

# Container Issues and Larbatch Updates

Larsoft Coordination Meeting  
Mar. 23, 2021

H. Greenlee

# Overview

- The upgrade from art 3.05 to art 3.06 in larsoft v09\_16\_00 triggered a lengthy discussion on the larsoft listserv.
  - Some people were getting crashes due to missing system rpms.
  - If the above link doesn't work, you can find the thread in the Feb., 2021 larsoft listserv archive with subject “Grid jobs and the required xxhash library.”
- The missing required rpms were rather quickly added to standard Fermilab system configurations and Fermilab-supplied singularity containers that needed them.
- Another result of the listserv discussion was a complicated set of best practices that are required to ensure that a proper singularity container is used in batch jobs.
  - See e.g. MicroBooNE best grid practices here.

# Container Best Practices

- For the record, here are the (new?) container-related best practices `jobsub_submit` options.
  - `--append_condor_requirements='(TARGET.HAS_SINGULARITY=?=true)'`
  - `--lines='+SingularityImage=\"/cvmfs/singularity.opensciencegrid.org/fermilab/fnal-wn-sl7:latest\"'`
  - Do not specify OS using option `--OS`.
- The first option ensures that batch jobs land on a singularity-enabled node.
- The second option specifies the container.
- Above options can be included in `project.py <jobsub> xml` element.

# Disclaimer

- SCD is encouraging experiments and users to use `fife_utils` `fife_launc/fife_wrap` to submit batch jobs.
- In the long run this is a good idea.
  - Several experiments are already using `fife_launch/fife_wrap` for production.
  - `Larbatch/project.py` will not be maintained forever.

# Proposed Larbatch Updates

- To make the new best practices easier to remember and follow, I made some updates to larbatch, which are contained in larbatch pull request 13.
  - Basically, make previous best practices the default behavior.
- Short version.
  - In most cases, project.py xml element `<os>` will specify a container rather than the hardware OS (jobsub\_submit option `--OS`).
    - Container can usually be specified as an alias, such as `<os>SL7</os>` or `<os>sl7</os>`.
    - Currently allowed aliases are sl6, sl7, and el8.

# What is in Larbatch PR 13 (Long Version)

- Added `<singularity>` xml element to generate singularity condor requirement.
  - Use `<singularity>1</singularity>` to require singularity-capable batch node (default).
  - Use `<singularity>0</singularity>` to not require singularity-capable batch node (current behavior).
- Added `<cvmfs>` xml element to require batch node with access to regular cvmfs (`<cvmfs>1</cvmfs>`, default, or `<cvmfs>0</cvmfs>`).
- Added `<stash>` xml element to require batch node with access to cvmfs stash cache (`<stash>1</stash>`, default, or `<stash>0</stash>`).
- All three of the newly added xml elements/flags default to true.

# What is in Larbatch PR 13 (II)

- If singularity flag is true (explicitly or by default), interpretation of `<os>` xml element changes from current behavior.
  - In this case, `<os>` element can be any of the following.
    - An alias for a singularity image (standard Fermilab image).
    - An absolute or relative path to a singularity image file.
  - No `--OS` option is generated.
- If singularity flag is false, `<os>` element is used to specify `jobsub_submit` option `--OS` (same as current behavior).

# What is in Larbatch PR 13 (III)

- Command `mrbslp` is no longer used to set up batch environment if there is a local test release (always just use plain ups setup).
  - Was causing more problems than it was solving.
  - In most cases, this won't make any difference, but there are some corner cases.
    - Qualifier needs to be correctly specified in xml file.
    - All required products need to be set up via ups table file/product\_deps from top level product.
- Copy back now done using current version of `ifdhc`, instead of larsoft version of `ifdhc`.
  - Needed for running some very old versions of larsoft.



# Larbatch PR 13 Status

- Tested working. Adheres to current best practice using existing xml files.
- Works seamlessly for SL6.
- Updates verified python 2/3 agnostic.
- PR itself is not yet approved.