进程的管理

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进程管理

01 进程**监控**命令

- ps
- pstree
- top

➡ **监控静态和动态的进程**

02 进程**控制**命令

- kill [信号编号] PID
- killall [选项] 进程名

➡ **终止进程**

ps命令

ps：process status ——显示系统中当前的进程状态

常用选项：

```
[root@ccit ~]# ps -a
   PID TTY          TIME CMD
  2233 pts/0    00:00:00 ps
[root@ccit ~]# ps a
   PID TTY      STAT   TIME COMMAND
  1296 tty1     Ss+    0:00 -bash
  1321 pts/0    Ss     0:00 -bash
  2234 pts/0    R+     0:00 ps a
```

ps命令


```
[root@ccit ~]# ps u
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root        1296  0.0  0.0 115432  1980 tty1     Ss+  20:34   0:00 -bash
root        1321  0.0  0.0 115436  2056 pts/0    Ss   20:34   0:00 -bash
root        2236  0.0  0.0 155324  1852 pts/0    R+   21:54   0:00 ps u
```

```
[root@ccit ~]# ps x
   PID TTY      STAT   TIME COMMAND
     1 ?        Ss     0:02 /usr/lib/systemd/systemd --switched-root --system --deserialize 22
     2 ?        S      0:00 [kthreadd]
     3 ?        S      0:00 [ksoftirqd/0]
     5 ?        S<     0:00 [kworker/0:0H]
     7 ?        S      0:00 [migration/0]
     8 ?        S      0:00 [rcu_bh]
     9 ?        S      0:00 [rcu_sched]
    10 ?        S<     0:00 [lru-add-drain]
    11 ?        S      0:00 [watchdog/0]
    12 ?        S      0:00 [watchdog/1]
    13 ?        S      0:00 [migration/1]
    14 ?        S      0:00 [ksoftirqd/1]
    16 ?        S<     0:00 [kworker/1:0H]
    18 ?        S      0:00 [kdevtmpfs]
    19 ?        S<     0:00 [netns]
    20 ?        S      0:00 [khungtaskd]
    21 ?        S<     0:00 [writeback]
```

ps命令


```
[root@ccit ~]# ps -f
UID          PID    PPID  C STIME TTY          TIME CMD
root        1321    1316  0 20:34 pts/0    00:00:00 -bash
root        2275    1321  0 22:10 pts/0    00:00:00 ps -f
[root@ccit ~]# ps -e
   PID TTY          TIME CMD
     1 ?        00:00:02 systemd
     2 ?        00:00:00 kthreadd
     3 ?        00:00:00 ksoftirqd/0
     5 ?        00:00:00 kworker/0:0H
     7 ?        00:00:00 migration/0
     8 ?        00:00:00 rcu_bh
     9 ?        00:00:00 rcu_sched
    10 ?        00:00:00 lru-add-drain
    11 ?        00:00:00 watchdog/0
    12 ?        00:00:00 watchdog/1
    13 ?        00:00:00 migration/1
```

ps命令


```
[root@ccit ~]# ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.1 127936  6480 ?        Ss   20:33   0:02 /usr/lib/systemd/systemd --switched-r
root           2  0.0  0.0      0     0 ?        S    20:33   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        S    20:33   0:00 [ksoftirqd/0]
root           5  0.0  0.0      0     0 ?        S<   20:33   0:00 [kworker/0:0H]
root           7  0.0  0.0      0     0 ?        S    20:33   0:00 [migration/0]
root           8  0.0  0.0      0     0 ?        S    20:33   0:00 [rcu_bh]
root           9  0.0  0.0      0     0 ?        S    20:33   0:00 [rcu_sched]
root          10  0.0  0.0      0     0 ?        S<   20:33   0:00 [lru-add-drain]
root          11  0.0  0.0      0     0 ?        S    20:33   0:00 [watchdog/0]
root          12  0.0  0.0      0     0 ?        S    20:33   0:00 [watchdog/1]
root          13  0.0  0.0      0     0 ?        S    20:33   0:00 [migration/1]
root          14  0.0  0.0      0     0 ?        S    20:33   0:00 [ksoftirqd/1]
root          16  0.0  0.0      0     0 ?        S<   20:33   0:00 [kworker/1:0H]
root          18  0.0  0.0      0     0 ?        S    20:33   0:00 [kdevtmpfs]
root          19  0.0  0.0      0     0 ?        S<   20:33   0:00 [netns]
root          20  0.0  0.0      0     0 ?        S    20:33   0:00 [khungtaskd]
```

ps命令


```
[root@ccit ~]# ps -ef
UID          PID    PPID  C STIME TTY          TIME CMD
root           1       0  0 20:33 ?        00:00:02 /usr/lib/systemd/systemd --switched-root --system --d
root           2       0  0 20:33 ?        00:00:00 [kthreadd]
root           3       2  0 20:33 ?        00:00:00 [ksoftirqd/0]
root           5       2  0 20:33 ?        00:00:00 [kworker/0:0H]
root           7       2  0 20:33 ?        00:00:00 [migration/0]
root           8       2  0 20:33 ?        00:00:00 [rcu_bh]
root           9       2  0 20:33 ?        00:00:00 [rcu_sched]
root          10       2  0 20:33 ?        00:00:00 [lru-add-drain]
root          11       2  0 20:33 ?        00:00:00 [watchdog/0]
root          12       2  0 20:33 ?        00:00:00 [watchdog/1]
root          13       2  0 20:33 ?        00:00:00 [migration/1]
root          14       2  0 20:33 ?        00:00:00 [ksoftirqd/1]
root          16       2  0 20:33 ?        00:00:00 [kworker/1:0H]
root          18       2  0 20:33 ?        00:00:00 [kdevtmpfs]
root          19       2  0 20:33 ?        00:00:00 [netns]
root          20       2  0 20:33 ?        00:00:00 [khungtaskd]
```

ps命令


```
[root@ccit ~]# ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.1 127936  6480 ?        Ss   20:33   0:02 /usr/lib/systemd/systemd --switched-r
root           2  0.0  0.0      0     0 ?        S    20:33   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        S    20:33   0:00 [ksoftirqd/0]
root           5  0.0  0.0      0     0 ?        S<   20:33   0:00 [kworker/0:0H]
root           7  0.0  0.0      0     0 ?        S    20:33   0:00 [migration/0]
root           8  0.0  0.0      0     0 ?        S    20:33   0:00 [rcu_bh]
root           9  0.0  0.0      0     0 ?        S    20:33   0:00 [rcu_sched]
root          10  0.0  0.0      0     0 ?        S<   20:33   0:00 [lru-add-drain]
root          11  0.0  0.0      0     0 ?        S    20:33   0:00 [watchdog/0]
root          12  0.0  0.0      0     0 ?        S    20:33   0:00 [watchdog/1]
root          13  0.0  0.0      0     0 ?        S    20:33   0:00 [migration/1]
root          14  0.0  0.0      0     0 ?        S    20:33   0:00 [ksoftirqd/1]
root          16  0.0  0.0      0     0 ?        S<   20:33   0:00 [kworker/1:0H]
root          18  0.0  0.0      0     0 ?        S    20:33   0:00 [kdevtmpfs]
root          19  0.0  0.0      0     0 ?        S<   20:33   0:00 [netns]
root          20  0.0  0.0      0     0 ?        S    20:33   0:00 [khungtaskd]
```

ps命令


```
[root@ccit ~]# ps -ef
UID          PID    PPID  C STIME TTY          TIME CMD
root           1       0  0 20:33 ?        00:00:02 /usr/lib/systemd/systemd --switched-root --system --d
root           2       0  0 20:33 ?        00:00:00 [kthreadd]
root           3       2  0 20:33 ?        00:00:00 [ksoftirqd/0]
root           5       2  0 20:33 ?        00:00:00 [kworker/0:0H]
root           7       2  0 20:33 ?        00:00:00 [migration/0]
root           8       2  0 20:33 ?        00:00:00 [rcu_bh]
root           9       2  0 20:33 ?        00:00:00 [rcu_sched]
root          10       2  0 20:33 ?        00:00:00 [lru-add-drain]
root          11       2  0 20:33 ?        00:00:00 [watchdog/0]
root          12       2  0 20:33 ?        00:00:00 [watchdog/1]
root          13       2  0 20:33 ?        00:00:00 [migration/1]
root          14       2  0 20:33 ?        00:00:00 [ksoftirqd/1]
root          16       2  0 20:33 ?        00:00:00 [kworker/1:0H]
root          18       2  0 20:33 ?        00:00:00 [kdevtmpfs]
root          19       2  0 20:33 ?        00:00:00 [netns]
root          20       2  0 20:33 ?        00:00:00 [khungtaskd]
```

pstree命令

pstree ——显示系统的进程树

```
[root@ccit ~]# pstree
systemd─┬─NetworkManager───2*[{NetworkManager}]
        ├─VGAuthService
        ├─auditd───{auditd}
        ├─crond
        ├─dbus-daemon───{dbus-daemon}
        ├─firewalld───{firewalld}
        ├─irqbalance
        ├─login───bash
        ├─lvmetad
        ├─master─┬─pickup
        │        └─qmgr
        ├─polkitd───5*[{polkitd}]
        ├─rsyslogd───2*[{rsyslogd}]
        ├─sshd───sshd───bash───pstree
        ├─systemd-journal
        ├─systemd-logind
        ├─systemd-udevd
        ├─tuned───4*[{tuned}]
```

top命令

ps ——查看进程的**瞬间信息**

top ——**持续监视**进程的信息

top：

- Linux下常用的**系统性能分析工具**
- **实时显示**系统中各进程的资源占用情况
- 类似于Windows中的**任务管理器**
- 通过**按键**不断**刷新**当前状态
- 独占前台

top命令

常用的选项有：

-d：指定刷新时间间隔，默认为5秒

top –d 3：每过3秒刷新一次

-s：设置为安全模式，不能使用交互命令

交互命令：**空格键**--刷新；**c键**--更改显示方式；**q键**--退出

top –s：禁止交互

-c：显示整个命令行，而不是命令名

top命令


```
[root@ccit ~]# top
top - 23:53:00 up  3:19,  2 users,  load average: 0.00, 0.01, 0.05
Tasks: 115 total,   1 running, 114 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.2 sy,  0.0 ni, 99.7 id,  0.2 wa,  0.0 hi,  0.0 si,  0.0 st
KiB Mem :  4028432 total,  3238176 free,   160152 used,   630104 buff/cache
KiB Swap:  4063228 total,  4063228 free,        0 used.  3586596 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
  649 root      20   0  298724   6128   4800 S   0.3  0.2   0:29.06 vmtoolsd
 1316 root      20   0  156684   5484   4156 S   0.3  0.1   0:01.58 sshd
    1 root      20   0  127936   6480   4080 S   0.0  0.2   0:02.46 systemd
```

终止进程

终止**前台**进程：Ctrl+C

终止**后台**进程：kill命令

进程终止命令：

- kill **PID**
- killall **进程名**

```
[root@ccit ~]# kill -l
 1) SIGHUP       2) SIGINT       3) SIGQUIT      4) SIGILL       5) SIGTRAP
 6) SIGABRT      7) SIGBUS       8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS      34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5  40) SIGRTMIN+6  41) SIGRTMIN+7  42) SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5  60) SIGRTMAX-4  61) SIGRTMAX-3  62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
```

终止进程

killall 进程名 ——终止指定名称的进程

如：

- killall httpd：杀死所有的http进程
- killall -9 bash：把所有登录后的shell杀掉，要重新连接才能登录

操作演示

第一个进程监控命令：ps

```
[root@ccit ~]# ps a
   PID TTY      STAT   TIME COMMAND
  1296 tty1     Ss+    0:00 -bash
  1321 pts/0    Ss     0:00 -bash
  2401 pts/0    T      0:00 vim
  2566 pts/0    T      0:00 vi
  2585 pts/0    R+     0:00 ps a
[root@ccit ~]# ps -a
   PID TTY          TIME CMD
  2401 pts/0    00:00:00 vim
  2566 pts/0    00:00:00 vi
  2586 pts/0    00:00:00 ps
[root@ccit ~]# ps u
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root        1296  0.0  0.0 115432  1980 tty1     Ss+  Jan01   0:00 -bash
root        1321  0.0  0.0 115436  2068 pts/0    Ss   Jan01   0:00 -bash
root        2401  0.0  0.1 146816  4588 pts/0    T    00:50   0:00 vim
root        2566  0.0  0.0 124052  1556 pts/0    T    05:02   0:00 vi
root        2587  0.0  0.0 155324  1848 pts/0    R+   05:39   0:00 ps u
[root@ccit ~]# ps
```

1. 显示所有用户所有终端的进程
2. 显示当前终端中的所有进程
3. 显示进程的用户信息

```
1 ccit
  2566 pts/0    T      0:00 vi
  2585 pts/0    R+     0:00 ps a
[root@ccit ~]# ps -a
   PID TTY          TIME CMD
  2401 pts/0    00:00:00 vim
  2566 pts/0    00:00:00 vi
  2586 pts/0    00:00:00 ps
[root@ccit ~]# ps u
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root        1296  0.0  0.0 115432  1980 tty1     Ss+  Jan01   0:00 -bash
root        1321  0.0  0.0 115436  2068 pts/0    Ss   Jan01   0:00 -bash
root        2401  0.0  0.1 146816  4588 pts/0    T    00:50   0:00 vim
root        2566  0.0  0.0 124052  1556 pts/0    T    05:02   0:00 vi
root        2587  0.0  0.0 155324  1848 pts/0    R+   05:39   0:00 ps u
[root@ccit ~]# ps -f
UID          PID    PPID  C STIME TTY          TIME CMD
root        1321    1316  0 Jan01 pts/0    00:00:00 -bash
root        2401    1321  0 00:50 pts/0    00:00:00 vim
root        2566    1321  0 05:02 pts/0    00:00:00 vi
root        2588    1321  0 05:39 pts/0    00:00:00 ps -f
[root@ccit ~]#
```

1 显示进程的父进程

```
  2490 ?        00:00:00 kworker/0:0
  2528 ?        00:00:00 kworker/1:0
  2531 ?        00:00:00 pickup
  2546 ?        00:00:00 kworker/1:2
  2566 pts/0    00:00:00 vi
  2589 pts/0    00:00:00 ps
[root@ccit ~]# ps aux
USER        PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root          1  0.0  0.1 127936  6480 ?        Ss   Jan01   0:02 /usr/lib/systemd/systemd --switched-r
root          2  0.0  0.0      0     0 ?        S    Jan01   0:00 [kthreadd]
root          3  0.0  0.0      0     0 ?        S    Jan01   0:00 [ksoftirqd/0]
root          5  0.0  0.0      0     0 ?        S<   Jan01   0:00 [kworker/0:0H]
root          7  0.0  0.0      0     0 ?        S    Jan01   0:00 [migration/0]
root          8  0.0  0.0      0     0 ?        S    Jan01   0:00 [rcu_bh]
root          9  0.0  0.0      0     0 ?        S    Jan01   0:01 [rcu_sched]
root         10  0.0  0.0      0     0 ?        S<   Jan01   0:00 [lru-add-drain]
root         11  0.0  0.0      0     0 ?        S    Jan01   0:00 [watchdog/0]
root         12  0.0  0.0      0     0 ?        S    Jan01   0:00 [watchdog/1]
root         13  0.0  0.0      0     0 ?        S    Jan01   0:00 [migration/1]
root         14  0.0  0.0      0     0 ?        S    Jan01   0:00 [ksoftirqd/1]
root         16  0.0  0.0      0     0 ?        S<   Jan01   0:00 [kworker/1:0H]
```

PID=1表示系统进程systemd

每一个红框对应的标注都在脚本里有，请一一对应

问号表示进程与终端无关

```
root        2490  0.0  0.0      0     0 ?        S    03:25   0:00 [kworker/0:0]
root        2528  0.0  0.0      0     0 ?        S    04:06   0:00 [kworker/1:0]
postfix     2531  0.0  0.1  89820  4060 ?        S    04:54   0:00 pickup -l -t unix -u
root        2546  0.0  0.0      0     0 ?        R    05:01   0:00 [kworker/1:2]
root        2566  0.0  0.0 124052  1556 pts/0    T    05:02   0:00 vi
root        2590  0.0  0.0 155324  1860 pts/0    R+   05:40   0:00 ps aux
[root@ccit ~]# ps -ef
UID          PID    PPID  C STIME TTY          TIME CMD
root           1       0  0 Jan01 ?        00:00:02 /usr/lib/systemd/systemd --switched-root -
root           2       0  0 Jan01 ?        00:00:00 [kthreadd]
root           3       2  0 Jan01 ?        00:00:00 [ksoftirqd/0]
root           5       2  0 Jan01 ?        00:00:00 [kworker/0:0H]
root           7       2  0 Jan01 ?        00:00:00 [migration/0]
root           8       2  0 Jan01 ?        00:00:00 [rcu_bh]
root           9       2  0 Jan01 ?        00:00:01 [rcu_sched]
root          10       2  0 Jan01 ?        00:00:00 [lru-add-drain]
root          11       2  0 Jan01 ?        00:00:00 [watchdog/0]
root          12       2  0 Jan01 ?        00:00:00 [watchdog/1]
root          13       2  0 Jan01 ?        00:00:00 [migration/1]
root          14       2  0 Jan01 ?        00:00:00 [ksoftirqd/1]
root          16       2  0 Jan01 ?        00:00:00 [kworker/1:0H]
```

1 父进程PPID

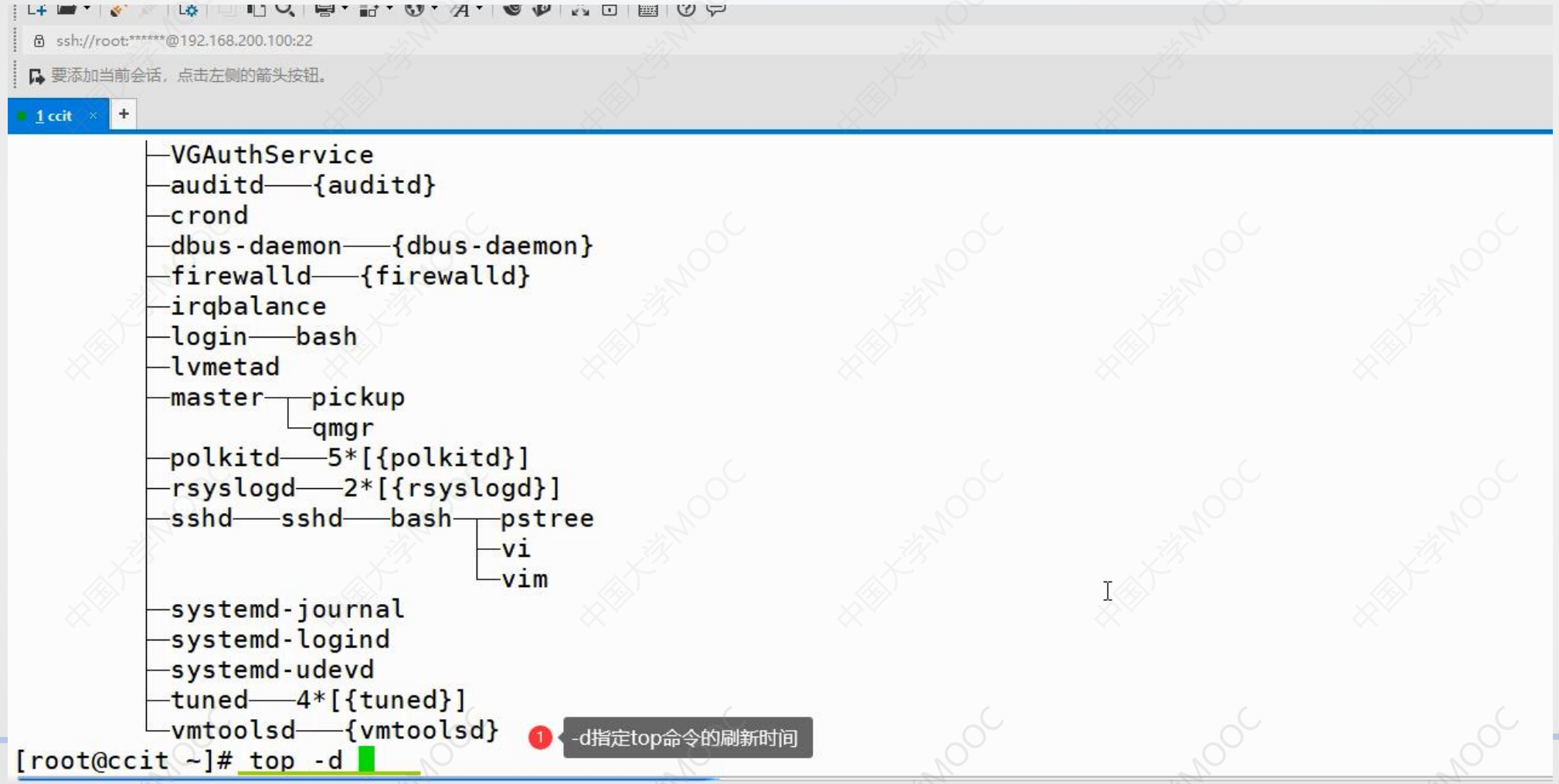
第二个进程监控命令：pstree


```
root        2566    1321  0 05:02 pts/0    00:00:00 vi
root        2591       2  0 05:40 ?        00:00:00 [kworker/0:1]
root        2592    1321  0 05:40 pts/0    00:00:00 ps -ef
[root@ccit ~]# pstree
systemd─┬─NetworkManager───2*[{NetworkManager}]
        ├─VGAuthService
        ├─auditd───{auditd}
        ├─crond
        ├─dbus-daemon───{dbus-daemon}
        ├─firewalld───{firewalld}
        ├─irqbalance
        ├─login───bash
        ├─lvmetad
        ├─master─┬─pickup
        │        └─qmgr
        ├─polkitd───5*[{polkitd}]
        ├─rsyslogd───2*[{rsyslogd}]
        ├─sshd───sshd───bash─┬─pstree
        │                    ├─vi
        │                    └─vim
        └─systemd-journal
```

1 根

树状结构

第三个进程监控命令：top



```
top - 05:41:30 up  9:07,  2 users,  load average: 0.00, 0.01, 0.05
Tasks: 117 total,   1 running, 114 sleeping,   2 stopped,   0 zombie
%Cpu(s):  0.2 us,  0.0 sy,  0.0 ni, 99.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
KiB Mem :  4028432 total,  3230012 free,   163040 used,   635380 buff/cache
KiB Swap:  4063228 total,  4063228 free,        0 used.  3583472 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
    1 root      20   0  127936   6480   4080 S   0.0  0.2   0:02.66 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.03 kthreadd
    3 root      20   0       0      0      0 S   0.0  0.0   0:00.09 ksoftirqd/0
    5 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/0:0H
    7 root      rt   0       0      0      0 S   0.0  0.0   0:00.03 migration/0
    8 root      20   0       0      0      0 S   0.0  0.0   0:00.00 rcu_bh
    9 root      20   0       0      0      0 S   0.0  0.0   0:01.97 rcu_sched
   10 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 lru-add-drain
   11 root      rt   0       0      0      0 S   0.0  0.0   0:00.33 watchdog/0
   12 root      rt   0       0      0      0 S   0.0  0.0   0:00.32 watchdog/1
   13 root      rt   0       0      0      0 S   0.0  0.0   0:00.01 migration/1
   14 root      20   0       0      0      0 S   0.0  0.0   0:00.21 ksoftirqd/1
   16 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/1:0H
   18 root      20   0       0      0      0 S   0.0  0.0   0:00.00 kdevtmpfs
```

1 刷新间隔2秒

2 命令名

```
top - 05:41:44 up  9:08,  2 users,  load average: 0.00, 0.01, 0.05
Tasks: 117 total,   1 running, 114 sleeping,   2 stopped,   0 zombie
%Cpu(s):  2.9 us,  2.9 sy,  0.0 ni, 94.1 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
KiB Mem :  4028432 total,  3230036 free,   163016 used,   635380 buff/cache
KiB Swap:  4063228 total,  4063228 free,        0 used.  3583496 avail Mem
```

1 top -c显示完整的命令信息

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2595	root	20	0	162004	2228	1608	R	6.2	0.1	0:00.01	top -c
1	root	20	0	127936	6480	4080	S	0.0	0.2	0:02.66	/usr/lib/systemd/systemd --switc+
2	root	20	0	0	0	0	S	0.0	0.0	0:00.03	[kthreadd]
3	root	20	0	0	0	0	S	0.0	0.0	0:00.09	[ksoftirqd/0]
5	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	[kworker/0:0H]
7	root	rt	0	0	0	0	S	0.0	0.0	0:00.03	[migration/0]
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	[rcu_bh]
9	root	20	0	0	0	0	S	0.0	0.0	0:01.98	[rcu_sched]
10	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	[lru-add-drain]
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.33	[watchdog/0]
12	root	rt	0	0	0	0	S	0.0	0.0	0:00.32	[watchdog/1]
13	root	rt	0	0	0	0	S	0.0	0.0	0:00.01	[migration/1]
14	root	20	0	0	0	0	S	0.0	0.0	0:00.21	[ksoftirqd/1]
16	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	[kworker/1:0H]

```
top - 05:42:42 up  9:09,  2 users,  load average: 0.00, 0.01, 0.05
Tasks: 117 total,   1 running, 114 sleeping,   2 stopped,   0 zombie
%Cpu(s):  0.0 us,  3.1 sy,  0.0 ni, 96.9 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
KiB Mem :  4028432 total,  3230584 free,   162484 used,   635364 buff/cache
KiB Swap:  4063228 total,  4063228 free,        0 used.  3584044 avail Mem
Unavailable in secure mode
  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
    1 root      20   0  127936   6480   4080 S   0.0  0.2   0:02.66 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.03 kthreadd
    3 root      20   0       0      0      0 S   0.0  0.0   0:00.09 ksoftirqd/0
    5 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/0:0H
    7 root      rt   0       0      0      0 S   0.0  0.0   0:00.03 migration/0
    8 root      20   0       0      0      0 S   0.0  0.0   0:00.00 rcu_bh
    9 root      20   0       0      0      0 S   0.0  0.0   0:01.98 rcu_sched
   10 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 lru-add-drain
   11 root      rt   0       0      0      0 S   0.0  0.0   0:00.33 watchdog/0
   12 root      rt   0       0      0      0 S   0.0  0.0   0:00.32 watchdog/1
   13 root      rt   0       0      0      0 S   0.0  0.0   0:00.01 migration/1
   14 root      20   0       0      0      0 S   0.0  0.0   0:00.21 ksoftirqd/1
   16 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/1:0H
   18 root      20   0       0      0      0 S   0.0  0.0   0:00.00 kdevtmpfs
```

1 执行完top -s再输入交互命令，提示已禁用

进程控制命令：kill和killall

```
     9 root      20   0       0      0      0 S   0.0  0.0   0:01.99 rcu_sched
    10 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 lru-add-drain
    11 root      rt   0       0      0      0 S   0.0  0.0   0:00.33 watchdog/0
    12 root      rt   0       0      0      0 S   0.0  0.0   0:00.32 watchdog/1
    13 root      rt   0       0      0      0 S   0.0  0.0   0:00.01 migration/1
    14 root      20   0       0      0      0 S   0.0  0.0   0:00.21 ksoftirqd/1
[root@ccit ~]# kill -l
 1) SIGHUP       2) SIGINT       3) SIGQUIT      4) SIGILL       5) SIGTRAP
 6) SIGABRT      7) SIGBUS       8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS      34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37) SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5  40) SIGRTMIN+6  41) SIGRTMIN+7  42) SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57) SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5  60) SIGRTMAX-4  61) SIGRTMAX-3  62) SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
[root@ccit ~]#
```

1 列出全部的信号名称和编号

```
root         671  0.0  0.0  96524  2444 ?        Ss   Jan01   0:00 login -- root
root         692  0.0  0.7 357880 28824 ?        Ssl  Jan01   0:00 /usr/bin/python -Es /usr/sbin/firewal
root         693  0.0  0.2 476140  8616 ?        Ssl  Jan01   0:01 /usr/sbin/NetworkManager --no-daemon
root        1029  0.0  0.1 112812  4288 ?        Ss   Jan01   0:00 /usr/sbin/sshd -D
root        1031  0.0  0.4 573844 19004 ?        Ssl  Jan01   0:07 /usr/bin/python -Es /usr/sbin/tuned -
root        1032  0.0  0.1 222716  4680 ?        Ssl  Jan01   0:03 /usr/sbin/rsyslogd -n
root        1168  0.0  0.0  89636  2164 ?        Ss   Jan01   0:00 /usr/libexec/postfix/master -w
postfix     1177  0.0  0.1  89808  4076 ?        S    Jan01   0:00 qmgr -l -t unix -u
root        1207  0.0  0.0      0     0 ?        S<   Jan01   0:00 [kworker/1:1H]
root        1296  0.0  0.0 115432  1980 tty1     Ss+  Jan01   0:00 -bash
root        1316  0.0  0.1 156684  5484 ?        Ds   Jan01   0:02 sshd: root@pts/0
root        1321  0.0  0.0 115436  2068 pts/0    Ss   Jan01   0:00 -bash
root        2401  0.0  0.1 146816  4588 pts/0    T    00:50   0:00 vim
root        2490  0.0  0.0      0     0 ?        S    03:25   0:00 [kworker/0:0]
root        2528  0.0  0.0      0     0 ?        S    04:06   0:00 [kworker/1:0]
postfix     2531  0.0  0.1  89820  4060 ?        S    04:54   0:00 pickup -l -t unix -u
root        2546  0.0  0.0      0     0 ?        S    05:01   0:00 [kworker/1:2]
root        2566  0.0  0.0 124052  1556 pts/0    T    05:02   0:00 vi
root        2591  0.0  0.0      0     0 ?        S    05:40   0:00 [kworker/0:1]
root        2600  0.0  0.0 155324  1860 pts/0    R+   05:43   0:00 ps aux
[root@ccit ~]#
```

1 vim进程的PID为2401

```
root         671  0.0  0.0  96524  2444 ?        Ss   Jan01   0:00 login -- root
root         692  0.0  0.7 357880 28824 ?        Ssl  Jan01   0:00 /usr/bin/python -Es /usr/sbin/firewal
root         693  0.0  0.2 476140  8616 ?        Ssl  Jan01   0:01 /usr/sbin/NetworkManager --no-daemon
root        1029  0.0  0.1 112812  4288 ?        Ss   Jan01   0:00 /usr/sbin/sshd -D
root        1031  0.0  0.4 573844 19004 ?        Ssl  Jan01   0:07 /usr/bin/python -Es /usr/sbin/tuned -
root        1032  0.0  0.1 222716  4680 ?        Ssl  Jan01   0:03 /usr/sbin/rsyslogd -n
root        1168  0.0  0.0  89636  2164 ?        Ss   Jan01   0:00 /usr/libexec/postfix/master -w
postfix     1177  0.0  0.1  89808  4076 ?        S    Jan01   0:00 qmgr -l -t unix -u
root        1207  0.0  0.0      0     0 ?        S<   Jan01   0:00 [kworker/1:1H]
root        1296  0.0  0.0 115432  1980 tty1     Ss+  Jan01   0:00 -bash
root        1316  0.0  0.1 156684  5484 ?        Ds   Jan01   0:02 sshd: root@pts/0
root        1321  0.0  0.0 115436  2068 pts/0    Ss   Jan01   0:00 -bash
root        2401  0.0  0.1 146816  4588 pts/0    T    00:50   0:00 vim
root        2490  0.0  0.0      0     0 ?        S    03:25   0:00 [kworker/0:0]
root        2528  0.0  0.0      0     0 ?        S    04:06   0:00 [kworker/1:0]
postfix     2531  0.0  0.1  89820  4060 ?        S    04:54   0:00 pickup -l -t unix -u
root        2546  0.0  0.0      0     0 ?        S    05:01   0:00 [kworker/1:2]
root        2566  0.0  0.0 124052  1556 pts/0    T    05:02   0:00 vi
root        2591  0.0  0.0      0     0 ?        S    05:40   0:00 [kworker/0:1]
root        2600  0.0  0.0 155324  1860 pts/0    R+   05:43   0:00 ps aux
[root@ccit ~]# kill -15 2401
```

1 正常终止vim进程

```
root         671  0.0  0.0  96524  2444 ?        Ss   Jan01   0:00 login -- root
root         692  0.0  0.7 357880 28824 ?        Ssl  Jan01   0:00 /usr/bin/python -Es /usr/sbin/firewal
root         693  0.0  0.2 476140  8616 ?        Ssl  Jan01   0:01 /usr/sbin/NetworkManager --no-daemon
root        1029  0.0  0.1 112812  4288 ?        Ss   Jan01   0:00 /usr/sbin/sshd -D
root        1031  0.0  0.4 573844 19004 ?        Ssl  Jan01   0:07 /usr/bin/python -Es /usr/sbin/tuned -
root        1032  0.0  0.1 222716  4680 ?        Ssl  Jan01   0:03 /usr/sbin/rsyslogd -n
root        1168  0.0  0.0  89636  2164 ?        Ss   Jan01   0:00 /usr/libexec/postfix/master -w
postfix     1177  0.0  0.1  89808  4076 ?        S    Jan01   0:00 qmgr -l -t unix -u
root        1207  0.0  0.0      0     0 ?        S<   Jan01   0:00 [kworker/1:1H]
root        1296  0.0  0.0 115432  1980 tty1     Ss+  Jan01   0:00 -bash
root        1316  0.0  0.1 156684  5484 ?        Ds   Jan01   0:02 sshd: root@pts/0
root        1321  0.0  0.0 115436  2068 pts/0    Ss   Jan01   0:00 -bash
root        2401  0.0  0.1 146816  4588 pts/0    T    00:50   0:00 vim
root        2490  0.0  0.0      0     0 ?        S    03:25   0:00 [kworker/0:0]
root        2528  0.0  0.0      0     0 ?        S    04:06   0:00 [kworker/1:0]
postfix     2531  0.0  0.1  89820  4060 ?        S    04:54   0:00 pickup -l -t unix -u
root        2546  0.0  0.0      0     0 ?        S    05:01   0:00 [kworker/1:2]
root        2566  0.0  0.0 124052  1556 pts/0    T    05:02   0:00 vi
root        2591  0.0  0.0      0     0 ?        S    05:40   0:00 [kworker/0:1]
root        2600  0.0  0.0 155324  1860 pts/0    R+   05:43   0:00 ps aux
[root@ccit ~]# kill -9 2401
```

1 强制终止vim进程

```
root         692  0.0  0.7 357880 28824 ?        Ssl  Jan01   0:00 /usr/bin/python -Es /usr/sbin/firewa
root         693  0.0  0.2 476140  8616 ?        Ssl  Jan01   0:01 /usr/sbin/NetworkManager --no-daemon
root        1029  0.0  0.1 112812  4288 ?        Ss   Jan01   0:00 /usr/sbin/sshd -D
root        1031  0.0  0.4 573844 19004 ?        Ssl  Jan01   0:07 /usr/bin/python -Es /usr/sbin/tuned
root        1032  0.0  0.1 222716  4680 ?        Ssl  Jan01   0:03 /usr/sbin/rsyslogd -n
root        1168  0.0  0.0  89636  2164 ?        Ss   Jan01   0:00 /usr/libexec/postfix/master -w
postfix     1177  0.0  0.1  89808  4076 ?        S    Jan01   0:00 qmgr -l -t unix -u
root        1207  0.0  0.0      0     0 ?        S<   Jan01   0:00 [kworker/1:1H]
root        1296  0.0  0.0 115432  1980 tty1     Ss+  Jan01   0:00 -bash
root        1316  0.0  0.1 156684  5484 ?        Ds   Jan01   0:02 sshd: root@pts/0
root        1321  0.0  0.0 115436  2072 pts/0    Ss   Jan01   0:00 -bash
root        2490  0.0  0.0      0     0 ?        S    03:25   0:00 [kworker/0:0]
root        2528  0.0  0.0      0     0 ?        S    04:06   0:00 [kworker/1:0]
postfix     2531  0.0  0.1  89820  4060 ?        S    04:54   0:00 pickup -l -t unix -u
root        2546  0.0  0.0      0     0 ?        S    05:01   0:00 [kworker/1:2]
root        2566  0.0  0.0 124052  1556 pts/0    T    05:02   0:00 vi
root        2591  0.0  0.0      0     0 ?        S    05:40   0:00 [kworker/0:1]
root        2605  0.0  0.0 155324  1860 pts/0    R+   05:45   0:00 ps aux
[root@ccit ~]# killall -9 vi
[2]+  Killed                  vi
[root@ccit ~]#
```

1 强制终止vi进程

感谢您的观看！