

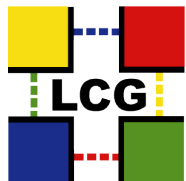
WLCG GridKa+T2s Workshop

Munich, Sep. 18th-19th, 2006

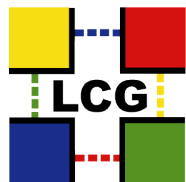
CMS - from SC4 to CSA06

Thomas Kress

RWTH Aachen, Germany

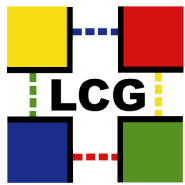


Worldwide LHC Computing Grid
Distributed Production Environment for Physics data Processing



Disclaimer

- No CMS computing expert, directly and officially involved in SC4/CSA06, available for the Munich WLCG T1/2 workshop since CMS plenary week in parallel with important meetings.
- No SC4 summary/conclusions presentation from CMS plenary available already on Monday; I will add official material to the Munich agenda page in a few days.
- Personally, I was participating in SC4 only peripherally.
- However I will present and comment some material for the discussion and quote Michael Ernst (intergration manager) for the evaluation from an Email just received in time this morning.

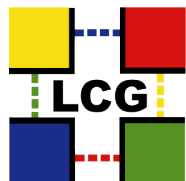


Collected Material

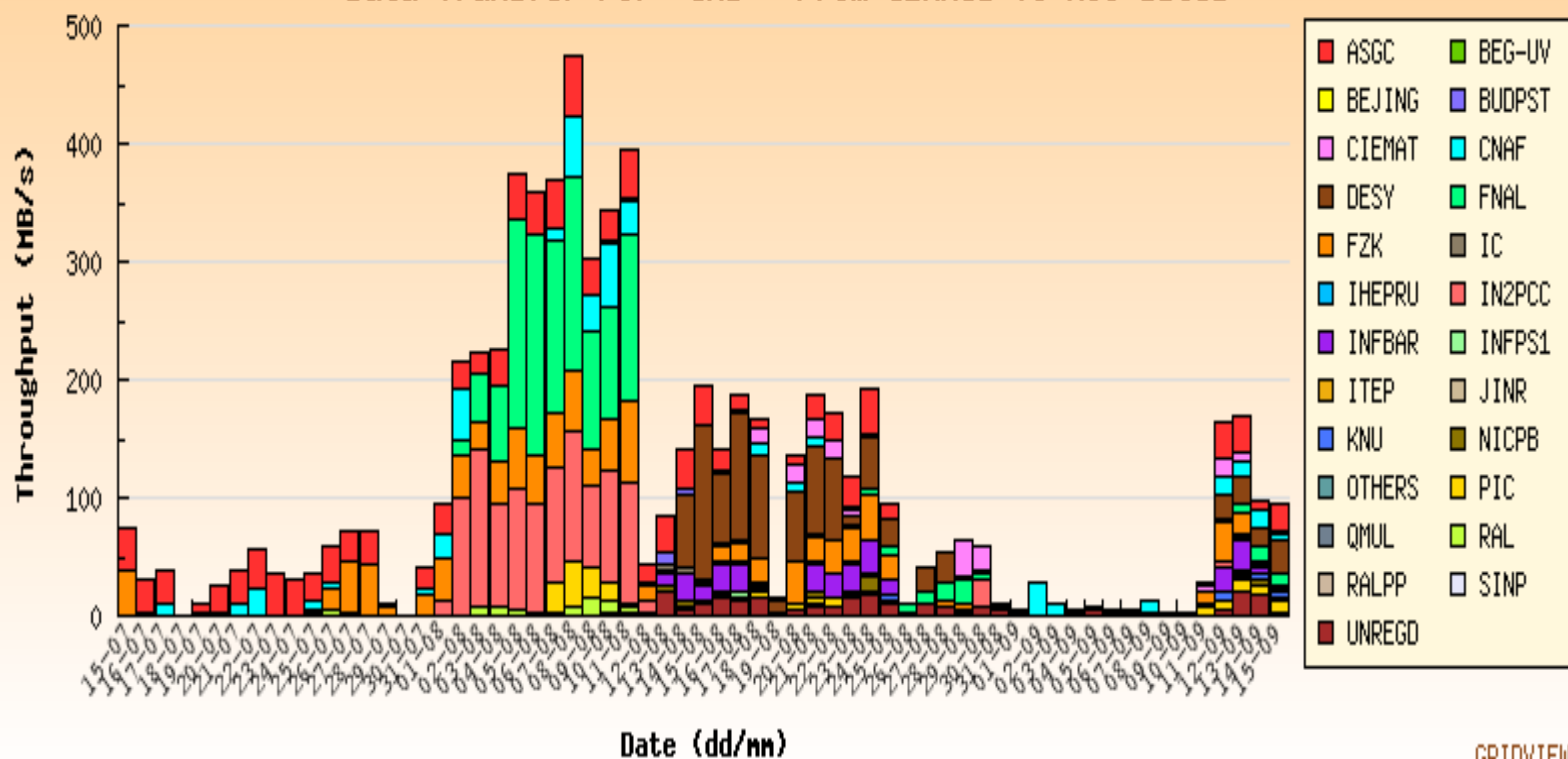
- Data transfers CERN, T1s, T2s
- Grid analysis jobs
- New MC production system

- Brief evaluation of SC4 quoting M.Ernst

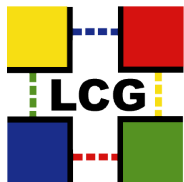
- Plans for the CSA06
 - Computing, Software and Analysis challenge
 - Test of the complete 'chain' T0 -> T1 <-> T2; MC production, calibration, re-processing, skimming, user analyses, ...
 - SC4 was the preparation phase for the CSA06
 - I will present the related talk of Ian Fisk (integration manager) from CMS internal meeting, Sep.14th



Averaged Throughput From 15/07/06 To 15/09/06
Data Transfer For 'CMS' From CERNCI To All Sites

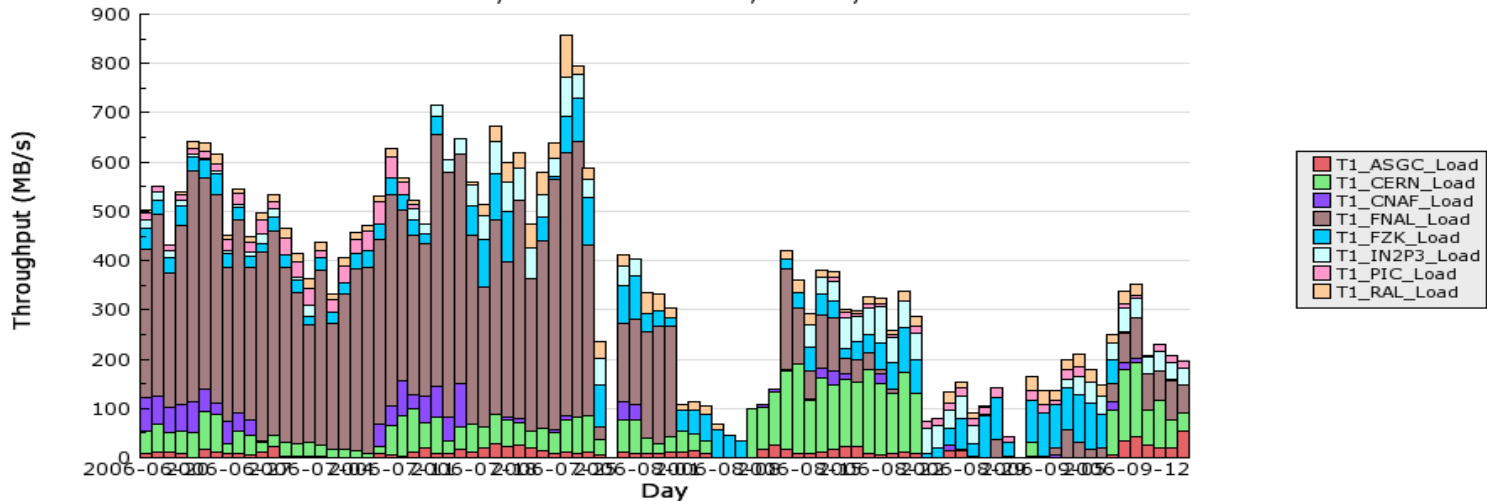


GRIDVIEW



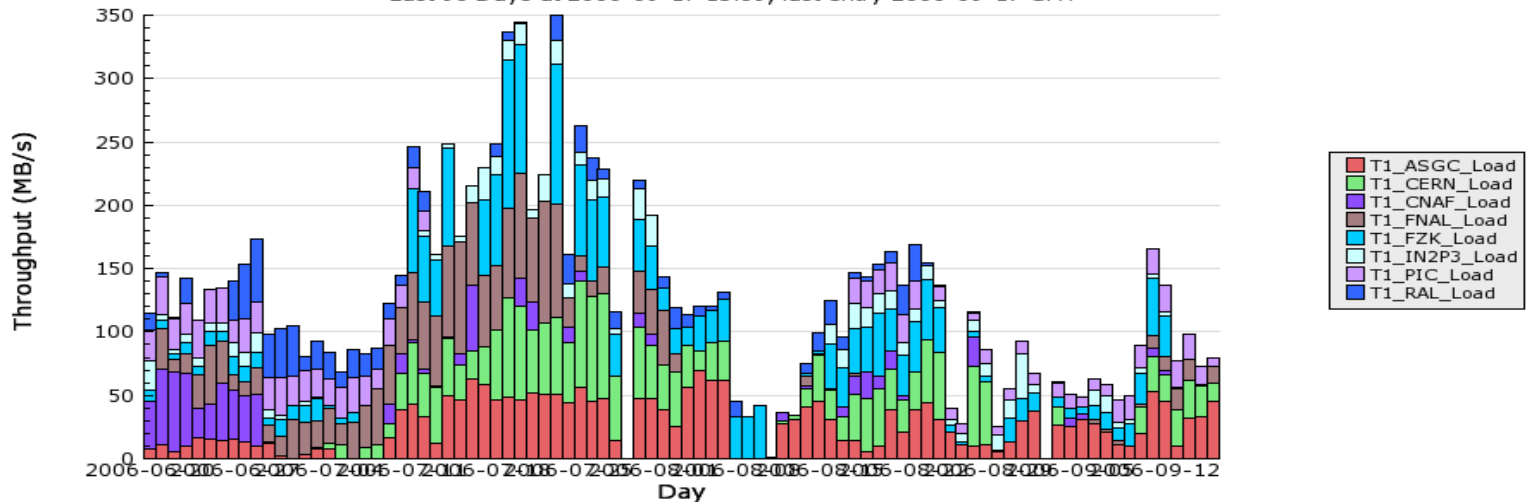
PhEDEx SC4 Data Transfers By Sources matching 'T1_.*Load'

Last 90 Days at 2006-09-17 14:01, last entry 2006-09-17 GMT

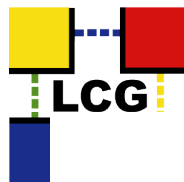


PhEDEx SC4 Data Transfers By Destinations matching 'T1_.*Load'

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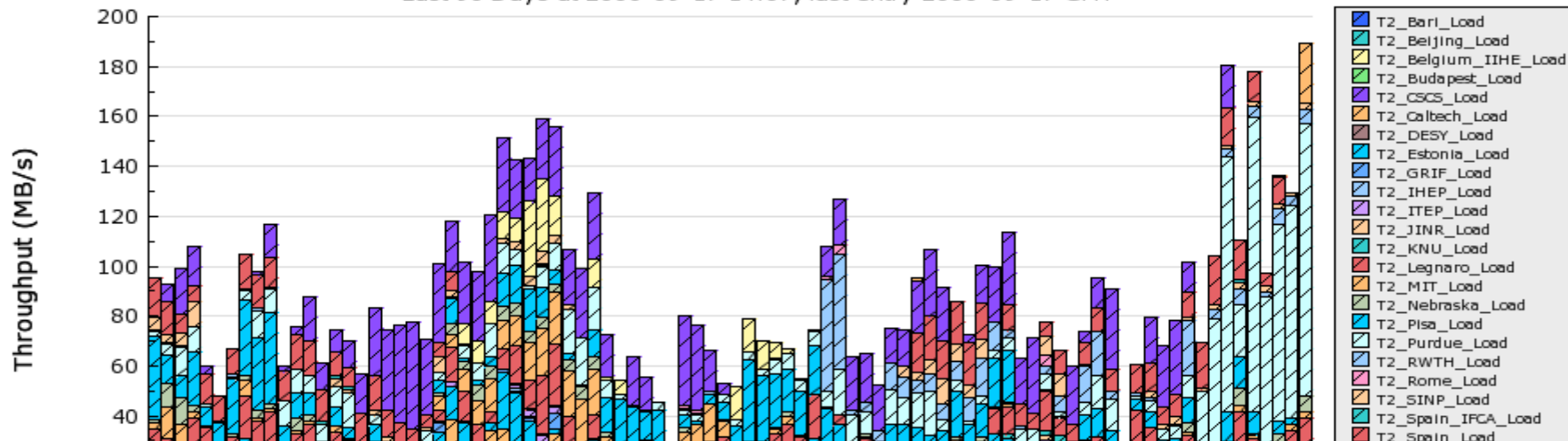


Transfer of 3.3 PB (T1+T2) in 3 months



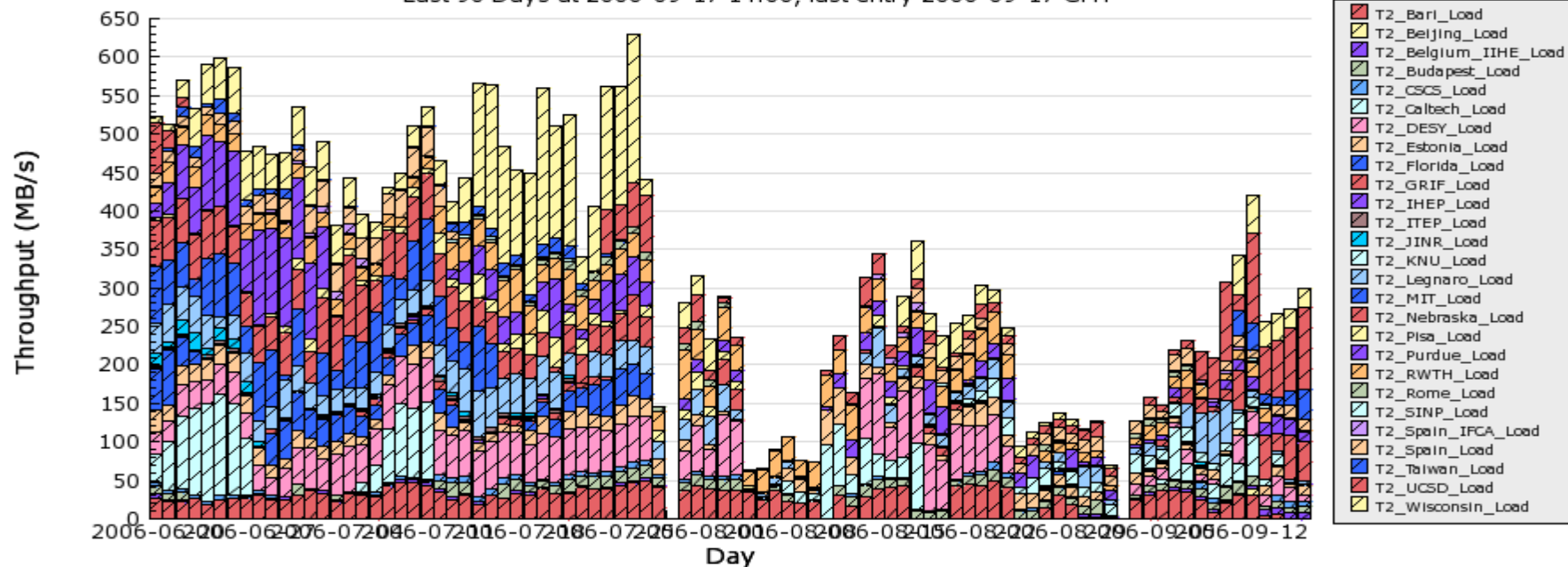
PhEDEx SC4 Data Transfers By Sources matching 'T2_.*Load'

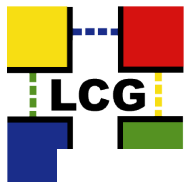
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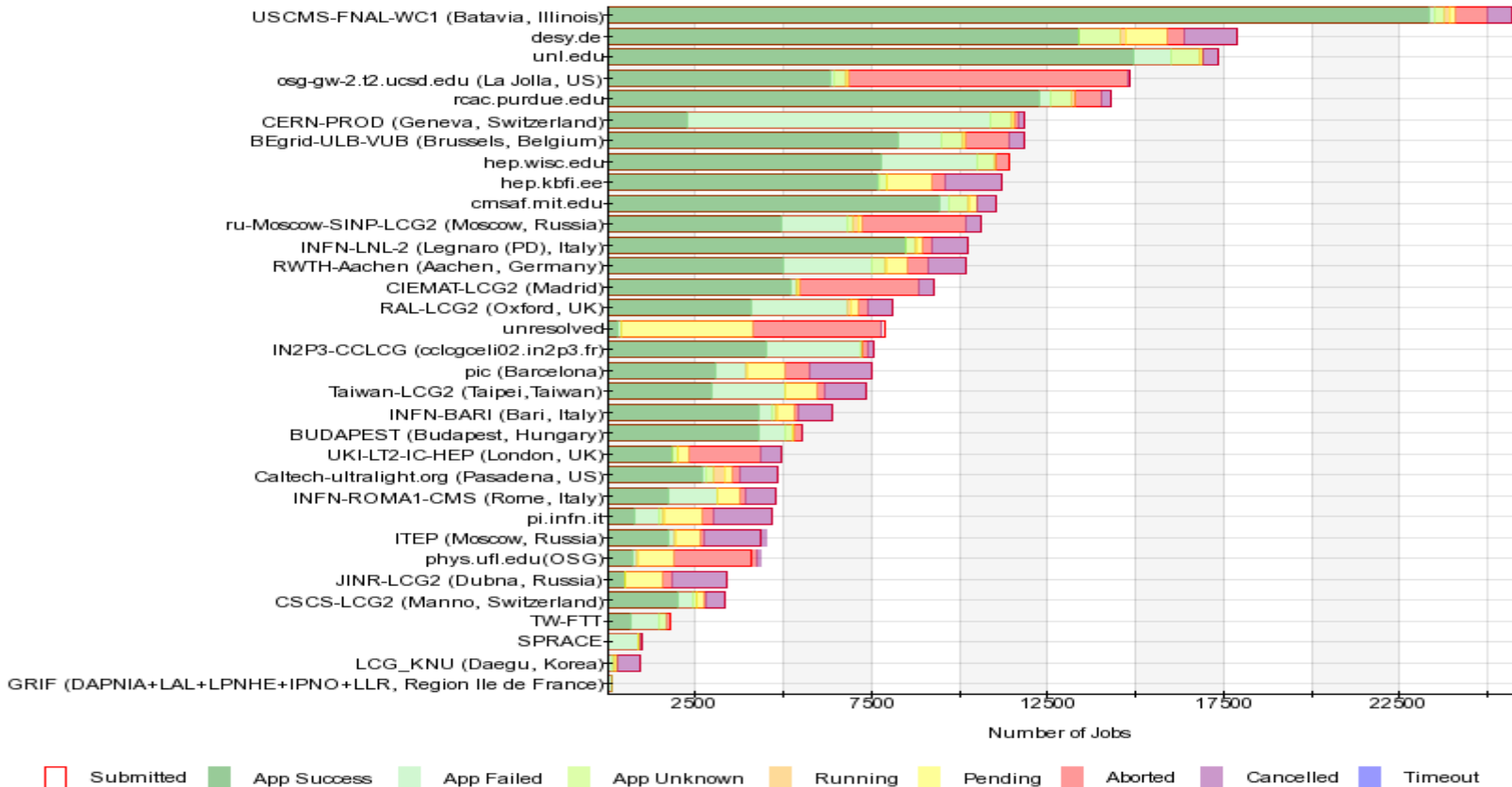
PhEDEx SC4 Data Transfers By Destinations matching 'T2_.*Load'

Last 90 Days at 2006-09-17 14:06, last entry 2006-09-17 GMT

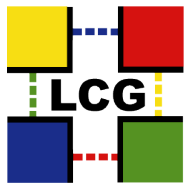




Site vs Number of Jobs for JobRobot

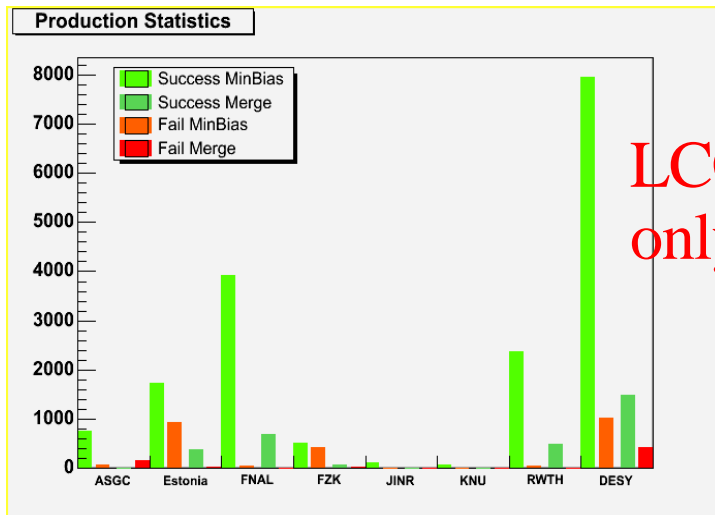


Monitoring of dummy Grid analysis jobs, ~200/site/day
In general **Grid** (dark+light green) performance O(90%) but
total succes (dark green) rate less good

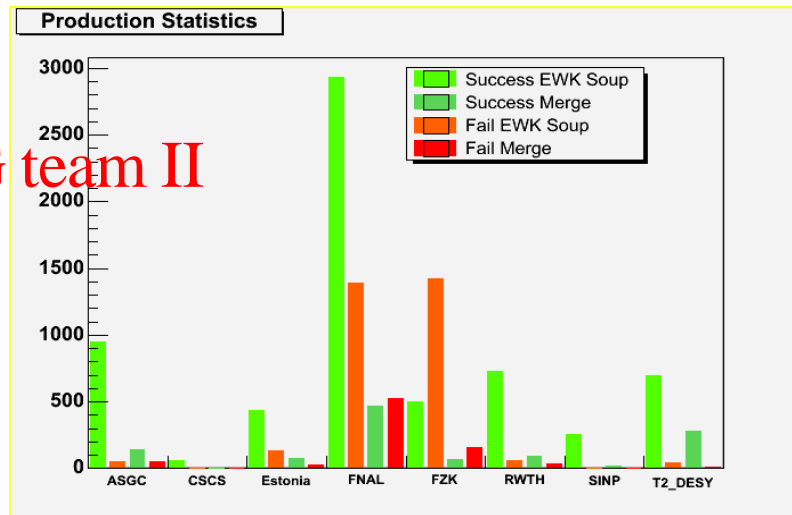


Contributions to SC4

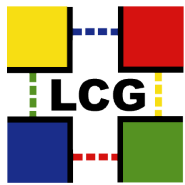
- Monte Carlo production
 - Grid-based system, 1*USA + 3*Europe (incl. RWTH/DESY) support teams
 - so far gen+sim+dig steps, few 100 evts/job, jobs merged and sent to T0, pile-up and reco (s.w. not yet ready) later at T0 during CSA06



LCG team II
only



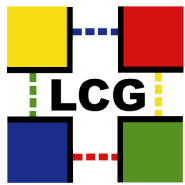
In general 90% of failures due to stage-out problems, fallback transfer to other site now implemented; goal of 50 M events already reached



Michael Ernst's evaluation

Results obtained wrt metrics and foreseen timetable

- Throughout the SC4 service phase (1 June - 30 September CMS had the goal to run 25k jobs/day
- In preparation of reliable data transfer for the entire matrix of sites (T0->T1<->T2) a LoadTest was set up that was not designed to achieve highest data rates but to have sustained transfers between all sites involved. The goal was to achieve a continuous rate of 20MB/s.
- 150 MB/s aggregate rate from CERN/Tier-0 to 7 Tier-1 sites according to 25% of their 2008 pledges.



Michael Ernst's evaluation

Problems encountered; how were they solved; how could things be improved for the future

- The job rate was smaller than the anticipated rate of 25k jobs/day due to inefficiencies of the RBs. Solution: CMS used up to 5 RBs. For CSA06 (starting on 2 October) CMS will use gLite RBs with bulk submission. Using the latest version in combination with some patches from the developers it was demonstrated that we can submit >20k jobs/day with a single gLite RB.
- Lots of problems encountered with data transfers
- Castor problems at CERN (solved through the work of the CMS-WLCG task force)
 - Incompatibilities due to different storage systems used (Castor vs. dCache vs. DPM) in addition to firewalls at sites. Solution: the only viable solution is to consequent implementation of FTS channels for especially Tier-1 \Leftrightarrow Tier-2 transfers (which CMS is in the process of doing at the moment)