Information Technology Institute

redhat LINUX

Lecture 4

DAY 4

- Monitoring and Managing Linux Processes
- Controlling Services and Daemons
- Analyzing and Sorting Logs
- Disk Space in Linux
- Scheduling Jobs

Monitoring and Managing Linux Processes

A process is a program which is being executed.

Any process may create a child process. All processes are descendants of the first system process, which is systemd on a RHEL7 system.

[root@master ~]# echo $$ → To see the PID of your current shell process

4085

[root@master ~]# bash

[root@master ~]# echo $$

8686

[root@master ~]# exit

exit

[root@master ~]# echo $$

4085

Monitoring and Managing Linux Processes

Listing processes:

[root@master ~]# ps

[root@master ~]# ps aux | less

[root@master ~]# ps aux | grep -i vim

[root@master ~]# ls /proc/

[root@master ~]# ps aux | grep 264 (which shown in /proc)

[root@master ~]# pidof vim **OR** [root@master ~]# pgrep vim

[root@master ~]# ps -l → To display Parent PID PPID

[root@master ~]# ps -ef → To display Parent PID PPID and nice values

Monitoring and Managing Linux Processes

Listing processes:

ps aux:

a → all processes attached to a terminal

u → provides more columns

x → all other processes

[root@master ~]# pstree → Process Status Tree

OR

[root@master ~]# ps fax → Process Status Tree

[root@master ~]# pstree -p → Display PID of each process

Monitoring and Managing Linux Processes

Real-Time Process Monitoring:

uptime → ?

[root@master ~]# top

type 1 to show all cpu cores

type s to change the default refresh rate which is 3 seconds

type h for help

type k to kill a process

type r to renice a process

Monitoring and Managing Linux Processes

Real-Time Process Monitoring:

type M to change the display to sort by the amount of memory

type P to change the display to sort by the CPU utilization

type n to change the number of processes shown

type w to save current display configuration

type q to quit

PID → The process ID

USER → The process owner

VIRT → (Virtual memory) All memory the process is using including swap

RES → (Resident memory) The physical memory used by the process

TIME → CPU time, the total processing time since the process started

Monitoring and Managing Linux Processes

Controlling Jobs:

Background processes display a question mark (?) in the TTY column in a ps aux command.

[root@master ~]# sleep 100000 & → Running a job in the background

[1] 5151

[root@master ~]# jobs → To list the jobs running in the bg and fg

[1]+ Running sleep 100000 &

[root@master ~]# fg %1 → To send the job to the foreground again

sleep 100000

Monitoring and Managing Linux Processes

Controlling Jobs:

^Z → To resend to the background

[1]+ Stopped sleep 100000

[root@master ~]# bg %1 → To restart the process in the background

[1]+ sleep 100000 &

OR

[root@master ~]# bg 5151

^C → End the process

Monitoring and Managing Linux Processes

Killing Processes:

[root@master ~]# kill -l → List all signals

[root@master ~]# man 7 signal

9 → SIGKILL Should be used with caution

15 → SIGTERM, The default, kills the process gracefully

[root@master ~]# pidof vim

4123

[root@master ~]# kill 4123 (Default is SIGTERM 15)

Monitoring and Managing Linux Processes

Killing Processes:

[root@master ~]# pidof vim

7073

[root@master ~]# kill -9 7073

[root@master ~]# pkill vim (Default is SIGTERM 15)

[root@master ~]# killall vim

kill uses the process ID, while pkill and killall uses the process name.

killall is used to kill all the running versions of the same program.

Monitoring and Managing Linux Processes

Managing Process Priorities:

The “nice” command is used to launch a process with a user-defined scheduling priority.

It range from -20 to 19, where -20 is the highest priority and 19 is the lowest

Processes are scheduled according to priority.

Negative values are allowed only to root.

[root@master ~]# ps l → To show nice values

Monitoring and Managing Linux Processes

Managing Process Priorities:

[root@master ~]# nice vim text & (Default is 0)

[1] 9182

[root@master ~]# nice -n 15 vim text &

The renice command is used to change the priority of a currently running process.

[root@master ~]# renice 19 9182 (19 is the new value)

Controlling Services and Daemons

Systemd is system startup and server processes and managed by systemctl.

```
[root@master ~]# systemctl status sshd
```

```
[root@master ~]# systemctl stop sshd
```

```
[root@master ~]# systemctl start sshd
```

```
[root@master ~]# systemctl restart sshd
```

Controlling Services and Daemons

Enabling system daemons to start or stop at boot:

[root@master ~]# systemctl disable sshd

[root@master ~]# systemctl enable sshd

[root@master ~]# systemctl is-active sshd

[root@master ~]# systemctl is-enabled sshd

Controlling Services and Daemons

Dependencies:

[root@master ~]# systemctl stop cups

Warning: Stopping cups.service, but it can still be activated by:

cups.socket

cups.path

[root@master ~]# systemctl list-dependencies cups


BREAK

Analyzing and Sorting Logs

Set Local Clocks and Time Zone:

[root@master ~]# timedatectl → Shows an overview of the current time settings

[root@master ~]# timedatectl list-timezones → shows a list of all time zones

[root@master ~]# timedatectl set-timezone Africa/Cairo

[root@master ~]# timedatectl set-time 9:00:00

Analyzing and Sorting Logs

journald:

[root@server ~]# journalctl → To show all logs of systemctl, during system load

[root@server ~]# journalctl -n → Shows the "last" 10 log entries

[root@server ~]# journalctl -n 5 → Shows the "last" 5 log entries

Analyzing and Sorting Logs

journald:

[root@server ~]# journalctl -p err → Filters the output to a specific severity

Code	Priority	Severity
0	emerg	System is unstable
1	alert	Actions must be taken immediately
2	crit	critical error conditions
3	err	non-critical error conditions
4	warning	warning conditions
5	notice	normal but significant events
6	info	information event
7	debug	debugging level messsage

Analyzing and Sorting Logs

journald:

[root@server ~]# journalctl --since yesterday

[root@server ~]# journalctl --since yesterday --until 9:30:00

[root@server ~]# journalctl _PID=1

[root@server ~]# journalctl _SYSTEMD_UNIT=sshd

Analyzing and Sorting Logs

Logging:

[root@master ~]# last → The last command in Linux is used to display the list of all the users logged in and out

[root@master ~]# lastlog →The lastlog file is a database which contains info on the last login of each user. You

Disk Space Usage

df -h /home/user1 → To list the available space in a human readable format for the directory /user1

```
sofija@sofija-VirtualBox:~$ df
Filesystem     1K-blocks    Used Available Use% Mounted on
udev              983112       0    983112   0% /dev
tmpfs             203548    1628    201920   1% /run
/dev/sda1       10253588 8638124   1074896  89% /
tmpfs            1017740       8   1017732   1% /dev/shm
tmpfs               5120       4      5116   1% /run/lock
tmpfs            1017740       0   1017740   0% /sys/fs/cgroup
/dev/loop2          1024    1024         0 100% /snap/gnome-logs/93
/dev/loop3          1024    1024         0 100% /snap/gnome-logs/81
/dev/loop4         49536   49536         0 100% /snap/gtk-common-themes/1474
/dev/loop5         56064   56064         0 100% /snap/core18/1668
/dev/loop6         46080   46080         0 100% /snap/gtk-common-themes/1440
/dev/loop7         15104   15104         0 100% /snap/gnome-characters/495
```

Disk Space Usage

du → To display the used space with the list of the content of the / directory

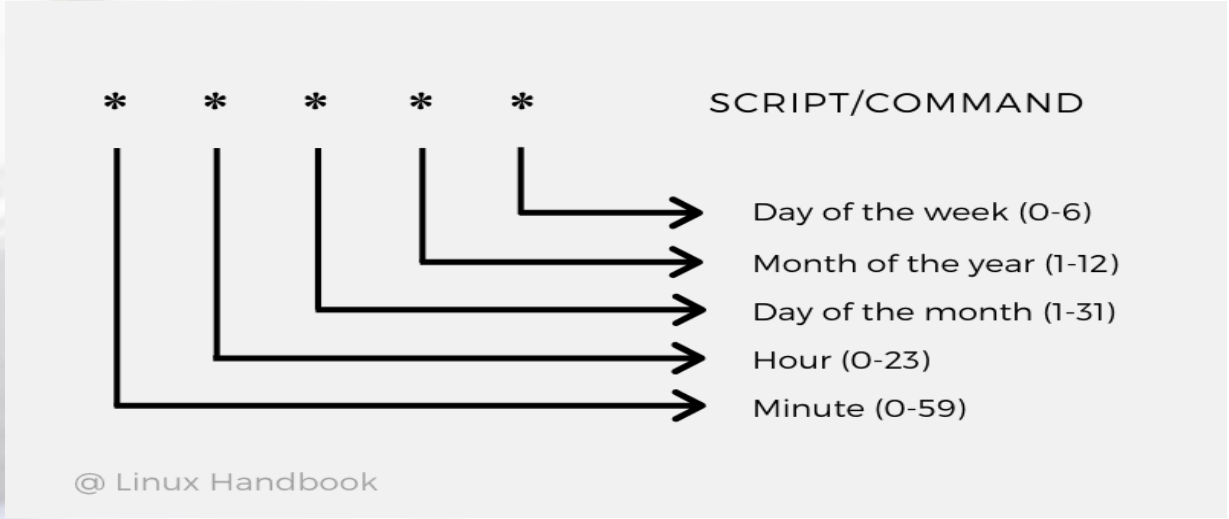
du –h / → To display the used space in a human readable format of the / directory

du –sh /→ To display the total used space in a human readable format without list the content of the directory

```
sofija@sofija-VirtualBox:~$ du
4       ./.mozilla/extensions
4       ./.mozilla/firefox/Pending Pings
8       ./.mozilla/firefox/t0nmmasz.default
4       ./.mozilla/firefox/Crash Reports/events
24      ./.mozilla/firefox/Crash Reports
4       ./.mozilla/firefox/qqbqcih2.default-release/extensions
12      ./.mozilla/firefox/qqbqcih2.default-release/sessionstore-back
8       ./.mozilla/firefox/qqbqcih2.default-release/bookmarkbackups
4       ./.mozilla/firefox/qqbqcih2.default-release/browser-extensior
```

Scheduling Jobs

The command crontab is used for scheduling specific jobs to run within a specific window.



Scheduling Jobs

Cron job every Wednesday at noon → crontab 0 0 * * WED executable_file

Cron job every half hour → crontab * /30 * * * ls –l

Cron job to run on weekdays only at midnight → crontab 0 0 * * 1-5

* → any value

, → value list separator

- → range of values

/ → step values


Thank You!