Data Operations
CSA07 Experiences at IN2P3

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Outline – Experience and Concerns

Data Operations – General

- CMSSW, Tools (ProdX,DBS), Transfers (phedex), storage and the rest

Tier-1 specific and IN2P3

- history and performance
- wishes and desires

Tier-2 centers in the area

- Belgium_UCL, T2_Belgium, GRIF, IN2P3(T2), IHEP
- events produced and usage for MC production

DataOps Issues – From CSA07

CMSSW

- large memory usage of the executable

- reproducible scheme to deal with database access
  - production job results are not reproducible
  - supposedly fixed, but need to watch this

- IO issues
  - file opening scheme:
    - too many file handles in root (solved)
    - too high frequency, due to too many and too small files (patched, solution might be difficult)
    - too large latency in castor
  - file contents inconsistencies prevent merging (3 soups)
  - dynamic loading of libraries, polymorphism (patched, load all)

- missing flexibility for patches in release

DataOps Issues – From CSA07

Tools (ProdX, DBS)

- cleanup of un-merged files not sufficiently supported
- no record of "completed files"
- patching obvious mistakes not well supported
- rolling back to defined point in time not supported
- not robust with respect to castor file server losses
- DBS difficulties to deal with large number of files
- local DBS support for CERN site

Data Transfers (phedex,FTS)

- phedex and DBS database inconsistencies
- castor/phedex filesize inconsistency cause transfer block
- priorities in transfers and algorithm needs improvement
- FTS setup not stable enough, configuration issues

DataOps Issues – From CSA07

Storage

- running out of tape (should be easy to resolve)
- losing file servers in castor: causes major delay in processing: cleanup is tedious
- dCache/castor tuning to deal with high file frequency
  - mass storage not designed for many small files
  - nevertheless it seems unavoidable ....
- castor's failure rate for file opening: is it acceptable?

Other things

- monitoring of operations insufficient
- CERN team not homogeneous enough (too many experts)
- file/event accounting and completeness in no shape for data taking
- FNAL team needs operators (instead coordinator heroes)
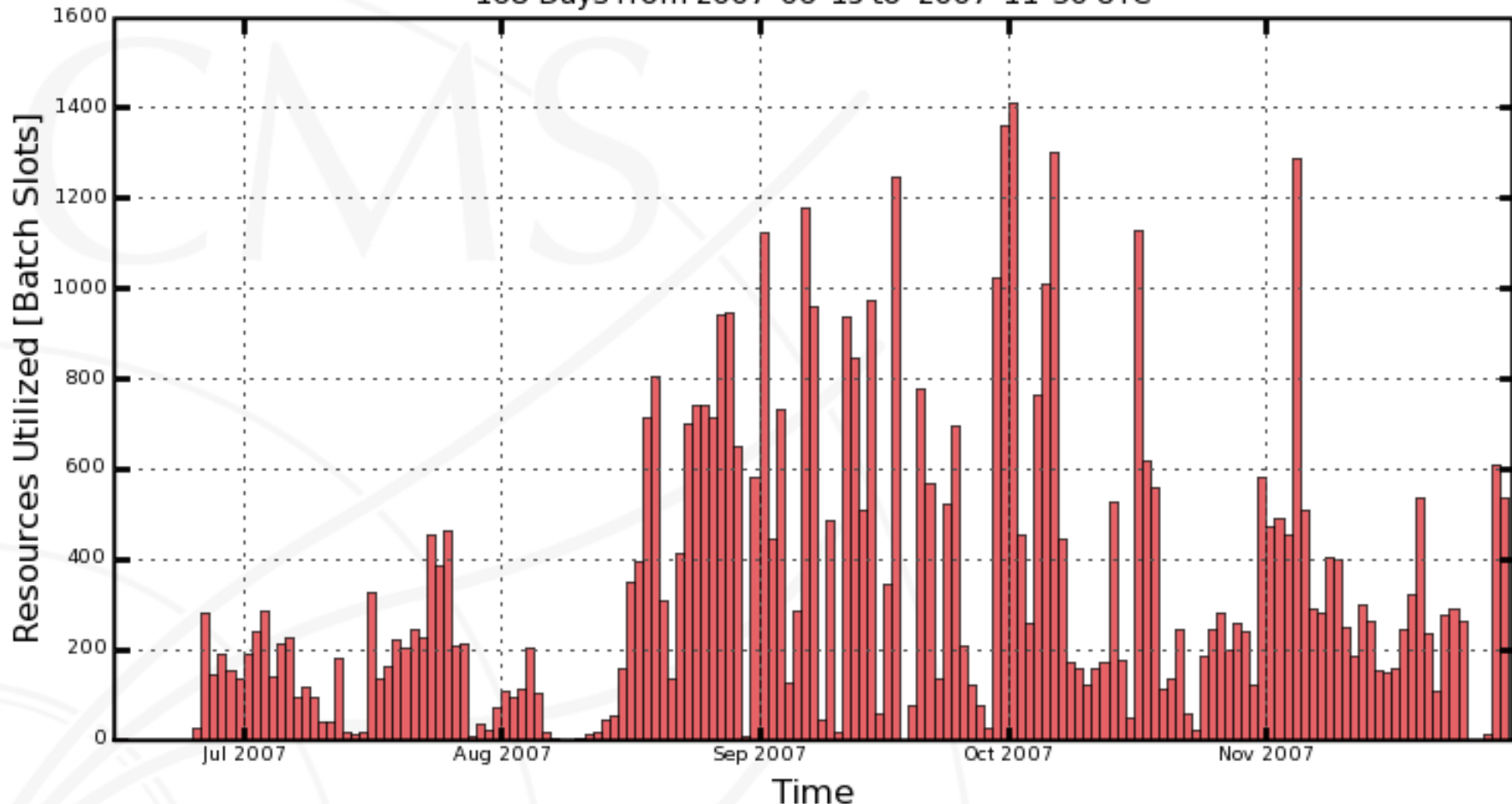
Tier-1 Center – IN2P3

General remarks about IN2P3 during CSA07

- IN2P3 uses dCache
  - large contribution to processing, and lots of data but serious merging problems encountered
  - dCache tuning and upgrades improved storage reliability
  - *see spotty site usage on next slide*
  - failures in reading input files or just created un-merged files fails, IN2P3 was not the worst site
  - for re-processing files need to be pre-staged (does not work automatically)
- resources offered are largest apart from CERN and FNAL (over 1100 slots)
- issues worth mentioning
  - keep an eye on above mentioned issues
  - make installation of CMSSW releases really automatic
- thank you for good support, keep it up!

IN2P3 – Contribution to CSA07

worked good fraction during (pre) CSA07, most importantly:
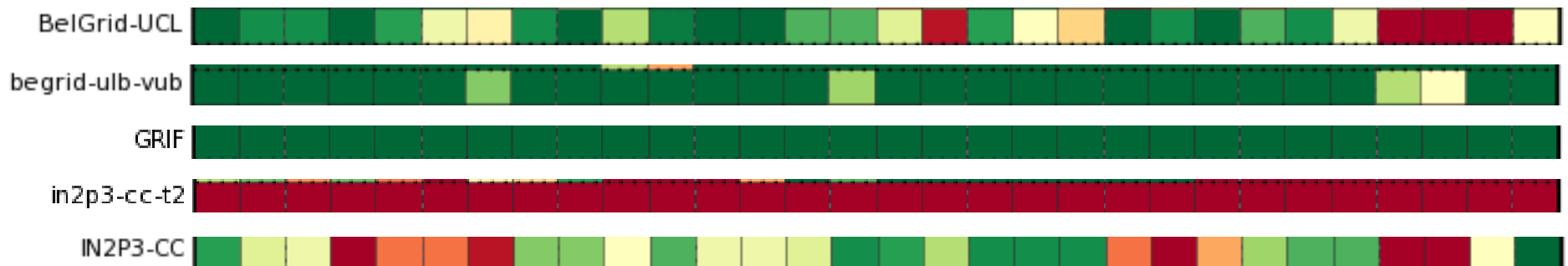issues with dCache/tape and related data transfers *etc.*

Tier-2 – Site Availability (SAM)

History of availability: overall

- Belgium-UCL, T2-Belgium, GRIF, IN2P3(include T2)
- sites are reasonably stable and mostly up and available
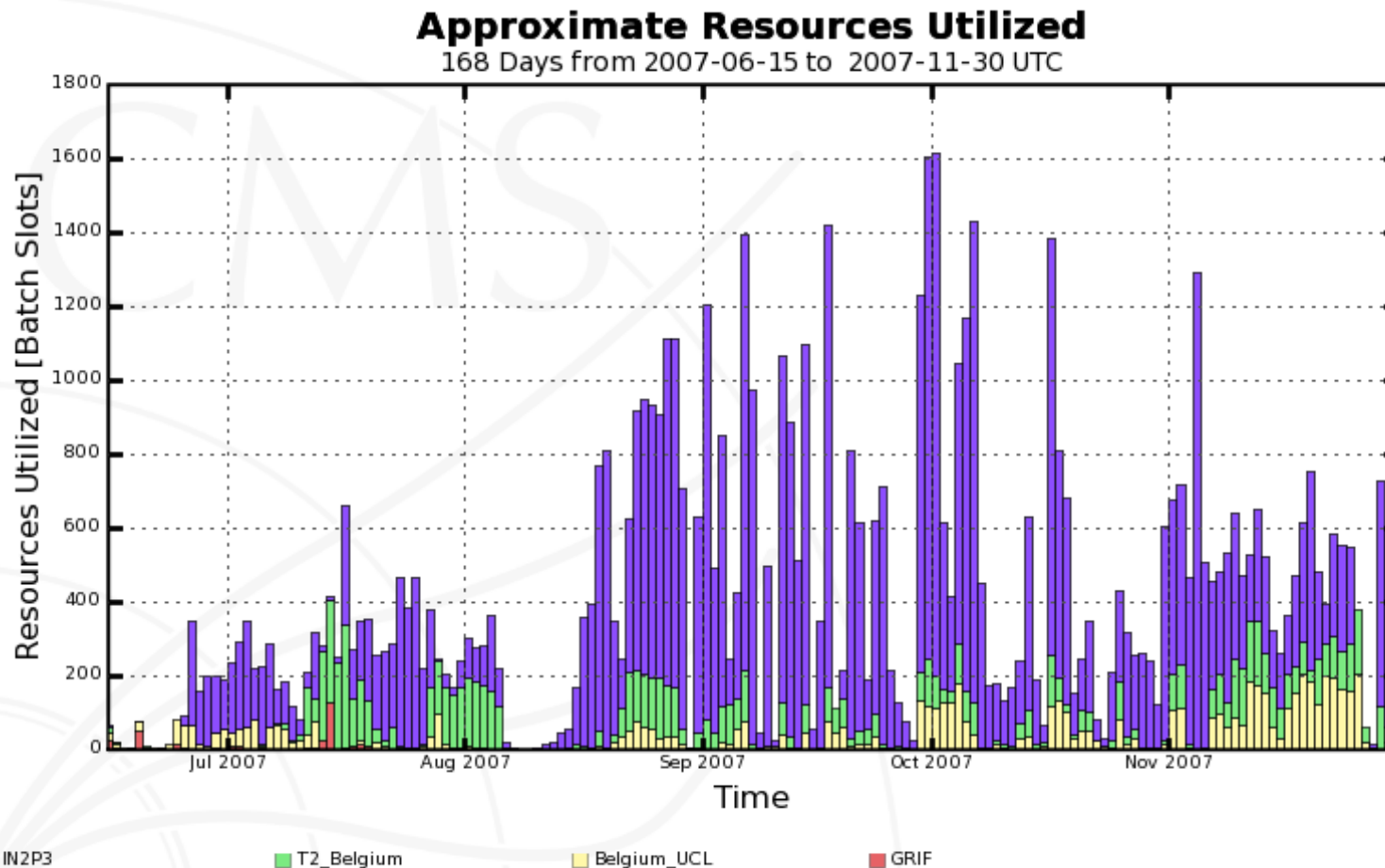- Some problem with IN2P3 Tier2 site though

Site Availability
30 Days from 2007-10-31 to 2007-11-30 UTC

Regional Tier-2 Centers

Tier-2s:

- all, but Beijing, do MC production: resource usage not very stable → improve (storage, support, MC request handling)
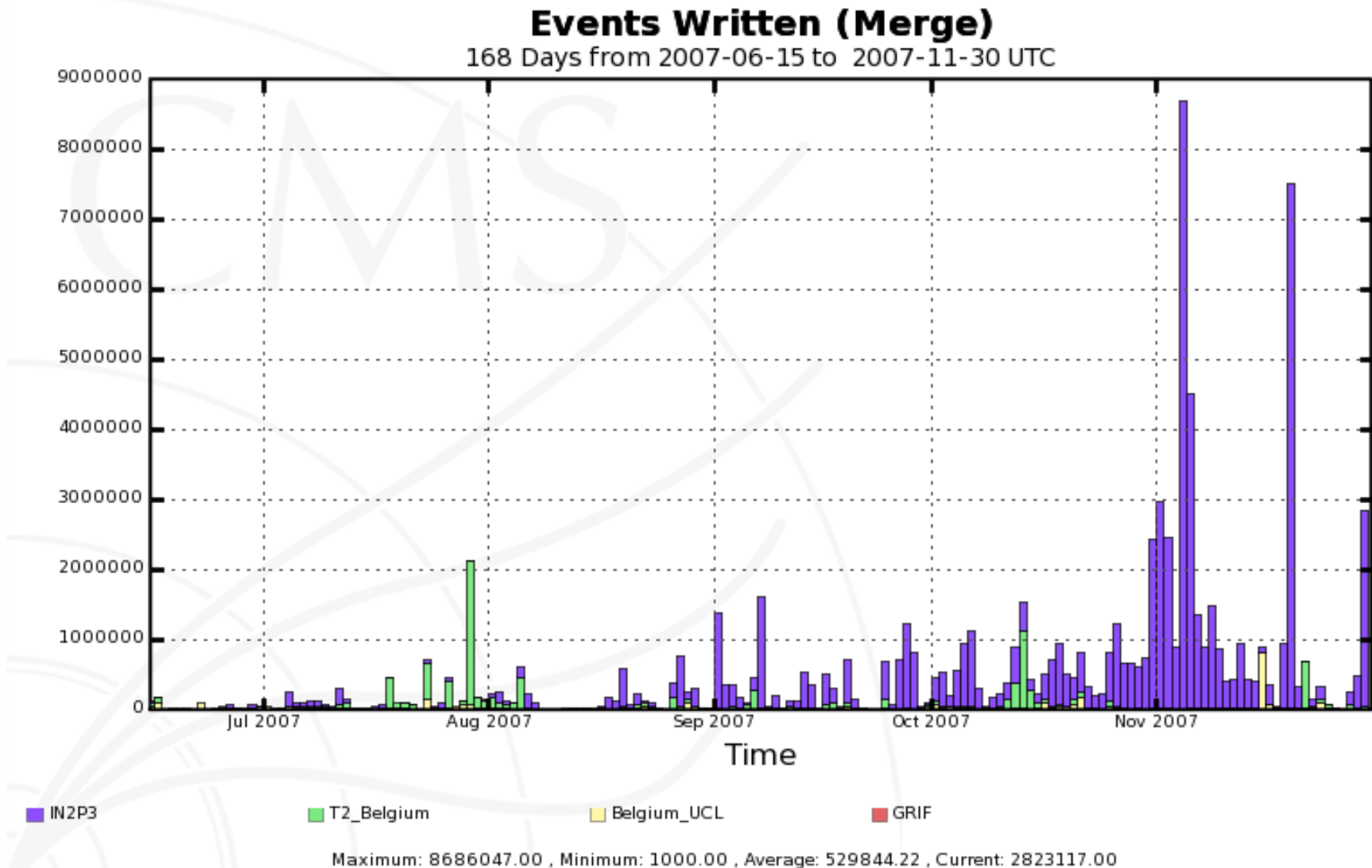- Belgium_UCL, T2_Belgium, GRIF, In2P3(T2), IHEP

Approximate Resources Utilized
168 Days from 2007-06-15 to 2007-11-30 UTC

Maximum: 1611.67 Batch Slots, Minimum: 0.36 Batch Slots, Average: 424.14 Batch Slots, Current: 592.36 Batch Slots

Associated Tier-2 Centers

How can we improve....

- more steady usage, fully automatize CMSSW installations

Events Written (Merge)
168 Days from 2007-06-15 to 2007-11-30 UTC

Legend: IN2P3, T2_Belgium, Belgium_UCL, GRIF

Maximum: 8686047.00 , Minimum: 1000.00 , Average: 529844.22 , Current: 2823117.00

Conclusions

Will be discussed here