NAME

free – Display amount of free and used memory in the system

SYNOPSIS

free [*options*]

DESCRIPTION

free displays the total amount of free and used physical and swap memory in the system, as well as the buffers and caches used by the kernel. The information is gathered by parsing /proc/meminfo. The displayed columns are:

total Total usable memory (MemTotal and SwapTotal in /proc/meminfo). This includes the physical and swap memory minus a few reserved bits and kernel binary code.

used Used or unavailable memory (calculated as **total** - **available**)

free Unused memory (MemFree and SwapFree in /proc/meminfo)

shared Memory used (mostly) by tmpfs (Shmem in /proc/meminfo)

buffers Memory used by kernel buffers (Buffers in /proc/meminfo)

cache Memory used by the page cache and slabs (Cached and SReclaimable in /proc/meminfo)

buff/cache
Sum of **buffers** and **cache**

available
Estimation of how much memory is available for starting new applications, without swapping. Unlike the data provided by the **cache** or **free** fields, this field takes into account page cache and also that not all reclaimable memory slabs will be reclaimed due to items being in use (MemAvailable in /proc/meminfo, available on kernels 3.14, emulated on kernels 2.6.27+, otherwise the same as **free**)

OPTIONS

−b, **−−bytes**
Display the amount of memory in bytes.

−k, **−−kibi**
Display the amount of memory in kibibytes. This is the default.

−m, **−−mebi**
Display the amount of memory in mebibytes.

−g, **−−gibi**
Display the amount of memory in gibibytes.

−−tebi Display the amount of memory in tebibytes.

−−pebi Display the amount of memory in pebibytes.

−−kilo Display the amount of memory in kilobytes. Implies --si.

−−mega
Display the amount of memory in megabytes. Implies --si.

−−giga Display the amount of memory in gigabytes. Implies --si.

−−tera Display the amount of memory in terabytes. Implies --si.

−−peta Display the amount of memory in petabytes. Implies --si.

−h, **−−human**
Show all output fields automatically scaled to shortest three digit unit and display the units of print out. Following units are used.

B = bytes
Ki = kibibyte

Mi = mebibyte
Gi = gibibyte
Ti = tebibyte
Pi = pebibyte

If unit is missing, and you have exbibyte of RAM or swap, the number is in tebibytes and columns might not be aligned with header.

−w, **−−wide**
Switch to the wide mode. The wide mode produces lines longer than 80 characters. In this mode **buffers** and **cache** are reported in two separate columns.

−c, **−−count** *count*
Display the result *count* times. Requires the **−s** option.

−l, **−−lohi**
Show detailed low and high memory statistics.

−L, **−−line**
Show output on a single line, often used with the **−s** option to show memory statistics repeatedly.

−s, **−−seconds** *delay*
Continuously display the result *delay* seconds apart. You may actually specify any floating point number for *delay* using either . or , for decimal point. **usleep**(3) is used for microsecond resolution delay times.

−−si Use kilo, mega, giga etc (power of 1000) instead of kibi, mebi, gibi (power of 1024).

−t, **−−total**
Display a line showing the column totals.

−v, **−−committed**
Display a line showing the memory commit limit and amount of committed/uncommitted memory. The **total** column on this line will display the memory commit limit. This line is relevant if memory overcommit is disabled.

−−help Print help.

−V, **−−version**
Display version information.

FILES

/proc/meminfo
memory information

BUGS

The value for the **shared** column is not available from kernels before 2.6.32 and is displayed as zero.

Please send bug reports to
⟨procps@freelists.org⟩

SEE ALSO

ps(1), **slabtop**(1), **top**(1), **vmstat**(8).