# Update on CI test suite deployment

## LArSoft Coordination Meeting

**December, 22nd 2015**

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# CI test suite status

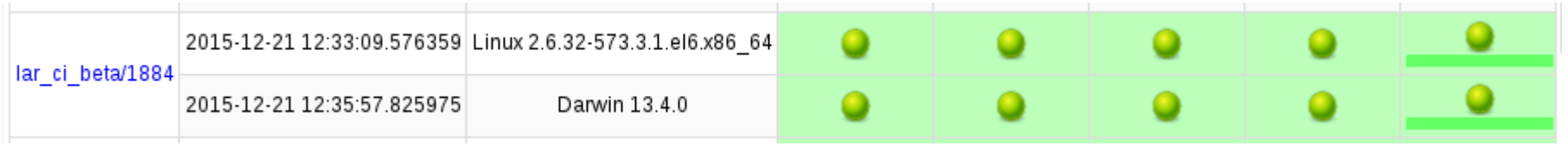
- CI regression test implementation available in the experiments *feature/vdb_ci_regression_test_suite* feature branch.
- Request to get this feature branch merged into dunetpc and uboonecode repositories;
  - DUNE it is done, thank you!
  - MicroBooNE it is pending, hopefully this will be done this week.
- DUNE modified reco stage data products:
  - they added *pmtrack* and *pmtrackdc* data products;
  - new references files have been generated to include them.
- A commit in larreco repository got CI tests to fails:
  - the user has been contacted, he promptly fixed the issue (he already had plan to do it).

# CI test suite status

- In lar_ci the feature branch *vitoBranch* has the configuration to put in production the CI regression test suite.
- As soon as the CI test feature branch will be merged into uboonecode we can update lar_ci.
- Mac OS build re-established.
  - CI regression test suite for Mac OS verify that:
    - the experiment work flow works properly;
    - the data product are stable;
    - doesn't verify if the data product size is stable, for same stage this doesn't happen:
      - reference files generated on Linux, maybe in some circumstances Linux and Mac OS handle the random seed differently?

# Status of the tests on Jenkins system

- The test includes all **LArSoft** products plus **MicroBooNE** and **DUNE** products.
- Mac OS build re-established.




| Stage | checkout | build | make_test | install | ci_tests | TOTAL |
|---|---|---|---|---|---|---|
| **MicroBooNE + DUNE35T + LarSoft v04_30_03 [execution time(min)]** | | | | | | |
| **prof Linux** | 2.04 | 10.29 | 3.40 | 0.46 | 4.65 | **21** |
| **prof MacOS** | 5.06 | 39.97 | 3.03 | 1.83 | 4.51 | **55** |

- Linux build takes half than Mac OS build
  - N.B. Linux buildserver has 32 nodes; Mac OS buildserver has 4 nodes.
- In the ci_tests stage there are 6 MicroBooNE plus 5 DUNE CI tests.
- Adding CI regression tests for other experiment is not supposed to increase the running time; CI regression tests are independent and they can run in parallel.
- **This configuration is to be used in production.**

# CI test suite TODO list

- Merge the feature branch *feature/vdb_ci_regression_test_suite* into the develop branch of the experiment,
  - DUNE it is done, thank you!
  - MicroBooNE it is pending; hopefully this will be done this week.

- Merge the *vitoBranch* into lar_ci master branch:
  - to be done as soon as the CI regression test will be merged into uboonecode repository.

# Backup slides

# LArSoft CI regression test suite

- **CI regression test suite implemented for:**
  **ArgoNeuT, DUNE35T, LArIAT, MicroBooNE, SBDN.**
  - The code is published in the feature branch *feature/vdb_ci_regression_test_suite* for each experiment repository.
- **Implementation details:**
  - The CI regression test runs all the stages of the experiment work-flow.
  - Runs updated/modified code to generate “current” data files.
  - Use official FHiCL files with some option added to handle the random seed for the CI test.
  - Compare “current” data files against “reference” data files generated for this purpose.
    - Reference files are located in the experiment scratch dCache area.

# CI test implementation details

## Test example:

**srcs/uboonecode/test/ci/ci_tests.cfg excerpt**

```
[DEFAULT]
STEPS = none gen geant detsim reco1 reco2 ana
LARSOFT_REFERENCE_VERSION=v04_20_00
BASEFILENAME=prodgenie_bnb_nu_cosmic_uboone
EXPCODE=uboonecode
EXPSCRIPT=ci_regression_test_uboonecode.sh
INPUTFILEDIR=/pnfs/uboone/scratch/users/vito/ci_tests_inputfiles
```

Experiment specific configuration

```
[test ci_gen_regression_test_uboonecode]
script=${UBOONECODE_DIR}/test/%(EXPSCRIPT)s
STEP=1
NEVENTS=1
args=%(NEVENTS)s %(STEP)s %(LARSOFT_REFERENCE_VERSION)s %(BASEFILENAME)s %(EXPCODE)s %(STEPS)s
inputfiles=%(INPUTFILEDIR)s/%(BASEFILENAME)s_Reference_gen_%(LARSOFT_REFERENCE_VERSION)s.root %
(INPUTFILEDIR)s/GenRandomSeeds_Ref.dat
parse_art_output=True
mem_usage_range=100:20000000
cpu_usage_range=10:60000
...
```

CI test section

```
[suite quick_test_uboonecode]
testlist=ci_gen_regression_test_uboonecode ci_geant_regression_test_uboonecode
ci_detsim_regression_test_uboonecode ci_reco1_regression_test_uboonecode ci_reco2_regression_test_uboonecode
ci_ana_regression_test_uboonecode
```

CI test suite section

- The script to run the test is the same for all experiments.
- The “experiment specific section” in the ci_tests.cfg sets all required input to properly initialize the script.
- The “CI test section” sets further arguments for the specific CI test.
- The “CI test suite section” collects a list of tests to run all together.

# CI regression test statistics

| Experiment | qualifier | stage | Time (min) | Memory (Mb) |
|---|---|---|---|---|
| MicroBooNE | prof v04_14_00 | prodgenie | 2:04 | 591 |
| | | g4 | 2:36 | 1665 |
| | | detsim | 0:59 | 1190 |
| | | reco1 | 1:13 | 1338 |
| | | reco2 | 1:55 | 1410 |
| | | analysis | 0:47 | 1410 |
| | prof v04_22_00 | prodgenie | 2:15 | 609 |
| | | g4 | 2:53 | 1840 |
| | | detsim | 1:17 | 1392 |
| | | reco1 | 1:35 | 1464 |
| | | reco2 | 2:46 | 1506 |
| | | analysis | 0:56 | 1508 |

Tests executed on uboonegpvm03

- Simulated a ~1.8GeV $\nu_\mu$ interaction with cosmic rays.
- MicroBooNE code uses similar resources in both LArSoft releases.
- Each test runs well within the target time upper limit (10 min)

# CI regression test statistics

| Experiment | qualifier | stage | Time (min) | Memory (Mb) |
|---|---|---|---|---|
| DUNE35T | prof v04_14_00 | prodantimu | 0:09 | 89 |
| | | g4 | 0:18 | 336 |
| | | detsim | 0:13 | 164 |
| | | reco | 0:15 | 252 |
| | | analysis | 0:27 | 4543 |
| | prof v04_22_00 | prodantimu | 0:09 | 89 |
| | | g4 | 0:13 | 215 |
| | | detsim | 0:13 | 152 |
| | | reco | 0:27 | 329 |
| | | analysis | 0:14 | 7664 |

Tests executed on lbnegpvm03

- Simulated a ~1.6 GeV single $\bar{\mu}$ interaction.
- DUNE35T code uses similar resources in both LArSoft releases.
- Each test runs well within the target time upper limit (10 min)

# CI regression test statistics

| Experiment | qualifier | stage | Time (min) | Memory (Mb) |
|---|---|---|---|---|
| LArIAT | prof v04_14_00 | fragment | 0:11 | 204 |
| | | reco | 0:16 | 211 |
| | prof v04_22_00 | slicer | 0:14 | 165 |
| | | beamlinereco | 0:09 | 101 |
| | | reco2D | 0:12 | 134 |

Tests executed on lariatgpvm03

- Procesed 1 real data event taken at FTBF, MCenter beamline, 16GeV beam.
- LArIAT changed FhiCL files between v04_14_00 and v04_22_00.
- Each test runs well within the target time upper limit (10 min).

# CI regression test statistics

ArgoNeuT and SBND FHiCL files used for this CI test are splitted to allow independ checks for each simulation step

| Experiment | qualifier | stage | Time (min) | Memory (Mb) |
|---|---|---|---|---|
| ArgoNeuT | prof v04_14_00 | sim | 1:33 | 682 |
| | | reco | 0:08 | 190 |
| | prof v04_22_00 | gen | 1:29 | 636 |
| | | geant | 0:13 | 140 |
| | | detsim | 0:09 | 101 |
| | | reco | 0:10 | 192 |

Tests executed on argoneutgpvm03

- Simulated a ~2GeV $\nu_\mu$ interaction.
- ArgoNeuT uses similar resources in both LarSoft releases.
- All tests run well within the target time upper limit (10 min).

| Experiment | qualifier | stage | Time (min) | Memory (Mb) |
|---|---|---|---|---|
| SBND | prof v03_08_02 | sim | 2:07 | 540 |
| | | reco | 0:35 | 713 |
| | prof v04_00_00 | gen | 0:13 | 87 |
| | | geant | 2:06 | 364 |
| | | detsim | 0:14 | 278 |
| | | reco | Not Available | Not Available |

Tests executed on lar1ndgpvm01

- Simulated a ~2GeV single **μ** interaction.
- SBND uses similar resources in both LarSoft releases.
- All tests run well within the target time upper limit (10 min).
- reco stage can't run because of some issue, reco statisctic not yet available.