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)

- cron configuration file
  - crontab – cron table
  - Every user can have at most one crontab file and this file will be named the user's login ID
  - All crontab files will be in the same directory
  - /etc/crontab
    - **System crontab**

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

CRON – Schedule Commands (3)

> crontab file format

minute hour day month weekday command

- * matches everything
- Single character matches exactly
- Dash matches range
- Comma matches any listed value

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)

CRON – Schedule Commands (4)

> 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 * * *	
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/tytsai/virus-check.sh

crontab command

- % 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

- Allow or deny
  - 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,cron.deny}	/var/log/cron
Solaris	/etc/cron.d/{cron.allow,cron.deny}	/var/cron/log
SunOS	/var/spool/cron/{cron.allow,cron.deny}	By syslogd

/etc/crontab

```
1     3     *     *     *     root     periodic daily
15    4     *     *     6     root     periodic weekly
30    5     1     *     *     root     periodic monthly
```

> periodic command

[Synopsis] *periodic directory ...*

– Run periodic system function under /etc/periodic

```
tytsai@tybsd:/<1>periodic/daily> ls
100.clean-disks*          220.backup-distfile*      420.status-network*
110.clean-tmps*           300.calendar*             430.status-rwho*
120.clean-preserve*       310.accounting*           440.status-mailq*
130.clean-msgs*           320.rdist*                450.status-security*
140.clean-rwho*           330.news*                 460.status-mail-rejects*
150.clean-hoststat*       340.uucp*                 470.status-named*
200.backup-passwd*        400.status-disks*         500.queuerun*
210.backup-aliases*       410.status-uucp*          999.local*
tytsai@tybsd:/<1>periodic/daily>
```