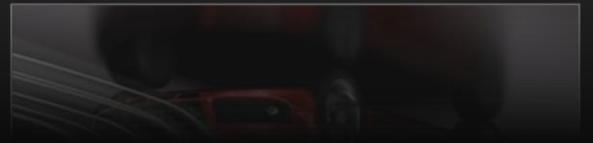
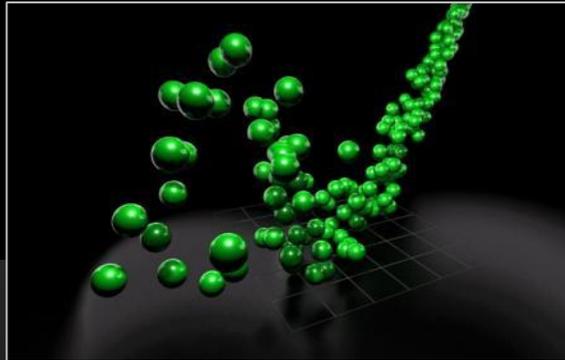
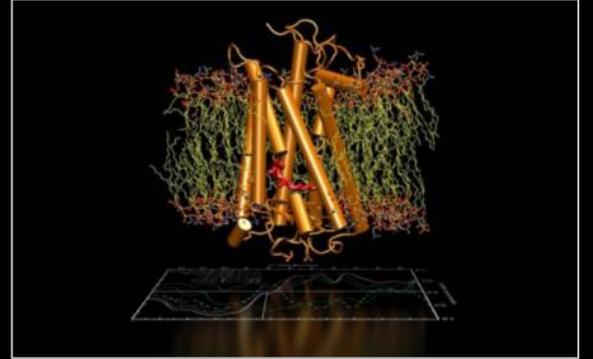
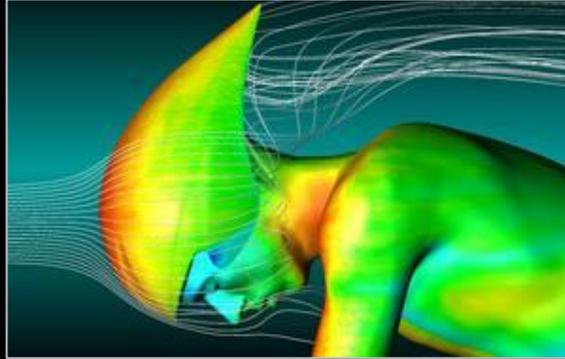


TESLA

Supercomputing





Tianhe-1A

#1 Top500



7168 GPUs
2.5 Petaflops

“ The computer is fast. Really, really fast. ”

Washington Post

“ It reflects a major design shift to use graphics chips to help accelerate the number-crunching functions most often carried out by so-called x86 chips, which evolved from personal computers and have long dominated supercomputing ”

Wall Street Journal

“ This blows away the existing No. 1 machine, ” said Dongarra. “ I would say it is unlikely we will see a system that is faster. ”

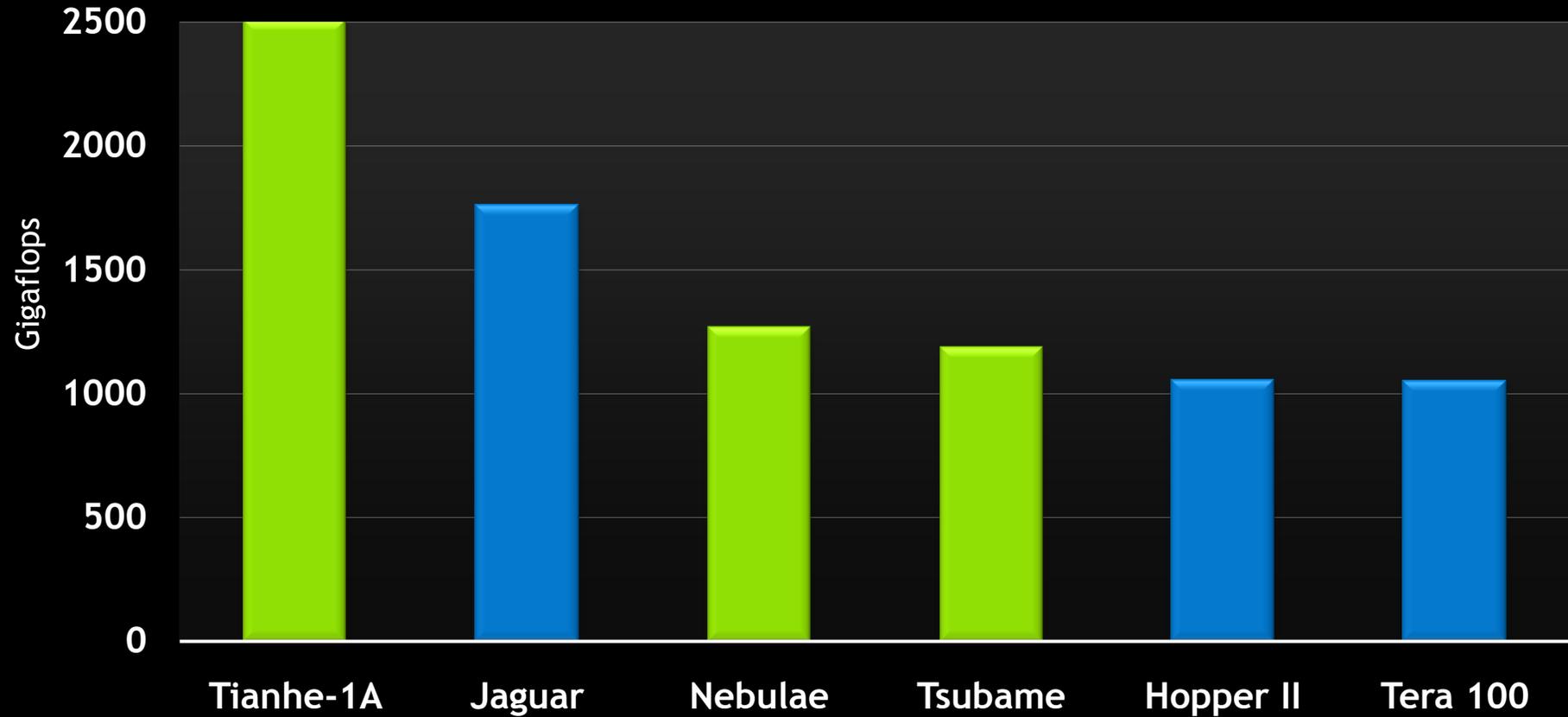
New York Times

“ What may be the world’s fastest computer is a little bit like your Mac because it relies on two very different kinds of processors to get its work done: GPUs and CPUs. ”

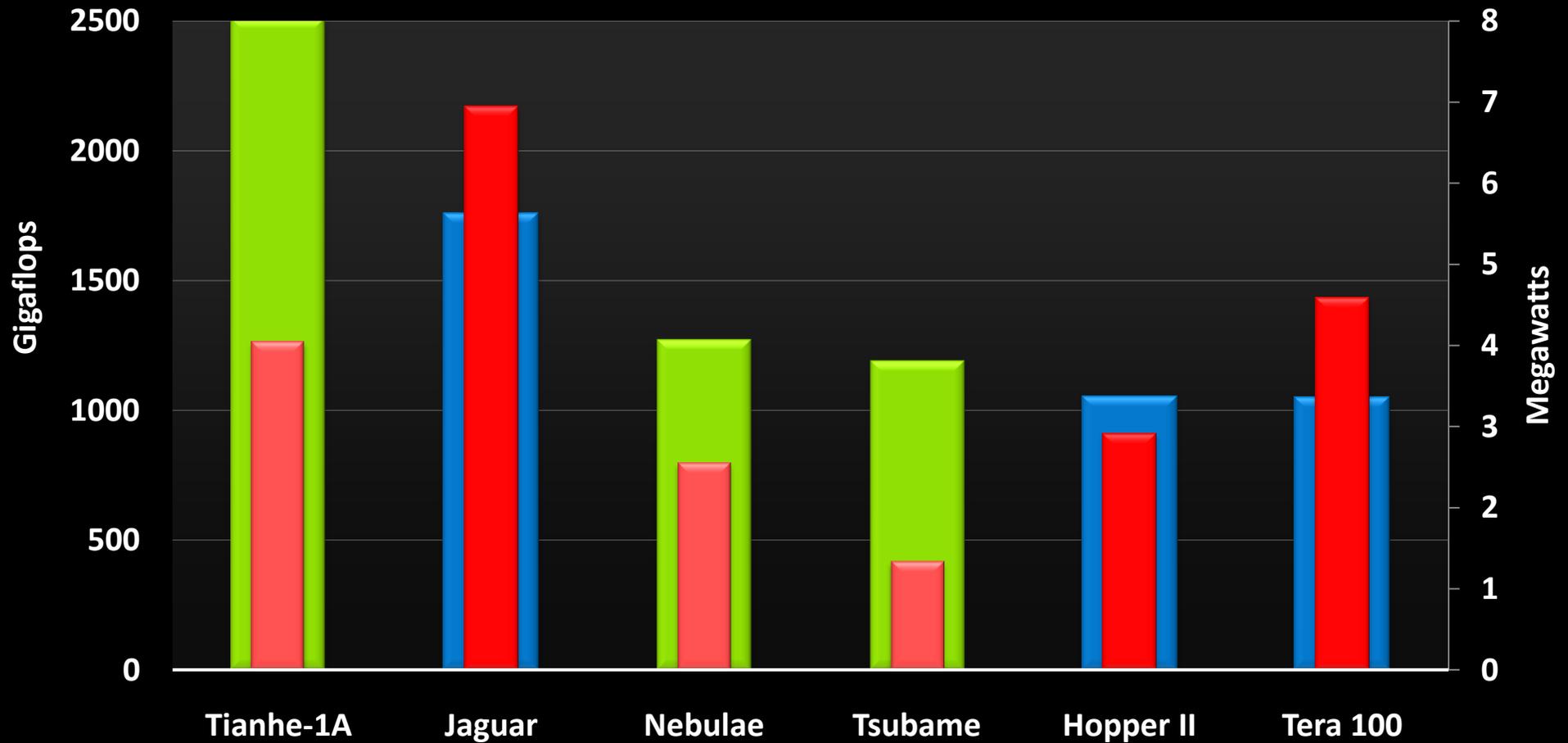
Forbes



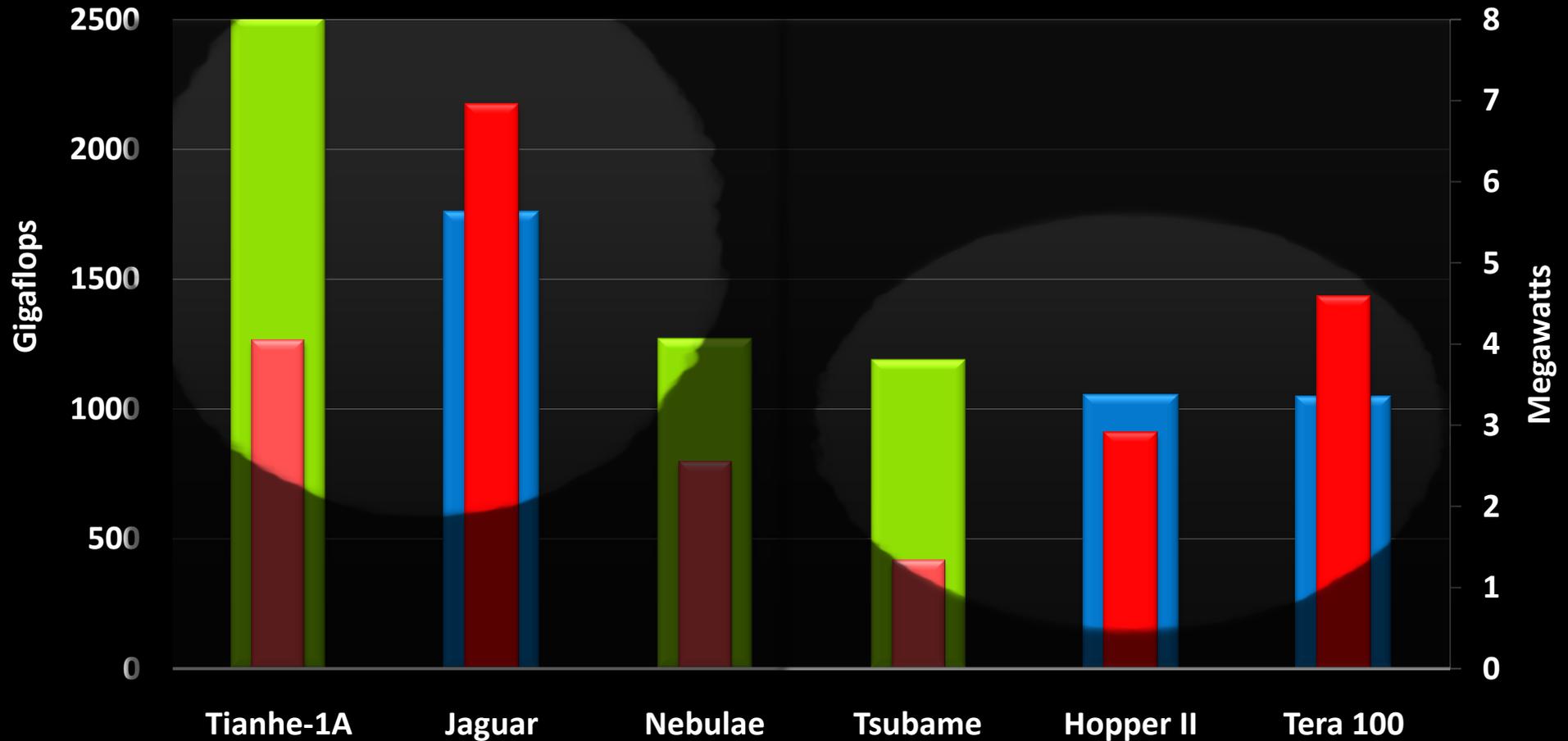
3 of the Top Supercomputers



Performance and Power

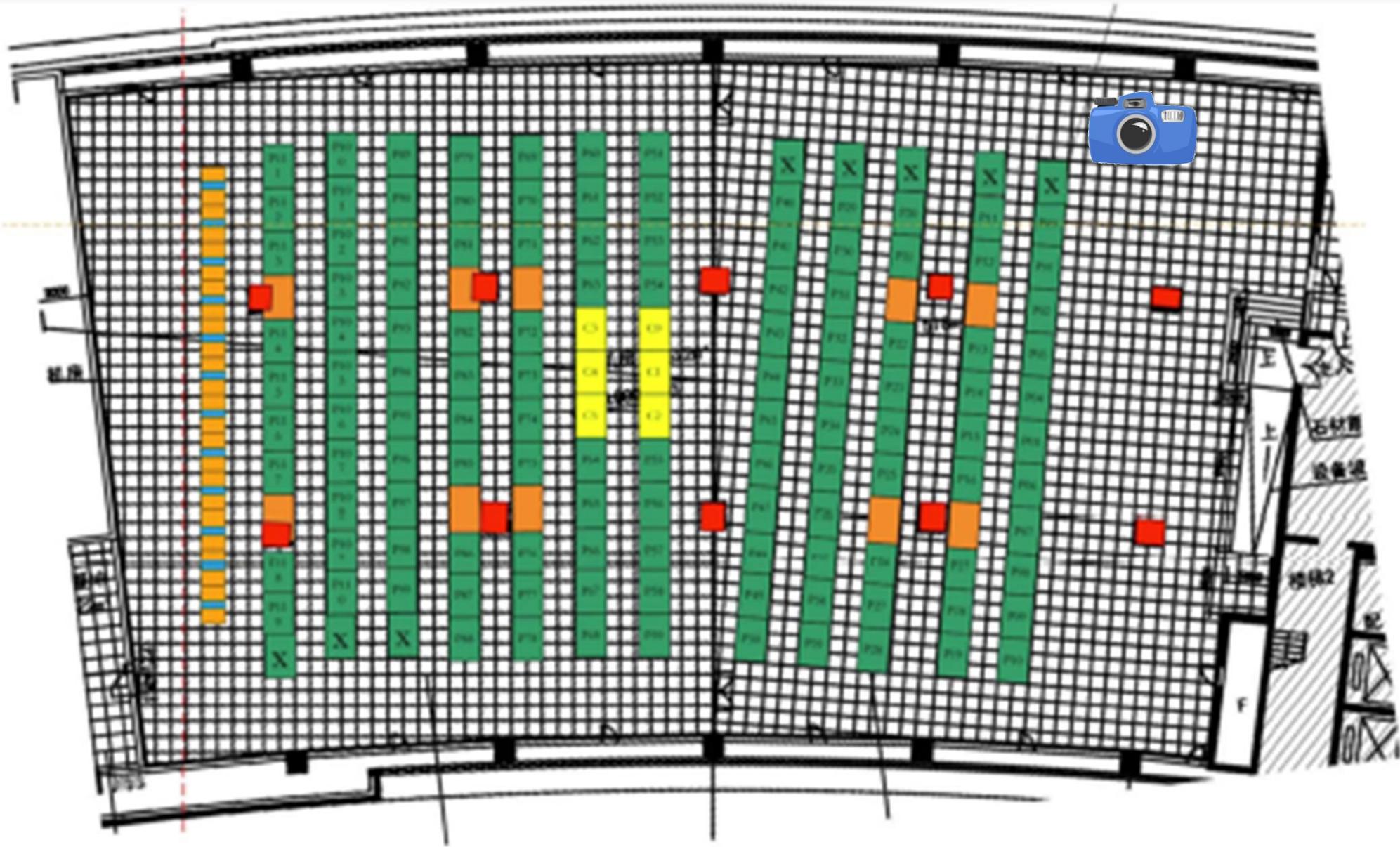


Top 5 Performance and Power



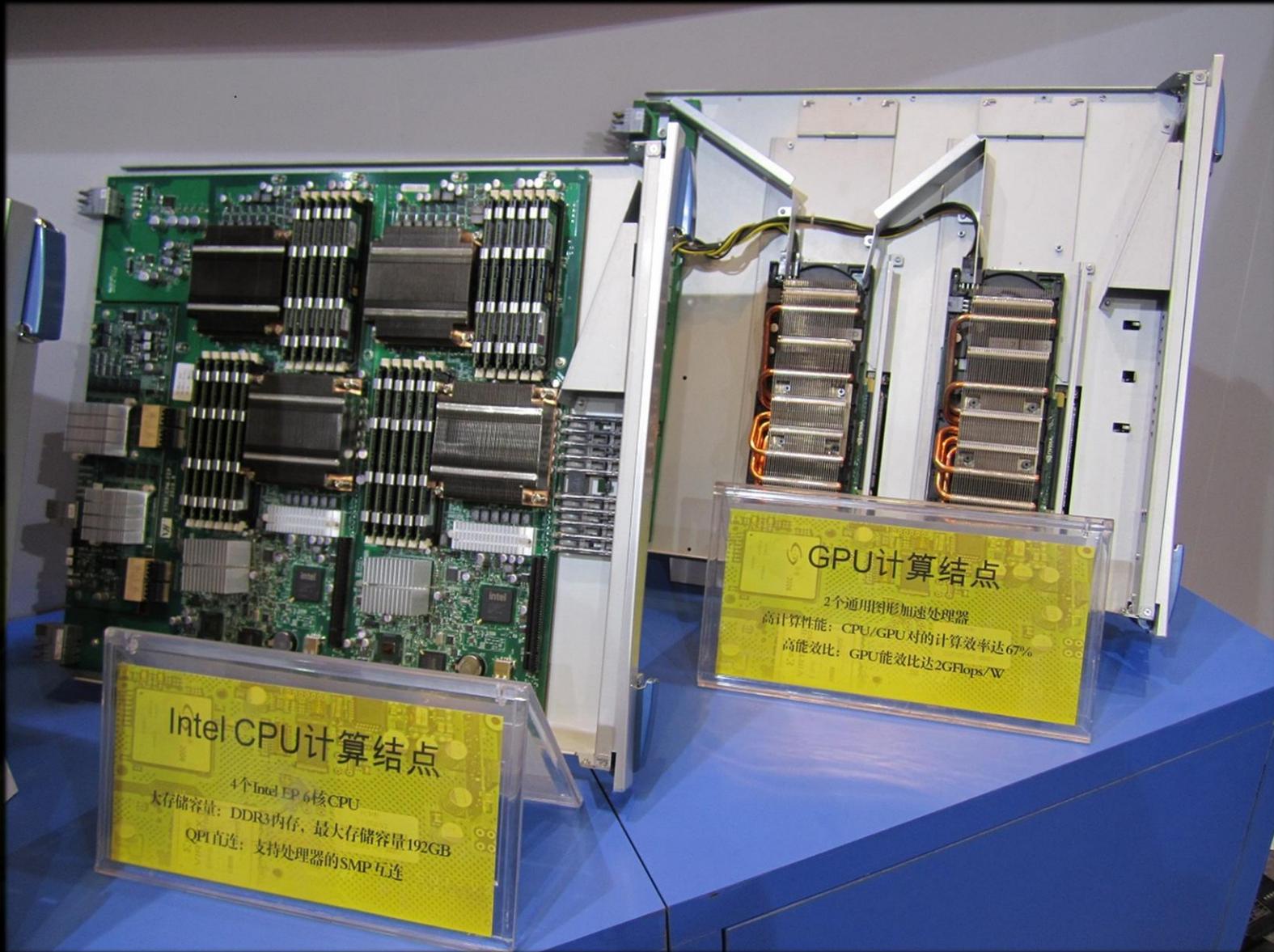
Images of Tianhe-1A at NSC Tianjin









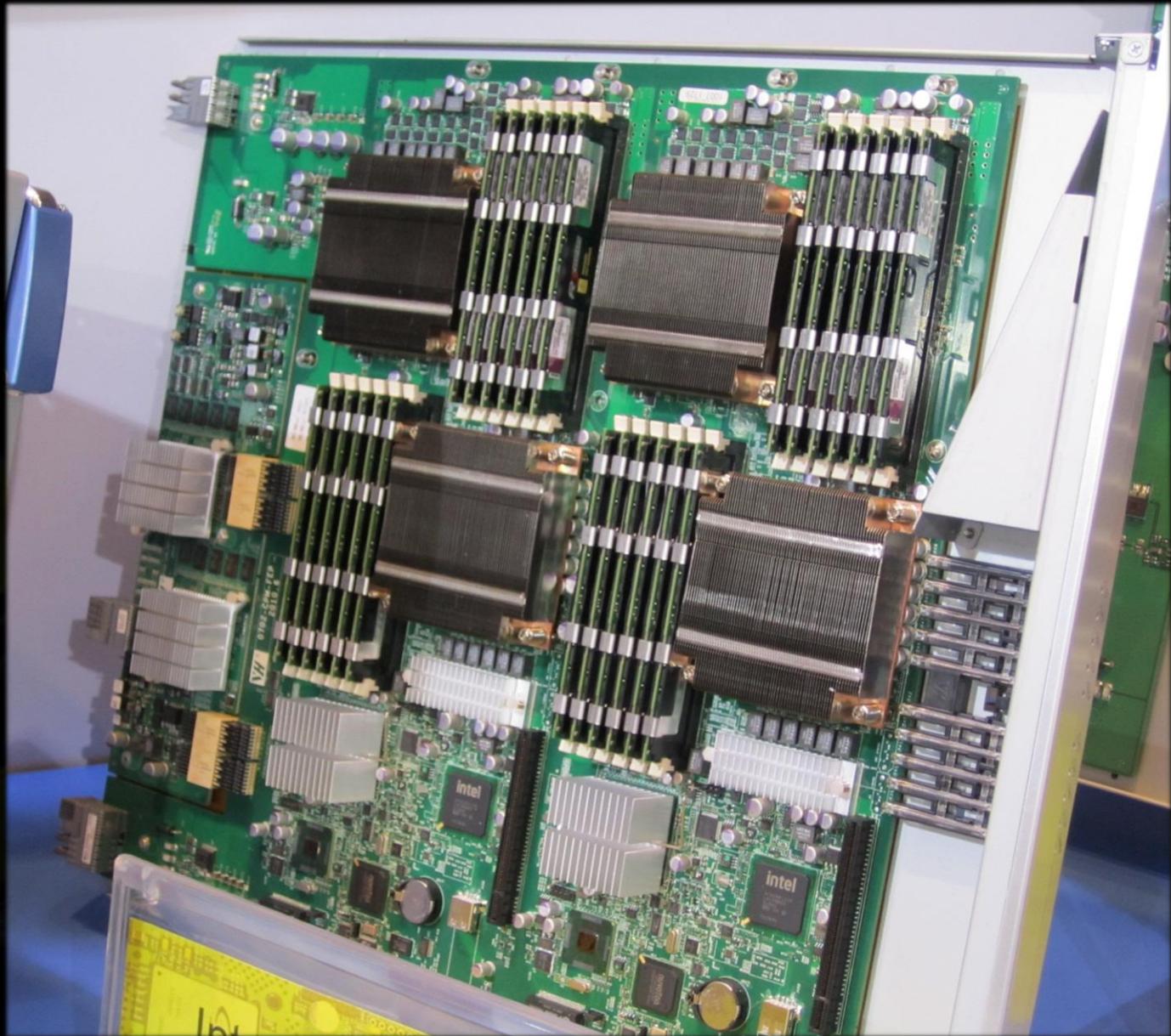


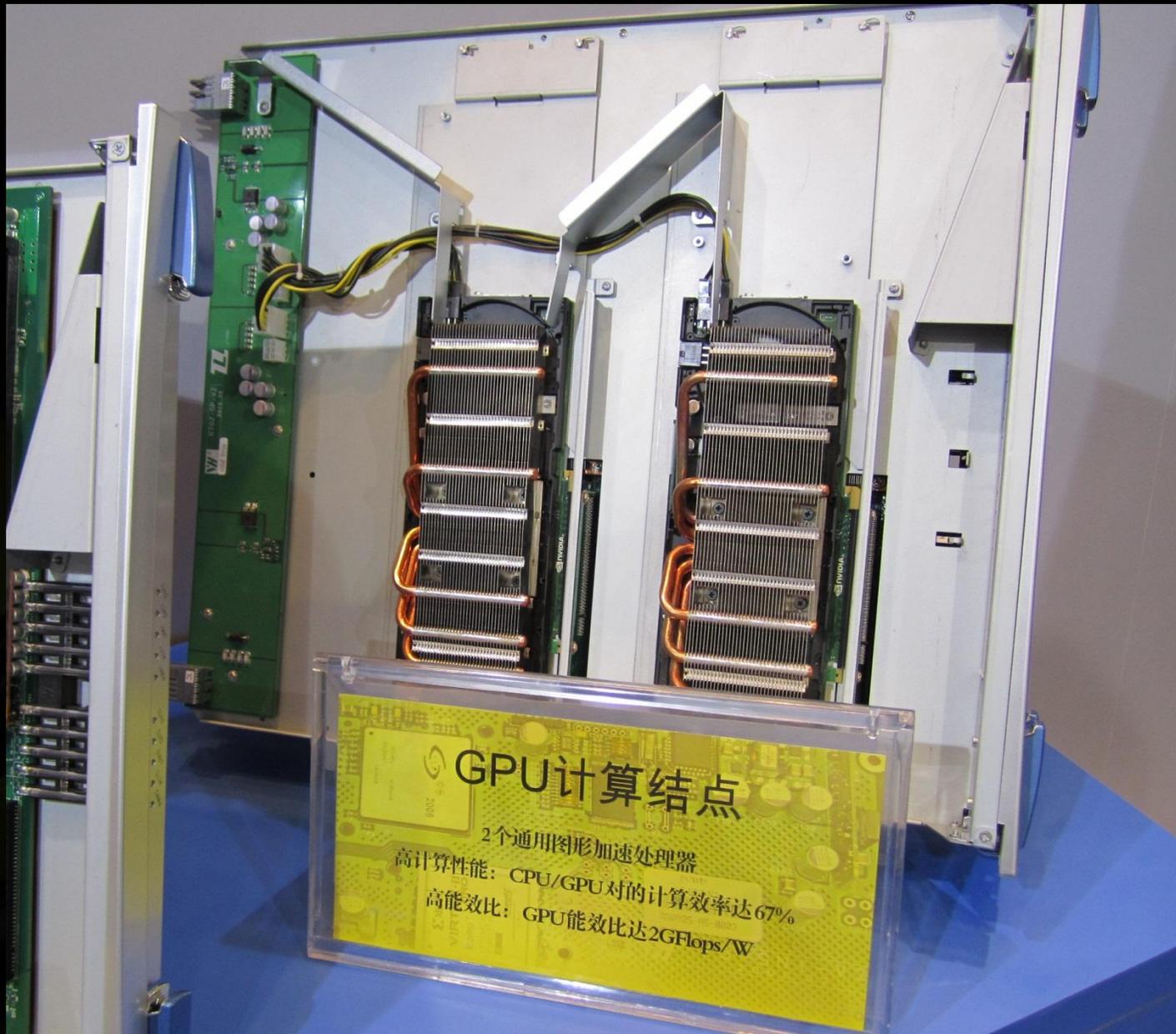
Intel CPU计算节点

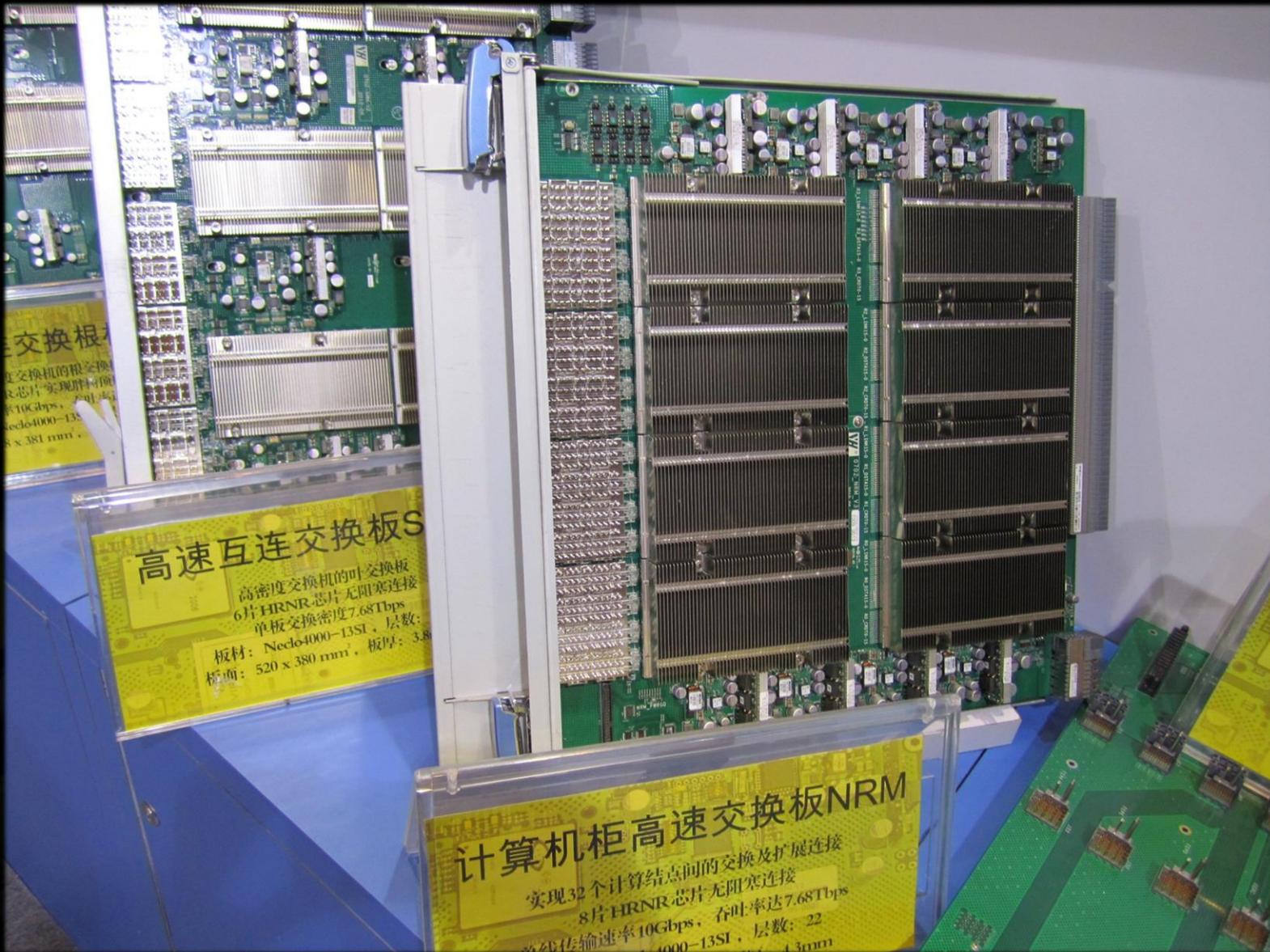
4个Intel EP 6核CPU
大存储容量: DDR3内存, 最大存储容量192GB
QPI直连: 支持处理器的SMP互连

GPU计算节点

2个通用图形加速处理器
高计算性能: CPU/GPU对的计算效率达67%
高能效比: GPU能效比达2GFlops/W







交换根
交换机的根交换
芯片实现片间
10Gbps, 吞吐率
Necla4000-13S
8 x 381 mm

高速互连交换板S
高密度交换机的叶交换板
6片HRNR芯片无阻塞连接
单板交换密度7.68Tbps
板材: Necla4000-13SI, 层数:
板面: 520 x 380 mm, 板厚: 3.8

计算机柜高速交换板NRM
实现32个计算节点间的交换及扩展连接
8片HRNR芯片无阻塞连接
单线传输速率10Gbps, 吞吐率达7.68Tbps
Necla4000-13SI, 层数: 22
板厚: 4.3mm

互连接口芯片NIC

实现用户级点对点通信与聚合通信
160Gbps 高速互连网络接口
16 Lane PCI-E G2.0 主机接口
MPI带宽6.3Gbps, 通信延迟1.1us
90nm 工艺, 约1.5亿晶体管

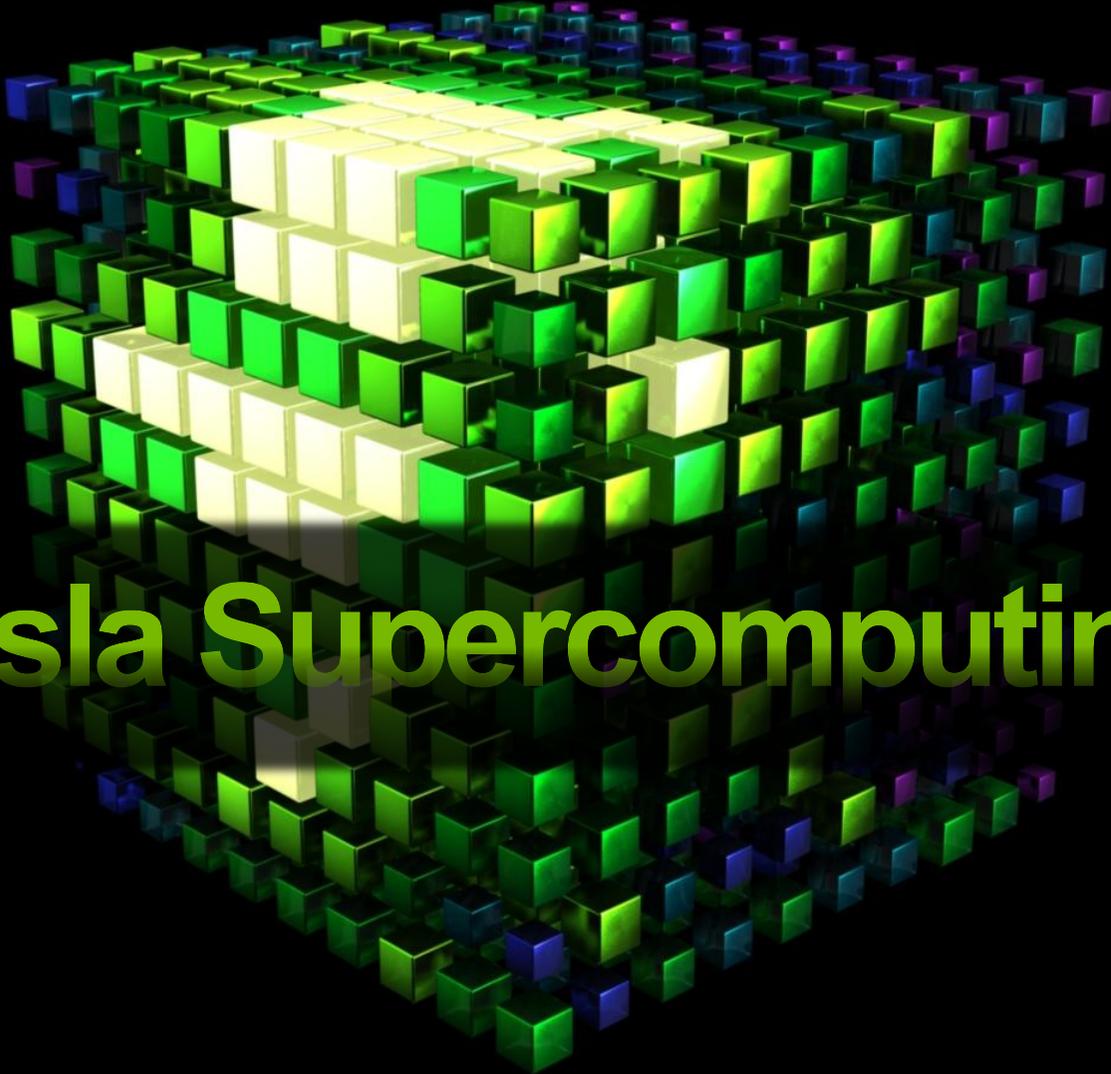
飞腾CPU计算节点

4个自主FT-1000微处理器
高访存带宽: 4路并发访问, 访存带宽128GB/s
自主互连协议: 支持4路处理器的SMP互连

Intel CPU计算节点

4个Intel EP 6核CPU
存储容量: DDR3内存, 最大存储容量192GB
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Tesla Supercomputing