

How to check available memory in Ubuntu

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Linux, BSD and * nix operating systems in general, provide users with many options to view information within the system. Just open the terminal and type **cat / proc / cpuinfo**, **cat / proc / meminfo** or **cat / proc / net / wireless** . Although the data found through these Linux commands is quite comprehensive, they are not easy to read at all. Let's see some utilities that display memory usage in a more readable format in the following article!

Note: Although the instructions here are for Ubuntu, you can read it for most other Linux distributions.

How to check memory on Ubuntu?

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Graphic utilities to check RAM usage

By default, Ubuntu includes an application called System Monitor. Users can access this tool by clicking the **Show Applications** button at the bottom left and then entering from the monitor to search for the application.

If it is not installed on the distribution you are using, you can install it with:

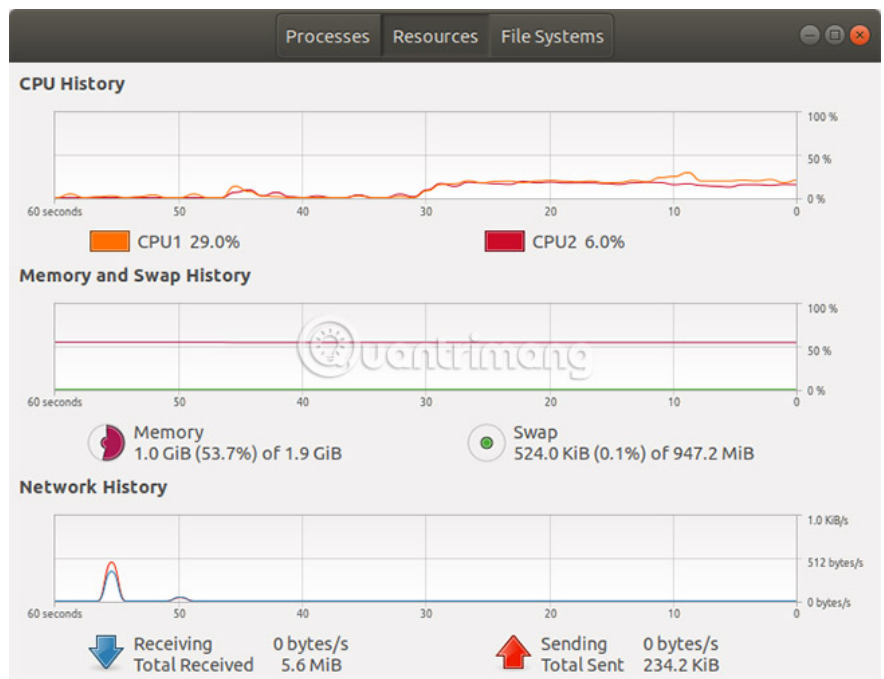
```
sudo apt install gnome-system-monitor
```

Gnome System Monitor

Process Name	User	% CPU	ID	Memory	Disk read tota	Disk writ
at-spi-bus-launcher	user	0	4308	596.0 KiB	N/A	
blueman-applet	user	0	4904	20.5 MiB	336.0 KiB	4.1
dbus-daemon	user	0	4269	1.8 MiB	N/A	
dbus-daemon	user	0	4313	868.0 KiB	N/A	
dconf-service	user	0	4594	880.0 KiB	N/A	1.5
deja-dup-monitor	user	0	6177	5.4 MiB	860.0 KiB	
evolution-addressbook-factory	user	0	5049	3.3 MiB	N/A	
evolution-addressbook-factory	user	0	5066	3.4 MiB	N/A	52.1
evolution-calendar-factory	user	0	4937	38.4 MiB	N/A	
evolution-calendar-factory-sub	user	0	5004	37.5 MiB	N/A	
evolution-source-registry	user	0	4656	4.1 MiB	N/A	
gconfd-2	user	0	6157	500.0 KiB	240.0 KiB	
gnome-calendar	user	0	7092	10.3 MiB	172.0 KiB	
gnome-control-center-search-p	user	0	7624	4.3 MiB	N/A	
gnome-keyring-daemon	user	0	4405	948.0 KiB	N/A	
gnome-screensaver	user	0	4571	4.6 MiB	N/A	
gnome-session-binary	user	0	4409	2.7 MiB	4.0 KiB	24.1
gnome-shell	user	5	4630	188.2 MiB	18.0 MiB	1.9
gnome-shell-calendar-server	user	0	4652	2.9 MiB	N/A	

This application has 3 tabs to view information about processes, resources and file system. Tab **Process** is very useful. Not only to see memory usage, users can also right-click programs and change their CPU usage priority, forcing programs to close, etc.

In the **Resources** tab , users can view information about CPU load, memory usage and Swap (virtual RAM), as well as network activities.



Sometimes users may want to monitor memory usage when opening or using programs. Right-click the bar (title) at the top of the memory usage window and select **Always on Top** . This will keep the window displayed all the time, even if you open a full screen program. You can use the same trick with **htop** or other utilities in the

terminal window.

Conky

Another popular solution for tracking system resources is Conky. It is an integral part of the desktop. It is always active and allows users to quickly see information about system resources at any time. Please install it with the following command:

```
sudo apt install conky-all
```

By default, it displays on the left side of the screen and will be superimposed on the application bar. Therefore, move it to the right:

```
cp /etc/conky/conky.conf ~/.conkyrc && sed -i 's/left/right/' ~/.conkyrc sed -i
```

Open a terminal and enter:

```
conky
```



Of course, the default settings are very basic, so they often don't look very nice. But this utility is very flexible and can display many other system indicators. Moreover, some themes created by other users make Conky very beautiful. You can apply if you want. For more on how to customize Conky, please refer to the article: [How to use Conky to make Linux more awesome.](#)

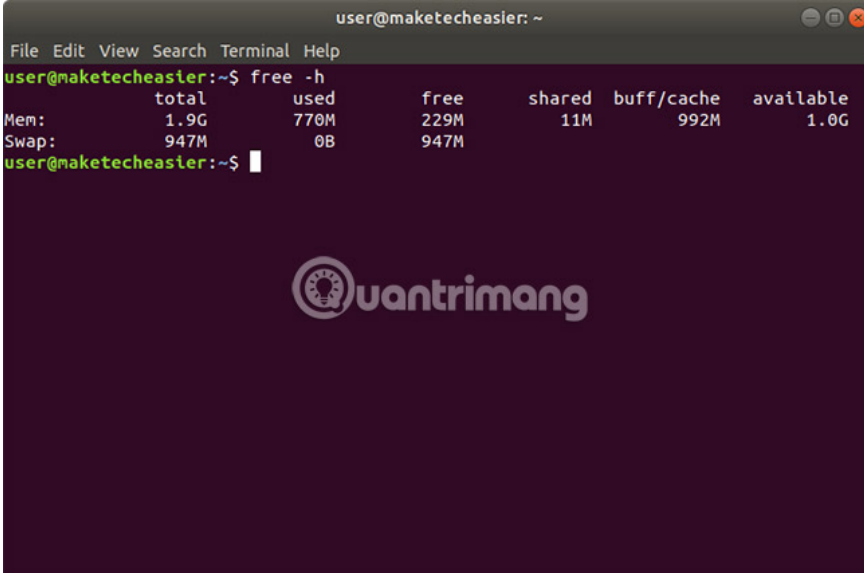
Check the free memory with the command line utilities

Sometimes the graphical user interface is not available, for example on servers. In such cases, there are command line utilities that can display information about memory usage.

'Free' utility

Open a terminal and enter the following command:

```
free -h
```



```
user@maketecheasier: ~  
File Edit View Search Terminal Help  
user@maketecheasier:~$ free -h  
              total        used         free       shared  buff/cache   available  
Mem:           1.9G          770M          229M           11M           992M           1.0G  
Swap:          947M           0B          947M
```

Display results can be confusing for new users who have moved from Windows to. Here, **'free'** does not mean the amount of free memory that applications can use. That's because **'buff / cache'**. When the operating system reads a file from a hard drive or SSD, it will hold the data of that file in RAM. In this way, when you need to read the file again, the operating system can skip accessing the storage device and read directly from RAM. This will be much faster. That's why if you open the browser, close it, then open it again, the browser will load much faster.

Although the buffer and cache can use almost all RAM, users can still consider the available memory. That's because as soon as an application needs more RAM, some data buffer / cache will be immediately deleted to free up memory for the required program.

Therefore, the most important fields here are **'used'** and **'available'**. **'Used'** reflects the amount of RAM that the program is using and **'Available'** indicates how much RAM is available for the required application. This is really the amount of RAM left. Concepts **'free,' 'used'** and **'available'** are also used in some graphics applications.

'Top' and 'htop' utilities

Another command, usually available on Linux systems, is **'top'**. You can type **'top'** in the terminal to open it. Press **q** to exit. But, as you can see in the illustration below, it's a bit hard to read.

```

user@maketecheasier: ~
File Edit View Search Terminal Help
top - 00:40:28 up 22 min, 1 user, load average: 0.28, 0.13, 0.17
Tasks: 197 total, 1 running, 155 sleeping, 0 stopped, 1 zombie
%Cpu(s): 7.1 us, 1.4 sy, 0.1 ni, 91.0 id, 0.3 wa, 0.0 hi, 0.0 si, 0.1 st
KiB Mem : 2041032 total, 219444 free, 820292 used, 1001296 buff/cache
KiB Swap: 969960 total, 969960 free, 0 used, 1018736 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
 4630 user        20   0 3474784 284224 96544 S  17.6  13.9   0:41.53 gnome-shell
 4271 root         20   0  572712   74108 39496 S   5.9   3.6   0:08.46 Xorg
 6888 user        20   0  52724   4080  3408 R   5.9   0.2   0:00.01 top
    1 root         20   0 1600040   9192  6540 S   0.0   0.5   0:02.16 systemd
    2 root         20   0     0     0     0 S   0.0   0.0   0:00.00 kthreadd
    4 root         0  -20     0     0     0 I   0.0   0.0   0:00.00 kworker/0:+
    6 root         0  -20     0     0     0 I   0.0   0.0   0:00.00 mm_percpu_+
    7 root         20   0     0     0     0 S   0.0   0.0   0:00.10 ksoftirqd/0
    8 root         20   0     0     0     0 I   0.0   0.0   0:00.28 rcu_sched
    9 root         20   0     0     0     0 I   0.0   0.0   0:00.00 rcu_bh
   10 root         rt    0     0     0     0 S   0.0   0.0   0:00.00 migration/0
   11 root         rt    0     0     0     0 S   0.0   0.0   0:00.00 watchdog/0
   12 root         20   0     0     0     0 S   0.0   0.0   0:00.00 cpuhp/0
   13 root         20   0     0     0     0 S   0.0   0.0   0:00.00 cpuhp/1
   14 root         rt    0     0     0     0 S   0.0   0.0   0:00.00 watchdog/1
   15 root         rt    0     0     0     0 S   0.0   0.0   0:00.00 migration/1
   16 root         20   0     0     0     0 S   0.0   0.0   0:00.09 ksoftirqd/1

```

This is why so many users prefer a more friendly version, called **htop**. First, install this utility:

```
sudo apt install htop
```

Then start the program.

```
htop
```

```

user@maketecheasier: ~
File Edit View Search Terminal Help
1  [ | 0.7%] Tasks: 112, 241 thr; 2 running
2  [ | 1.3%] Load average: 0.20 0.12 0.17
Mem[|||||817M/1.95G] Uptime: 00:22:21
Swp[ 0K/947M]

  PID USER      PRI  NI   VIRT   RES   SHR  S  CPU%  MEM%     TIME+  Command
 4630 user        20   0 3393M  277M 96544 S   0.7  13.9   0:42.64 /usr/bin/gnome-sh
 6892 user        20   0  42012   4564  3804 R   0.7   0.2   0:00.11 htop
 4636 user        20   0 3393M  277M 96544 S   0.7  13.9   0:06.96 /usr/bin/gnome-sh
 4271 root         20   0  559M  74740 39496 S   0.7   3.7   0:08.63 /usr/lib/xorg/Xor
 4637 user        20   0 3393M  277M 96544 S   0.0  13.9   0:07.29 /usr/bin/gnome-sh
 6383 user        20   0  786M  38204 28340 S   0.0   1.9   0:01.02 /usr/lib/gnome-te
 3759 user         9  -11 1402M 12936  9416 S   0.0   0.6   0:00.58 /usr/bin/pulseaud
 3760 user        -6   0 1402M 12936  9416 S   0.0   0.6   0:00.48 /usr/bin/pulseaud
    1 root         20   0  156M  9192  6540 S   0.0   0.5   0:02.16 /sbin/init splash
  234 root        19  -1  117M 36892 35412 S   0.0   1.8   0:01.34 /lib/systemd/syst
  254 root         20   0  46564  4792  3112 S   0.0   0.2   0:00.13 /lib/systemd/syst
  338 systemd-r    20   0  70748  5312  4752 S   0.0   0.3   0:00.03 /lib/systemd/syst
  375 systemd-t    20   0  142M  3336  2788 S   0.0   0.2   0:00.00 /lib/systemd/syst
  340 systemd-t    20   0  142M  3336  2788 S   0.0   0.2   0:00.02 /lib/systemd/syst
   643 root         20   0  174M 17360  9436 S   0.0   0.9   0:00.00 /usr/bin/python3
   434 root         20   0  174M 17360  9436 S   0.0   0.9   0:00.09 /usr/bin/python3
F1 Help F2 Setup F3 Search F4 Filter F5 Tree F6 Sort By F7 Nice F8 Nice F9 Kill F10 Quit

```

As you can see, **htop** is much easier to read, thanks to the use of colors and column charts. The first and the front columns are numbers 1, 2, etc., reflecting the use of CPU core. In the Memory column, you can pay attention to the green lines. The remaining two lines are blue and brown, reflecting the buffer and cache of the file as well as the directory. As mentioned in the previous section, they can be deleted from memory at any time to free up parts of RAM that can be used.

Besides using keys to interact with **htop**, you can also use the mouse cursor to click on the displayed elements.

These are the most common applications for displaying Ubuntu memory usage. You can sort processes according to the amount of RAM they use. You may find that you do not need some applications that take up a lot of memory and have the right to remove them from your system.

See more:

1. How to manage memory to restrict Linux to use too much RAM
2. Learn about swapping Linux memory space
3. How to use Memory Cleaner to release RAM

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