

Recent PanDA Pilot Features

Paul Nilsson

UNIVERSITY OF TEXAS  ARLINGTON

Pilot Updates (v 45a)

- Major version 45a released November 5
 - AtlasSetup support for release $\geq 16.1.0$
 - Updates for CERNVM for the CoPilot framework
 - Support for prun jobs not using an ATLAS release/homepackage
 - HammerCloud jobs can now fully use the `accessmode` job parameter to force jobs to use copy-to-scratch, remote I/O or file stager
 - Looping job killer now looking at all files in the work dir for looping job detection
 - Support for having multiple software dirs in `schedconfig.appdir` (relevant `appdir` is selected by `processingType`)
 - E.g. `processingType = unvalid`
`schedconfig.appdir = /afs/cern.ch/atlas/software/releases|release^/afs/cern.ch/atlas/software/releases|unvalid^/afs/cern.ch/atlas/software/unvalidated/caches`
`selects appdir = /afs/cern.ch/atlas/software/unvalidated/caches`
if `processingType` does not match anything, use the default first entry (`afs/cern.ch/atlas/software/releases`)
 - TURL based PFC (next few slides)
- All new features listed at <http://pandapilotblog.blogspot.com/>

Less Complex Copysetup

- The pilot has the ability to skip the input file transfer stage and leave the data access to runAthena/trf. The direct access mode is selected by setting the schedconfig copysetup[in] variable accordingly
 - Previous pilot: (old style)
`copysetup = setup_string^oldPrefix^newPrefix^useFileStager^directIn`
 - New pilot: (new style)
`copysetup = setup_string^useFileStager^directIn`
- **directIn = True** in new style copysetup triggers the creation of a TURL based PFC used by runAthena/trf
 - The pilot uses lcg-getturls to get the TURLs which requires BDII (alternatives to be added in a later version)
- Pilot is backward compatible, so no need to change existing copysetup's using the old style

Remote I/O in Production

- Production jobs can use remote I/O (direct access) by specifying job definition option **transferType = direct**
 - Input file sizes will not be checked
 - TURL based PFC supported from PyJobTransformsCore-00-08-47
 - Test tasks recommended
 - **To discuss:** activate remote I/O with task request option **diskCount = 0?** (no additional pilot change needed)
- **Note:** in case the pilot fails to create the TURL based PFC (i.e. when lcg-getturls fails/hangs), the pilot will default back to copy-to-scratch mode (input file sizes will be checked)

Pilot Updates (v 45b, HC)

- Minor version 45b to be released today
 - Simplified python finding (less setup sourcing, easier on e.g. AFS systems)
 - Updated URL list used for dynamic patch installation
 - Extracting number of events from Athena Summary file, whenever available (old stdout grep method used for backup)
 - Discovered problem with summary file not always having the same error/exit code as trf in case of failure (Charles Leggett has been informed)
 - Skipping file verification for stage-in on storm sites (not needed)
 - Updated setup for generic user analysis jobs (allowing direct access for prun jobs that do not have ATLAS release specified)
 - Looping job killer update (next slide)
- HammerCloud is now used to send special jobs for testing the Release Candidate version of the pilot on analysis sites

Looping Job Killer (until v 45a)

■ Current pilot:

- **Looping job definition:** job not updating its files within looping limit
- Internal pilot default looping limit is 12 hours. Can be overridden by maxCpuCount (as set in task request or by pathena option)
- Pilot is monitoring all of its subprocesses (stage-in, payload, stage-out)
 - But limited to checking modification times of output [v 45a: all files in payload work dir – including payload stdout]
- **Additionally**, stage-in and stage-out are protected by special time-out limits enforced either by pilots' `timed_command()` or by copy command itself (`lcg-cp` / `lcg-cr` / `lsm-get` / `lsm-put`)
- What happens when payload finishes quickly and stage-out command hangs in spite of time-out option?
- Discovered bug in `lcg-cp` / `lcg-cr` (GGUS ticket created)

Looping Job Killer (from v 45b)

- **From new pilot version 45b:** After payload has finished, pilot is resetting looping limit to stage-out time-out
 - In case the copy tool is hanging (in spite of being protected by a time-out function), the pilot will abort it and set the correct error message (hanging transfer, not looping job as would have happened before)

Coming Features

- Report corrupt files to DQ2 consistency server
- Retry using alternative replica (in case primary replica choice is temporarily unavailable)
- Job Execution Monitor framework in the pilot
- New job recovery algorithm