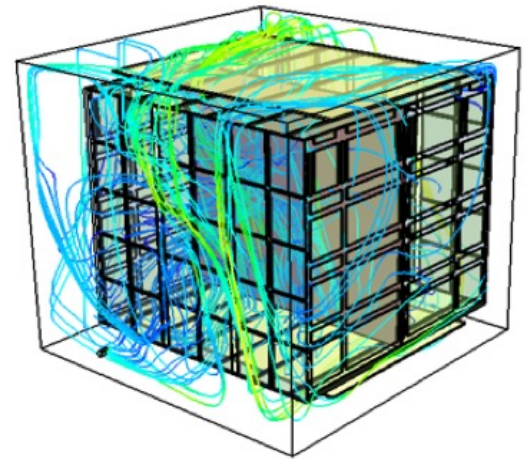


DUNE Worker Node Requirements

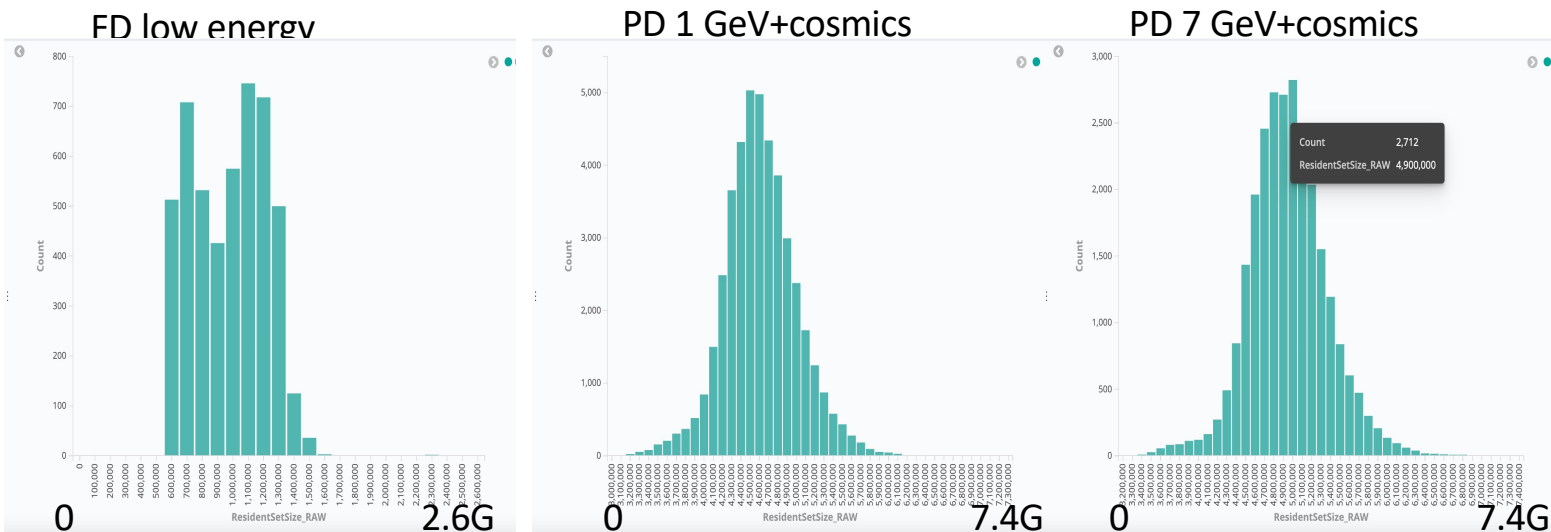
- RAM—not all DUNE applications require 4-5GB/core but many of them do.
- On typical 2 GB/T systems, memory limits are a major source of CPU inefficiency.
- Multi-threading coming into DUNE but it is not everywhere yet (and won't be for quite a while). Quite a lot of single-core jobs in the mix still.
- Scratch space > 10 GB, reconstruction requires more.
- IOPS: We are making use of CVMFS and Xcache/Stashcache as much as possible but workflow still can require fetching a lot of small files. Many similar jobs on same worker node can give scratch disks problems.
- Network bandwidth—calling home for CVMFS and databases—streaming most of the input files via xrootd. 0.1 to 100 MB/s per thread depending on application.

ProtoDUNE-SP



90M effective voxels in
1/25 of final module

Memory utilization for simulation



g4 simulating 7x7x7 m volume with 0.5 cm resolution and low energy cutoffs
volume is 1/2 of likely far detector sim volume, but with more activity from cosmics