Setup user level security
Weight 1

1.114.3

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2005 July
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]
Description of Objective

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:

**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

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.
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):

```plaintext
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
```
Set and View Disk Quotas
Check the Quota database Regularly with `cron`

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:

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

or a job in crontab to achieve the same thing.
Quota Limits

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
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
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
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
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
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 limit hard limit inodes  soft limit hard limit
/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.
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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