

1. Clock Frequency of CPUs

does not really change over time
with average 2.5 GHz.

2. Memory BW has grown over time (roughly 1.5x)

Year	2016	17	18	19	20	21 →
MB/s	17064		19200		21328	25600

3. Increase in vectorization capabilities

=> avx2 \rightsquigarrow avx512
(2016) \rightsquigarrow (2019)

• More GPU memory
=> 24 GB \rightsquigarrow 80 GB
(2016) \rightsquigarrow (2023)

• N. cores: 2023
2012 \rightsquigarrow 2.64

4. year 2016

Transfer speed 17 GB/s $\times 1.5 \rightarrow$ 25.6 GB/s
Comp. capabilities 2.12 Gflops $\xrightarrow{\text{avx2}} 2.64 \text{ cores} \times 2.06 \text{ GHz} \xrightarrow{\text{avx2}} 2023$
Ratio $3.13 \text{ op/s} = \frac{\text{op}}{6 \text{ s}} \rightarrow 4.20 \cdot 2.46 \text{ Hz avx512 2020}$