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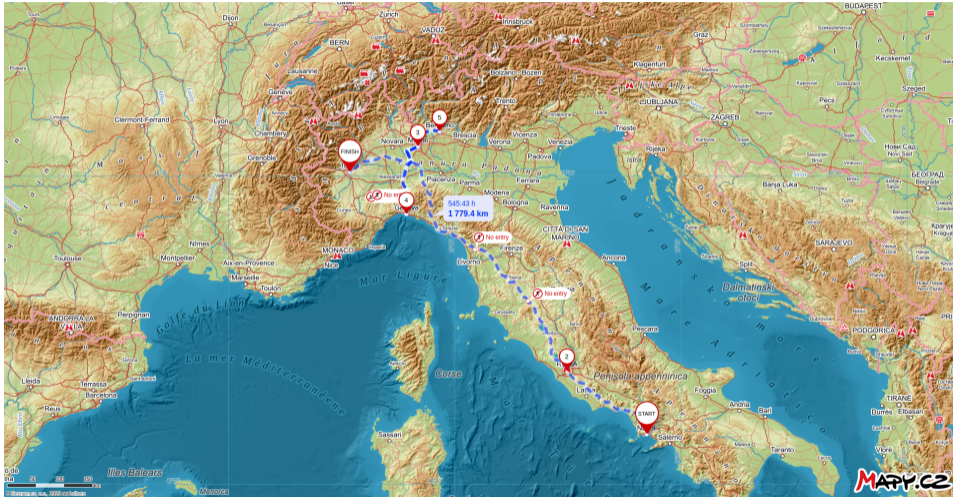
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Erik Kooistra a66@nikhef.nl

2023-05-16

A tour of Italy

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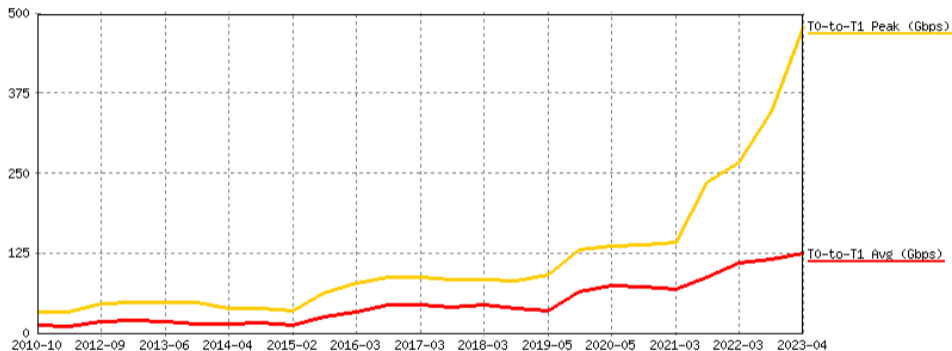Nikhef Innovatie

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Network speed

Why?

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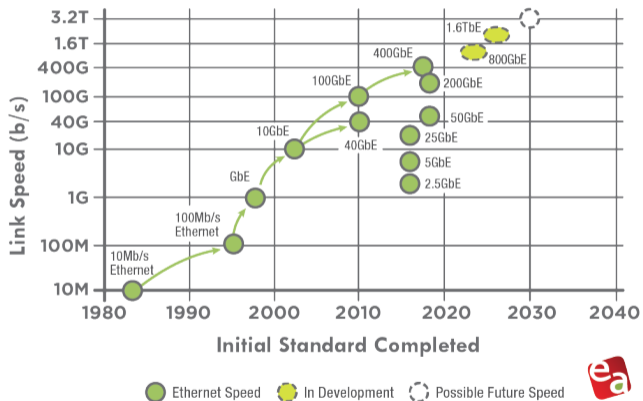
ETHERNET SPEEDS

800G
History of single lane speeds
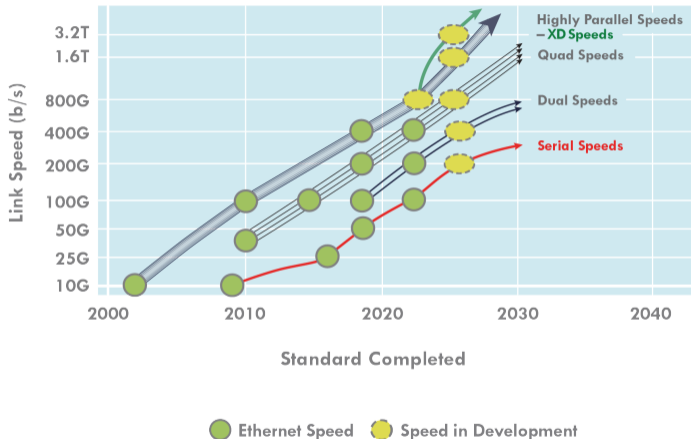
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NRZ

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PAM4

Coherent

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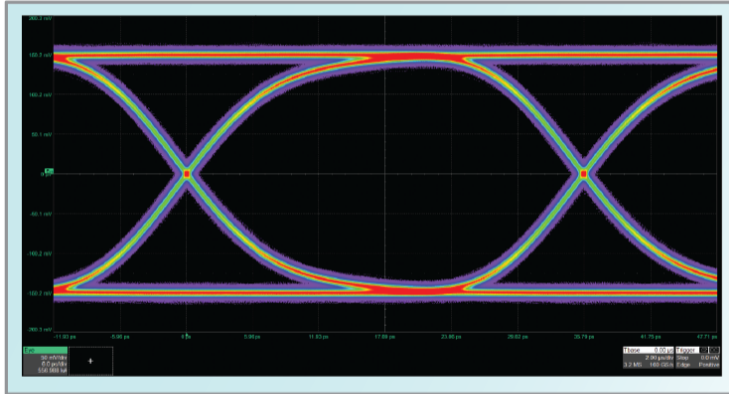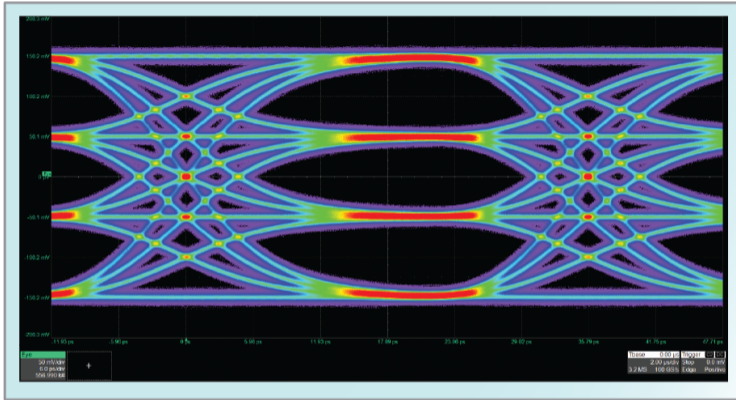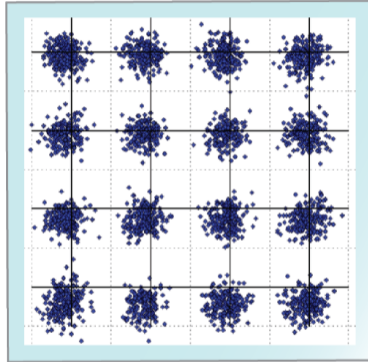
CPU codenames

- Intel
  - Ice Lake (Sunny Cove)
  - Sapphire rapids (Golden Cove)
  - Sierra Forest (Crestmont)
- AMD
  - Naples (Zen)
  - Rome (Zen 2)
  - Milan (Zen 3)
  - Genoa (Zen 4)
  - Bergamo (zen 4c)

- Ampere
  - Max (Neoverse N1)
- Apple
  - A14 (Firestorm & Icestorm)
  - A15 (Avalanche & Blizzard)
  - A16 (Everest & Sawtooth)
- IBM
  - POWER8
  - POWER9
  - Power10

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AMD

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AMD

AMD EPYC™ 9004: 12 CCD Configuration

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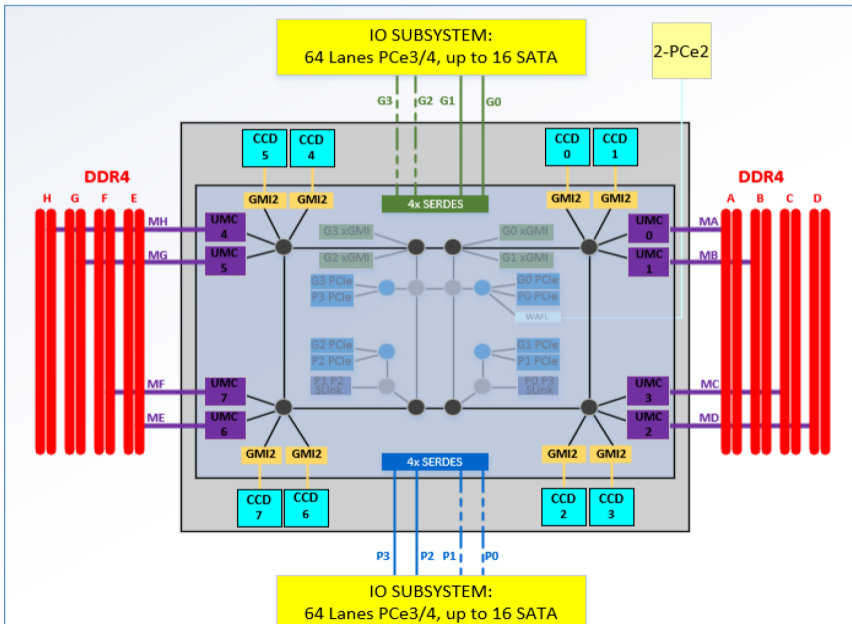
Italian CPUs
Hep score 1.2

Generation	HEPscore/core	Clock(Ghz)	HEPscore/Ghz	W	Cores	HEPscore/W
naples	18.192	2.5	7.28	180	32	3.23
rome	27.171	2.6	10.45	280	64	6.21
milanX	26.171	2	13.09	280	64	5.98
Genoa	35.551	2.45	14.53	280	64	8.13
Genoa	29.724	2.40	12.385	360	96	7.926

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Italian CPUs
Performance per socket

Generation	Bandwith(GB/s)	Cores	Bandwith/core
Sapphire Rapids	307.2	60	5.12
Milan	204.8	64	3.2
Genoa	460.8	96	4.8

Outlook
Future?

- Moving towards more specialised CPUs
- Better intergration of software and hardware
- Right tool for right job...

Outlook

Things in the pipeline

- Benchmarking Sapphire Rapids
- Looking at ARM platforms
- AMD Bergamo (128C/256T)
- New high performance GPUs

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