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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'units.7' command

$ man units.7

UNITS(7) Linux Programmer's Manual UNITS(7)

NAME

units - decimal and binary prefixes

DESCRIPTION

Decimal prefixes

The SI system of units uses prefixes that indicate powers of ten. A kilometer is 1000 meter, and a megawatt is 1000000 watt. Below the standard prefixes.

Prefix	Name	Value
y	yocto	10^-24 = 0.000000000000000000000001
z	zepto	10^-21 = 0.000000000000000000001
a	atto	10^-18 = 0.000000000000000001
f	femto	10^-15 = 0.000000000000001
p	pico	10^-12 = 0.000000000001
n	nano	10^-9 = 0.000000001
?	micro	10^-6 = 0.000001
m	milli	10^-3 = 0.001
c	centi	10^-2 = 0.01
d	deci	10^-1 = 0.1
da	deka	10^ 1 = 10
h	hecto	10^ 2 = 100
k	kilo	10^ 3 = 1000
M	mega	10^ 6 = 1000000

G giga 10^ 9 = 1000000000

T tera 10^12 = 1000000000000

P peta 10^15 = 1000000000000000

E exa 10^18 = 1000000000000000000

Z zetta 10^21 = 1000000000000000000000

Y yotta 10^24 = 1000000000000000000000000

The symbol for micro is the Greek letter mu, often written u in an ASCII context where this Greek letter is not available. See also

?http://physics.nist.gov/cuu/Units/prefixes.html?

Binary prefixes

The binary prefixes resemble the decimal ones, but have an additional 'i' (and "Ki" starts with a capital 'K'). The names are formed by tak? ing the first syllable of the names of the decimal prefix with roughly the same size, followed by "bi" for "binary".

Prefix Name Value

Ki kibi 2^10 = 1024

Mi mebi 2^20 = 1048576

Gi gibi 2^30 = 1073741824

Ti tebi 2^40 = 1099511627776

Pi pebi 2^50 = 1125899906842624

Ei exbi 2^60 = 1152921504606846976

See also

?http://physics.nist.gov/cuu/Units/binary.html?

Discussion

Before these binary prefixes were introduced, it was fairly common to use k=1000 and K=1024, just like b=bit, B=byte. Unfortunately, the M is capital already, and cannot be capitalized to indicate binary-ness. At first that didn't matter too much, since memory modules and disks came in sizes that were powers of two, so everyone knew that in such contexts "kilobyte" and "megabyte" meant 1024 and 1048576 bytes, re? spectively. What originally was a sloppy use of the prefixes "kilo" and "mega" started to become regarded as the "real true meaning" when computers were involved. But then disk technology changed, and disk

sizes became arbitrary numbers. After a period of uncertainty all disk manufacturers settled on the standard, namely k=1000, M=1000 k, G=1000 M.

The situation was messy: in the 14k4 modems, k=1000; in the 1.44 MB diskettes, M=1024000; and so on. In 1998 the IEC approved the standard that defines the binary prefixes given above, enabling people to be precise and unambiguous.

Thus, today, MB = 1000000 B and MiB = 1048576 B.

In the free software world programs are slowly being changed to con? form. When the Linux kernel boots and says

```
hda: 120064896 sectors (61473 MB) w/2048KiB Cache
```

the MB are megabytes and the KiB are kibibytes.

COLOPHON

This page is part of release 5.10 of the Linux man-pages project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at https://www.kernel.org/doc/man-pages/.