

# Persistency Framework News for ATLAS

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For the Persistency Framework team

*ATLAS Database Meeting, 2<sup>nd</sup> December 2010*

- **Recent developments and releases**

- POOL, CORAL, COOL (*news since my July 15 talk at [ATLAS sw week](#)*)
- ORA-07445 (*already covered in my August 23 talk at [ATLAS DB meeting](#)*)

- **Work in progress**

- CORAL network glitches
- Consolidate CORAL test infrastructure (CppUnit & qmtest)
- Change date/time type used internally in COOL ([task #5112](#))
- Joint review of POOL usage in ATLAS & LHCb (*yesterday*)



- **LCG59 for ATLAS was built on July 7 and rebuilt on July 28**
  - Difference between the builds: disable gssapi in XercesC
    - Upgrade XercesC 3.1.1 to 3.1.1p1 (without 'network' features)
    - Main motivation also of LCG 58e release for LHCb (rebuild of 58d)
- **This is a workaround for a bug in the Globus client library**
  - Globus redefines gssapi symbols that already exist in the OpenSSL system libraries, loaded by XercesC 3.1.1 ([bug #70641](#))
  - Applications may crash depending on the order of library loading
    - If OpenSSL version is loaded first (e.g. through XercesC 3.1.1), then any linked Grid middleware (e.g. LFCReplicaSvc for LHCb) fails
  - Fix has been identified: use gssapi 'versioned symbols' in Globus
    - This will be included in the first EMI middleware release (~April 2011)
- **A similar bug affects Oracle client 11.2.0.1.0p2**
  - Oracle defines a third, different, implementation of gssapi symbols
    - This was reported to Oracle Support proposing the use of versioned symbols for the Oracle client too – an Enhancement Request is open
  - Note also that frontier client loads the OpenSSL gssapi symbols



- **Main motivation: ROOT and POOL/CORAL/COOL patches**
  - ROOT 5.26.00d includes genreflex fix ([bug #70660](#))
- **POOL 2.9.10**
  - Many fixes and enhancements for ATLAS in collection packages
  - Fix conflicts between simultaneous nightly tests on different slots
- **CORAL 2.3.11**
  - FrontierAccess fixes to read ATLAS geometry ([bug #70208](#))
  - FrontierAccess fixes to read CMS timestamps ([bug #69605](#))
  - Other fixes (e.g. memory leaks), some suggested by Coverity
- **COOL 2.8.7**
  - New vector payload mode for ATLAS ([task #10335](#))
    - *Disabled (#ifdef COOL290) as it breaks binary compatibility: is it ok?*
- **For full details see the [release notes](#) on TWiki**
  - Also: upgrade Grid clients (python 2.6 support, new voms features)



- **CORAL 2.3.12 (September 2010)**
  - Fix segfault in OracleAccess with gcc43 optimization ([bug #71853](#))
  - Fix SQLiteAccess file leak in ATLAS CherryPyCOOL ([bug #71449](#))
- **CORAL 2.3.12a (November 2010)**
  - Port to gcc451 with -std=c++0x
- **For full details see the [release notes](#) on Twiki**
  - CMS was previously using a one-year old version of CORAL
  - Now all of ATLAS, LHCb and CMS rapidly adopt the ~last version



- **Main motivation: review the release build process in SPI**
  - Only POOL/CORAL/COOL patches (on top of CMS CORAL patch)
    - Seize the opportunity to freeze recent changes in PF packages
    - Could be used by ATLAS if needed (same externals as 59a)?
- **POOL 2.9.11**
  - Many fixes and enhancements for ATLAS in collection packages
  - Patches in RootStorageSvc (e.g. prepare for ROOT I/O changes)
- **CORAL 2.3.13**
  - Start consolidation of C++ tests (goal: use CppUnit)
  - Start cleanup of qmtest (goal: fixed #tests in all platforms/slots)
  - Minor fixes, start code cleanup to prepare network glitch changes
- **COOL 2.8.8**
  - Improve handling of NaN floats and doubles ([bug #72147](#))
- **For full details see the [release notes](#) on TWiki**

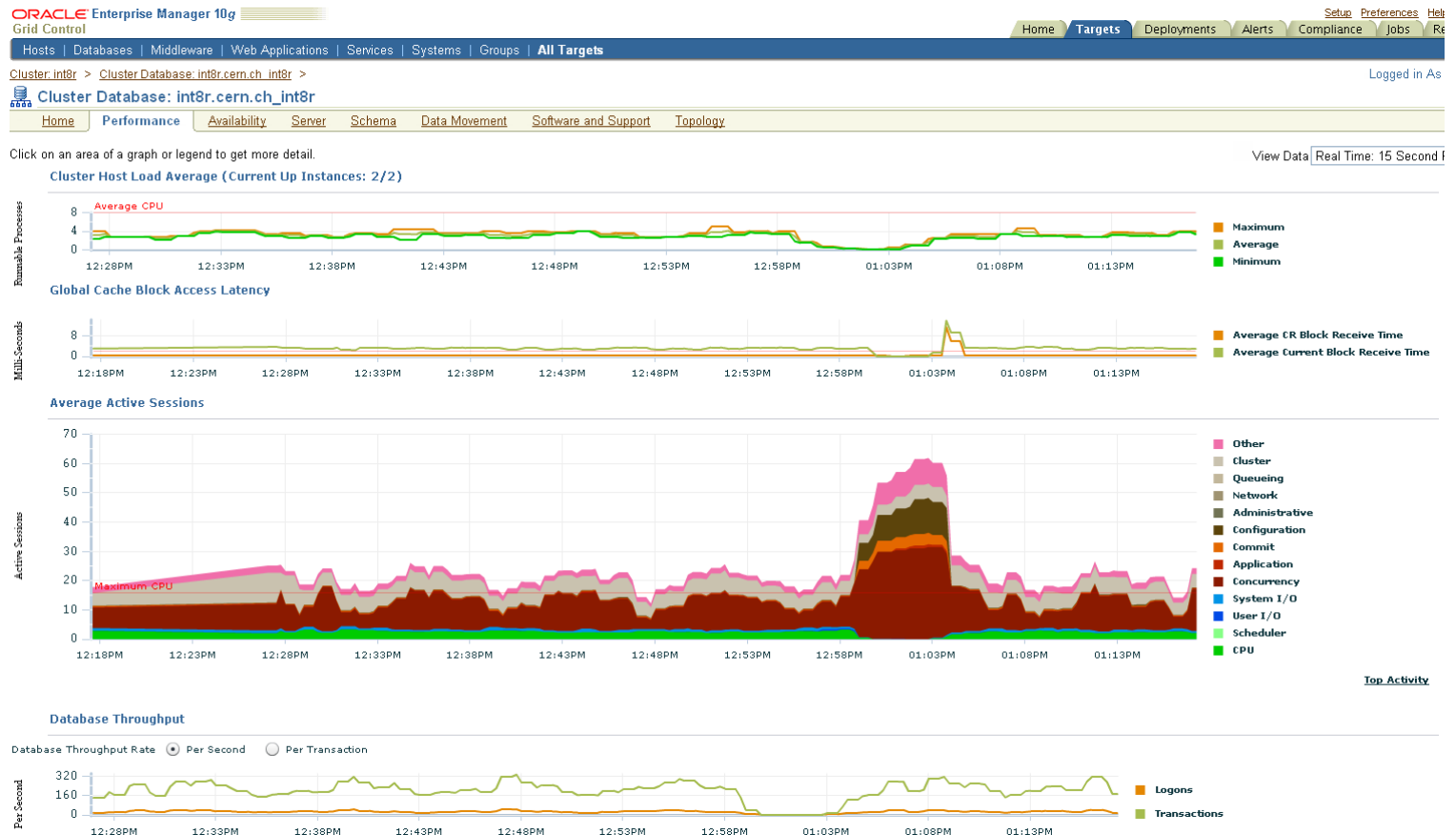




- **Signature: ORA-07445 server process crash**
  - “core dump [ksxpmprp()+267] [SIGSEGV]” in trace files
  - Effect on end users: high load spikes, DB server ‘freezes’
- **Observed in COOL (ATLAS & LHCb) after April PSU in June**
  - Rolled back the April PSU until problem better understood
  - *Tried to reproduce it on test DB to validate possible patches*
- **Used COOL nightly tests to try and reproduce it**
  - June PSU was not rolled back on test1 (lcg\_cool\_nightly)
  - “ORA-07445 [ksxpmprp()+267]” seen 15x in 2 months (June-July)
    - Always associated to “update sys.aud\$” on disconnecting
    - Always the same test “test\_RelationalCool\_RelationalFolder”
    - Client apps succeed: crash is on server side when disconnecting
  - Developed a script to maximize chances of reproducing the issue
    - Successfully managed to reproduce ORA-07445 (~25 per hour)
    - Also observed freezing of DB server (and of client at the same time)



- Observed freezing of database server during COOL tests



- Observed freezing of client CPU at same time...





- **Which applications are hit by ORA-07445?**
  - COOL applications with connection sharing
    - Clearly demonstrated using the COOL based test script
    - No errors observed if connection sharing is disabled
  - Issue was also observed in applications other than COOL
    - e.g. on int8r: ATLAS tags (CORAL-based POOL collections)
- **Validation of patches on int8r (thanks to Marcin!)**
  - **No April PSU: OK...** (no ORA-07445)
  - **April PSU: NOT OK** (~90 ORA-07445 on 900 COOL tests)
  - **April + July PSU: NOT OK** (ORA-07445 still there)
  - **April + July PSU + 6196748 patch: OK!** (no ORA-07445 on 300 tests)
- **COOL test script can now be used by PDB team**
  - Further tests of ORA-07445 and similar issues
  - Generate some COOL load with/without connection sharing
  - Warning: not fully representative of production-like activities
    - Much more DDL (create/drop tables) than in production!

- **Reported by all experiments in various cases**
  - “A transaction is not active” in CORAL server ([bug #65597](#))
  - ORA-24327 “need explicit attach” in ATLAS/CMS ([bug #24327](#))
  - OracleAccess crash after losing session in LHCb ([bug #73334](#))
- **What should CORAL do? Many different scenarios**
  - e.g. non serializable R/O transaction: should reconnect and restart it
  - e.g. DDL not committed in update transaction: cannot do anything
- **What is CORAL doing now?**
  - Correctly reconnecting in some cases (*existing useful features*)
  - Not doing anything in other cases (*missing useful features*)
  - Reconnecting in the wrong way in other cases (*bugs!*)
- **Work in progress** (*A. Kalkhof, R. Trentadue, A.V.*)
  - Catalog the different scenarios and prepare tests for each of them
  - Prototype the implementation changes (ConnectionSvc and plugins)