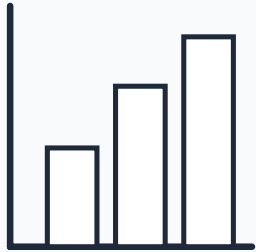


Bits, Bytes & Sizes

Computing

What the units actually mean, and why a 1 TB drive shows up as 931 GB.



A bit is one binary digit. Eight bits are a byte. Everything above that is a multiplier — and there are two competing sets of multipliers, which is the source of nearly every

BITS IN A BYTE
8

VALUES IN A BYTE
256

1 KiB
1024 bytes

- Manufacturers use powers of 1000: 1 TB = 1,000,000,000,000 bytes.
- Operating systems often use powers of 1024 and still call it TB.
- 1024^4 is about 1.0995×10^{12} , so 1 TB displays as ~931 GB.
- The unambiguous names are KiB, MiB, GiB, TiB — powers of 1024.
- Network speeds are in bits, storage in bytes: 100 Mbps $\approx$ 12.5 MB/s.
- One byte holds 256 values: 0–255 unsigned, or –128 to 127 signed.

LOOK FOR IT

A 2 TB drive advertised = 2,000,000,000,000 bytes = 1.82 TiB as the OS reports it.

Nothing is missing from the drive. The two numbers are counting in different bases.