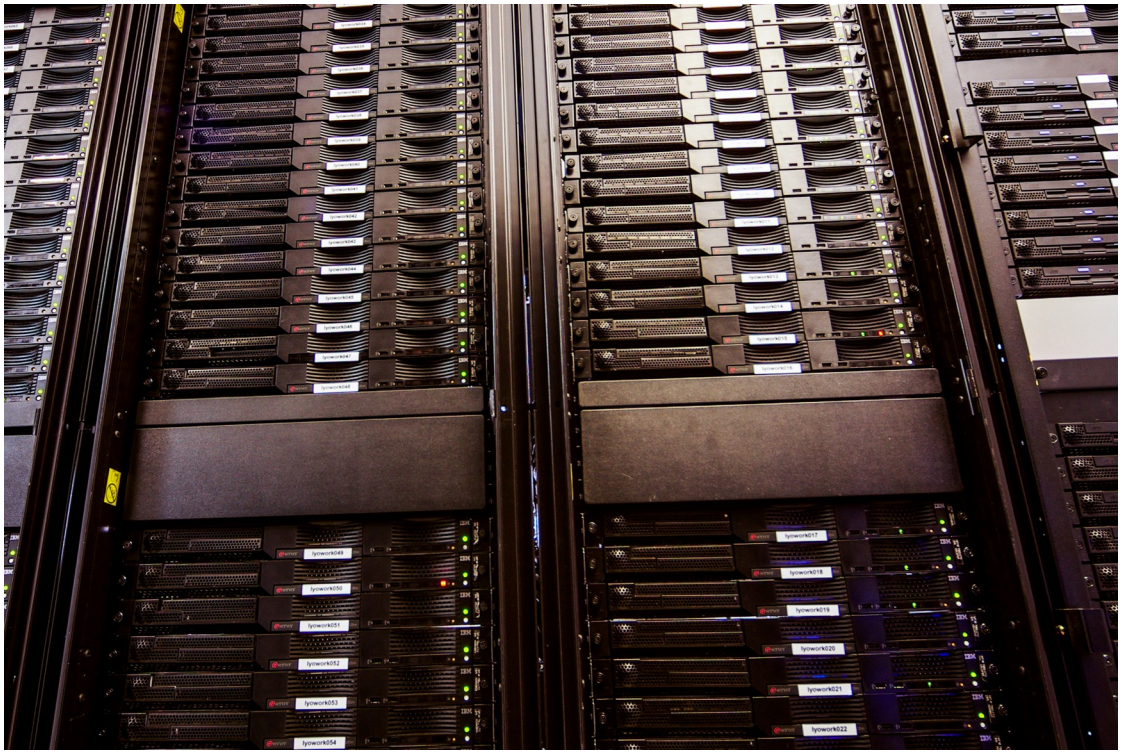
Hardware & Software Resources



Current Hardware Software and Usage

G. Baulieu

Currently available hardware

1. **High Throughput Computing** (CPU Farm for batch computing)

   SLURM @**IP2I** : ~ 3K threads
   https://ip2i.pages.in2p3.fr/calcul/documentation/calcul/ip2i_farm/

   SLURM htc@**CCIN2P3** : ~ 18K threads
   https://doc.cc.in2p3.fr/fr/Computing/computing-introduction.html

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2. **High Performance Computing** (CPU farm for parallel computing → MPI)

   SLURM hpc@**CCIN2P3** : ~ 500 threads

Currently available hardware

3. GPU

Using existing GPU oriented software (Cuda, ML, …) :

→ SLURM gpu@**CCIN2P3** : 56 jobs (NVidia V100 – 32GB)
https://doc.cc.in2p3.fr/fr/Computing/slurm/examples.html#sub-gpu

Currently available hardware

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Developing GPU software :

→ SLURM gpu@**IP2I** : 3 interactive sessions (NVidia RTX6000 – 24GB)
https://ip2i.pages.in2p3.fr/calcul/documentation/ML/IP2I_GPU_Server/

Software and usage

1. FCCSW (Software for the Future Circular Collider)

"*FCCSW is a set of software packages, tools, and standards to help different FCC studies work together.*"

Distributed on **CVMFS** : source /cvmfs/sw.hsf.org/key4hep/setup.sh

→ Should already be usable @IP2I and @CCIN2P3

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Possibility to use Aptainer (ex-Singularity) images to create containers. Allows to control the available software/libraries installed for your jobs.

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- Pytorch

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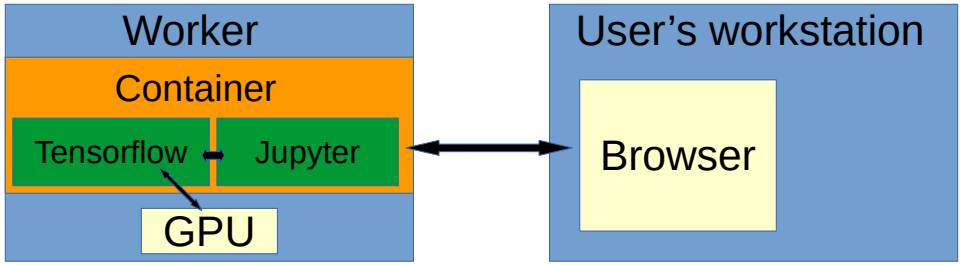


Software and usage

3. Dask

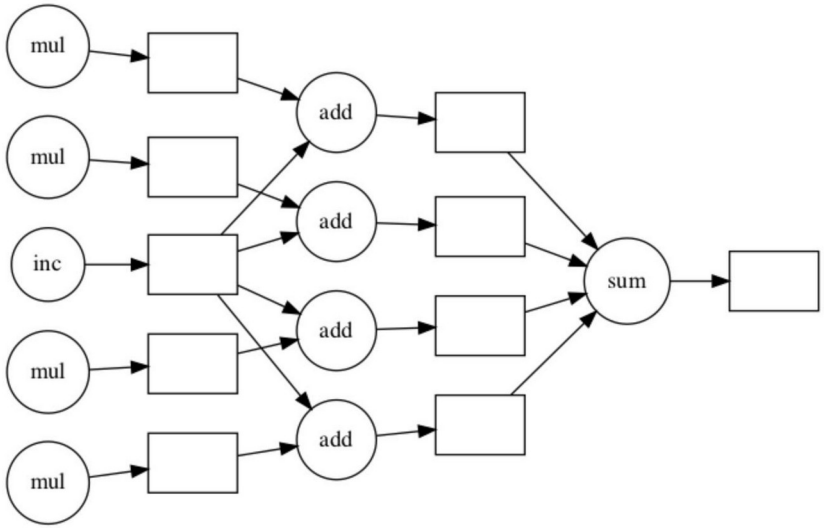
Interactive usage of the SLURM cluster.

You split you work in small tasks that are dispatched to the workers and run in parallel

Can be run in a Jupyter Notebook : you run on the cluster from your web browser.

Available @IP2I and @CCIN2P3

Tutorial from C. Bernet



Software and usage

4. Containers orchestration?

Services deployed using Kubernetes?

Used internally @CCIN2P3, some users as beta testers

Allows to deploy services specific to a project

Expertise needed inside the project