



VO auger – DIRAC and other Grid activities

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7th DIRAC Users' Workshop



- ❑ The largest observatory for detection of ultra high energy cosmic rays
 - $5 \cdot 10^{17} - 10^{20}$ eV; 3500 km², different detection techniques
- ❑ Detector upgrade 2016 – 2019, measurement until at least 2025
- ❑ Grid distributed resources uses for simulation since 2007
- ❑ Typical tasks:
 - CORSIKA simulations – several hours, hundreds of MB output
 - Offline processing (detector response and reconstruction) – from minutes to many hours, input from CORSIKA, output tens of MB

- ❑ DIRAC servers at CC IN2P3
 - DFC at CESNET in Prague: dfc-auger.grid.cesnet.cz
- ❑ About 10 sites tested, only 2 used in the recent production
 - also local batch submission
 - we want to keep “archives” at a small number of sites
 - currently we have enough CPU; long term disk space availability is a bigger concern
- ❑ CVMFS used for sw distribution
- ❑ Production: no major problems, limited by from manpower availability

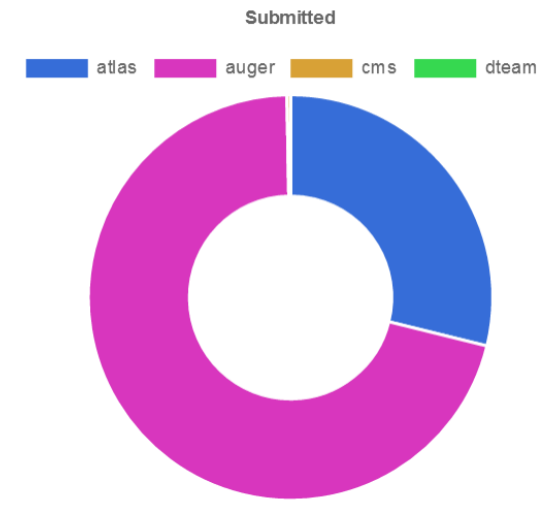
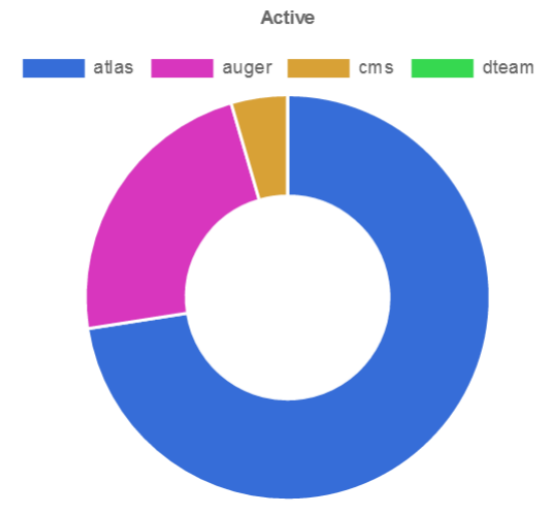
- ❑ Old files (until 2016) registered in LFC, new productions in DFC
- ❑ Plan
 - reregister (and it also mean copy) only a small fraction of LFC files
 - keep LFC until registered files “expire”
- ❑ Reality
 - we must move old files registered in LFC due to site requirements
 - “manual” work – scripts for bulk transfers via FTS handle tens of thousand files, but we need to move millions of files, many transient errors encountered
- ❑ Data management for DFC files now easy
 - only drawback that we cannot easily “rename” files

Statistics - VO

For the last 12 hours

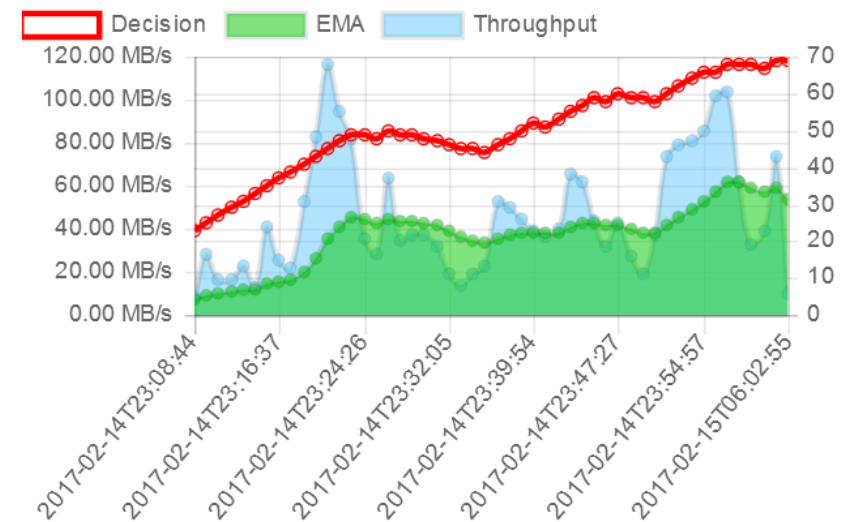
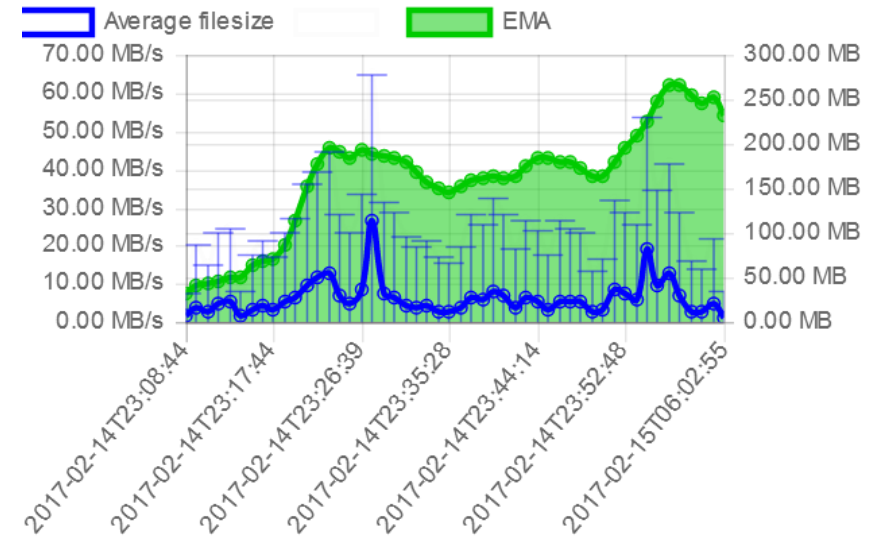
Source: Destination:

VO	Transfer states
atlas	177 active 422 canceled 3072 failed 80722 finished 3258 submitted
auger	56 active 499 failed 11438 finished 8007 submitted
cms	11 active 17 canceled 245 failed 5867 finished 33 submitted
dteam	36 canceled 240 failed 492 finished



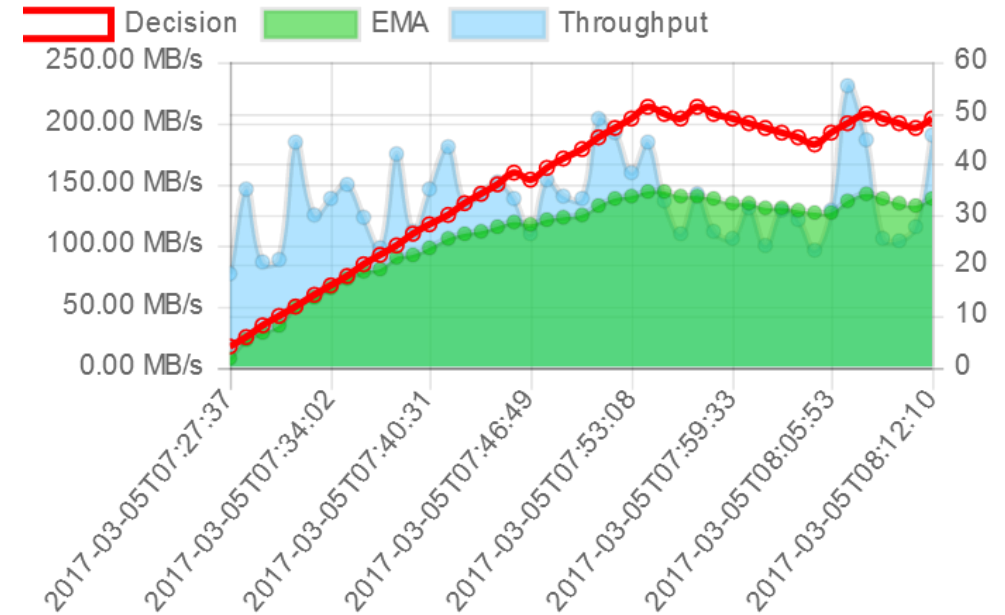
Transfers from LAL to CESNET sites

- ❑ File sizes 10 – 300 MB
- ❑ Throughput upto 100 MB/s
- ❑ Both sites on LHCONE

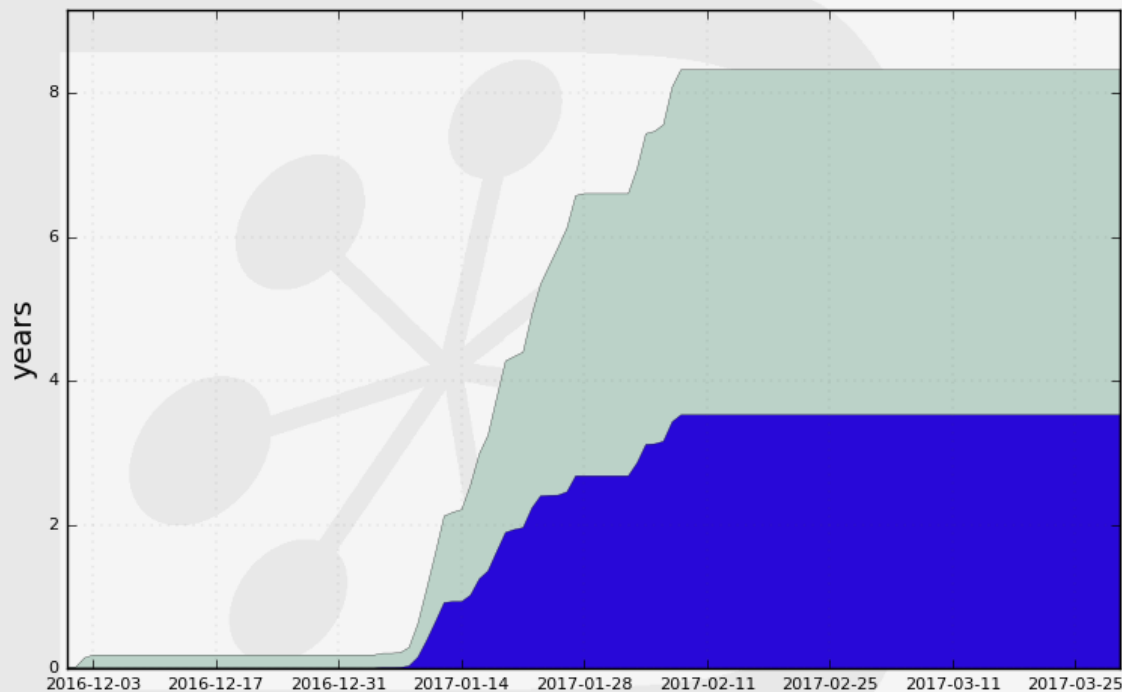


Transfers within CESNET network

- ❑ dCache -> DPM CESNET
- ❑ Distributed dCache
- ❑ File sizes ~1 GB
- ❑ Throughput 100 - 200 MB/s (10 Gbps link)



Cumulative wall time by Site
17 Weeks from Week 48 of 2016 to Week 13 of 2017

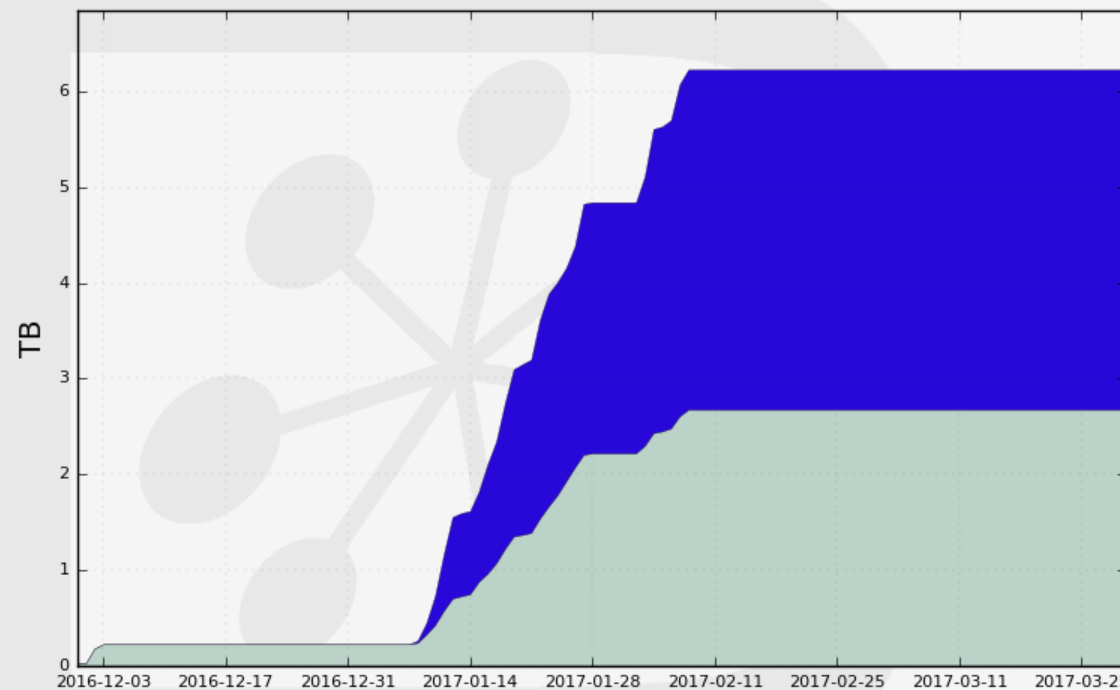


Max: 8.33, Min: 0.02, Average: 4.78, Current: 8.33

LCG.ROISS.ro 4.8 LCG.CESNET.cz 3.5

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Cumulative Output data by Site
17 Weeks from Week 48 of 2016 to Week 13 of 2017



Max: 6.22, Min: 0.02, Average: 3.58, Current: 6.22

LCG.CESNET.cz 3.5 LCG.ROISS.ro 2.7

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- ❑ More users to use DIRAC mostly for data download
- ❑ Some users willing to test own smaller scale production
- ❑ Better documentation for data handling
 - Usage of virtual machines to have lcg_utils
- ❑ Use synergies with other projects (CTA, Belle)
- ❑ Direct usage of clouds if manpower available
- ❑ Thanks for very good support from DIRAC