

Hardware requirements from ECDC to DST

Rough requirements for DAQ, Control, and EFUs.

Assumption: User session runs in cave or remotely. That hardware is not included below.

Machines

Kafka and File Writing Scalability data: <https://arxiv.org/abs/1807.10388>

Specs (Except where mentioned)

Good I/O - Network Interfaces: 10 or 100 Gbit/s - strong preference for Intel NICs (82599 based or XL710 based)

Moderate CPU and RAM needs - match the controller's memory speed and use all memory channels

Small/slow local disks but access to parallel file system - prefer SSD disks?

Per instrument

- EFU: 1-8 nodes per detector (1 sufficient for most instruments initially) - better CPU (2018: latest generation Xeon E5 type)
- One machine for EPICS Forwarder & Fast SE
- One NICOS server - I/O needs under 10GB
- Three Kafka Nodes with fast i/O and sufficient RAID-10 disk capacity
- File writer: 1 node per instrument

Total: 7 per instrument + extra EFUs

Plus one "fake instrument" for staging/testing (same HW requirements)

Reasonable number of hot spares (especially EFUs, the rest is pooled to some extent anyway)

Additional machines

a dozen machines for other services, scicat workflows, zoo keeper, etc

Infrastructure and Services

Parallel filesystem: GPFS or Lustre (for SWMR and speed)

MongoDB, Kubernetes, replication across sites.