

Managing CPU Utilization of a Process



```
pramod@isda-lightning:~$ sudo apt-get install -y cputool
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  cputool
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 0 B/10.7 kB of archives.
After this operation, 59.4 kB of additional disk space will be used.
Selecting previously unselected package cputool.
(Reading database ... 81577 files and directories currently installed.)
Preparing to unpack .../cputool_0.0.8-2_amd64.deb ...
Unpacking cputool (0.0.8-2) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up cputool (0.0.8-2) ...
pramod@isda-lightning:~$ █
```

```
pramod@isda-lightning:~$ dd if=/dev/zero of=/dev/null &
```

```
[1] 2347
```

```
pramod@isda-lightning:~$
```

```

top - 04:23:22 up 28 min,  1 user,  load average: 1.06, 0.67, 0.31
Tasks: 150 total,  2 running, 148 sleeping,  0 stopped,  0 zombie
%Cpu(s):  3.5 us,  9.0 sy,  0.0 ni, 87.5 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
KiB Mem : 16432052 total, 16095724 free,  82916 used,  253412 buff/cache
KiB Swap:  0 total,  0 free,  0 used. 16053500 avail Mem

```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2347	pramod	20	0	6052	800	724	R	100.0	0.0	4:12.44	dd
1	root	20	0	37964	6040	4020	S	0.0	0.0	0:02.26	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/0
5	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/0:0H
7	root	20	0	0	0	0	S	0.0	0.0	0:00.03	rcu_sched
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_bh
9	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
10	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/0
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/1
12	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/1
13	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/1
15	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/1:0H

```
pramod@isda-lightning:~$ cputool --cpu-limit 60 -p 2347
```

```
pramod@isda-lightning:~$ cputool -c 60 -p 2347
```

```
top - 04:32:29 up 37 min, 2 users, load average: 0.58, 0.80, 0.59
Tasks: 157 total, 2 running, 155 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.0 us, 5.6 sy, 0.0 ni, 92.0 id, 0.5 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 16432052 total, 16090244 free, 87884 used, 253924 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 16048768 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2347	pramod	20	0	6052	800	724	R	60.1	0.0	12:32.25	dd
1	root	20	0	37964	6040	4020	S	0.0	0.0	0:02.27	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/0
5	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/0:0H
7	root	20	0	0	0	0	S	0.0	0.0	0:00.04	rcu_sched
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_bh
9	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
10	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/0
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/1
12	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/1
13	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/1
15	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/1:0H

A terminal window with a grey title bar. The title bar contains a home icon, the text "prdev — pramod@isda-lightning: ~ — ssh -i ssh_keys/knownbula.pem ubuntu@isda-lightning.knowhub.org — 109x20", and a close button. The terminal content shows a green prompt "pramod@isda-lightning:~\$", a blue cursor, and the command "cputool -c 30 -p 2347".

```
prdev — pramod@isda-lightning: ~ — ssh -i ssh_keys/knownbula.pem ubuntu@isda-lightning.knowhub.org — 109x20
~ — pramod@isda-lightning: ~ — ssh -i ssh_keys/knownbula.pem ubuntu@isda-lightning.knowhub.org
pramod@isda-lightning:~$ cputool -c 30 -p 2347
```

```
top - 04:35:39 up 40 min,  2 users,  load average: 0.42, 0.78, 0.63
Tasks: 156 total,  2 running, 154 sleeping,  0 stopped,  0 zombie
%Cpu(s):  1.1 us,  2.7 sy,  0.0 ni, 93.8 id,  2.5 wa,  0.0 hi,  0.0 si,  0.0 st
KiB Mem : 16432052 total, 16090384 free,  87496 used,  254172 buff/cache
KiB Swap:  0 total,  0 free,  0 used. 16049156 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2347	pramod	20	0	6052	800	724	R	30.0	0.0	14:18.98	dd
1056	root	10	-10	5724	3516	2428	S	0.3	0.0	0:00.18	iscsid
1	root	20	0	37964	6040	4020	S	0.0	0.0	0:02.28	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/0
5	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/0:0H
7	root	20	0	0	0	0	S	0.0	0.0	0:00.04	rcu_sched
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_bh
9	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
10	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/0
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/1
12	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/1
13	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/1


```
pramod@isda-lightning:~$ cputool -c 30 -p 2347
```

```
^Cpramod@isda-lightning:~$
```

```
pramod@isda-lightning:~$ kill -9 2347
```

```
pramod@isda-lightning:~$ pidof apache2
```

```
3386 3385 3382
```

```
pramod@isda-lightning:~$
```

```
pramod@isda-lightning:~$ cputool --cpu-limit 20 -P 3386
```

```
pramod@isda-lightning:~$ cputool --load-limit 2.5 --rsync -av /home/pramod /backup/`date+%Y-%m-%d`/
```

```
prdev — pramod@isda-lightning: ~ — ssh -i ssh_keys/knownbula.pem ubuntu@isda-lightning.knowhub.org — 109x20
pramod@isda-lightning:~$ sudo apt-get install -y cpulimit
[sudo] password for pramod:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  cpulimit
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 15.1 kB of archives.
After this operation, 64.5 kB of additional disk space will be used.
Get:1 http://nova.clouds.archive.ubuntu.com/ubuntu xenial/universe amd64 cpulimit amd64 2.2-1 [15.1 kB]
Fetched 15.1 kB in 0s (47.8 kB/s)
Selecting previously unselected package cpulimit.
(Reading database ... 82273 files and directories currently installed.)
Preparing to unpack .../cpulimit_2.2-1_amd64.deb ...
Unpacking cpulimit (2.2-1) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up cpulimit (2.2-1) ...
pramod@isda-lightning:~$
```

```
pramod@isda-lightning:~$ dd if=/dev/zero of=/dev/null &
```

```
[1] 3914
```

```
pramod@isda-lightning:~$ █
```

```
top - 05:04:06 up 1:09, 1 user, load average: 1.08, 1.01, 0.94
Tasks: 153 total, 2 running, 151 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.3 us, 9.2 sy, 0.0 ni, 87.5 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 16432052 total, 16052332 free, 91368 used, 288352 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 16041092 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
3914	pramod	20	0	6052	692	616	R	100.0	0.0	7:19.66	dd
1	root	20	0	37964	6044	4020	S	0.0	0.0	0:02.44	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/0
5	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/0:0H
7	root	20	0	0	0	0	S	0.0	0.0	0:00.12	rcu_sched
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_bh
9	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
10	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/0
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	watchdog/1
12	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/1
13	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/1
15	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/1:0H


```
pramod@isda-lightning:~$ cpulimit --pid 3914 --limit 50
```

```
pramod@isda-lightning:~$ cpulimit -p 3914 -l 50
```

```
Process 3914 detected
```

```
top - 05:22:24 up 1:27, 3 users, load average: 0.65, 0.85, 0.93
Tasks: 164 total, 2 running, 162 sleeping, 0 stopped, 0 zombie
%Cpu(s): 1.7 us, 4.7 sy, 0.0 ni, 91.1 id, 2.4 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 16432052 total, 16041216 free, 100796 used, 290040 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 16031400 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
3914	pramod	20	0	6052	692	616	R	51.5	0.0	24:31.44	dd
1	root	20	0	37964	6044	4020	S	0.0	0.0	0:02.44	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/0
5	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/0:0H
7	root	20	0	0	0	0	S	0.0	0.0	0:00.22	rcu_sched
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_bh
9	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
10	root	rt	0	0	0	0	S	0.0	0.0	0:00.01	watchdog/0
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.01	watchdog/1
12	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/1
13	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/1
15	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/1:0H

```
prdev — pramod@isda-lightning: ~ — ssh -i ssh_keys/knownbula.pem ubuntu@isda-lightning.knowhub.org — 109x20
~ — pramod@isda-lightning: ~ — ssh -i ssh_keys/knownbula.pem ubuntu@isda-lightning.knowhub.org
~ — ubuntu@isda-lightning: ~ — ssh -i ssh_keys/knownbula.pem ubuntu@isda-lightning.knowhub.org ... +
pramod@isda-lightning:~$ cputlimit --pid 3914 --limit 20 --background
pramod@isda-lightning:~$ cputlimit -p 3914 -l 30 -b
pramod@isda-lightning:~$ Process 3914 detected
```

```
top - 05:23:39 up 1:28, 3 users, load average: 0.91, 0.89, 0.94
Tasks: 164 total, 2 running, 162 sleeping, 0 stopped, 0 zombie
%Cpu(s): 1.2 us, 3.0 sy, 0.0 ni, 93.4 id, 2.4 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 16432052 total, 16041308 free, 100608 used, 290136 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 16031572 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
3914	pramod	20	0	6052	692	616	R	33.6	0.0	25:15.27	dd
3385	www-data	20	0	426340	6572	2988	S	0.3	0.0	0:00.31	apache2
4066	pramod	20	0	8616	1572	1444	S	0.3	0.0	0:00.01	cpulimit
1	root	20	0	37964	6044	4020	S	0.0	0.0	0:02.44	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/0
5	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/0:0H
7	root	20	0	0	0	0	S	0.0	0.0	0:00.25	rcu_sched
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_bh
9	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
10	root	rt	0	0	0	0	S	0.0	0.0	0:00.01	watchdog/0
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.01	watchdog/1
12	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/1

--cpu or -c flag specifies no. of CPU (normally detected automatically)

```
# sudo cpulimit --pid 4132 --limit 20 --cpu 8
```

--kill or -k option kills the process

```
# sudo cpulimit --pid 4132 --limit 20 --kill
```

--lazy or -z option exits if there is not suitable target process, or in case it dies

```
# sudo cpulimit --pid 4132 --limit 20 --kill --lazy
```

Note

- **CPULimit offers more usage options such as specifying number of CPUs and lazy killing of a process compared to CPULimit.**
- **However, CPULimit can manage system load and CPULimit can not.**

There is no limit

```
# man cputool
```

```
# man cpulimit
```

