cron Scheduled jobs

CONCEPTS

Cron wakes every minute and runs jobs whose five time fields match. Jobs run with a minimal environment and no terminal, so use absolute paths and set PATH yourself.

min	hour	dom	month	dow
0-59	0-23	1-31	1-12	0-7

Field order, left to right (not nested)

If both day-of-month and day-of-week are restricted (not *), the job runs when either matches, not both. 30 4 1,15 * 5 runs on the 1st, the 15th and every Friday.

MANAGING CRONTABS

crontab -e
Edit your crontab in $EDITOR

crontab -l
Show your installed crontab

crontab -r
Remove your crontab, no confirmation

crontab -i -r
Ask before removing

crontab *<file>*
Replace your crontab with a file

crontab -
Replace your crontab from stdin

crontab -n *<file>*
Dry run: check syntax only

crontab -u *<user>* **-l**
List another user's crontab (root)

crontab -u *<user>* **-e**
Edit another user's crontab (root)

/etc/cron.d/*<file>*
System job file, has a user field

SCHEDULE SYNTAX

*** * * * *** *<cmd>*
Every minute

***/15 * * * *** *<cmd>*
Every 15 minutes

SCHEDULE SYNTAX (cont.)

0 * * * * *<cmd>*
Top of every hour

30 4 * * * *<cmd>*
Every day at 04:30

0 9 * * 1-5 *<cmd>*
Weekdays at 09:00

0 0 1 * * *<cmd>*
First of the month at midnight

0 8,12,18 * * * *<cmd>*
List: 08:00, 12:00, 18:00

0 9-17/2 * * * *<cmd>*
Range with step: 9, 11, 13, 15, 17

0 6 * * mon *<cmd>*
Names allowed for month and weekday

0 0 * * 0 *<cmd>*
Sundays (0 or 7)

SPECIAL STRINGS

@reboot
Once when the cron daemon starts

@hourly
Same as 0 * * * *

@daily / @midnight
Same as 0 0 * * *

@weekly
Same as 0 0 * * 0

@monthly
Same as 0 0 1 * *

@yearly / @annually
Same as 0 0 1 1 *

ENVIRONMENT AND OUTPUT

PATH=/usr/local/bin:/usr/bin:/bin
Set PATH at the top (no $PATH)

SHELL=/bin/bash
Choose the shell for commands

MAILTO=*<addr>*
Mail job output to this address

MAILTO=""
Never mail output

<cmd> **>>** *<log>* **2>&1**
Append stdout and stderr to a log

ENVIRONMENT AND OUTPUT (cont.)

<cmd> **> /dev/null 2>&1**
Discard all output

<cmd> **> /dev/null**
Keep errors, drop normal output

date +\%F
Escape % with a backslash

<cmd> **# note**
Trailing # is NOT a comment

flock -n *<lock>* *<cmd>*
Skip if the previous run is still going

DEBUGGING

grep CRON /var/log/syslog
See cron run lines (needs rsyslog)

journalctl -u cron
Cron log on systemd (cron.service on Debian)

systemctl status cron
Is the daemon running?

env -i SHELL=/bin/sh PATH=/usr/bin:/bin *<cmd>*
Test with a cron-like environment

A job that works in your shell but fails in cron nearly always comes down to PATH, a relative path, a missing env variable or a % character.

For logging, dependencies and catching up after downtime, consider a systemd timer instead (systemctl list-timers).

RECIPES

Typical crontab header

```
SHELL=/bin/bash
PATH=/usr/local/bin:/usr/bin:/bin
MAILTO=you@example.com
# m  h  dom mon dow  command
15 3 * * *  /home/me/bin/
backup.sh >> /home/me/backup.log
2>&1
```

Add one job without opening the editor

```
(crontab -l 2>/dev/null; echo
'*/10 * * * * /home/me/bin/
sync.sh') | crontab -
```

Non-overlapping job with a lock

```
*/5 * * * * flock -n /tmp/
sync.lock /home/me/bin/sync.sh
>> /home/me/sync.log 2>&1
```