit.

- We can then attribute these settings to the rest of the users thus:

  fehung:/home/greebo# edquota -p greebo $(awk -F: '$3 > 999 { print $1 }' /etc/passwd)
  
  and can confirm this worked by running
  
  $ sudo edquota ⟨randomuser⟩ ←
  
  to see whether the new settings copied across.

- We can only modify the grace limit system wide. We do this by running # edquota -tu ←, and changing the value.
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Set and View Disk Quotas

Quota commands: `quota(1)`

`quota` is used to display quotas on users and groups, using the `-u` switch for users and `-g` switch for groups:

fehung:/home# `quota -uv greebo` ←

Disk quotas for user greebo (uid 1000):

Filesystem  blocks  quota limit  grace files  quota limit  grace
/dev/hda2    538    29000    30000     689     0   0
Set and View Disk Quotas

Quota commands: `quotaon(1)`

`quotaon` turns on the quota system, `quotaoff` turns it off. Easy!
Set and View Disk Quotas

Quota commands: repquota(1)

repquota reports on the status on quotas. Common options are as follows:

- `a` reports on all quotas
- `g` reports on group quotas
- `u` reports on user quotas
- `v` verbose mode

Examples:

```
$ sudo repquota -v /home
```

or

```
$ sudo repquota -a
```

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