Software Management News and Issues

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DUNE Software Architecture Meeting

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SL7 → AL9 Migration

- In RITM2044665, Heidi says this:

  Outage start date: 2024-03-20 12:41:54 (US/Central)

Outage/Incident details:

DUNE is planning to switch our interactive gpvm machines to Alma 9 over the next week or so. Most users will need to use the interactive container listed below as we do not have a full validated replacement for ups/upd available yet.

On this timescale, only SL7 containers will work for the dunesw/larsoft/art stack (spack work is in progress)

SL7 container

- Vito di Benedetto has a "standard" container installed on the SBND and ICARUS machines

  https://sbnsoftware.github.io/GPVM_migration#sl7-development-container

- Heidi has tried it out and found it was missing editors (emacs and nedit are missing), and also jobsub.
- Lisa Goodenough has replied that the container task force has decided not to add this functionality and that people have to have two sessions – one AL9 to edit, and a SL7 one to compile and run, and use AL9 to submit jobs.
- Heidi replies that this will cause confusion in DUNE's user community

Other container issues

- Tom has his own container – see /exp/dune/data/users/trj/containers/trjsl7.tgz
- It has emacs, but not enough to get tokens or submit jobs
- I use it on the AL9 desktop computer in my office.
- I would prefer DUNE use a standard one however – maintenance issues.
- The MINERvA+2x2 analysis team wanted cvs – I added that, but Vito's container didn't have that.

LArSoft v09_86_00

- Uses art v3_14_04 and ROOT v6_28_10b
- https://github.com/LArSoft/larsoft/releases/tag/v09_86_00
- We needed to update several DUNE dependencies due to new ROOT, Boost, and other dependencies
  - dunepdlegacy
  - duneanaobj
  - edepsim (garsoft and other ND people)
  - highfive (needed Boost version updated in the UPS table)
- dunesw stack in develop has updated dependencies
- A couple of unit tests fail. CI tests succeed.

duneanaobj

- Contains standard record tools and interface to srproxy, which makes a flat ntuple out of the standard record class
- dunesw (larsoft-based code) uses an older version, v2_04_00, before Jeremy Wolcott's additions for NDCafMaker
- duneanaobj is up to v3_04_00 with a new standard record format for ND
- We've been maintaining a branch for the FD because we need to upgrade to new ROOT versions, compilers, and srproxy (which depends on castxml, a Kitware product that is a little too tightly coupled to the compilers).

duneanaobj

- To make matters worse, the NDCafMaker people need an e20 build of duneanaobj because they are using an old version of hdf5, before the removal of the C++ API that came with HDF5
- The scisoft team does not like the C++ API that comes with HDF5 because it is not thread safe. I also couldn't find much documentation on it.
- DUNE-DAQ uses highfive, but even that is not thread safe (even when using HDF5 in its thread safe mode) and has problems with eigen support.
- Lynn Garren has asked Jeremy Wolcott to get in touch with the scisoft team before investing in converting his code to using highfive.
- In the mean time, we asked Lynn to make a ROOT v6_28_10b with the e20 compiler.

ROOT Fit bug

- See https://cdcvs.fnal.gov/redmine/issues/28651
- I am not happy to distribute this ROOT (v6_28_10b) to DUNE.
- ROOT team fixed it in January

- This fix was already back-ported to ROOT's v6-28-00-patches branch, and has been incorporated into a UPS build of ROOT 6.28.12 which will be part of an upcoming art-suite 3.14 patch release.

Spack Development and Tutorials

- https://fifewiki.fnal.gov/wiki/Spack
- Complete with wiki and video
- Transition not complete – unleashing it on DUNE will cause a lot of support need we do not know how to provide at the moment
- Kyle Knoepfel says he is working on a development environment that looks like mrb
- Patrick Gartung has submitted pull requests to each of the DUNE repositories and has created a dune_spack repository https://github.com/DUNE/dune_spack/
- I tried building with Patrick's PRs but got stuck in some places (eigen, fftw3, and other packages).

Geometry refactoring

- Kyle Knoepfel has been working on generalizing LArSoft's geometry service and core tools to accommodate pixel planes
- Not every TPC has wires. So WireGeo objects have to be generalized.
- This exposed a different API and Kyle has submitted PRs to help us migrate.
- LArSoft release candidates 10.x (major version number bump) have the refactored geometry tools. Some updates within the last few weeks.
- The PRs are getting a little stale – conflicts have arisen from ongoing development in dunesw. Mostly just fcl configurations from what I could see.

Geometry Refactoring Effort

- Dom Brailsford has volunteered to test the new refactored geometry code. But he ran into the PR merge conflicts. So someone will have to resolve these before we can test the new geometry.