



Centro di Competenza sul Calcolo Scientifico

Il SuperComputer OCCAM

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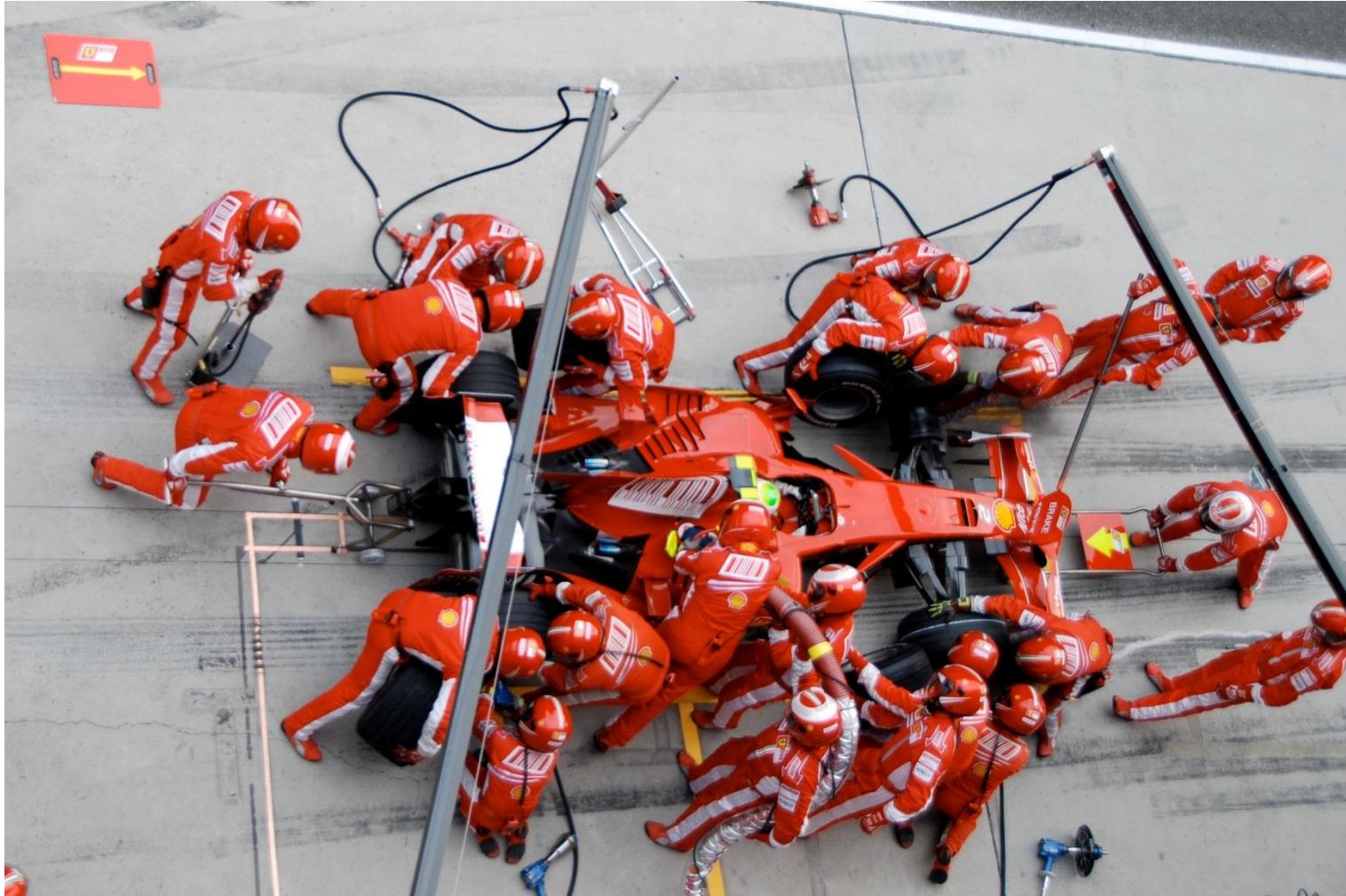
Responsabile Unico del Procedimento per la gara di appalto
OCCAM/C3S



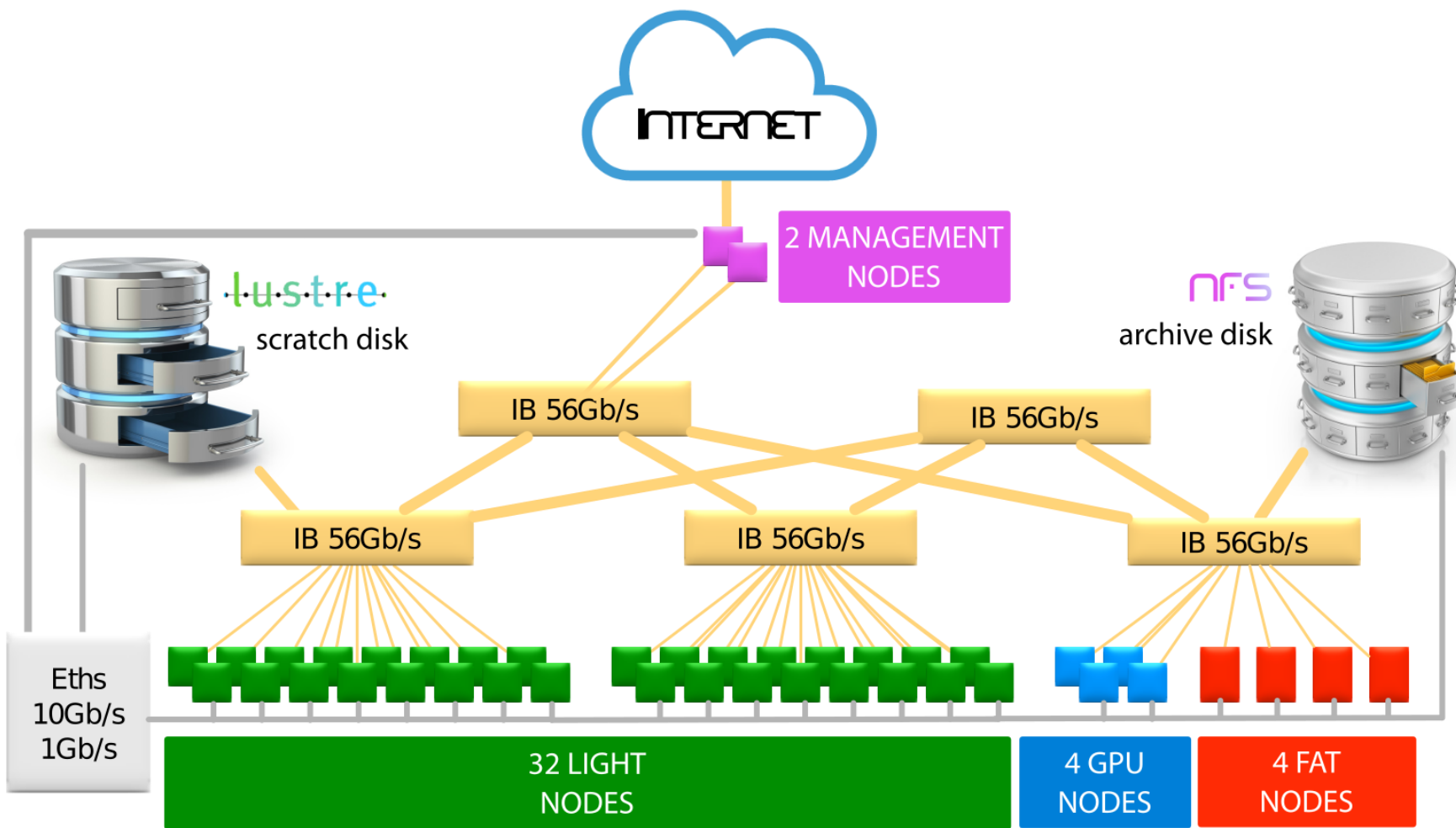
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DIPARTIMENTO
DI INFORMATICA

Il SuperComputer OCCAM



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32 “Light” nodes

- CPU - 2x Intel® Xeon® Processor E5-2680 v3, 12 core 2.5Ghz
- RAM - 128GB/2133 (8 x 16 Gb)
- DISK - SSD 400GB SATA 1.8 inch.
- NET - IB 56Gb + 2x10Gb
- FORMFACTOR - high density (4 nodes x RU)

4 “Fat” nodes

- CPU - 4x Intel® Xeon® Processor E7-4830 v3 12 core/2.1Ghz
- RAM - 768GB/1666MHz (48 x 16Gb) DDR4
- DISK - 1 SSD 800GB + 1 HDD 2TB 7200rpm
- NET - IB 56Gb + 2x10Gb

4 “GPU” nodes

- CPU - 2x Intel® Xeon® Processor E5-2680 v3, 12 core 2.1Ghz
- RAM - 128GB/2133 (8 x 16Gb) DDR4
- DISK - 1 x SSD 800GB sas 6 Gbps 2.5”
- NET - IB 56Gb + 2x10Gb
- GPU - 2 x NVIDIA K40 su PCI-E Gen3 x16

High-performance “Scratch” storage

- DISK TYPE - HDD da 4 TB SAS 7200 rpm
- CAPACITY - 320 TB RAW e 256 TB usable
- NET - 2 x IB 56Gb FDR + 2 x 10Gb
- FILESYSTEM - Lustre Parallel Filesystem

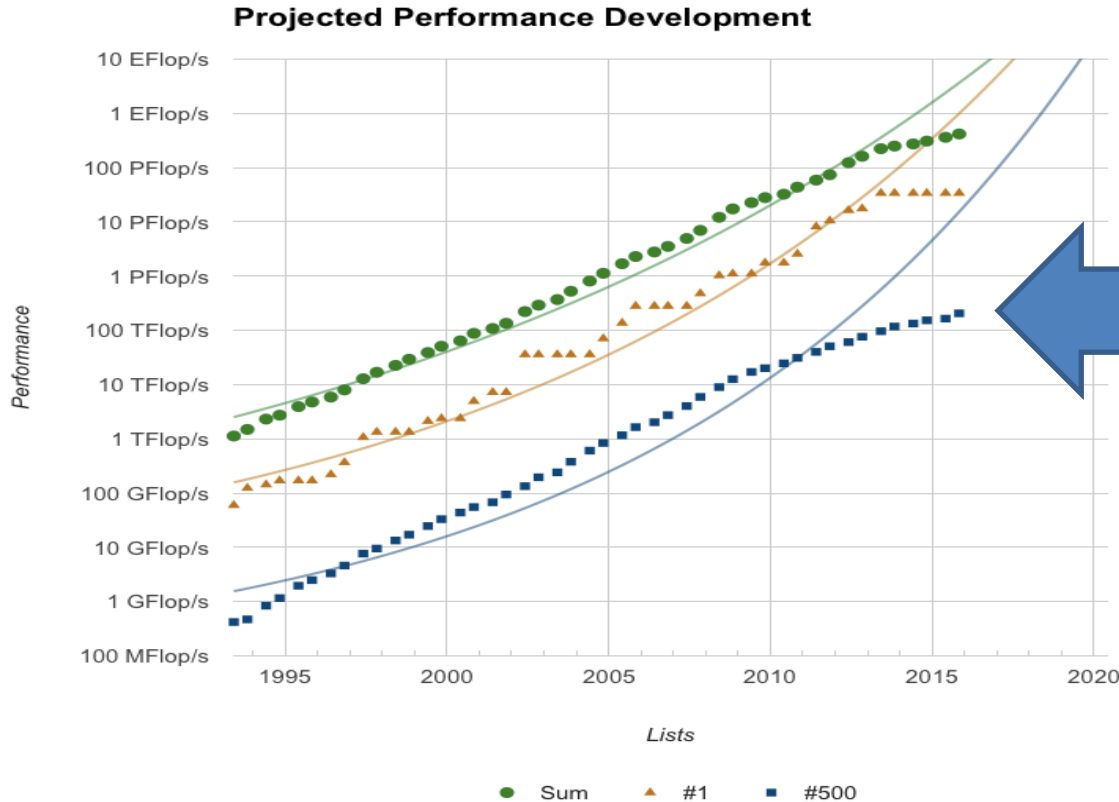
FAT “Archive” storage

- DISK TYPE - 180 x 6 TB a 7200 rpm SAS 6Gbps
- CAPACITY - 1080 TB raw 768 TB usable
- NET - 2 x IB 56Gb + 4 x 10GbE
- FILESYSTEM - NFS export
- FAULT TOLERANCE - RAID 6 Equivalent with Dynamic Disk Pools

Networking:

- InfiniBand layer - 56 Gbps “Fat Tree”
- 10GBPS Ethernet - 10 Gbps flat
- 1GBPS Ethernet for monitoring and management

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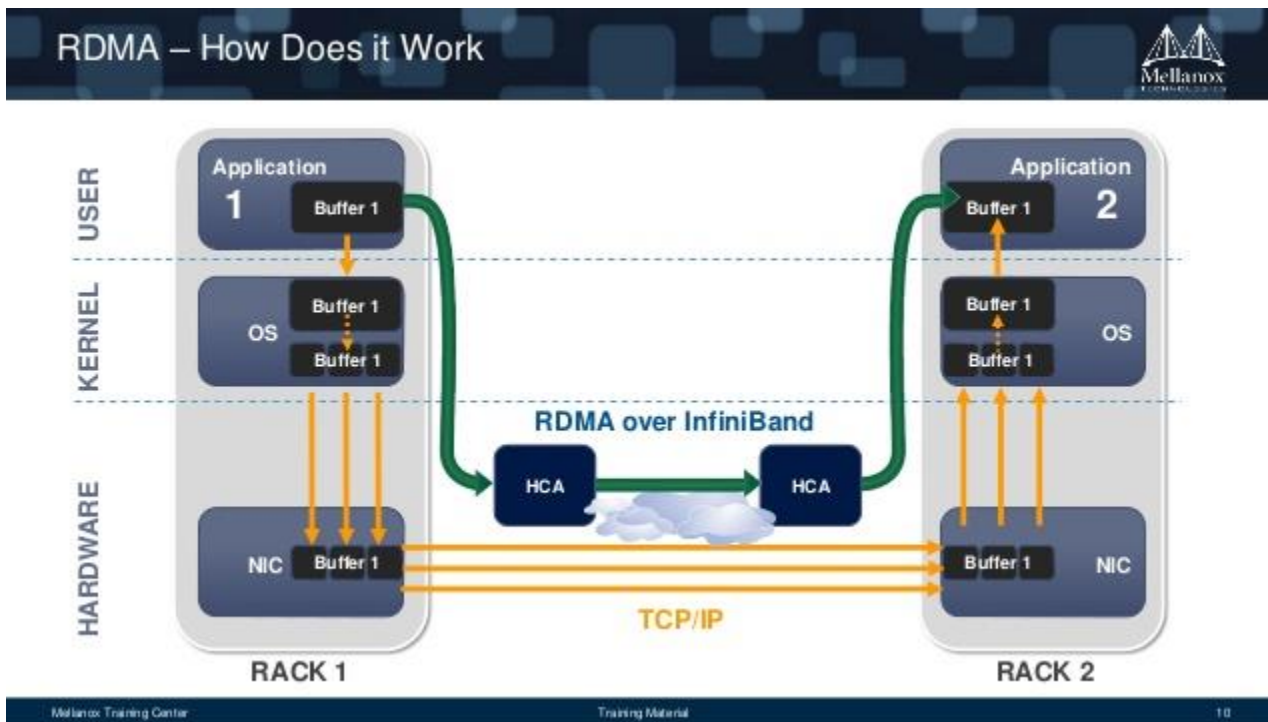
oretical FLOPS

(Linpack like)

$$\begin{aligned}
 & \text{ops per CPU E5} * 80 \\
 & + \\
 & 700 \text{ Gflops per CPU E7} * 32 \\
 & + \\
 & \text{a } 1.43 \text{ Tflops per GPU} * 8 \\
 & =
 \end{aligned}$$

105,840 TeraFlops

- INFINIBAND: perché ?



RDMA = Remote direct memory access

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<http://c3s.unito.it/booked>