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A Short Introduction To Cron Jobs

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This article is a short introduction to cron jobs, their syntax, and how to set them up. A cron job is a scheduled task that is executed by the system at a specified time/date.

I do not issue any guarantee that this will work for you!

1 crontab

The command to create/edit, list, and remove cron jobs is *crontab*. If you call it with the *-u* option, it specifies the name of the user whose crontab is to be tweaked. If this option is not given, crontab examines "your" crontab, i.e., the crontab of the person executing the command. If you are looged in as root and run *crontab* without *-u*, then root's crontab is listed/modified/removed. If you are logged in as *exampleuser* and run *crontab* without *-u*, then *exampleuser*'s crontab is listed/modified/removed.

Examples:

```
crontab -l
```

lists the cron jobs of the user as that you are currently logged in:

```
server1:~# crontab -l
  * * * * * /usr/local/ispconfig/server/server.sh > /dev/null 2>> /var/log/ispconfig/cron.log
  30 00 * * * /usr/local/ispconfig/server/cron_daily.sh > /dev/null 2>> /var/log/ispconfig/cron.log
```

```
server1:~#
```

```
crontab -u exampleuser -l
```

lists all cron jobs of *exampleuser*.

```
crontab -e
```

let's you create/modify the cron jobs of the user as that you are currently logged in (I'll come to the syntax in the next chapter).

```
crontab -u exampleuser -e
```

let's you create/modify the cron jobs of *exampleuser*.

```
crontab -r
```

deletes all cron jobs of the user as that you're currently logged in.

```
crontab -u exampleuser -r
```

deletes all cron jobs of *exampleuser*.

If you have written your cron jobs to a text file, you can use the text file to create the cron jobs. For example, let's assume you have created the text file */tmp/my_cron_jobs.txt*...

```
vi /tmp/my_cron_jobs.txt
```

... with the following contents:

```
30 00 * * * /path/to/script
```

You can create a cron job from that file as follows:

```
crontab  /tmp/my_cron_jobs.txt
```

(Or for exampleuser:

```
crontab -u exampleuser /tmp/my_cron_jobs.txt
```

)

Please note that this will overwrite all previously created cron jobs - if you've already created some cron jobs, you better use `crontab -e` and add the new cron job manually.

See

```
man crontab
```

to learn more about the `crontab` command.

2 Cron Job Syntax

A cron job consists out of six fields:

`<minute> <hour> <day of month> <month> <day of week> <command>`

```
field          allowed values
-----          --------------
minute         0-59
hour           0-23
day of month   1-31
month          1-12 (or names, see below)
day of week    0-7 (0 or 7 is Sun, or use names)
```

When specifying day of week, both day 0 and day 7 will be considered Sunday.

A field may be an asterisk (*), which always stands for first-last.

Names can also be used for the "month" and "day of week" fields. Use the first three letters of the particular day or month (case doesn't matter), e.g. *sun* or *SUN* for Sunday or *mar* / *MAR* for March..

Let's take a look at the two cron jobs from the first chapter:

```
* * * * * /usr/local/ispconfig/server/server.sh > /dev/null 2>> /var/log/ispconfig/cron.log
```

This means: execute */usr/local/ispconfig/server/server.sh > /dev/null 2>> /var/log/ispconfig/cron.log* once per minute.

```
30 00 * * * /usr/local/ispconfig/server/cron_daily.sh > /dev/null 2>> /var/log/ispconfig/cron.log
```

This means: execute */usr/local/ispconfig/server/cron_daily.sh > /dev/null 2>> /var/log/ispconfig/cron.log* once per day at 00:30h.

The day of a command's execution can be specified by two fields: day of month, and day of week. If both fields are restricted (i.e., aren't *), the command will be run when either field matches the current time. For example, *30 4 1,15 * 5* would cause a command to be run at 4:30h on the 1st and 15th of each month, plus every Friday.

You can use ranges to define cron jobs:

Examples:

1,2,5,9 - means every first, second, fifth, and ninth (minute, hour, month, ...).

0-4,8-12 - means all (minutes, hours, months,...) from 0 to 4 and from 8 to 12.

**/5* - means every fifth (minute, hour, month, ...).

1-9/2 is the same as *1,3,5,7,9*.

Ranges or lists of names are not allowed (if you are using names instead of numbers for months and days - e.g., *Mon-Wed* is not valid).

```
1,7,25,47 */2 * * * command
```

means: run *command* every second hour in the first, seventh, 25th, and 47th minute.

Instead of the first five fields, one of eight special strings may appear:

```
string          meaning
------          -------
@reboot         Run once, at startup.
@yearly         Run once a year, "0 0 1 1 *".
@annually       (same as @yearly)
@monthly        Run once a month, "0 0 1 * *".
@weekly         Run once a week, "0 0 * * 0".
@daily          Run once a day, "0 0 * * *".
@midnight       (same as @daily)
@hourly         Run once an hour, "0 * * * *".
```

You can also use *name=value* pairs in a crontab to define variables for the cron jobs:

```
# use /bin/bash to run commands, instead of the default /bin/sh
SHELL=/bin/bash
# mail any output to exampleuser, no matter whose crontab this is
MAILTO=exampleuser
```

```
# set the PATH variable to make sure all commands in the crontab are found
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin


* * * * * my_command
```

Please note: unless you set a *PATH* variable in a crontab, always use full paths in the crontab to make sure commands are found and can be executed. For example, instead of writing *rsync*, you should write */usr/bin/rsync*. Use *which* to find out the full path of a program:

```
which rsync
```

```
server1:~# which rsync
  /usr/bin/rsync
server1:~#
```

See

```
man 5 crontab
```

to learn more about the cron job syntax.