ATLAS Summary

Johannes Elmsheuser
for the GangaAtlas team

Ludwig-Maximilians-Universität München
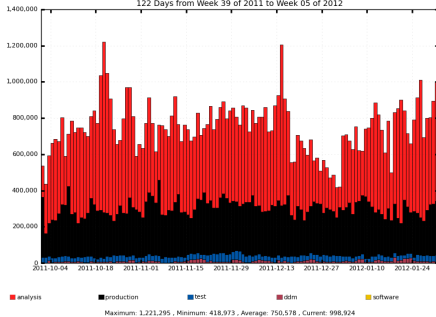
8 Feb 2012
Ganga Developer Days

Completed jobs
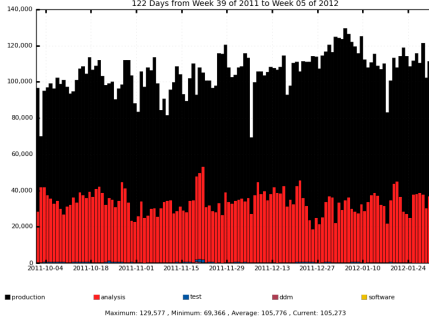122 Days from Week 39 of 2011 to Week 05 of 2012

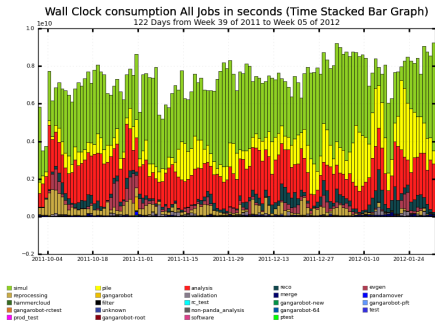Maximum: 1,221,295 , Minimum: 418,973 , Average: 750,578 , Current: 998,924

Running jobs
122 Days from Week 39 of 2011 to Week 05 of 2012

Maximum: 129,577 , Minimum: 69,366 , Average: 105,776 , Current: 105,273

ALL ATLAS JOBS WALLCLOCK, OCT 2011-JAN 2012

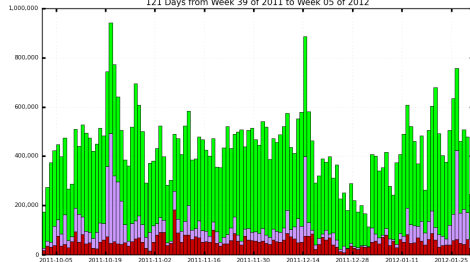Wall Clock consumption All Jobs in seconds (Time Stacked Bar Graph)

Wall Clock consumption Good Jobs in seconds (Pie Chart) (Sum: 829,608,901,214)
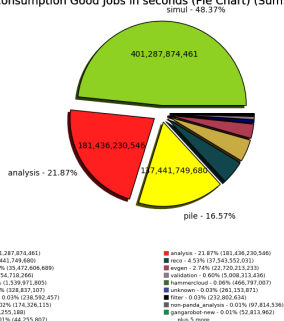
DA jobs Efficiency, Oct 2011-Jan 2012

Number of Successful and Failed Jobs (Time Stacked Bar Graph)
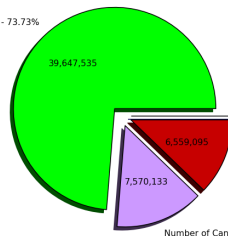121 Days from Week 39 of 2011 to Week 05 of 2012

Number of Successful and Failed Jobs (Pie Graph) (Sum: 53,776,763)

Completed jobs (Sum: 53,776,763)

Panda Failures by ExitCode (Pie Graph) (Sum: 7,172,318)
ailed due to "Unknown Problem" (see checklog.txt)

Athena crash - consult log fil

- BNL-ATLAS - 8.57% (4,606,863)
- AGLT2 - 3.89% (2,090,425)
- UKI-LT2-QMUL - 3.14% (1,689,063)
- RAL-LCG2 - 2.81% (1,510,176)
- FZK-LCG2 - 2.42% (1,302,108)
- DESY-HH - 2.31% (1,240,908)
- IN2P3-CC - 2.24% (1,205,267)
- DESY-ZN - 2.09% (1,121,994)
- UKI-SCOTGRID-GLASGOW - 2.00% (1,074,955)
- INFN-NAPOLI-ATLAS - 1.87% (1,003,700)

- MWT2_UC - 4.85% (2,606,930)
- CERN-PROD - 3.60% (1,933,306)
- IN2P3-CC-T2 - 3.11% (1,670,363)
- WT2 - 2.48% (1,336,135)
- TOKYO-LCG2 - 2.33% (1,250,358)
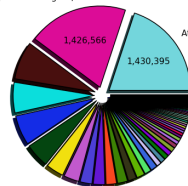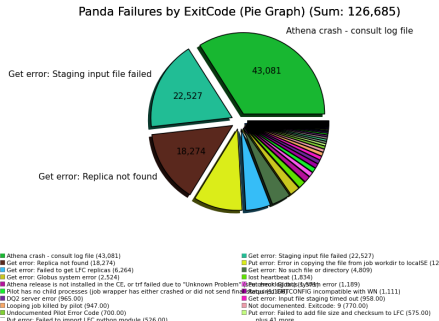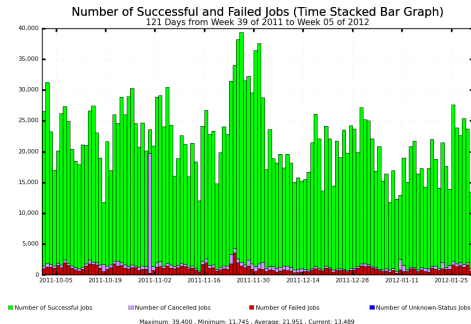- INFN-T1 - 2.25% (1,210,387)
- NIKHEF-ELPROD - 2.20% (1,182,131)
- UNI-FREIBURG - 2.07% (1,111,690)
- SARA-MATRIX - 1.98% (1,063,001)
- plus 80 more

- Athena crash - consult log file (1,430,395)
- Put error: Local output file missing (542,705)
- Put error: Error in copying the file from job workdir to localSE (426,635)
- trf is not installed in the CE (252,398)
- Looping job killed by pilot (170,695)
- Get error: Input file staging timed out (149,936)
- Athena ran out of memory (118,659)
- Not documentened. Exitcode: 9 (93,276)
- Adder could not add files to the output datasets (66,445)
- Pilot has no child processes (job wrapper has either crashed or did not send final status)

- Athena release is not installed in the CE, or trf failed due to "Unkn
- Expired three days after submission (416,236)
- Get error: Staging input file failed (348,052)
- Athena core dump, or Athena time out, or ConditionsDB exception
- Get error: Failed to get LFC replicas (165,780)
- lost heartbeat (142,999)
- Athena core dump (113,639)
- Not documentened. Exitcode: 137 (91,908)
- Not documentened. Exitcode: 139 (66,283)

Number of Successful and Failed Jobs (Time Stacked Bar Graph)
121 Days from Week 39 of 2011 to Week 05 of 2012

Panda Failures by ExitCode (Pie Graph) (Sum: 126,685)

Ganga and ATLAS DA
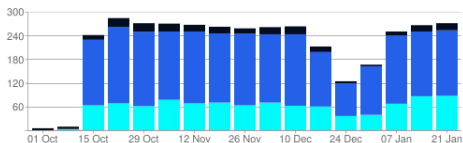
- 60-80 GangaAtlas users per week
- Strong competitor: command line tools: prun/pathena/pbook for Panda submission
- In total: $\approx$ 700 DA users per week
- Also: non negligible analysis share off-grid

BIGGEST GANGA(ATLAS) CUSTOMER: HAMMERCLOUD

http://hammercloud.cern.ch/
https://twiki.cern.ch/twiki/bin/viewauth/IT/HammerCloud

- ATLAS sites are tested with analysis functional test jobs (AFT) and production functional test jobs (PFT): 3-6 jobs per hour per site
- Job driver: Ganga sessions based on GangaRobot
- Job results are stored in MySQL DB and processed and displayed using Django
- Queues are black-listed/white-listed depending on the job efficiency
- ATLAS cloud squad notfied by email about failures, results pushed to Site Status Board and Efficiencies used in ADC (ATLAS Distributed Computing)
- Integral part of ADC distributed analysis
- Stress test on demand to test new sites configurations
- Similar setup for CMS and LHCb

Further Automatic Services

- Ganga is the backbone of the TAG skimming service
- TAGs are small event summary files which can be used for fast pre-selection
- TAG skimming service is used e.g. for RAW data skimming

- Positive feedback about MultiTasks package

Recent GangaAtlas/GangaPanda updates

Major updates in 5.6.x and 5.7.x:

- Integration of prepared state: user code tarball
- Production System Transformation support in GangaPanda for HammerCloud PFT
- Support for Panda rebrokerage added
- Support for RootCore (Build System for ATLAS ROOT analysis)
- Minor Tasks/MultiTasks fixes
- Minor GangaPanda and scripts/athena fixes
- 64bit job support
- GangaPanda merger step support
- Various TAG support updates

GangaAtlas/GangaPanda plans I

General Problem(s):

- Still perception that there are 2 systems in ATLAS: Ganga vs. Panda, which is wrong: Ganga is a configuration/monitoring job tool, Panda is a workload management tool
- Ganga usage (IPython) seems to be too complicated ?
- But command line submission is pretty similar to prun/pathena

GangaAtlas/GangaPanda plans II

Code change suggestions: (in no particular order)

- User code tarball storage location:
    - Athena.prepare() creates tarball and excludes large files/root files
    - Prepared state copies tarfile to shared dir
    - AthenaPandaRTHandler adds missing files from inputsandbox config
    - Only last file is uploaded, but 2 'incomplete' tarball are stored
- Job submission speed optimization
- ATLAS DDM is undergoing major change in a couple of month DQ2 → Rucio
    - Compatibility API has been promised, unclear what code changes will be necessary
    - DQ2Dataset, DQ2OutputDataset, DQ2JobSplitter changes
    - All shared worker node code in Local/Batch/LCG/Cream needs to be adpated

GangaAtlas/GangaPanda plans III

Code change suggestions: (in no particular order)

- Common WN code for LCG/Batch/Local with Panda Pilot (runAthena, runGen, etc...)
- Improve ROOT/ROOTCore support on GangaPanda
- Can Tasks be made even easier ? Command line support ?
- Proper CVMFS cond DB support in Local/Batch/LCG/Cream
- Command line submission `scripts/athena` improvements
- Concentrate on GangaPanda usability for ROOT, Athena and easy Local/Batch workflows
- AthenaMC, AtlasLocalDataset, TAG, EventPicking, AMIDataset ?
- GangaCore I/O changes should offer some new features
- Write stable Tests !