

1.114.3

Setup user level security

Weight 1

Linux Professional Institute Certification — 102

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Outline

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Enabling Quotas

Initialising Quotas when
booting

Check quotas regularly
with `cron`

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Hard Limit—Group

Soft Limit—User

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Grace Period

Configuring Quotas with
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Where we are up to

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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.

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Key files, terms, and utilities include:

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`quota` — display disk usage and limits

`usermod` — can modify expiry date of an account, and can disable an account

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Set and View Disk Quotas

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- ▶ 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 *ctd*...

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- ▶ 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:

```
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

Initialising Quotas when booting

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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):

```
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
```

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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`:

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

or a job in crontab to achieve the same thing.

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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

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- ▶ 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

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- ▶ 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

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- ▶ 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

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- ▶ 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

Set and View Disk Quotas

Setting up and configuring quotas

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- ▶ 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

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Configuring Quotas

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- ▶ 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
/dev/hda2	538	29000	30000		689	0

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Quota commands: `quotaon (1)`

`quotaon` turns on the quota system, `quotaoff` turns it off. Easy!

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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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