ATLAS and Covid-19

Setting up ATLAS resources to contribute to the global effort

WLCG Covi-19 Meeting, 9th April 2020

Alessandra Forti, Ivan Glushkov, David South, Rod Walker and many others

First attempts

- How can we most efficiently use our resources to contribute research into the ongoing COVID-19 pandemic?
  - Plenty of suggestions and ideas coming in, plenty of will from the sites.. and plenty of noise
  - Make sure any tasks we are run make sense - we are not the experts here

- Following advice of the CERN task force, ATLAS can make the most effective contribution via
  - Protein folding simulation jobs: Executable together with configuration input

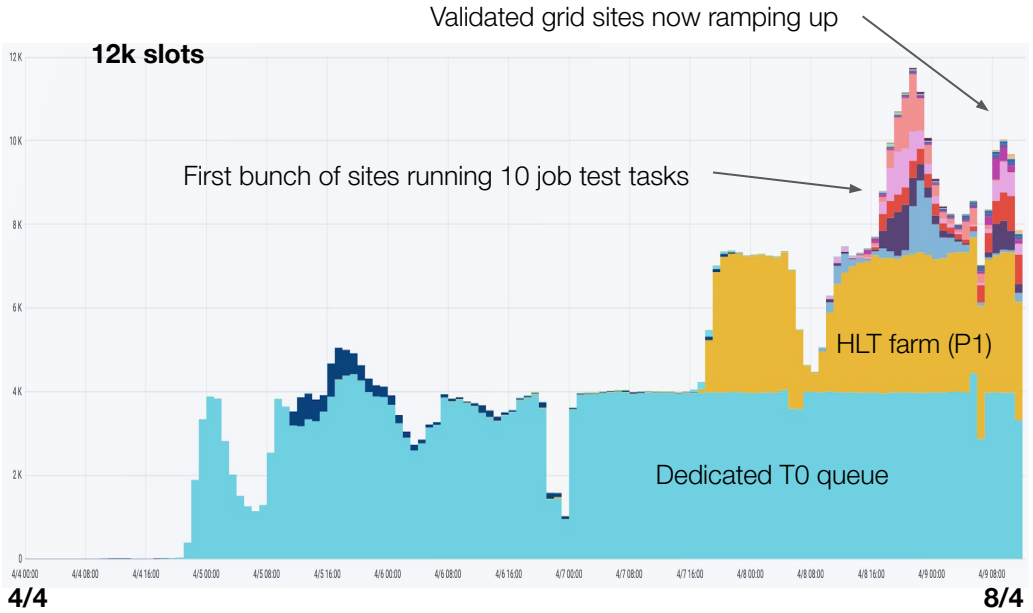
FOLDING @HOME

- ATLAS started looking into F@H a few weeks ago
  - Workflows available for both GPUs and more crucially CPUs
  - Exploratory work done by Alessandra Forti and Lukas Heinrich to set up the containerised workloads

- Once workflow established, real effort last Friday from all corners of ADC to increase the scale of covid-19 jobs
  - Created dedicated voms group/production role: `/atlas/covid/Role=Production`
  - New scope `group.covid` added for data management in Rucio
  - Deployed dedicated "`COVID`" L1 global share, applied to all ATLAS distributed resources
  - Running as an Analysis type job, using prun, using cvmfs-based image distribution

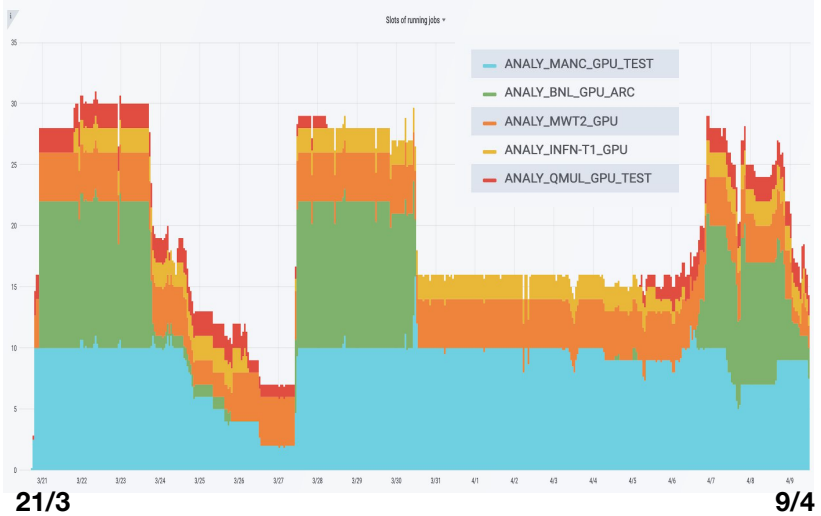
Increasing the scale

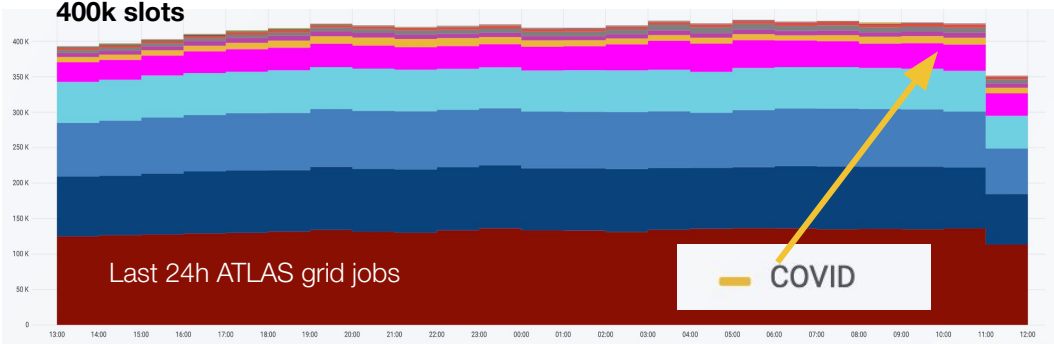
- First try out on large and familiar resources, using new dedicated queues
  - Using 4k (10%) of slots from Tier-0
  - Using up to 20k slots from HLT farm instead of for simulation (Sim@P1)
- Some numbers from yesterday:
  - Success rate (wall): 92%
  - Efficiency / core: 89%
  - Walltime: 4 hours (max: 24 hours)
  - RSS: 40 MB
- Other sites now joining, using 8/1 core common tasks, as opt-in via usual channel:
  - Using 8-core tasks:
    IFIC, pic, ifae, MPPMU, GOEGRID
  - Using 1-core tasks:
    DESY-ZN, IEPSAS-Kosice, FMPhI-UNIBA
- More to add, already through validation
  - *LRZ-LMU_MCORE, GRID-IRFU, IN2P3-LAPP..*



GPUs and overall strategy

- Covid jobs also running on the limited GPU resources available to ATLAS
  - We just don't have that many compared to CPUs
  - What we do have, we can run when available
  - Five sites talking part, potentially two more
  - GPUs better suited and jobs better rewarded by F@H in terms of "credits"
    - but some payloads can only run on CPU
- Additional monitoring and job separation to come, but around 90% of the jobs here are running covid payloads
- Plan to continue to add sites if they opt in
- Ramp up P1 and lower T0 contributions, Respectively (reflecting current workload of ATLAS physics production)





Folding@Home Monitoring

- ATLAS contributions to the CERN “Team” now visible on the Folding@Home monitoring page
- Initially a mixture of tests queues or *donors*, including the one used on the Tier-0
- Since yesterday the CPU submissions are all collected together under the name “**ATLAS_CPU**”
- GPU contributions will likely continue to be accounted separately, as is wished by the hosts

https://stats.foldingathome.org/team/38188

Team: CERN

Date of last work unit	2020-04-09 13:04:52
Active CPUs within 50 days	34,893
Team Id	38188
Grand Score	280,195,544
Work Unit Count	233,802
Team Ranking	557 of 249356
Homepage	http://public.web.cern.ch/public/
Fast Teampage URL	https://apps.foldingathome.org/teamstats/team38188.html

Team members

Rank	Name	Credit	WUs
3,892	CERN_Cloud	149,344,260	125,645
13,329	TheLaboratoire	28,073,062	465
22,783	Cloverfield	13,348,995	152
27,870	ALICE-CERN	10,430,021	16,990
2	Anonymous	10,401,808	1,781
33,929	ATLAS_CPU	8,147,956	12,724
39,630	CMS-Experiment	6,648,056	7,900
51,044	Corne_Lukken	4,709,510	164
53,312	Pic	4,107,260	623
44,846	Shaba-kun	3,927,865	81
59,639	Jarek	3,805,744	262
66,005	ANALY_MWT2_GPU	3,281,359	287
73,546	ATLAS.T0	2,805,471	4,012
78,157	ALICE-FZK	2,604,907	4,180
82,916	CERN_openlab	2,347,045	3,105
87,263	ANALY_MANC_GPU_TEST	2,158,196	223