

## Processes

Unix timeslices: each runnable process gets an allocation of time units.

The allocation does not depend on it being in the active window,

Processes have priority, but each gets some time (except very nice processes).

Your niceness (priority) controls how much CPU you get, but, if no else is running you will.

Example: all other processes are waiting for disk or user input.

## System Load

`uptime` – reports the short, medium and long term number of runnable processes. If this is under 1.0 you've got spare CPU. Warning: multiple CPU machines may or may not divide by the number of processors.

`free` – summary statistics about memory

`vmstat` – summary statistics about processes, swap space, memory usage, CPU usage and io. Shows what you are running short on. With no parameters it lists statistics since the last reboot. To get more meaningful information you can use the parameters to specify how many times to run and at what interval; the first report will still be a summary, but the later ones will be snapshot.

`top` – summarizes statistics and lists most consumptive processes

`ps` – look at the running processes. Various options show different subsets of the processes with different amounts of information. For a complete listing use:

`ps auxww`

## More about the ps command

### %CPU

The percentage of the CPU a process is using.

This is the current CPU percentage, your ps will be very high since it is running now.

*Watch for:* A process taking a large percentage of time.

### TIME

This is the total amount of CPU that the process has consumed.

Certain processes such as system will accumulate a lot of CPU since they never stop.

*Watch for:* A process which had consumed alot of CPU.

### STAT

The status of

*Watch for:* A lot of defunct (z) processes, indicating that some server is incorrectly handling forks and waits.

A lot of IO wait processes (D), often indicates that some network file system isn't online or a hard drive had gone bad.

### PID

You need this number to terminate the process

Watch for abnormalities

Example 1: a COMMAND of telnet with a TTY of ?. Telnets and edits should be associated with terminals

Example 2: a compile (gcc) with a TTY of ?. This will happen on build servers, but probably not on other machines.

## Sample Administration

Administration Task – remove run-away user jobs (without rebooting).

```
sseiden 13638 90.0 0.4 3164 120 ? R Sep 6 10935:50 netscape
volper 1464 7.7 1.8 260 508 p5 R 11:58 0:00 ps aux
root 119 0.0 0.0 28 0 ? S < Sep 4 38:50 (nfsd)
root 2 0.0 0.0 0 0 ? D Sep 4 0:46 pagedaemon
```

The netscape looks suspicious. It should be interactive. It's using 90% of the CPU. It's used 10000 minutes of CPU.

Action – 1) call user, 2) kill 13638, 3) kill -9 13638  
4) kill -15 13638

Caution: killing the wrong process could a) upset an innocent user b) lobotomize the operating system

For a multiprocess jam you can kill all processes of a given name:

```
joe 1431 1.0 0.5 260 54 ? R 10:39 0:50 hwk1
joe 1432 1.1 0.4 260 54 ? R 10:39 0:48 hwk1
joe 1433 1.0 0.4 261 54 ? R 10:39 0:50 hwk1
joe 1434 1.2 0.4 261 54 ? R 10:39 0:46 hwk1
```

killall hwk1