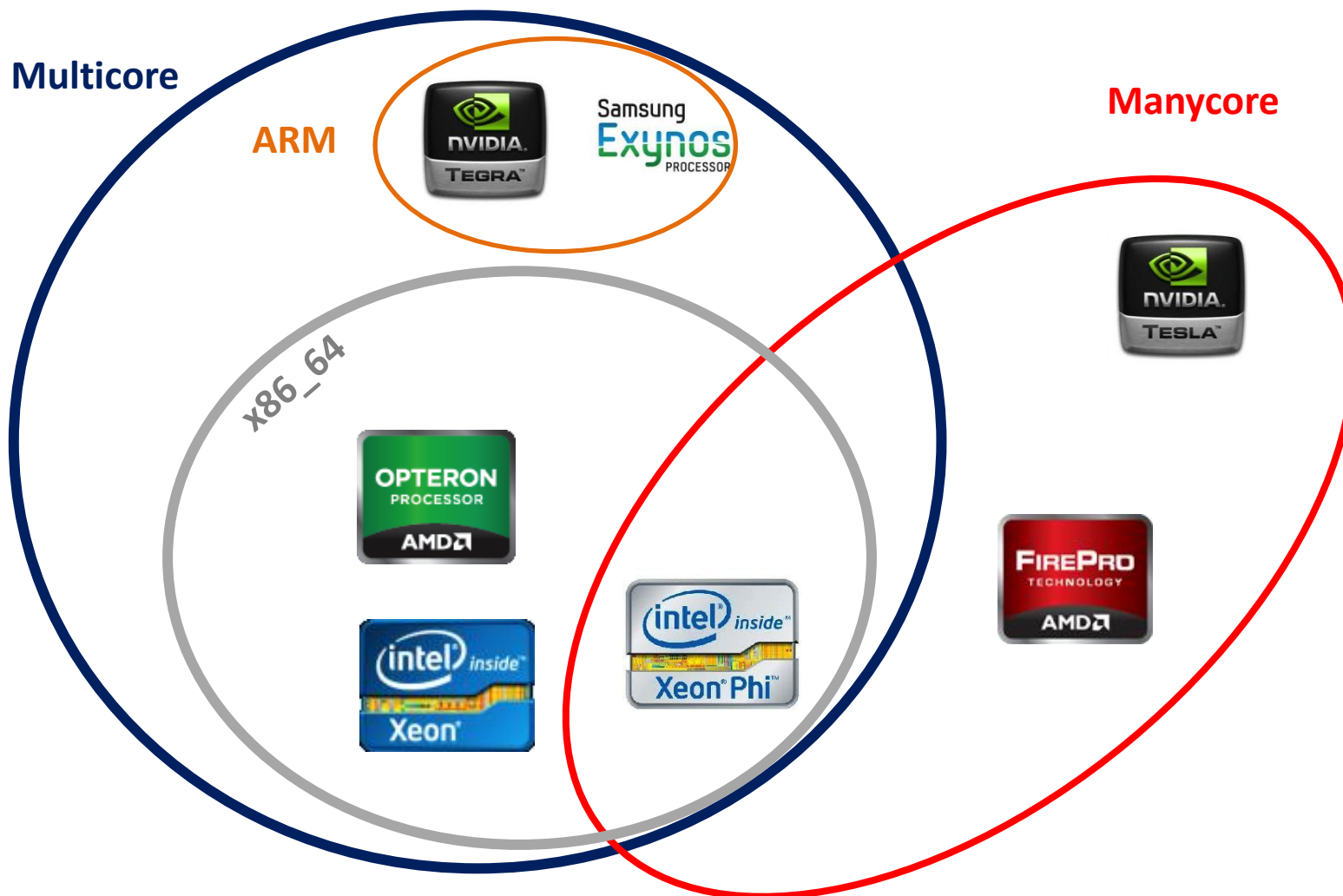


CCR Workshop 2013

Soluzioni per il calcolo ad alte prestazioni: stato dell'arte

Simone Tinti
simone.tinti@e4company.com
HPC Team leader

Workstation . Server . Storage & Solutions



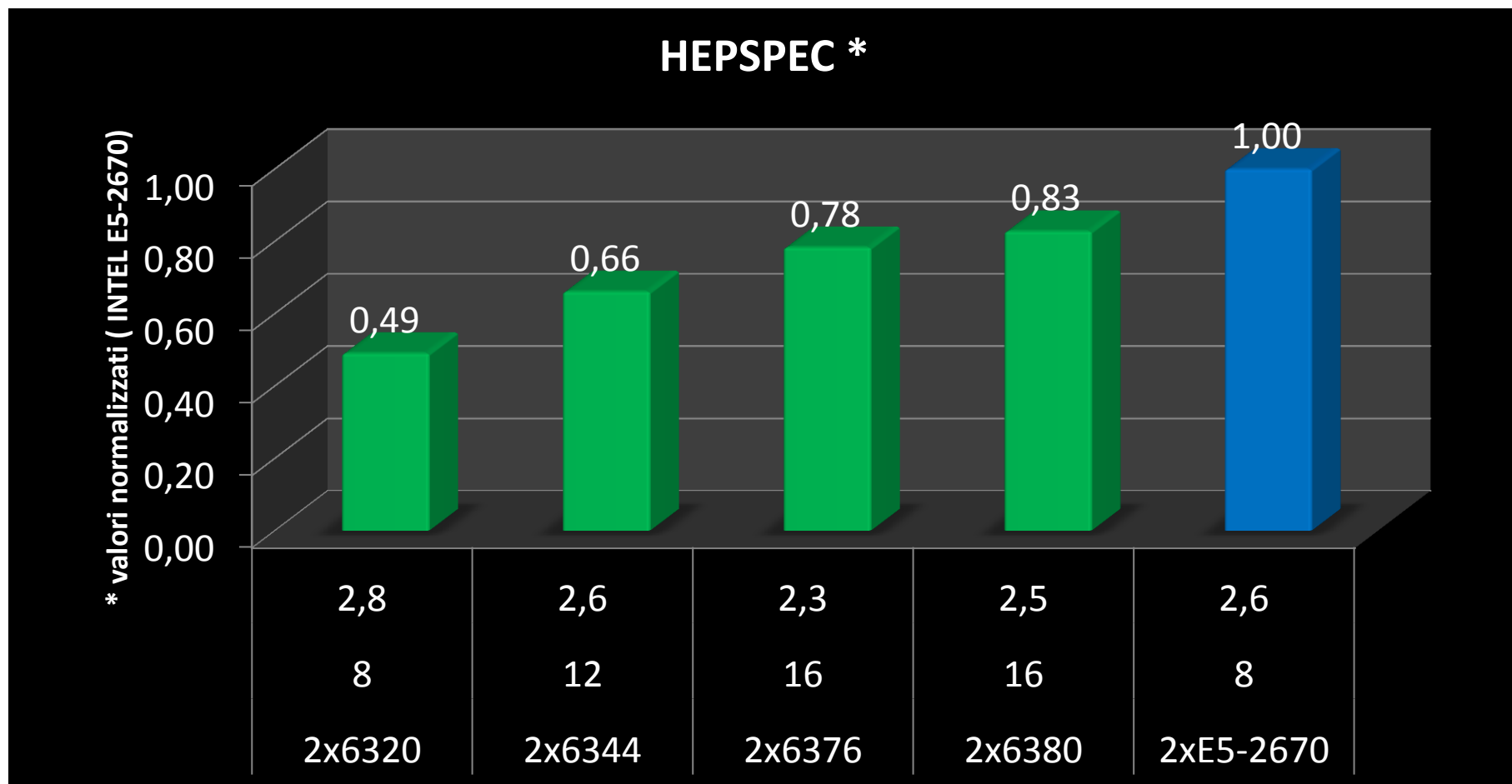
CPU

AMD: Opteron 6300 series (Abu Dhabi)

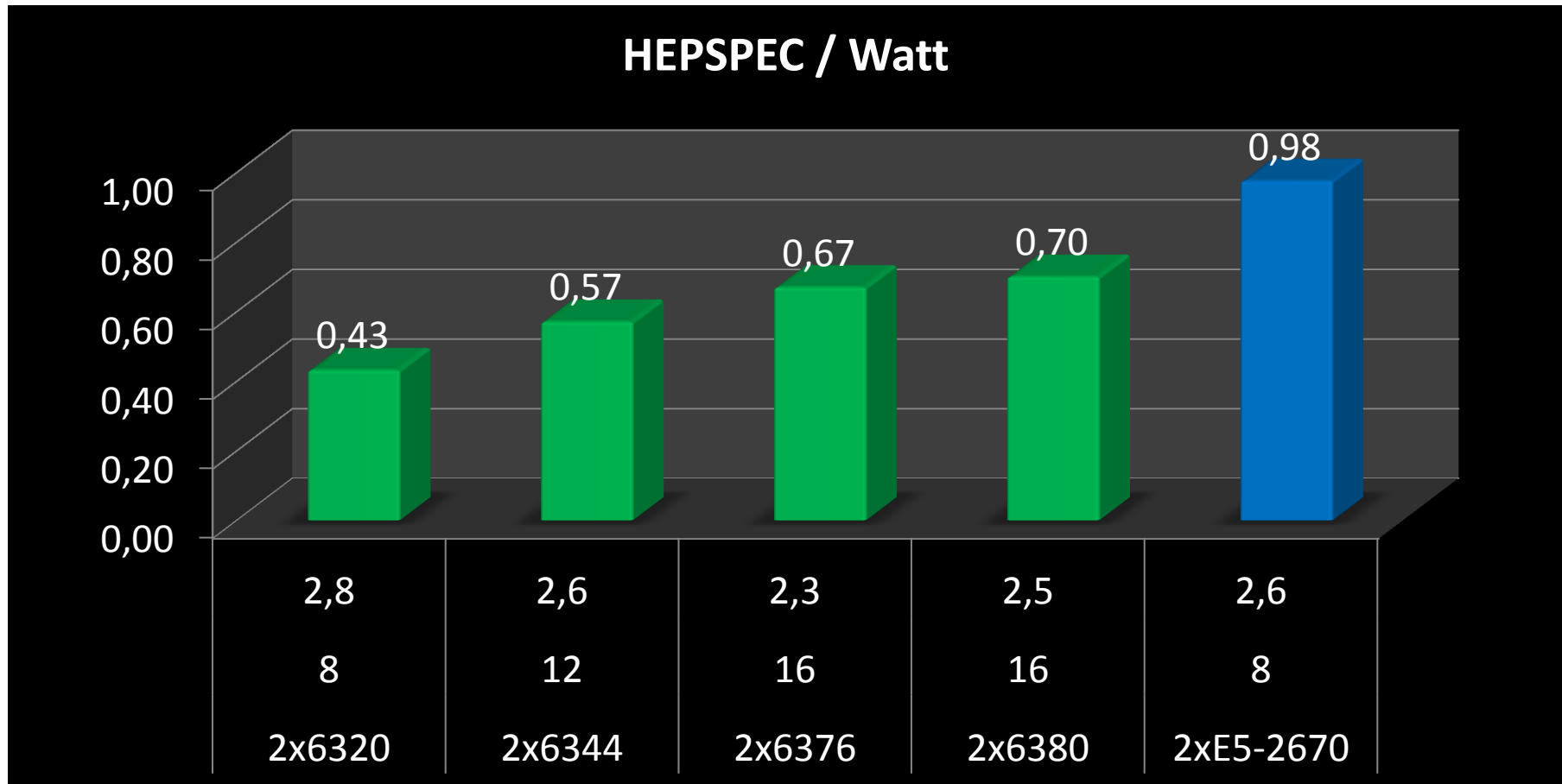
INTEL: E5 v2 (Ivy Bridge)

ARM: CortexA15

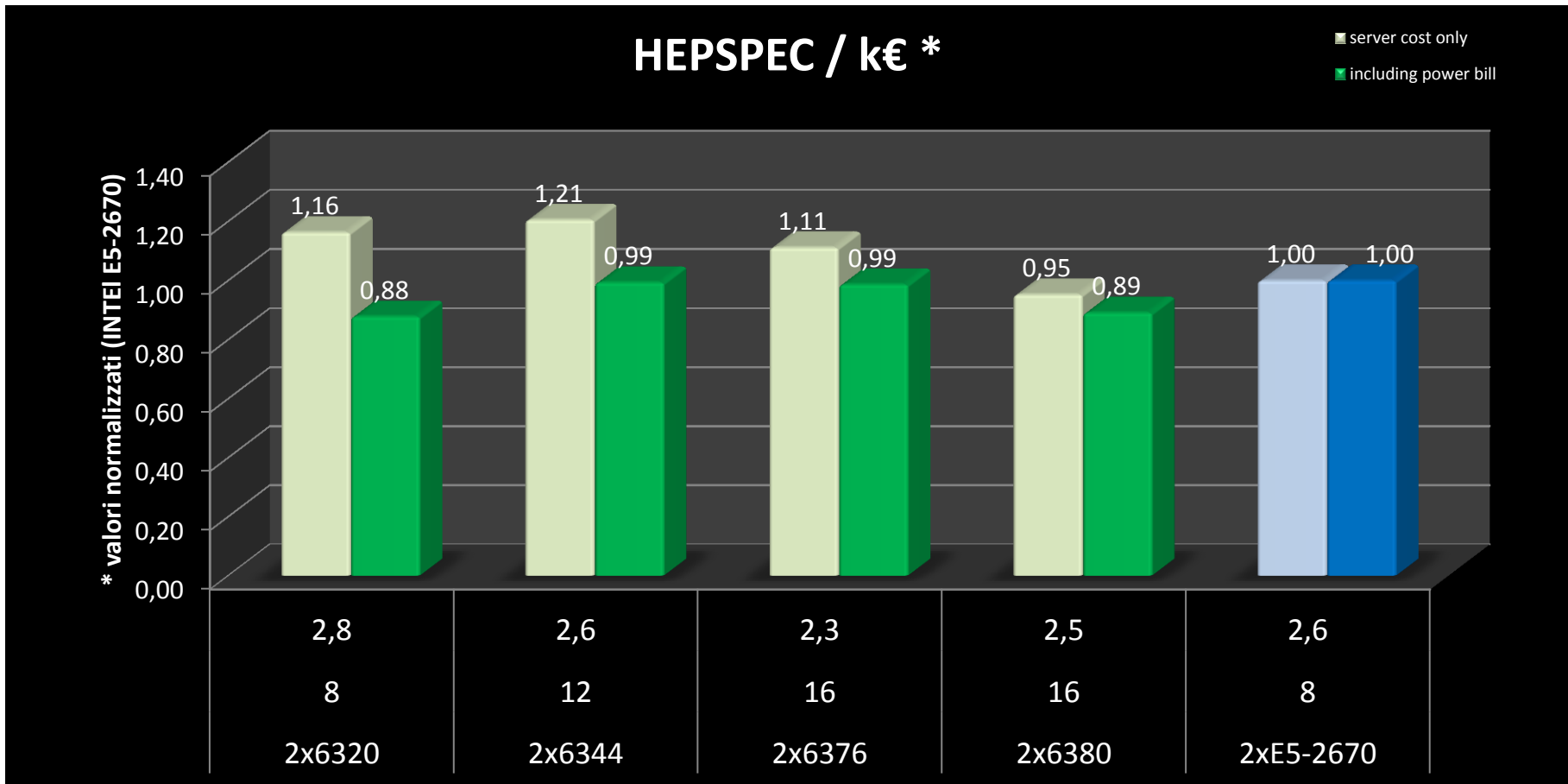
Computing performance: CPU



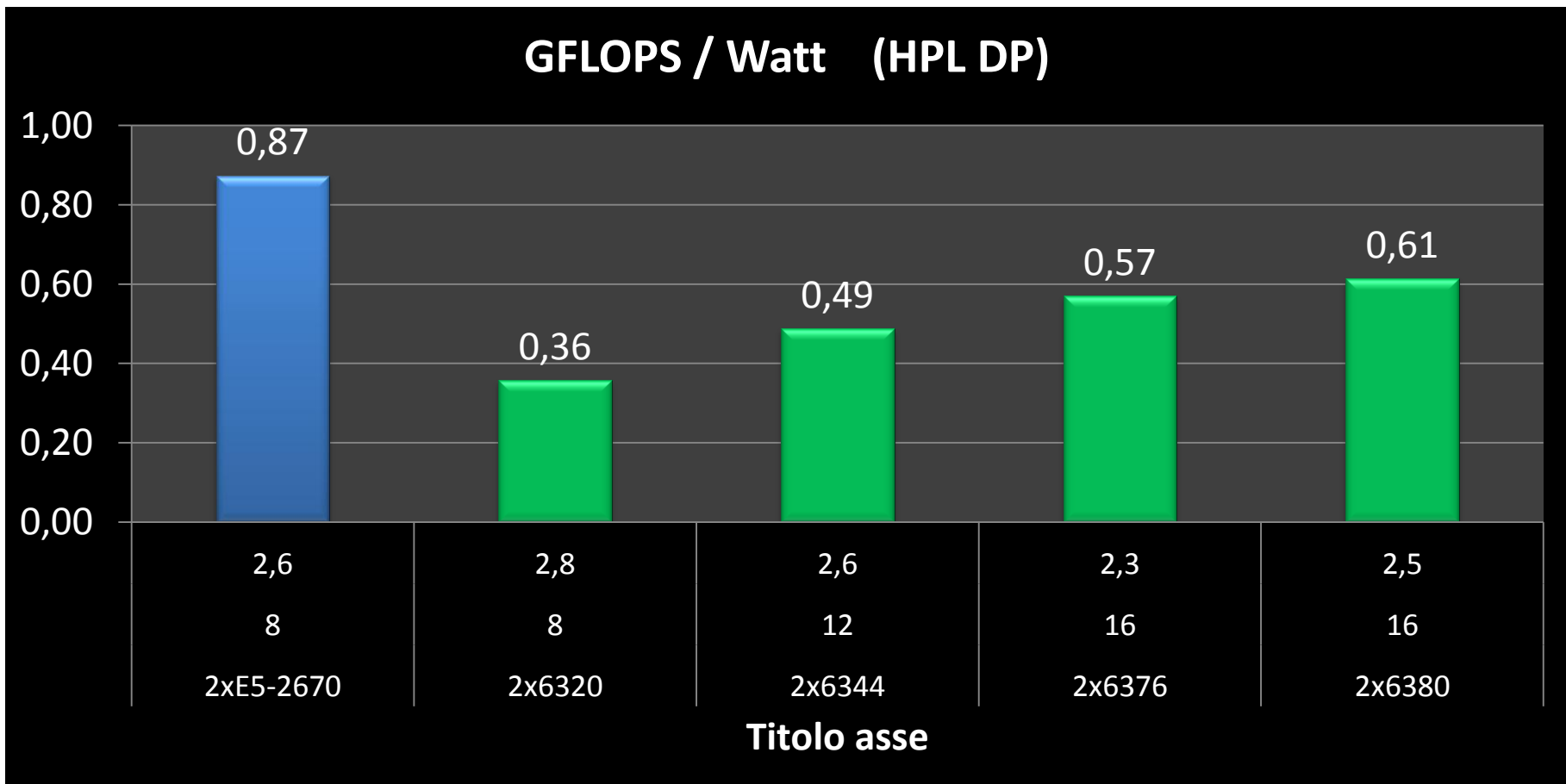
Computing performance: CPU



Computing performance: CPU



Computing performance: CPU





more and more common



brand new

for brave innovative projects!



ARKA MicroCluster Blade

Features	ARKA Blade
CPU	NVIDIA® Tegra® 3 ARM Cortex A9 Quad-Core
GPU	NVIDIA Quadro® 1000M with 96 CUDA Cores
Memory	2GB x CPU 2GB x GPU
Peak Performance	270 Single Precision GFLOPS
Network	1x Gigabit Ethernet
Storage	1x SATA 2.0 Connector
USB	3x USB 2.0
Display	3x HDMI (serial console available)



based on CARMA Devkit
developed by



ARKA MicroCluster chassis

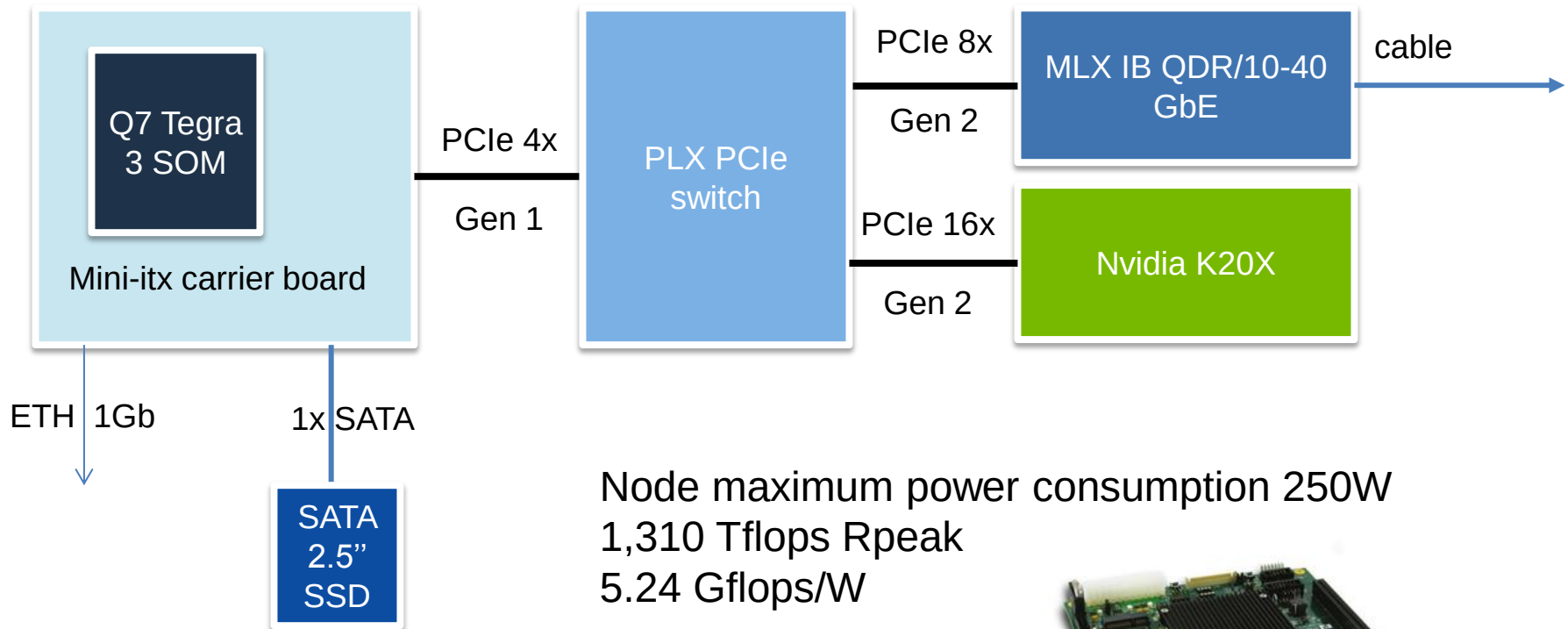


5U

8 x ARKA blades

1 x management node (x86)

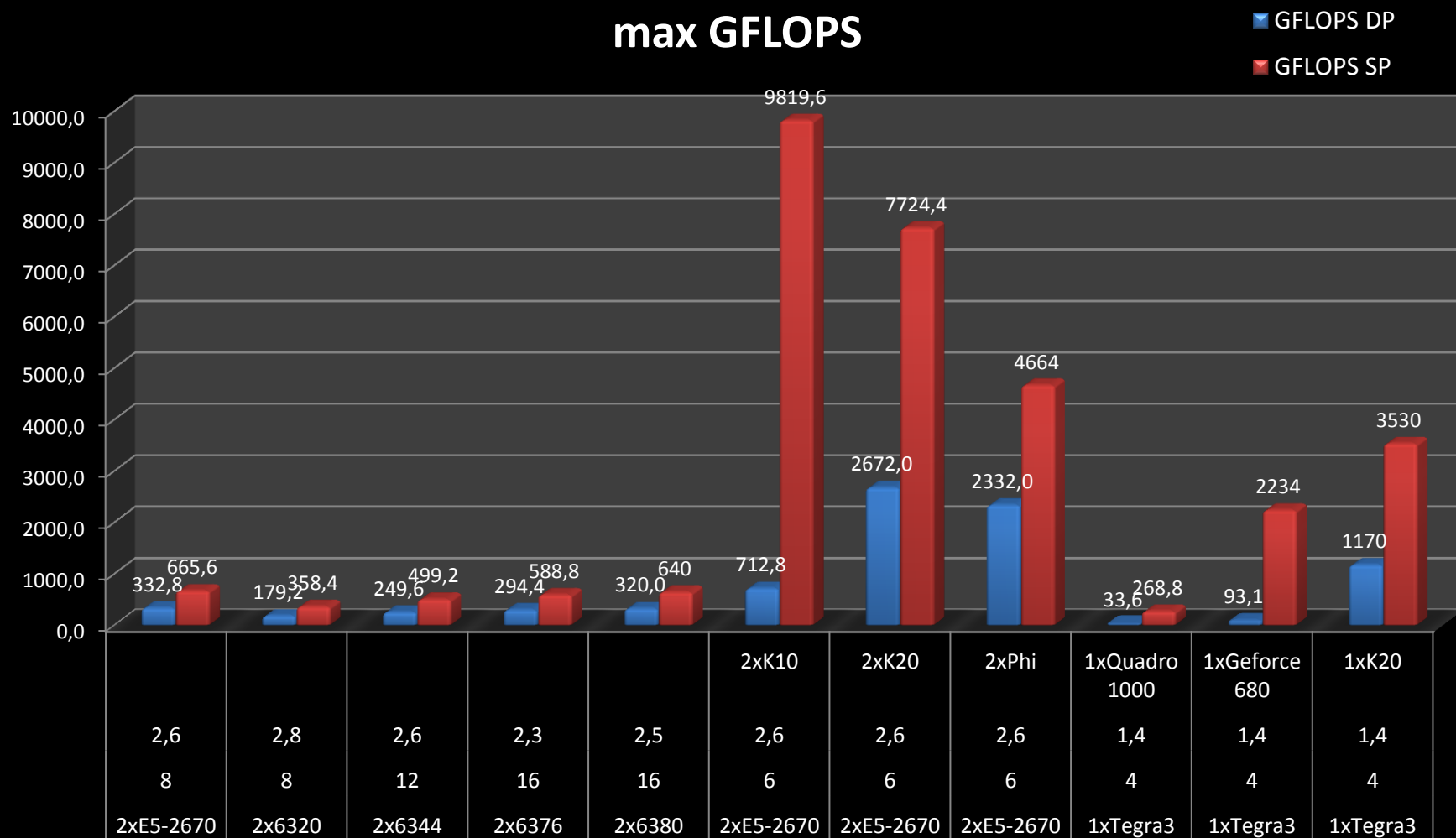
ARKA Extreme Pre-prod. K20 IB/10Gbe



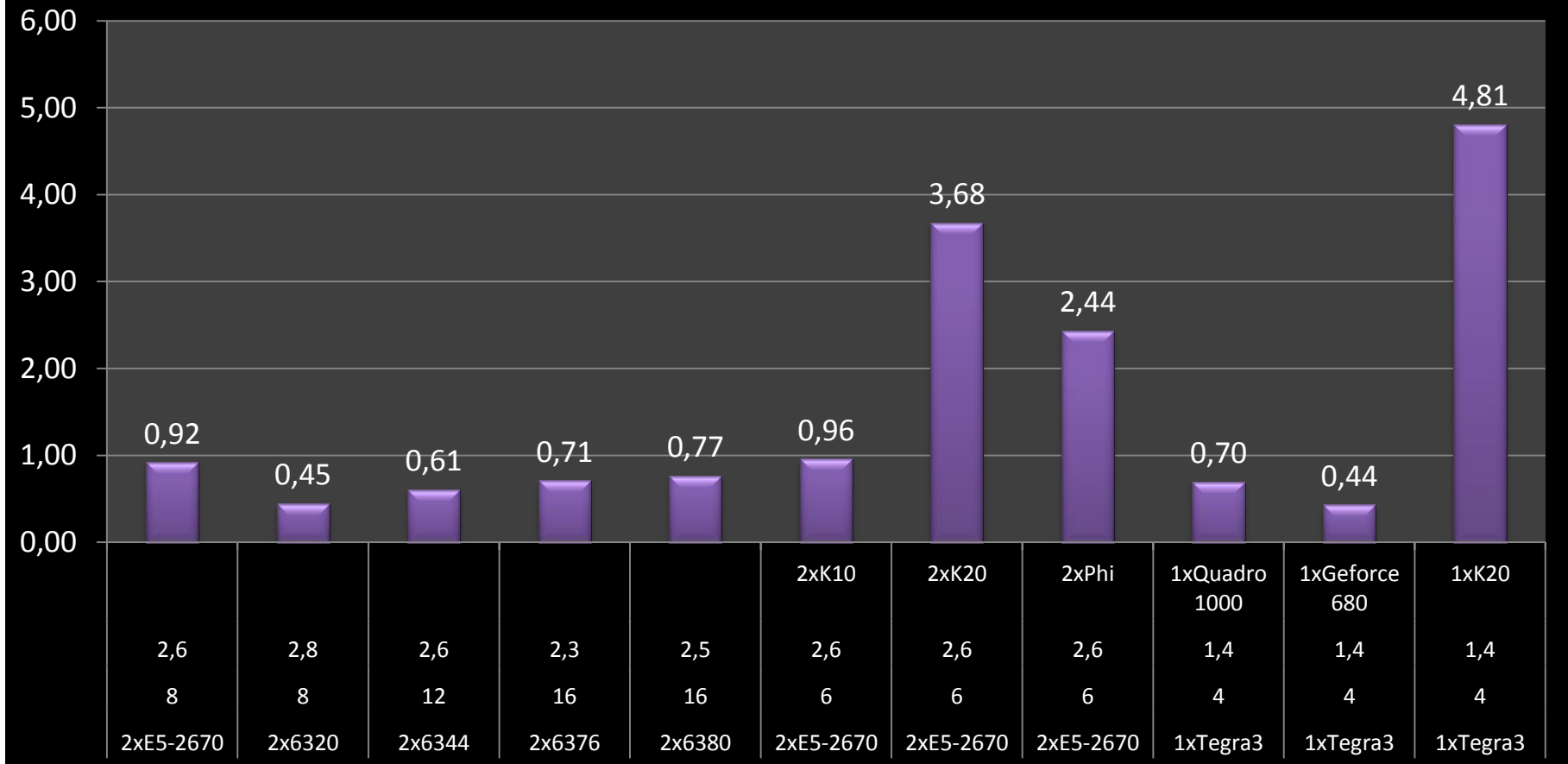
Node maximum power consumption 250W
1,310 Tflops Rpeak
5.24 Gflops/W

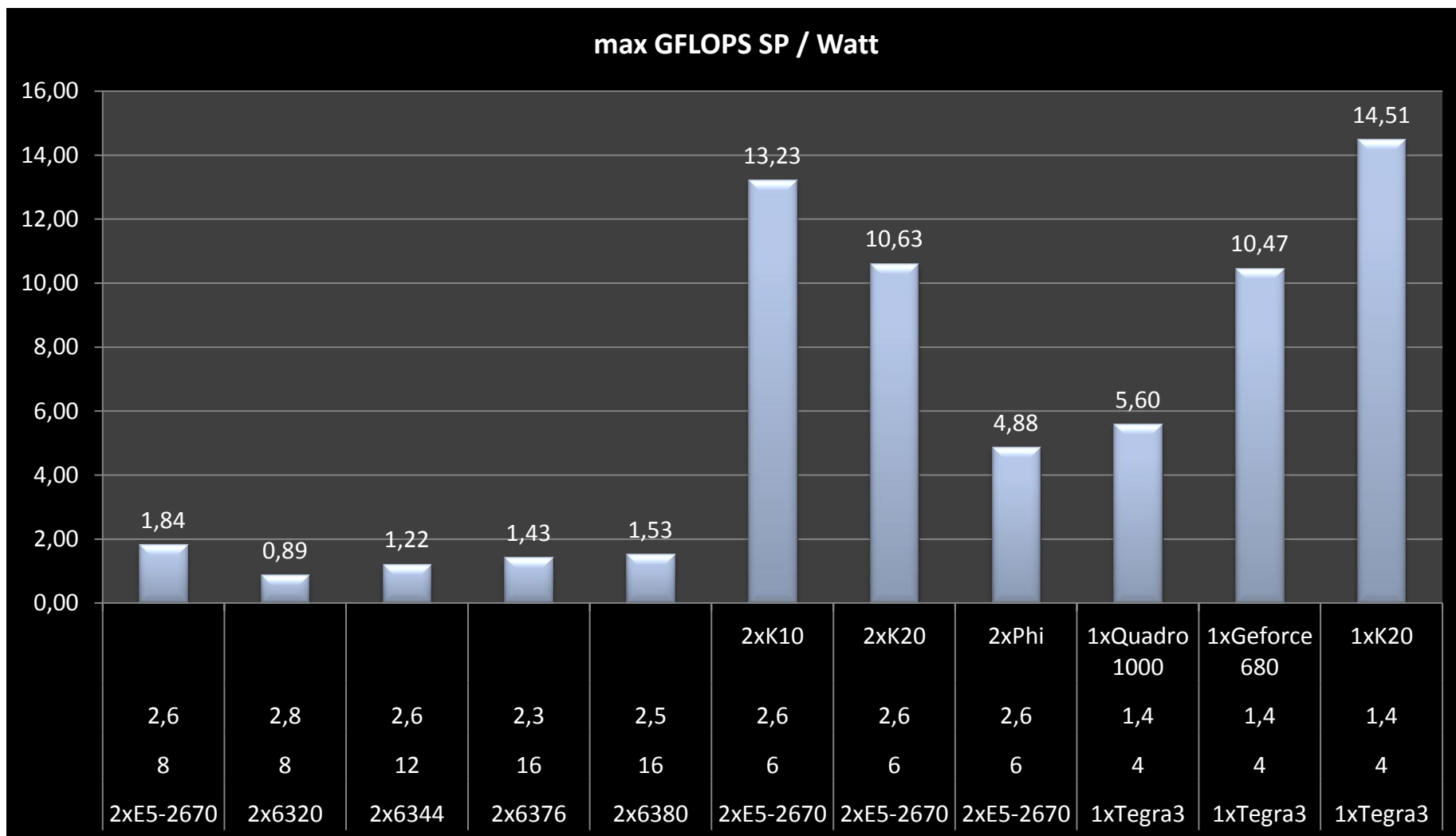


max GFLOPS



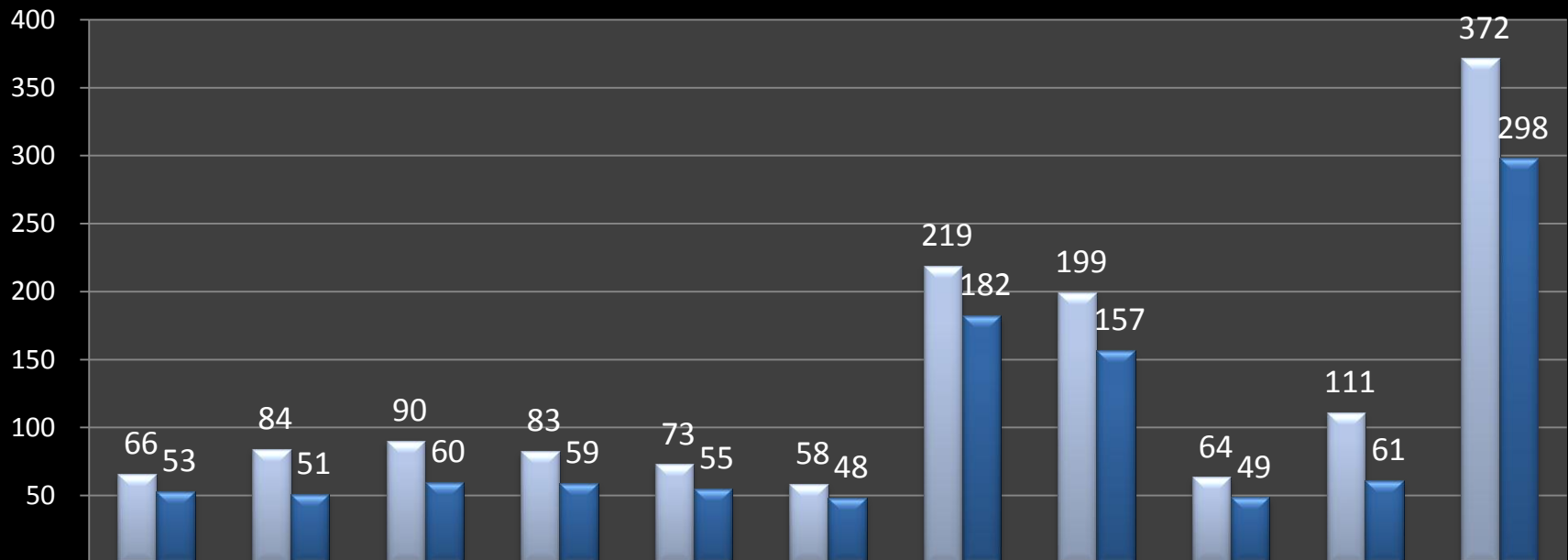
max GFLOPS DP / Watt



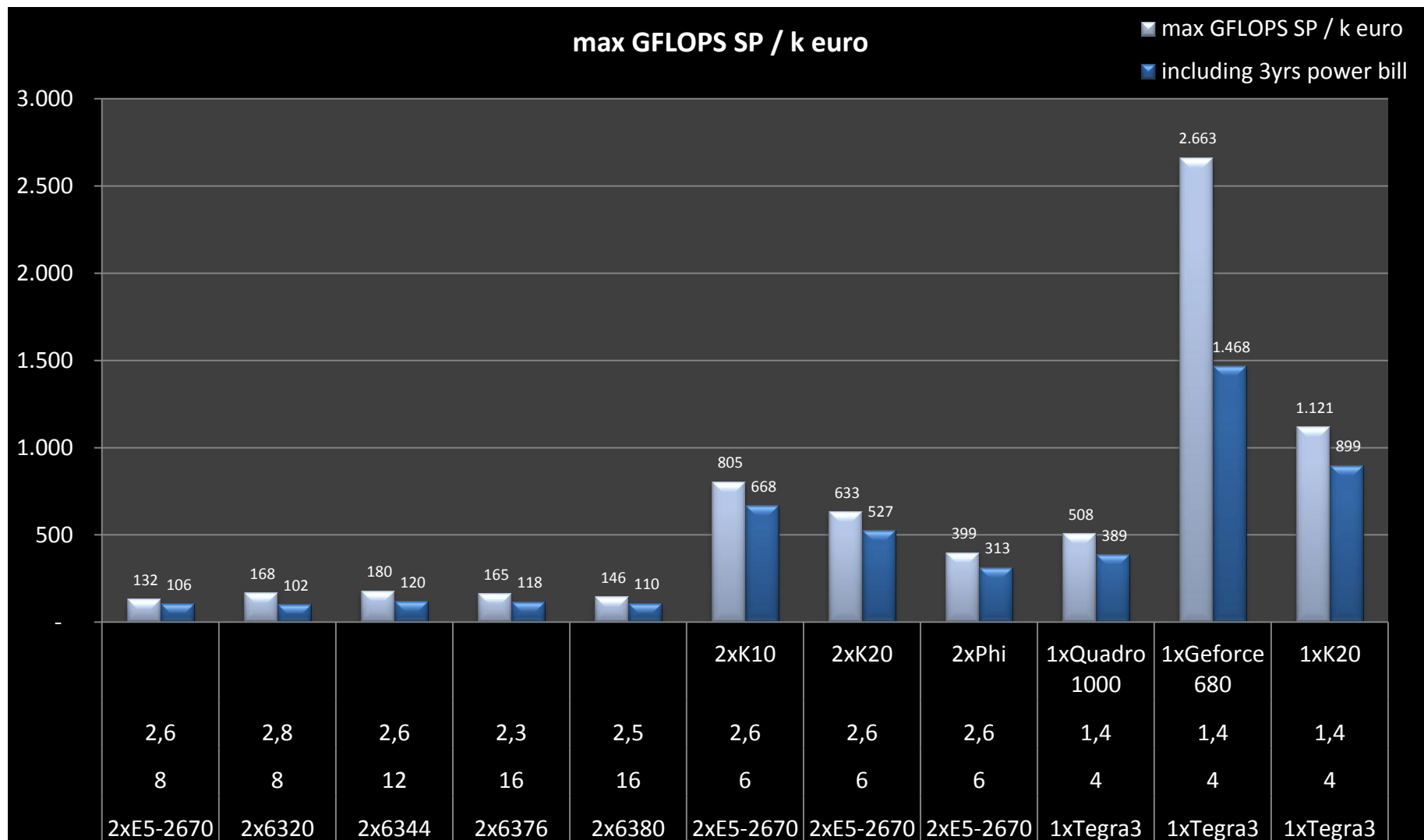


max GFLOPS DP / k euro

■ max GFLOPS DP / k euro
■ including 3yrs power bill



					2xK10	2xK20	2xPhi	1xQuadro 1000	1xGeforce 680	1xK20
2,6	2,8	2,6	2,3	2,5	2,6	2,6	2,6	1,4	1,4	1,4
8	8	12	16	16	6	6	6	4	4	4
2xE5-2670	2x6320	2x6344	2x6376	2x6380	2xE5-2670	2xE5-2670	2xE5-2670	1xTegra3	1xTegra3	1xTegra3



ARKA SHOC Test

The Scalable Heterogeneous Computing Benchmark Suite (SHOC) is a collection of benchmark programs testing performance and stability (using CUDA and/or openCL)

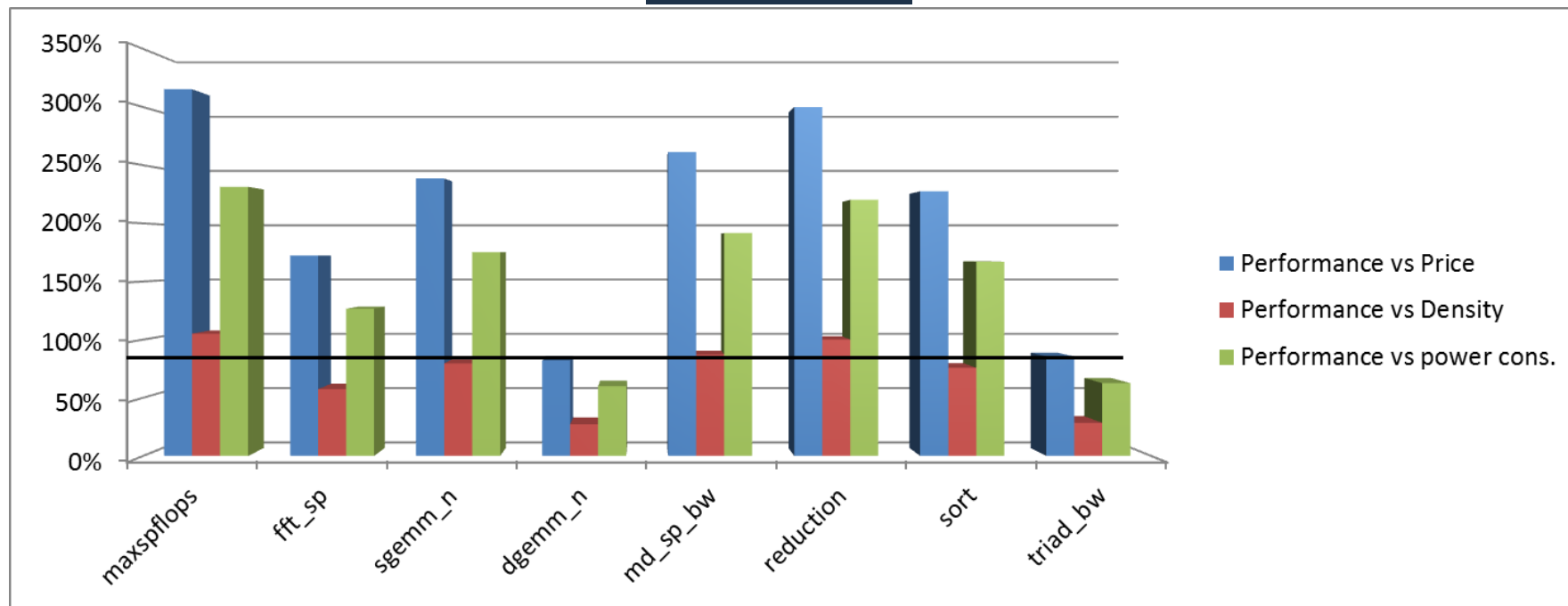
Test	ARKA	Intel+M2075	Units	ARKA/M2075
Maxspflops	263.12	1001.31	GFlops	26%
fft_sp	23.343	162.524	GFlops	14%
sgemm_n	132.482	666.272	GFlops	20%
dgemm_n	21.5152	315.110	GFlops	7%
md_sp_bw	5.5301	25.3975	GB/s	22%
Reduction	23.1895	92.7343	GB/s	25%
Sort	0.3090	1.6296	GB/s	19%
triad_bw	0.4279	6.0163	GB/s	7%

ARKA SHOC Test

Performance per Watt and per Price reveals the real capabilities of ARKA blades:

2x GFlops x W

3x Gflops x \$



1 Tegra3 + Quadro1000 Vs 2xE5-2670+nvidia M2075