

Lab 3: System Attributes and Using Word Processor

A. vmstat

1. Description

- Report virtual memory statistics.

2. Syntax

```
vmstat [options] [delay [count]]
```

Options:

- **-a**
 - Displays active and inactive memory.
- **-f**
 - Displays the number of forks since boot.
- **-m**
 - Displays slab statistics.
- **-n**
 - Displays the header only once rather than periodically.
- **-s**
 - Displays a table of various event counters and memory statistics.
- **-d**
 - Displays disk statistics.
- **-D**
 - Detailed disk activity report.
- **-p**
 - Detailed partition statistics.
- **-t**
 - Adds a timestamp to the report.

- **-S [unit]**
- Switches output units.
- **-V**
- Displays version information.
- **-h**
- Displays help.

3. Example

```
[root@fedora ~]# ps
  PID TTY          TIME CMD
 2614 pts/0    00:00:00 sudo
 2616 pts/0    00:00:00 bash
 2684 pts/0    00:00:00 ps
```

B. pstree -np

1. Description

-Display a tree of processes

2. Syntax

```
ps [OPTIONS] [USER or PID]
```

Options:

- **-a**
- Show command line arguments. If the command line of a process is swapped out, that process is shown in parentheses

```
[root@fedora ~]# ps -a
  PID TTY          TIME CMD
 1578 tty2    00:00:00 gnome-session-b
 2614 pts/0    00:00:00 sudo
 2616 pts/0    00:00:00 bash
 2716 pts/0    00:00:00 ps
```

- **-A**
Use ASCII characters to draw the tree.

```
[root@fedora ~]# ps -A
```

PID	TTY	TIME	CMD
1	?	00:00:02	systemd
2	?	00:00:00	kthreadd
3	?	00:00:00	rcu_gp
4	?	00:00:00	rcu_par_gp
5	?	00:00:00	slub_flushwq
6	?	00:00:00	netns
8	?	00:00:00	kworker/0:0H-events_highpri
9	?	00:00:00	kworker/u2:0-btrfs-endio-meta
10	?	00:00:00	mm_percpu_wq
11	?	00:00:01	kworker/u2:1-btrfs-endio-write
12	?	00:00:00	rcu_tasks_kthread
13	?	00:00:00	rcu_tasks_rude_kthread
14	?	00:00:00	rcu_tasks_trace_kthread
15	?	00:00:00	ksoftirqd/0
16	?	00:00:00	rcu_preempt
17	?	00:00:00	migration/0
18	?	00:00:00	kworker/0:1-events
19	?	00:00:00	cpuhp/0
20	?	00:00:00	kdevtmpfs
21	?	00:00:00	inet_frag_wq
22	?	00:00:00	kauditd

- **-c**

Disable compaction of identical subtrees.

```
[root@fedora ~]# ps -c
```

PID	CLS	PRI	TTY	TIME	CMD
2753	TS	19	pts/0	00:00:00	sudo
2760	TS	19	pts/0	00:00:00	bash
2791	TS	19	pts/0	00:00:00	ps

- **-h**

Highlight the current process and its ancestors.

```
[root@fedora ~]# ps -h
```

2753	pts/0	S	0:00	sudo -i
2760	pts/0	S	0:00	-bash
2792	pts/0	R+	0:00	ps -h

- **-H**

Like -h, but highlight the specified process instead.

```
[root@fedora ~]# ps -H
```

2753	pts/0		00:00:00	sudo
2760	pts/0		00:00:00	bash
2793	pts/0		00:00:00	ps

- **-l**

Display long lines.

```
[root@fedora ~]# ps -l
```

F	S	UID	PID	PPID	C	PRI	NI	ADDR	SZ	WCHAN	TTY	TIME	CMD
4	S	0	2753	2724	0	80	0	-	59126	do_sys	pts/0	00:00:00	sudo
4	S	0	2760	2753	0	80	0	-	56095	do_wai	pts/0	00:00:00	bash
4	R	0	2798	2760	0	80	0	-	56164	-	pts/0	00:00:00	ps

- **-n**

- Sort processes with the same ancestor by PID instead of by name. (Numeric sort.)

```
[root@fedora ~]# ps -n
```

PID	TTY	STAT	TIME	COMMAND
2753	pts/0	S	0:00	sudo -i
2760	pts/0	S	0:00	-bash
2863	pts/0	R+	0:00	ps -n

- **-P**

- Show PIDs.

```
[root@fedora ~]# ps -P
```

PID	PSR	TTY	TIME	CMD
2753	0	pts/0	00:00:00	sudo
2760	0	pts/0	00:00:00	bash
2868	0	pts/0	00:00:00	ps

- **-u**

- Show uid transitions.

```
[root@fedora ~]# ps -u
```

USER	PID	%CPU	%MEM	VSZ	RSS	TTY	STAT	START	TIME	COMMAND
root	2753	0.0	0.4	236504	9768	pts/0	S	03:20	0:00	sudo -i
root	2760	0.0	0.2	224380	5120	pts/0	S	03:20	0:00	-bash
root	2870	0.0	0.1	224656	3072	pts/0	R+	03:31	0:00	ps -u

3. Example

```
[root@fedora ~]# pstree -p
```

```

systemd(1)---ModemManager(748)---{ModemManager}(775)
                        |---{ModemManager}(777)
                        |---{ModemManager}(781)
                        |---NetworkManager(817)---{NetworkManager}(821)
                        |                        |---{NetworkManager}(822)
                        |                        |---{NetworkManager}(823)
                        |---VGAAuthService(661)
                        |---abrt-dbus(2353)---{abrt-dbus}(2354)
                        |                        |---{abrt-dbus}(2355)
                        |                        |---{abrt-dbus}(2356)
                        |---abrt-dump-journ(735)
                        |---abrt-dump-journ(739)
                        |---abrt-dump-journ(742)
                        |---abrt-d(669)---{abrt-d}(694)
                        |                |---{abrt-d}(695)
                        |                |---{abrt-d}(734)
                        |---accounts-daemon(650)---{accounts-daemon}(679)
                        |                        |---{accounts-daemon}(680)
                        |                        |---{accounts-daemon}(723)
                        |---alsactl(978)

```

C. pgrep

1. Description

- Searches for processes currently running on the system, based on a complete or partial process name, or other specified attributes.

2. Syntax

```
pgrep [options] pattern
```

Options

- **-c, --count**

- Suppress normal output; instead print a count of matching processes
- **-d, --delimiter**
 - Sets the string used to delimit each process ID in the output
- **-f, --full**
 - The pattern is normally only matched against the process name.
- **-g, --pgroup pgrp**
 - Only match processes in the process group IDs listed.
- **-G, --group gid**
 - Only match processes whose real group ID is listed.
- **-l, --list-name**
 - List the process name and the process ID.
- **-n, --newest**
 - Select only the newest (most recently started) of the matching processes.
- **-o, --oldest**
 - Select only the oldest (least recently started) of the matching processes.
- **-P, --parent ppid**
 - Only match processes whose parent process ID is listed.
- **-s, --session sid**
 - Only match processes whose process session ID is listed.

3. Example

```
[root@fedora ~]# pgrep -u root,daemon
1
2
3
4
5
6
8
10
11
12
13
14
15
16
17
18
19
20
21
22
23
```

D. pkill

1. Description

-Searches for processes currently running on the system, based on a complete or partial process name, or other specified attributes.

2. Syntax

```
pgrep [options] pattern
```

Options

- **-signal, --signal signal**
 - Defines the signal to send to each matched process. Either the numeric or the symbolic signal name can be used.
- **-f, --full**
 - The pattern is normally only matched against the process name.
- **-g, --pgroup pgrp**
 - Only match processes in the process group IDs listed.
- **-G, --group gid**

- Only match processes whose real group ID is listed.
- **-n, --newest**
 - Select only the newest (most recently started) of the matching processes.
- **-o, --oldest**
 - Select only the oldest (least recently started) of the matching processes.
- **-P, --parent ppid**
 - Only match processes whose parent process ID is listed.
- **-s, --session sid**
 - Only match processes whose process session ID is listed.

3. Example

```
[root@fedora ~]# pgrep -n
3418
```

E. Uptime

1. Description

- Tells how long the system has been running.

2. Syntax

```
uptime [options]
```

Options:

- **-p, --pretty**
 - show uptime in pretty format.
- **-s, --since**
 - system up since.clear

3. Example

```
[root@fedora ~]# uptime -p  
up 29 minutes
```

F. Free

1. Description

- Displays the total amount of free and used physical and swap memory, and the buffers used by the kernel.

2. Syntax

```
free [options]
```

Options

- **-b, --bytes**
 - Display the amount of memory in bytes.
- **-k, --kilo**
 - Display the amount of memory in kilobytes.
- **-m, --mega**
 - Display the amount of memory in megabytes.
- **-g, --giga**
 - Display the amount of memory in gigabytes.
- **--tera**
 - Display the amount of memory in terabytes.
- **-h, --human**
 - Show all output fields automatically scaled to shortest three digit unit and display the units of print out.
- **-c, --count count**
 - Display the result count times.
- **-l, --lohi**
 - Show detailed low and high memory statistics.

- ### 3. Example

vi

End

