How we renew an HPC cluster ?

HPC cluster renewal process

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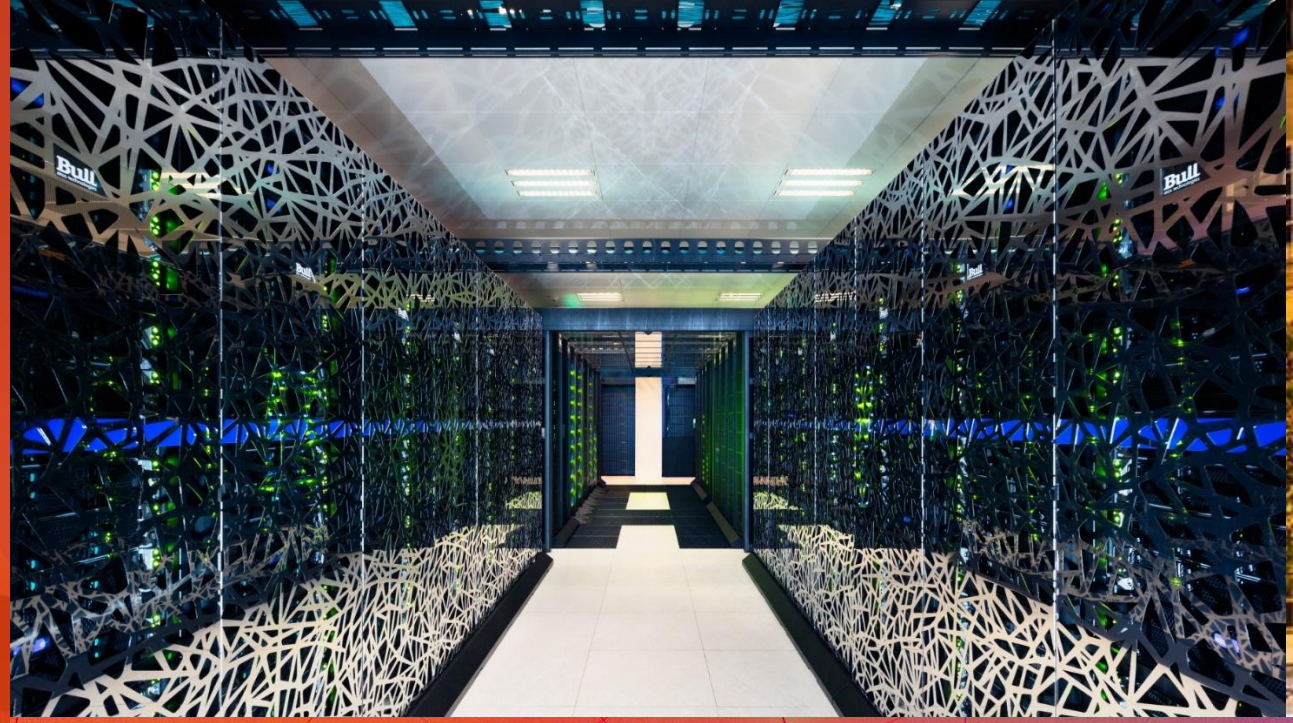
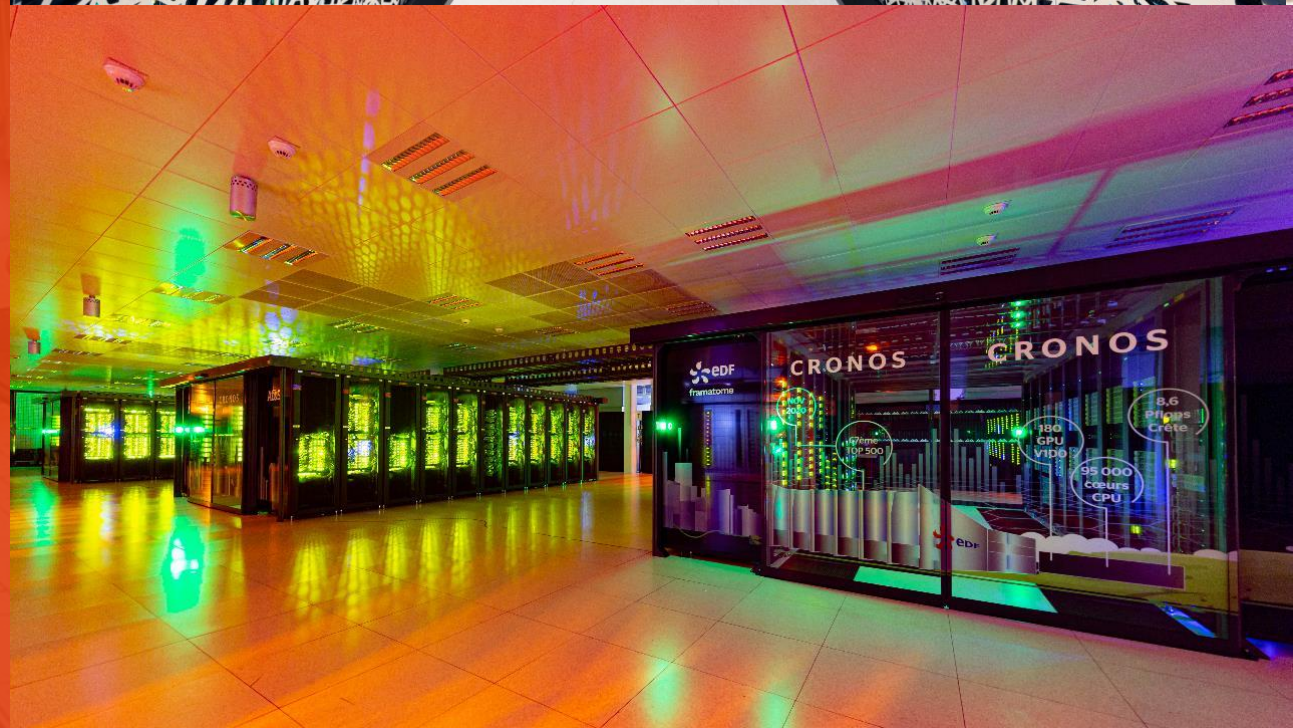
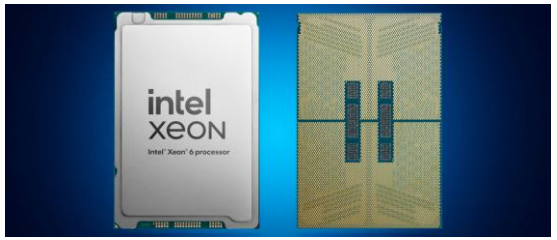
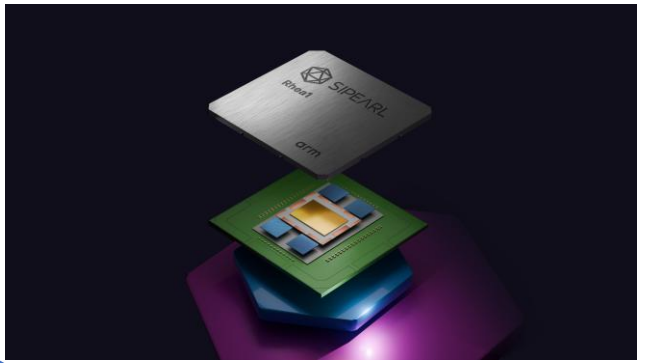




What is a High-Performance Computing System ?





Compute :

- ✓Frontend
- ✓CPU
- ✓GPGPU
- ✓Visualization

Software stack :

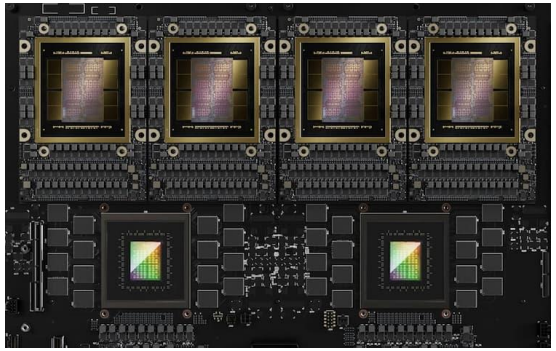
- ✓OS (redhat, …)
- ✓workload manager (SLURM, PBS, LSF, …)
- ✓User environment (scientific libraries, compilers, python, …

HPC

Low latency Network

Integration - Qualification System

Storage



WHAT IS INCLUDE IN AN RFP ?

General description of the solution

Detailed description of expected features of each component (compute, network, storage, …) with quantities

Security requirement (include cybersecurity, update delivery process, GDPR, …)

Solution availability requirements (>98 %)

Datacenter constraints : power, TCO, PUE, …

Benchmarks :

- ✓ General benchmarks (HPL, HPCC, HPCG, IO500)
- ✓ Specific benchmarks corresponding to industrial computation codes (Code_Saturne, Code_Aster, …)
- ✓ AI benchmarks (pyTorch, …)

- ✓ Expected: performance commitments over a variable number of nodes (from 1 to 64 today).

WHAT IS EXPECTED IN THE ANSWER ?

General description of the solution

Detailed description of each component (compute, network, storage, …) with quantities

Security aspects

Solution availability requirements

Datacenter integration plan includes static and dynamic weight constraints

Commitment on energy consumption (TCO, PUE,)

Product environmental footprint includes manufacturing and delivery process

Benchmarks :

- ✓ Performance commitments over a variable number of nodes (from 1 to 64 today).
  - ➢ commitments in the response
  - ➢ verification on the machine during delivery

Delivery IQ as soon as possible to prepare system integration into the company's Information System

Delivery and installation of all equipment:

- ✓ verification of conformity
- ✓ equipment inventory
- ✓ recipe log
- ✓ Unitary tests

Benchmarks and TOP500 tests

"Grands challenges" step (2 months):

- ✓ To prepare for the service to be opened to all users
- ✓ Installation/tests of major apps
- ✓ Limited number of users to tests the machine to its limits
- ✓ Installation and validation of all business codes

Opening of the service to all users

contractual meeting

- ✓ Weekly meeting with the supplier (technical point)
- ✓ Monthly meeting to monitor commitments (availability, …)

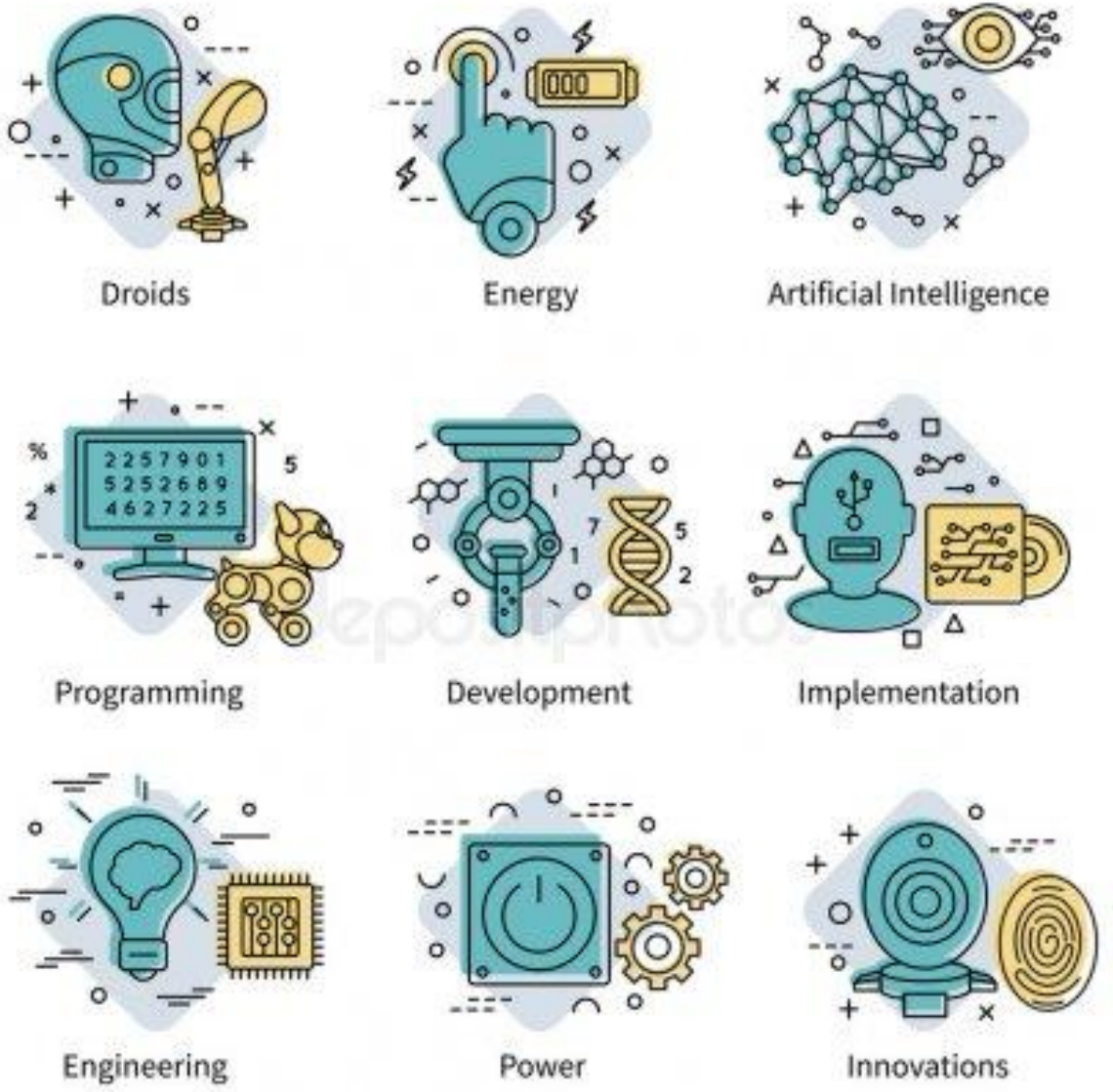
Supervision

- ✓ Components monitoring by outsourcing (Grafana, …)
- ✓ Monthly benchmarks to verify stability

Annual maintenance (limited to 5 days per year):

- ✓ precise definition of software stacks 4 months in advance, must be tested on another similar system
- ✓ installation on the IQ machine 2 months in advance to qualify industrials apps and performance effects
- ✓ Deployment on the cluster
- ✓ Survey in production

Energy needs modelize, simulation … and new technology!



Thanks you for your attention