



Chapter 9

Periodic Processes

CRON – Schedule Commands (1)

☐ What we want?

- Do things at right time automatically

☐ cron daemon

- The daemon that handles periodic execution
- cron daemon reads configuration file and executes commands on time

CRON – Schedule Commands (2)

❑ Configuration file

- So called: crontab (cron table)
- Location of user cron configuration file
 - Every user can have at most one crontab file and this file will be named the user's login ID

System	Cron Dir
FreeBSD	/var/cron/tabs
Red Hat	/var/spool/cron
Solaris	/var/spool/cron/crontabs
SunOS	/var/spool/cron/crontabs

- Location of System Cron Configuration file
 - /etc/crontab

CRON – Schedule Commands (3)

❑ man 5 crontab

❑ Configuration File Format

1. Ignored
 - Blank lines or leading spaces and tabs
2. Comments
 - pound-sign Lines whose first non-space character is a (#)
3. environment setting
 - name = value
 - Default environment variables:
 - LOGNAME, SHELL, PATH, HOME, MAILTO
4. cron command

Format:

minute hour day month weekday command

CRON – Schedule Commands (4)

❑ cron command format – *minute hour day month weekday command*

Field	Description	Range
minute	Minute of the hour	0 ~ 59
hour	Hour of the day	0 ~ 23
day	Day of the month	1 ~ 31
month	Month of the year	1 ~ 12
weekday	Day of the week	0 ~ 6 (0 = Sunday)

❑ Rule Matching

- * matches everything
- Single character matches exactly
- Dash(-) matches range
- Comma(,) matches any listed value
- Slash(/) matches skips of the number's value through the range.

CRON – Schedule Commands (5)

❑ crontab time format example

- | | |
|---------------|--|
| 45 10 * * 1-5 | ➔ AM 10:45, from Mon. to Fri. |
| 10 * * * * | ➔ On 10 minutes of each hour |
| */3 * * * * | ➔ Every three minutes |
| 30 15 5 * * | ➔ PM 3:30 of each 5-th day |
| 0 0 14 2 * | ➔ On the Midnight of Valentine's day |
| 5 0-6 * * * | ➔ On 5 minutes, from 0 to 6 o'clock. |
| 0,30 * 13 * 5 | ➔ every half-hour on Fri. and every half-hour on the 13-th day |

❑ crontab example

- | | |
|-----------------|--|
| 20 1 * * * | find /tmp -atime +3 -exec rm -f {} ';' |
| 55 23 * * 0-3,6 | /home/chwong/cputemp-check.sh |

crontab command

❑ `man 1 crontab`

`% crontab -e [-u user]`

- Edit the [user's] crontab using editor

`% crontab -l`

- List the content of the crontab

`% crontab -r`

- Remove the current crontab

`% crontab filename`

- Install *filename* as your crontab

crontab management

❑ To Allow or deny user

- By default, all users can have their own crontab
- allow file
 - A list of users that may use crontab, any other not in the list can not use it
- deny file
 - Reverse meaning

❑ log

System	Allow or deny file	Log file
FreeBSD	/var/cron/{ allow,deny }	By syslogd
Red Hat	/etc/cron.{ allow,deny }	/var/log/cron
Solaris	/etc/cron.d/cron.{ allow,deny }	/var/cron/log
SunOS	/var/spool/cron/cron.{ allow,deny }	By syslogd

System crontab: /etc/crontab

❑ System crontab

- /etc/crontab

```

SHELL=/bin/sh
PATH=/etc:/bin:/sbin:/usr/bin:/usr/sbin
HOME=/var/log
#minute hour mday month wday who command
*/5 * * * * root /usr/libexec/atrun
*/11 * * * * operator /usr/libexec/save-entropy
0 * * * * root newsyslog
1 3 * * * root periodic daily
15 4 * * 6 root periodic weekly
30 5 1 * * root periodic monthly
1,31 0-5 * * * root adjkerntz -a

```

periodic command

□ periodic command

[Synopsis] *periodic directory* ...

- Run periodic system function under /etc/periodic

```
sabsd [/home/chwong] -chwong- ls -ld /etc/periodic/*
drwxr-xr-x  2 root  wheel  1024 Sep 26 21:43 /etc/periodic/daily
drwxr-xr-x  2 root  wheel   512 Sep 27 03:49 /etc/periodic/monthly
drwxr-xr-x  2 root  wheel   512 Sep 27 03:49 /etc/periodic/security
drwxr-xr-x  2 root  wheel   512 Sep 27 03:49 /etc/periodic/weekly
```

```
sabsd [/home/chwong] -chwong- ls /etc/periodic/daily
100.clean-disks      200.backup-passwd    405.status-ata-raid  430.status-rwho
110.clean-tmps       210.backup-aliases   406.status-gmirror   440.status-mailq
120.clean-preserve   300.calendar         407.status-graid3     450.status-security
130.clean-msgs       310.accounting       408.status-gstripe    470.status-named
140.clean-rwho       330.news             409.status-gconcat    500.queuerun
150.clean-hoststat   400.status-disks     420.status-network    999.local
```

at command

❑ at command

- executes commands at a specified time

at [-q queue] [-f file] [-mldbv] time

or at [-q queue] [-f file] [-mldbv] -t [[CC]YY]MMDDhhmm[.SS]

❑ at management

- atq, atrm
- /var/at/at.{allow,deny}