

Binary units vs Mathematical units

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kB, MB, GB, KiB, MiB, GiB, what does it all mean? Many has been thrown off because of the mixed usage of among others the named terms.

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In short, the IEC - The International Electrotechnical Commission - changed the meaning of the term kB in 1998. Due to the mathematical meaning for k - kilo, meaning 1000, it made it was considered ambiguous as it in technical meaning often was referring to 1024, or 2^{10} . For more info on this matter, visit <http://physics.nist.gov/cuu/Units/binary.html>

In short it mean that kB now is equivalent of 1000 B, while KiB - or kilobinary byte equivs 1024 B, etc.

Mathworld also feature some clarification on this matter, visiting <http://mathworld.wolfram.com/Kibibyte.html>

Factor	Name	Symbol	Origin	Derivation
2^{10}	kibi	Ki	kilobinary: $(2^{10})^1$	kilo: $(10^3)^1$
2^{20}	mebi	Mi	megabinary: $(2^{10})^2$	mega: $(10^3)^2$
2^{30}	gibi	Gi	gigabinary: $(2^{10})^3$	giga: $(10^3)^3$
2^{40}	tebi	Ti	terabinary: $(2^{10})^4$	tera: $(10^3)^4$
2^{50}	pebi	Pi	petabinary: $(2^{10})^5$	peta: $(10^3)^5$
2^{60}	exbi	Ei	exabinary: $(2^{10})^6$	exa: $(10^3)^6$

Term	Numbers
one kibibit	1 Kibit = 2^{10} bit = 1024 bit
one kilobit	1 kbit = 10^3 bit = 1000 bit
one mebibyte	1 MiB = 2^{20} B = 1 048 576 B
one megabyte	1 MB = 10^6 B = 1 000 000 B
one gibibyte	1 GiB = 2^{30} B = 1 073 741 824 B
one gigabyte	1 GB = 10^9 B = 1 000 000 000 B

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