

Fermilab/CERN DUNE Interface

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Today

- Overview of potential topics for this meeting.
- Discussion of goals and format.
- Current best understanding and plans for Data Management.

protoDUNE vs DUNE

- DUNE is expected to grow to LHC size collaboration
- The two protoDUNEs are relatively smaller test beam experiments. Goals:
 - Validate SP/DP designs and take significant scaling step.
 - Primary goal of 2018 run in support of CD-2 (scheduled for 2019).
 - Cosmics runs can potentially fill in if necessary, and will be essential for protoDUNEs commissioning.
 - Evaluation of technologies (e.g. Felix) can be performed simultaneously, but can be done with Cosmics.
 - Provide calibrations and performance assessment for DUNE.
 - Potentially also possible with 2018 run, but can be deferred to post LHC-LS2 (e.g. in 2021).
- Do we have a plan for the long-term presence (post 2021 and post 2025) of DUNE @ CERN?

Requirements

- Data volume and rate are a function of noise, zero-suppression (and other sparsification), and compression.
 - We must include significant noise contingency.
 - Ideally, we want minimal lossy sparsification/compression.
- DAQ is still in design phase.
- Preliminary estimates suggest SP/DP will not need HLT or near-line sparsification/filtering.
 - If not true, presents significantly different systems.

Open Questions

- For S&C perspective, there are several critical decisions to be made:
 - Online Storage:
 - we need to record at $2 \times O(100 \text{ GB/s})$ during beam spills.
 - also monitor and potentially further process (e.g. nearline sparsification).
 - we need a buffer for the $2 \times 20 \text{ Gb/s}$ transfer to EOS.
 - Data Management: transfer to both EOS/Castor and Fermilab.
 - Technological choices to be made.
 - Computing Model: where do we long-term store and process?
 - Distributed Production and Analysis: given the Computing Model, how do we manage and operate activity?
 - Do we need a Workflow Management System or can we rely on batch queues at Fermilab?
- A formal group structure and charges soon to be established to address this issues with potential counter parts needed at Fermilab and CERN.

Questions to CERN/Fermilab

- Local computing facilities (how much is this Fermilab effort @ CERN? what level of “parity” do we want?)
 - Leveraged, used opportunistically, or built?
 - Local processing facility (e.g. Ixplus) for express stream or prompt reconstruction?
 - Services for transfers or support of workflow.
 - Access to [CERN] resources via GRID?
 - Interactive nodes for local development.
 - Local builds?
 - Local “Analysis”.
- Can Fermilab/CERN help with software (e.g. reconstruction), not just computing?
- ...

Action Items

- Accounts
- Systems
- Releases

Interface

- Representation: SP/DP, CERN, Fermilab
- Ideally we will have as much in common between SP/DP as possible.
 - e.g. Data Management
 - Accounts, machines, software releases, ???
- There may be an argument of 2 tiers of meetings:
 - Technical working group meetings between DUNE S&C WGs and counterparts at labs.
 - Management/decision making meetings