

# 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(8)`, `crontab(1)`, `crontab(5)`

# 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 (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)

## Matching Rules

- \* 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)

minute hour day month weekday command

- 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	/root/cputemp-check.sh

# crontab command

- crontab(1)

\$ 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

```
# /etc/crontab - root's crontab for FreeBSD
#
# $FreeBSD: src/etc/crontab,v 1.32 2002/11/22 16:13:39 tom Exp $
#
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
#
# Save some entropy so that /dev/random can re-seed on boot.
*/11         *          *          *          *          operator   /usr/libexec/save-entropy
#
# Rotate log files every hour, if necessary.
0            *          *          *          *          root       newsyslog
#
# Perform daily/weekly/monthly maintenance.
1            3          *          *          *          root       periodic daily
15           4          *          *          6          root       periodic weekly
30           5          1          *          *          root       periodic monthly
#
# Adjust the time zone if the CMOS clock keeps local time, as opposed to
# UTC time. See adjkerntz(8) for details.
1,31        0-5        *          *          *          root       adjkerntz -a
```

# periodic utility

```
lucky7:~ -lwhsu- ls -l /etc/periodic/  
total 8  
drwxr-xr-x  2 root  wheel  - 1024 Jul  7 14:43 daily/  
drwxr-xr-x  2 root  wheel  -  512 Oct 22  2007 monthly/  
drwxr-xr-x  2 root  wheel  -  512 Jul  7 14:43 security/  
drwxr-xr-x  2 root  wheel  -  512 Oct 22  2007 weekly/
```

```
lucky7:~ -lwhsu- ls /etc/periodic/daily  
100.clean-disks          310.accounting          420.status-network  
110.clean-tmps           330.news                 430.status-rwho  
120.clean-preserve       400.status-disks        440.status-mailq  
130.clean-msgs           404.status-zfs          450.status-security  
140.clean-rwho           405.status-ata-raid     460.status-mail-rejects  
150.clean-hoststat       406.status-gmirror      470.status-named  
200.backup-passwd        407.status-graid3       480.status-ntpd  
210.backup-aliases       408.status-gstripe      500.queuerun  
300.calendar             409.status-gconcat      999.local
```

/etc/periodic.conf

/etc/defaults/periodic.conf

/usr/local/etc/periodic

periodic(8)

# 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}

at(1), atrun(8)