

ATLAS Computing Status

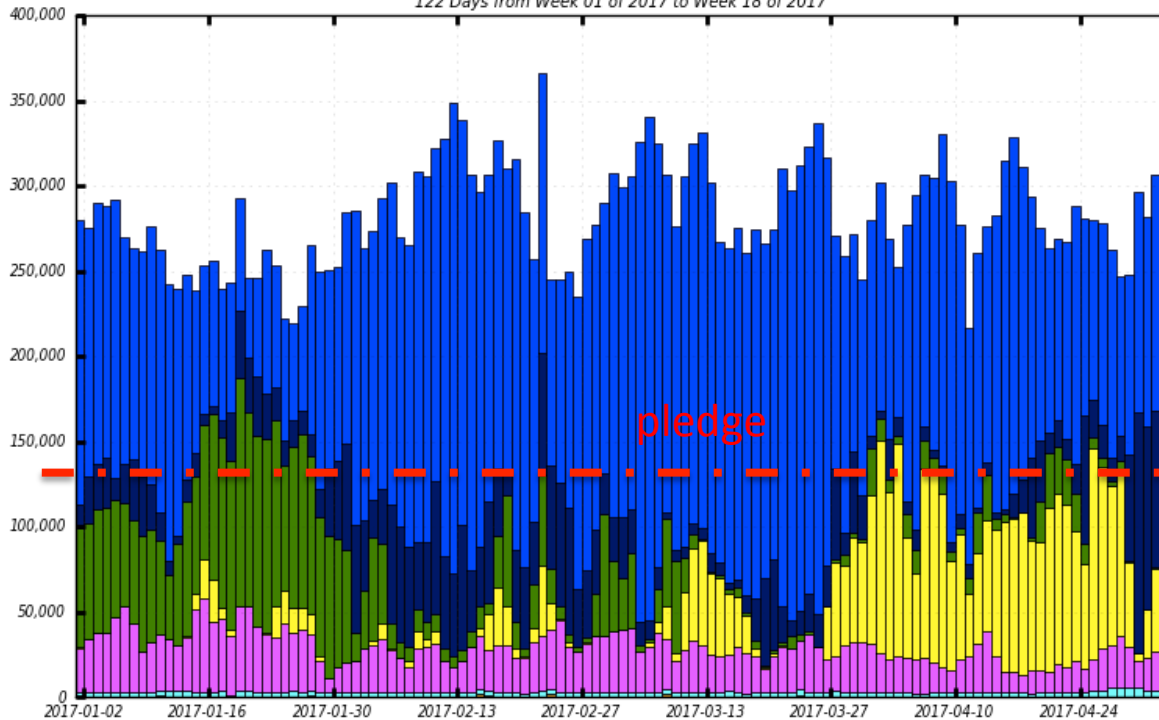
Simone Campana
Torre Wenaus

ATLAS computing activity in 2017



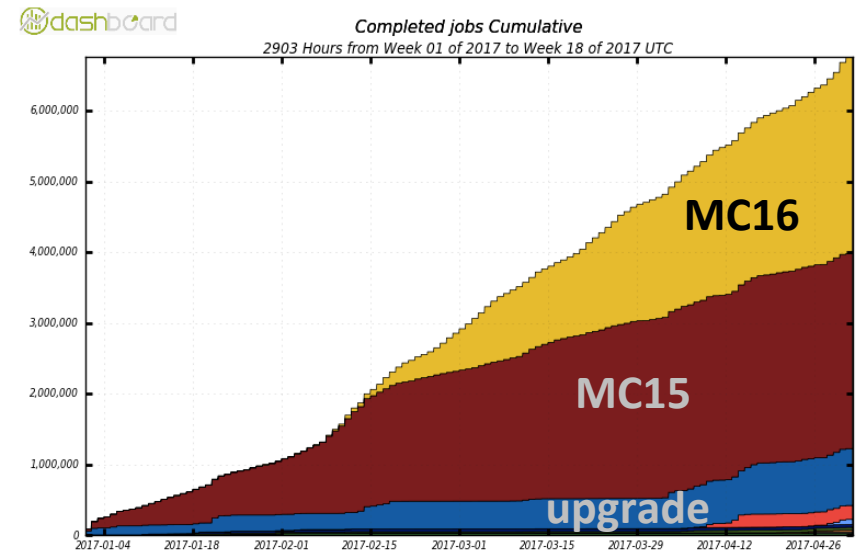
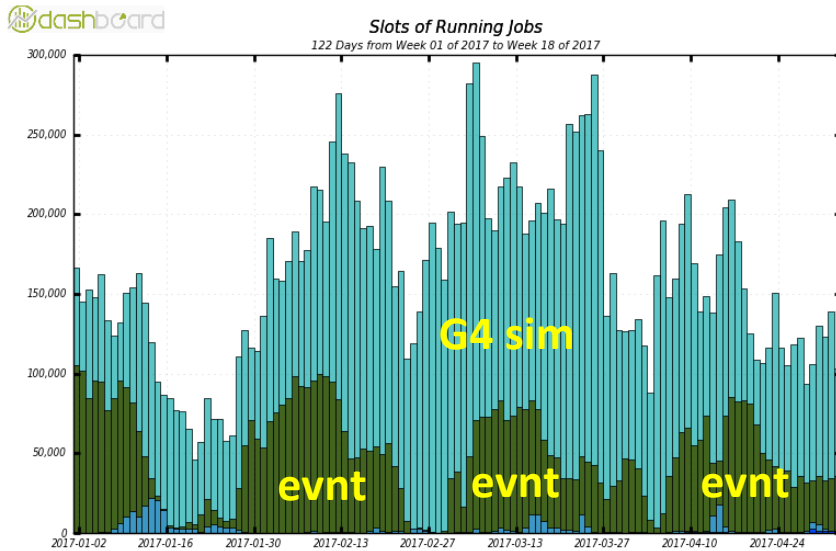
Slots of Running Jobs

122 Days from Week 01 of 2017 to Week 18 of 2017



- MC simulation and event generation
- MC reconstruction
- User Analysis
- Data reprocessing
- Analysis trains

MC Simulation



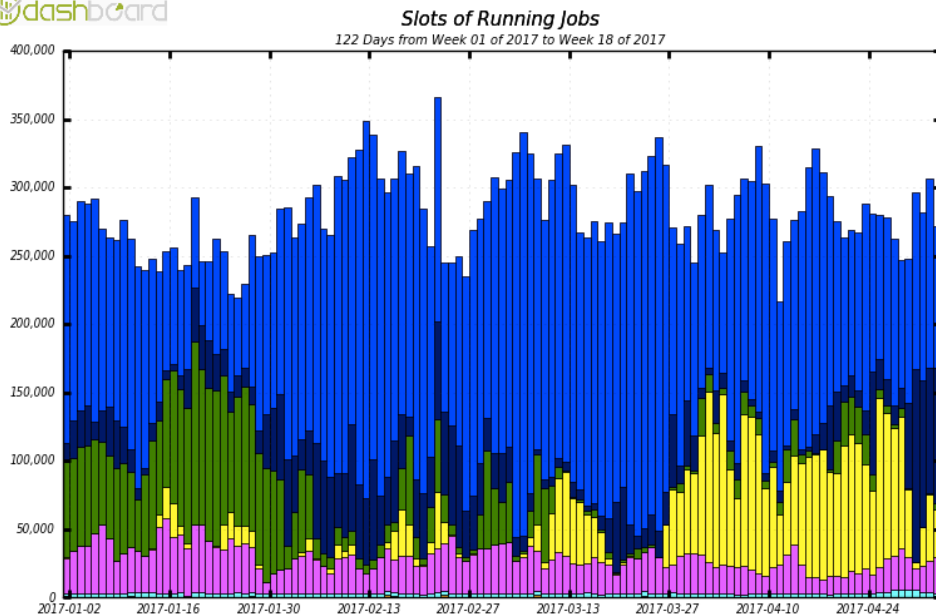
MC16 hits production started mid Feb. Improved Run-2 geometry, new chambers

MC16 G4 simulation is 30% faster than MC15 (G4.10, new compiler, code improvements)

MC16 will be the baseline for remaining of Run-2 analyses

Focus now on Fast Simulation

Reconstruction and Reprocessing



Analysis trains

Final derivations with Athena20.7 done in Jan (data+MC)

Focus now on Athena21 derivations, for Combined Performance recommendations and early 2017 analyses

MC reconstruction

Reconstruction of MC16 with Athena R21

So far HITS were reconstructed with 2015/2016 conditions (MC16a)

Preparation of 2017 condition (MC16c) is underway

Data reprocessing

Reprocessing of 2015 and 2016 data with Athena R21 completed in 6 weeks

Only 6 events crashed

Athena21 now on Git, built with CMake

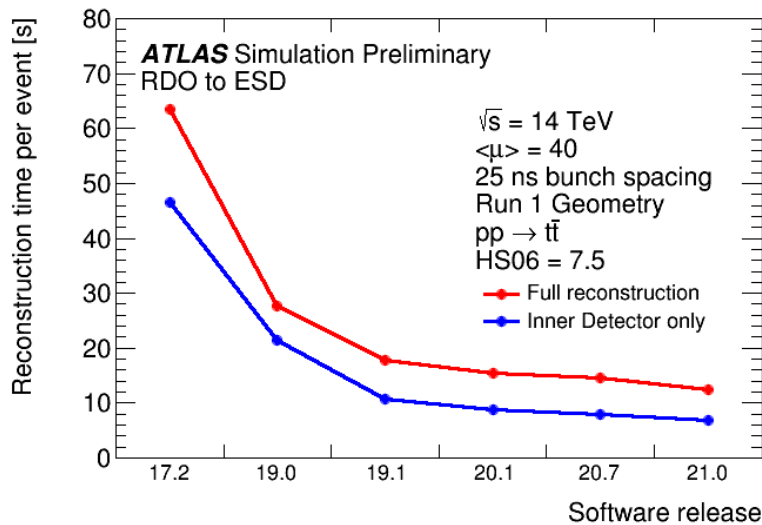
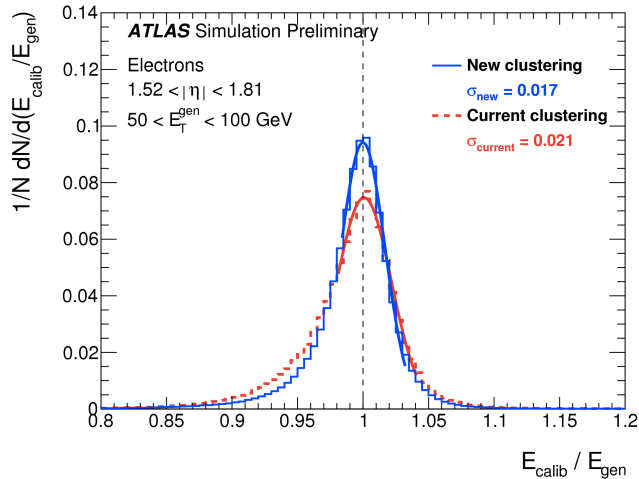
AOD sizes Task Force

Size savings (KB/ev) w.r.t. baseline 21.0 AOD

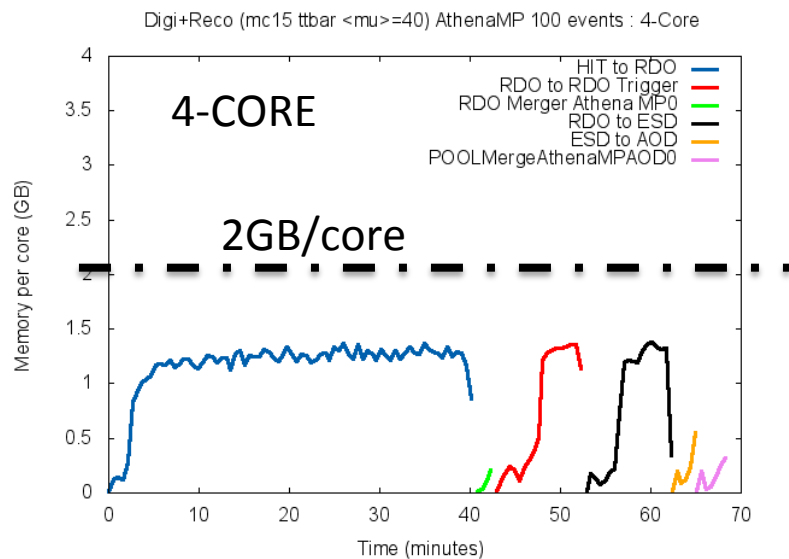
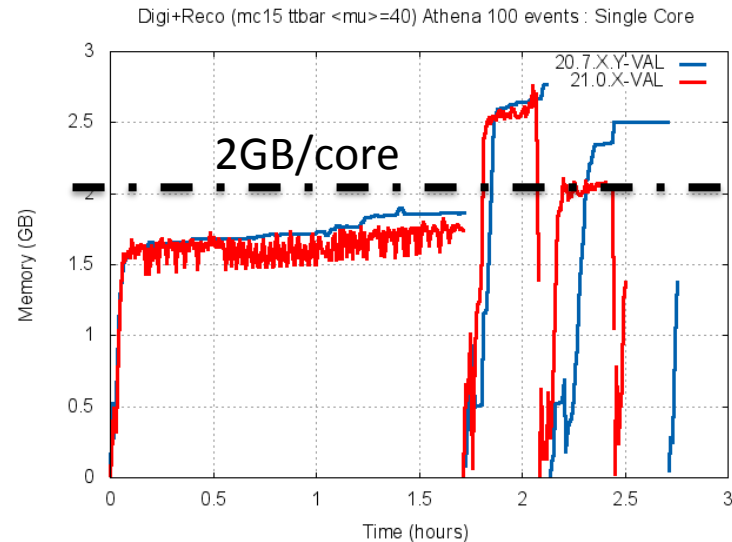
| | Data (1st pass) | Data (reprocessed) | Standard Model MC (ttbar) | Signal MC (ttbar) |
|---|-----------------|--------------------|---------------------------|-------------------|
| Track pT 400->500 MeV and covariance matrix compression | 26 | 26 | 27 | 27 |
| Removal of negative E caloclusters & unused moments | 4 | 4 | 12 | 12 |
| Removal of unused PFlow moments | 4 | 4 | 12 | 12 |
| Removal of most jet containers (retain 3) | 19 | 19 | 40 | 40 |
| Removal of most flavour tagging (retain 1) | 29 | 29 | 33 | 33 |
| Removal of G4 truth | 0 | 0 | 65 | 65 |
| Use of AODSLIM | 0 | 45 | 0 | 0 |
| Use of AODSUPERSLIM | 0 | 0 | 0 | 55 |
| Current AOD size | 420 | 420 | 582 | 582 |
| Nominal size/event | 420 | 420 | 582 | 582 |
| AOD size in Run-2 Computing Model | 320 | 320 | 500 | 500 |
| New AOD size in computing model | 319 | 319 | 410 | 410 |

We achieved implementing the recommendations already in 2017.
 AODs from latest reprocessing (2015+2016 data) benefit of **>20% reduction**

Athena R21 physics and software performance

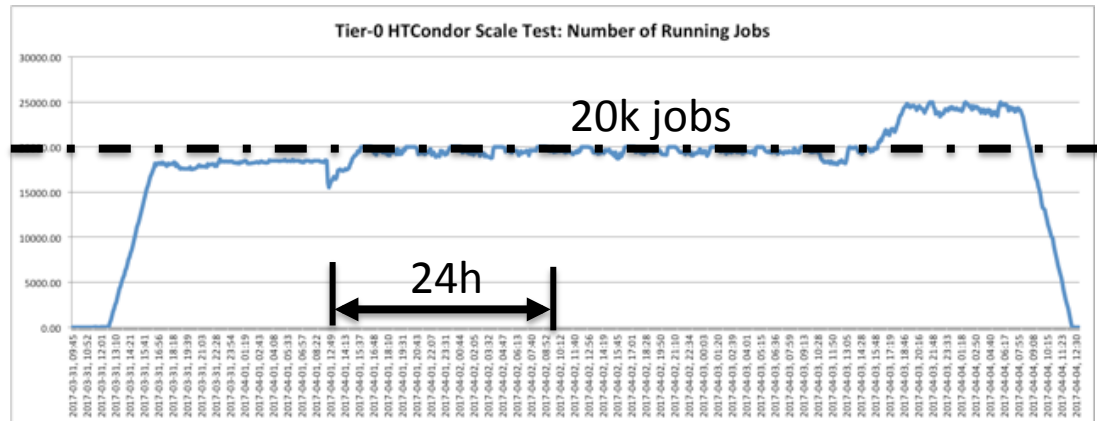


MC digi+trigger+reco, S-CORE



T0 Condor scaling test

Dedicated, specially configured, heavily over-committed nodes, allowing to run up to 200 parallel jobs. No AFS, using EOSFuse



We managed to run the system stably over 4 days, with 20-25k jobs in parallel (2016 production: 12k, 2017 production: expected 15-16k)

With Condor and EOSFuse combined latencies staying well within $< \sim 1$ s total budget we have per job (for preparation, submission, status queries, post-processing, etc.)

Measurement indicate we can reach/exceed the necessary expected throughput of ~ 100 k jobs/day

Will start running small fraction of T0 with Condor, then scale up based on experience

Conclusions

Ready for data