



Activités des Expériences LHC au CCIN2P3

Réunion des sites LCG-France

Ghita Rahal

CC-IN2P3, Villeurbanne, 22-23



STORAGE

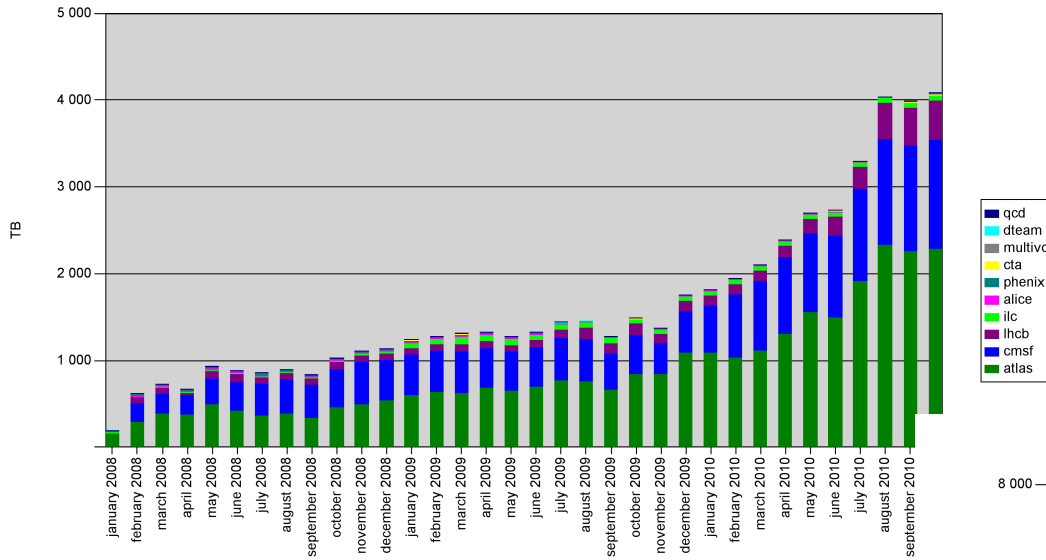


Dcache Usage

Usage report

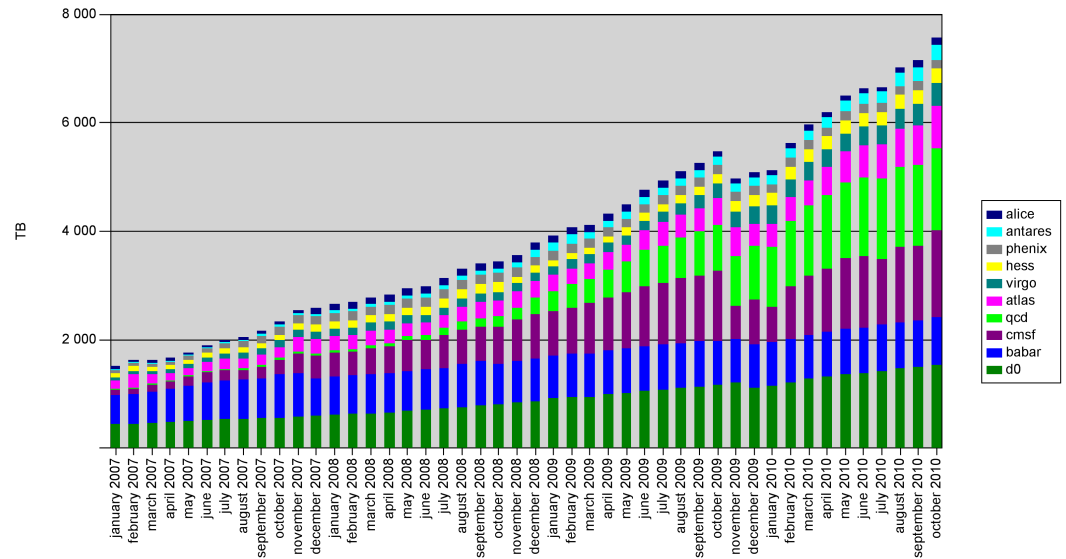


dcache usage for LHC experiments



Usage report

hps-tape usage for LHC experiments



21/11/2010

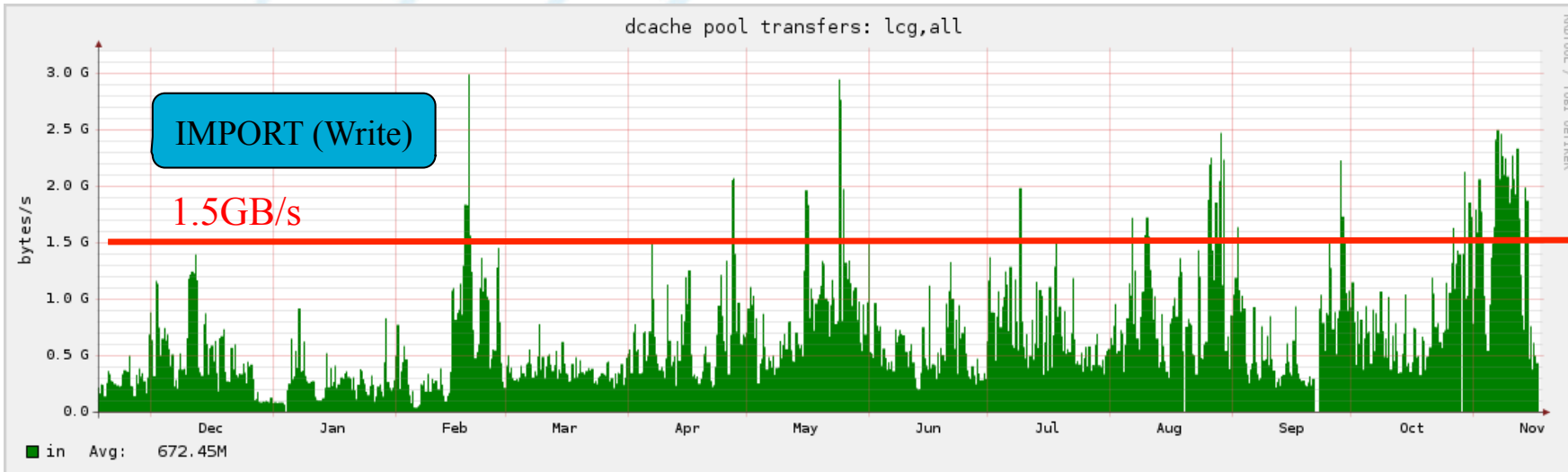
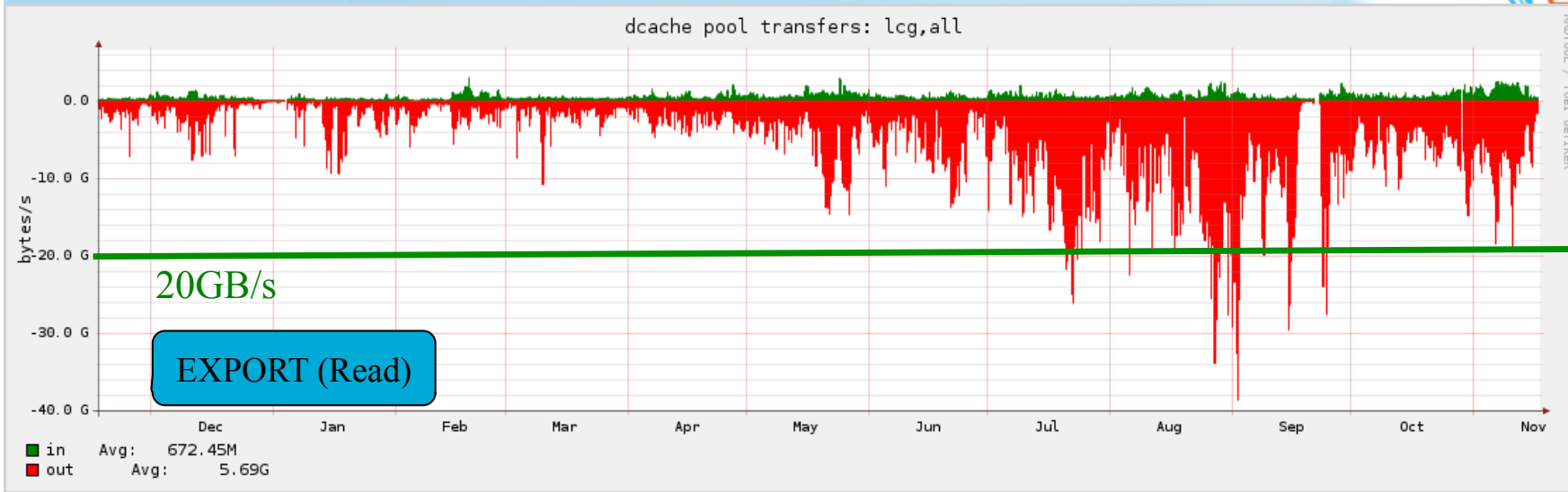
dcache usage for top 10 grou

21/11/2010

hps-tape usage for top 10 groups for LHC experiments : 1/1



Dcache Global Activity





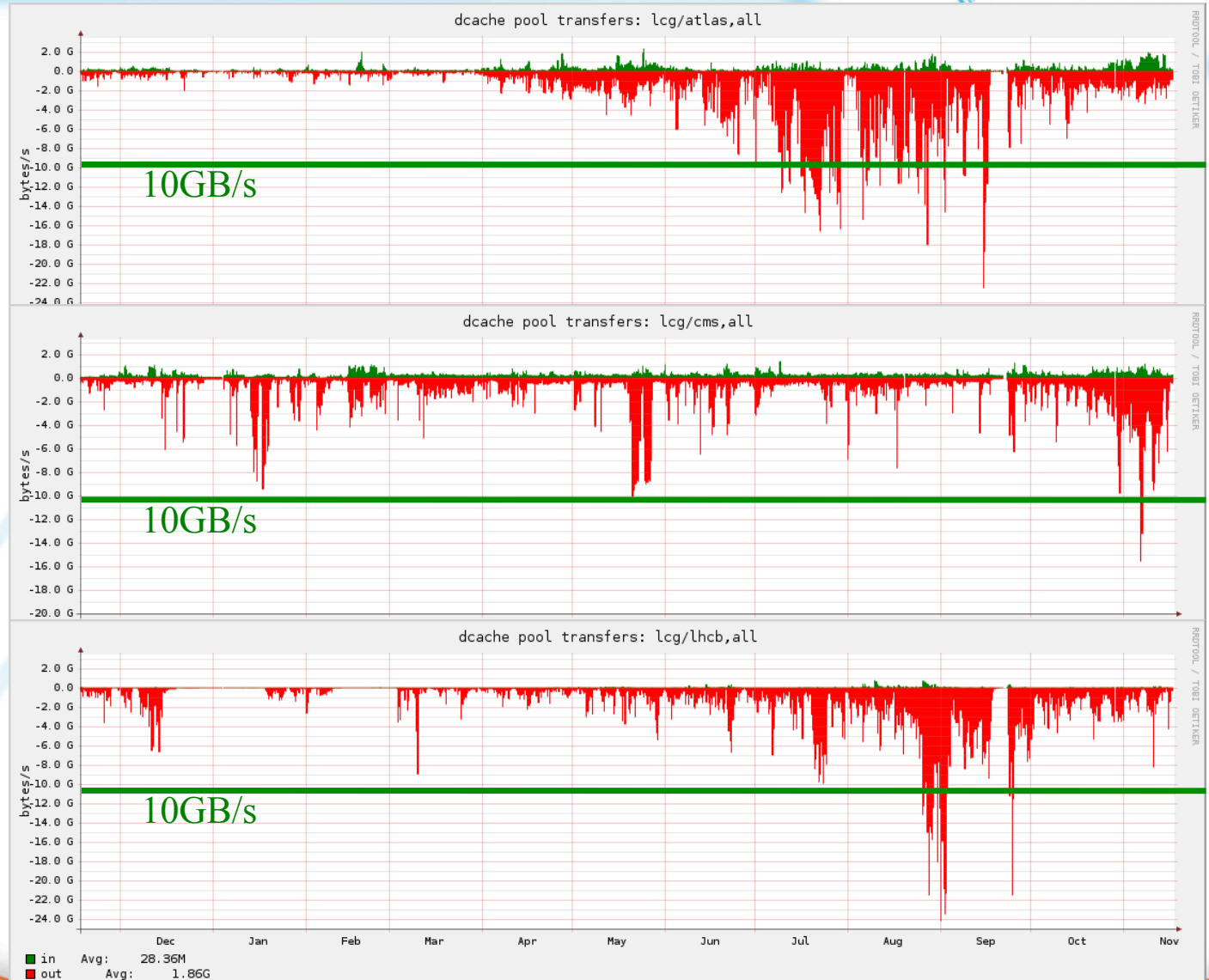
Dcache Activity EXPORT per VO



ATLAS

CMS

LHCb





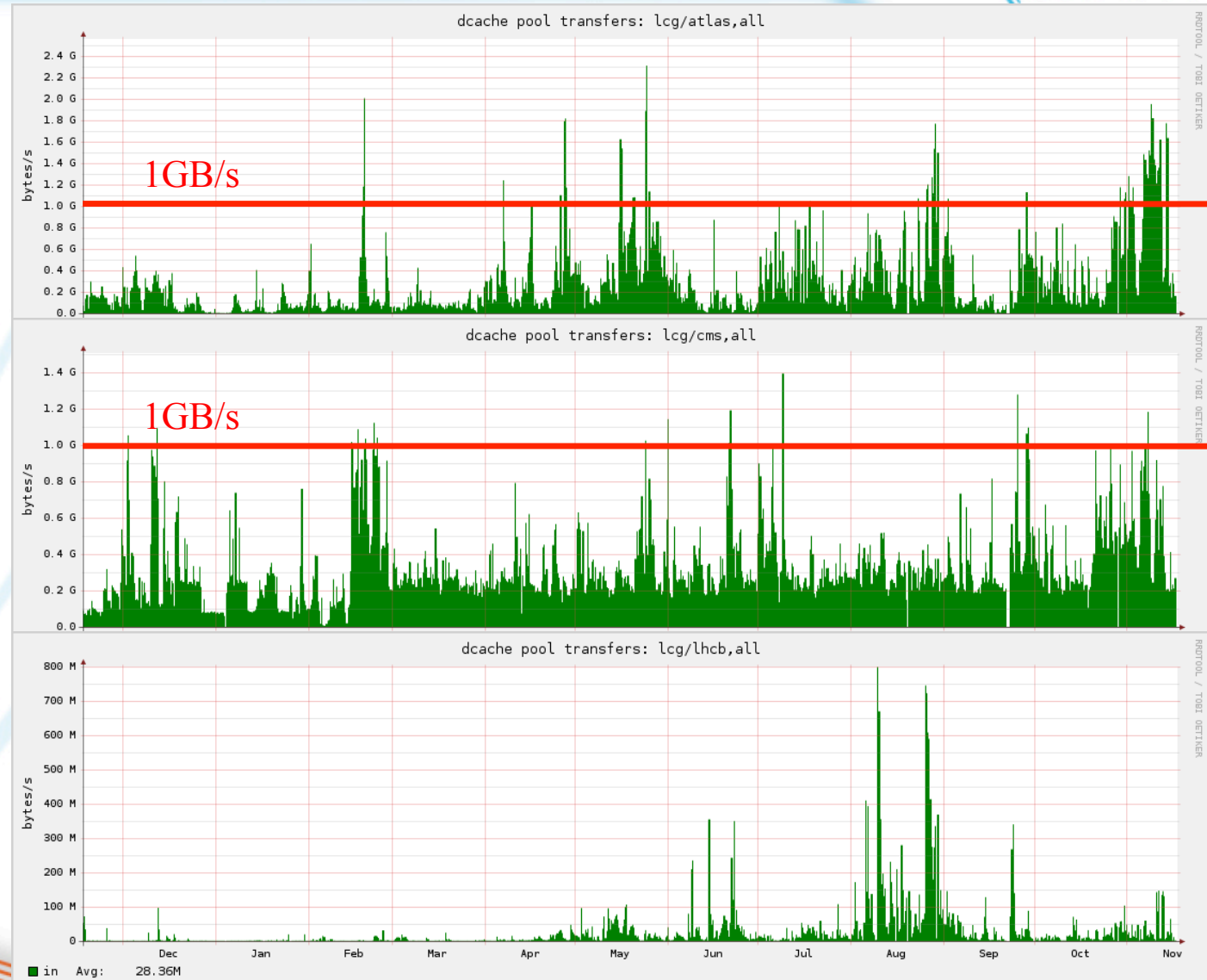
Dcache Activity IMPORT per VO



ATLAS

CMS

LHCb



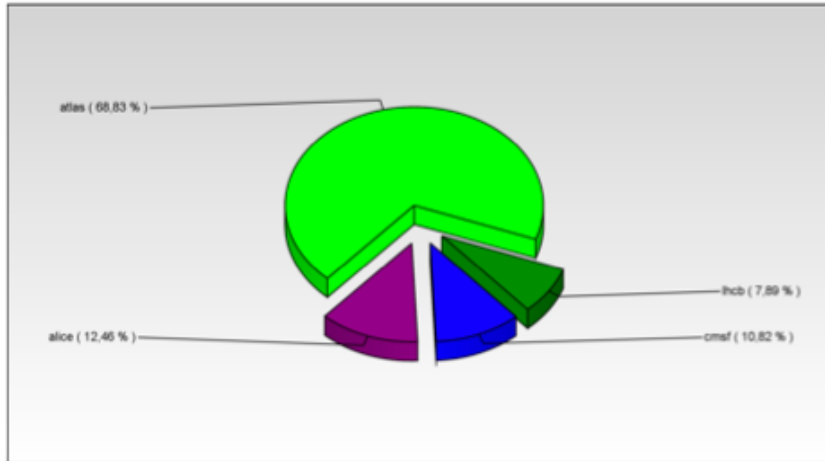
CPU



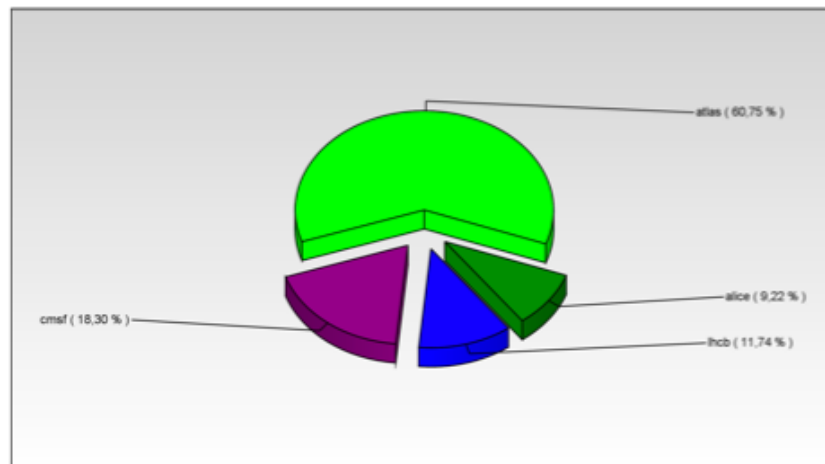
CPU consumption LHC



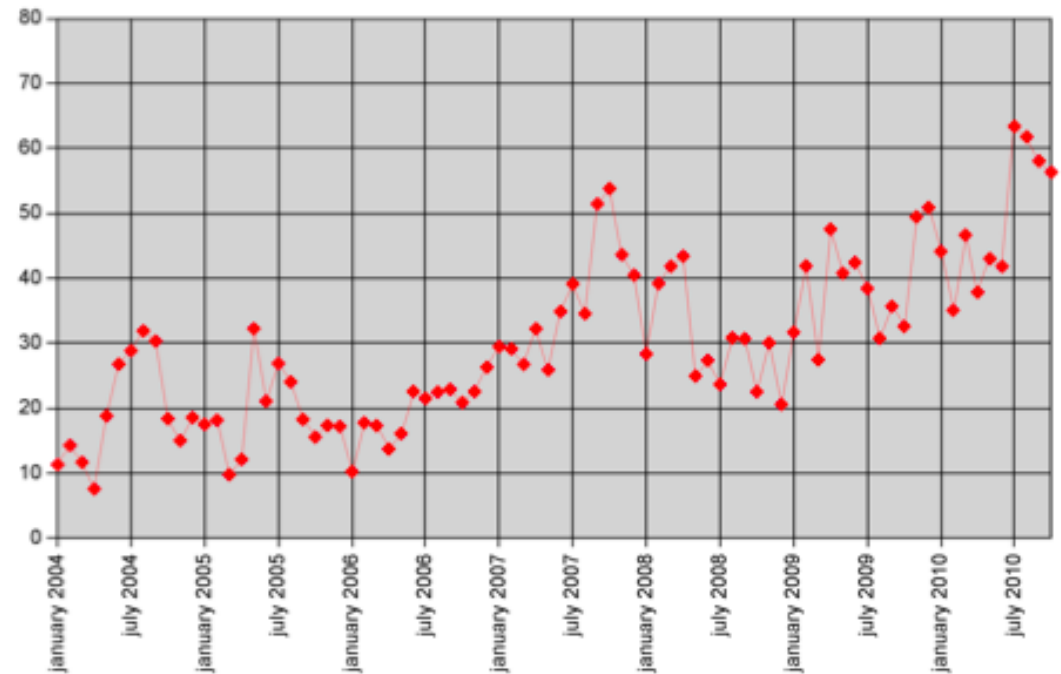
CPU sharing between LHC Experience in 2010



CPU sharing between LHC Experience in 2009



CPU consumption : Fraction LHC / Total from 2004 to 2010





CPU yearly consumption



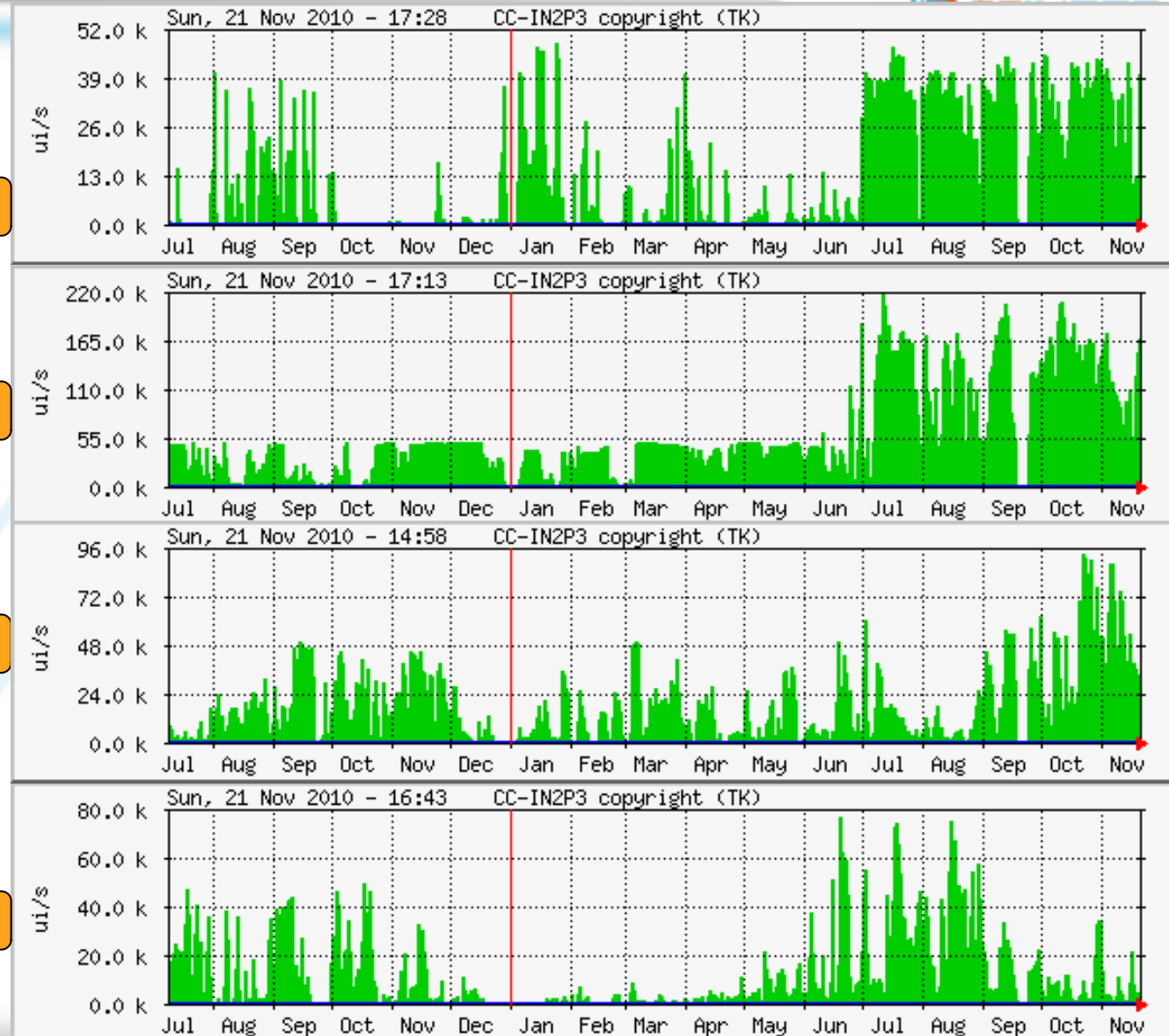
ALL EXPERIMENT ACTIVITIES

Alice

ATLAS

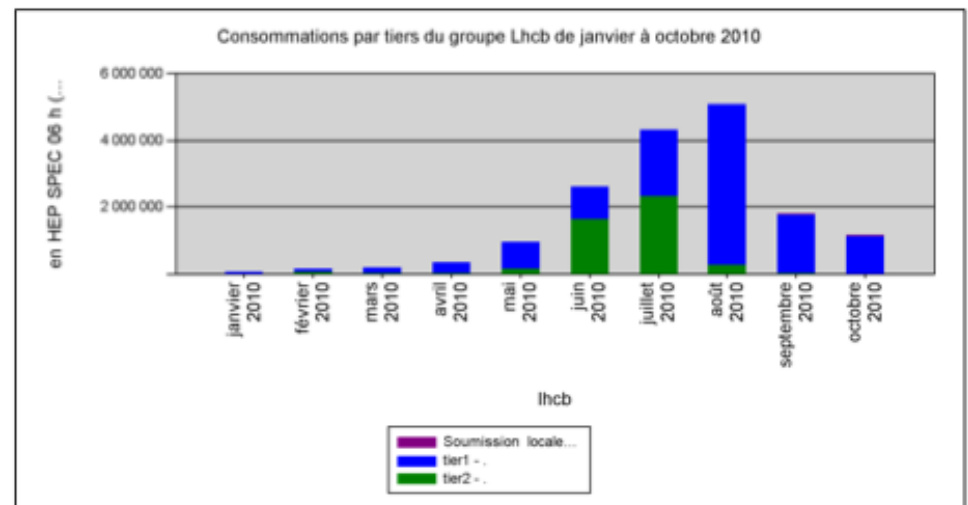
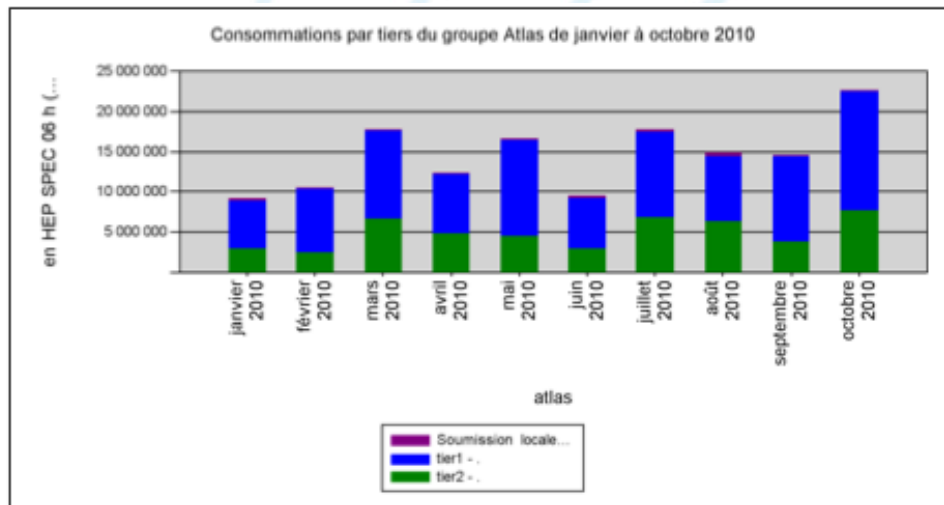
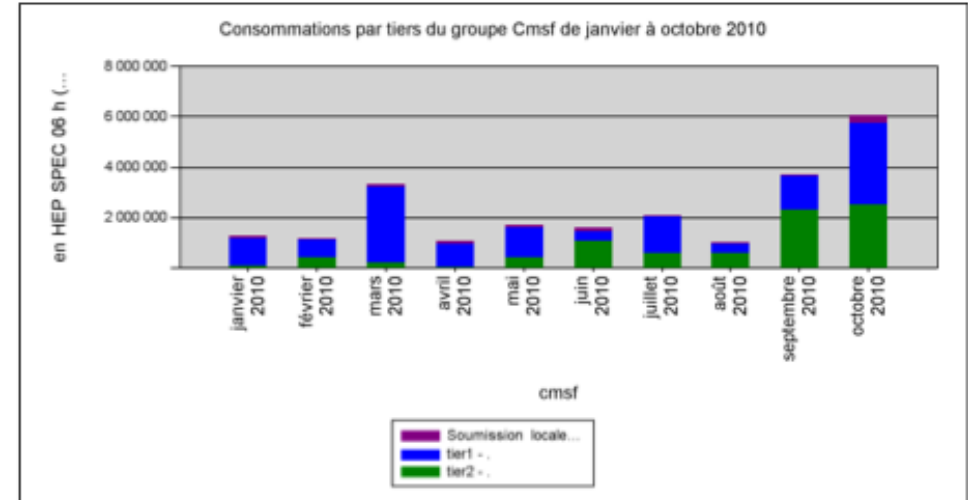
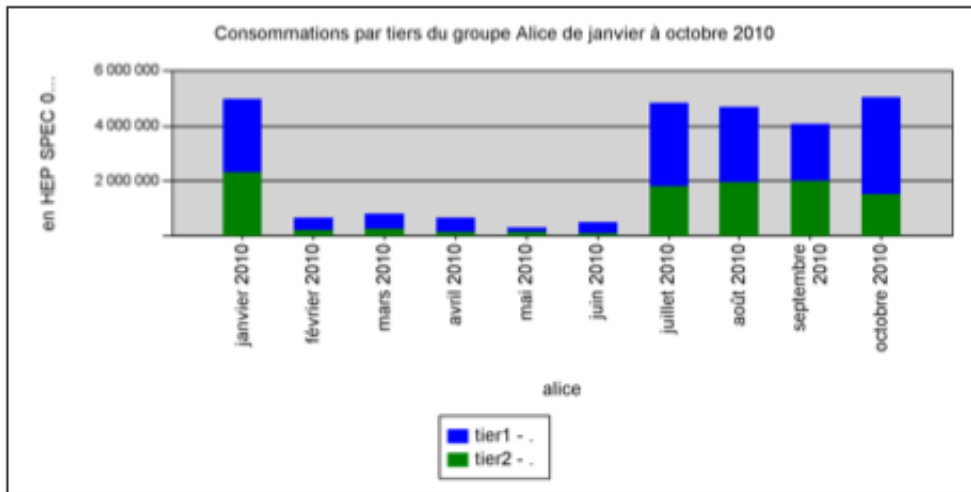
CMS

LHCb





CPU yearly consumption

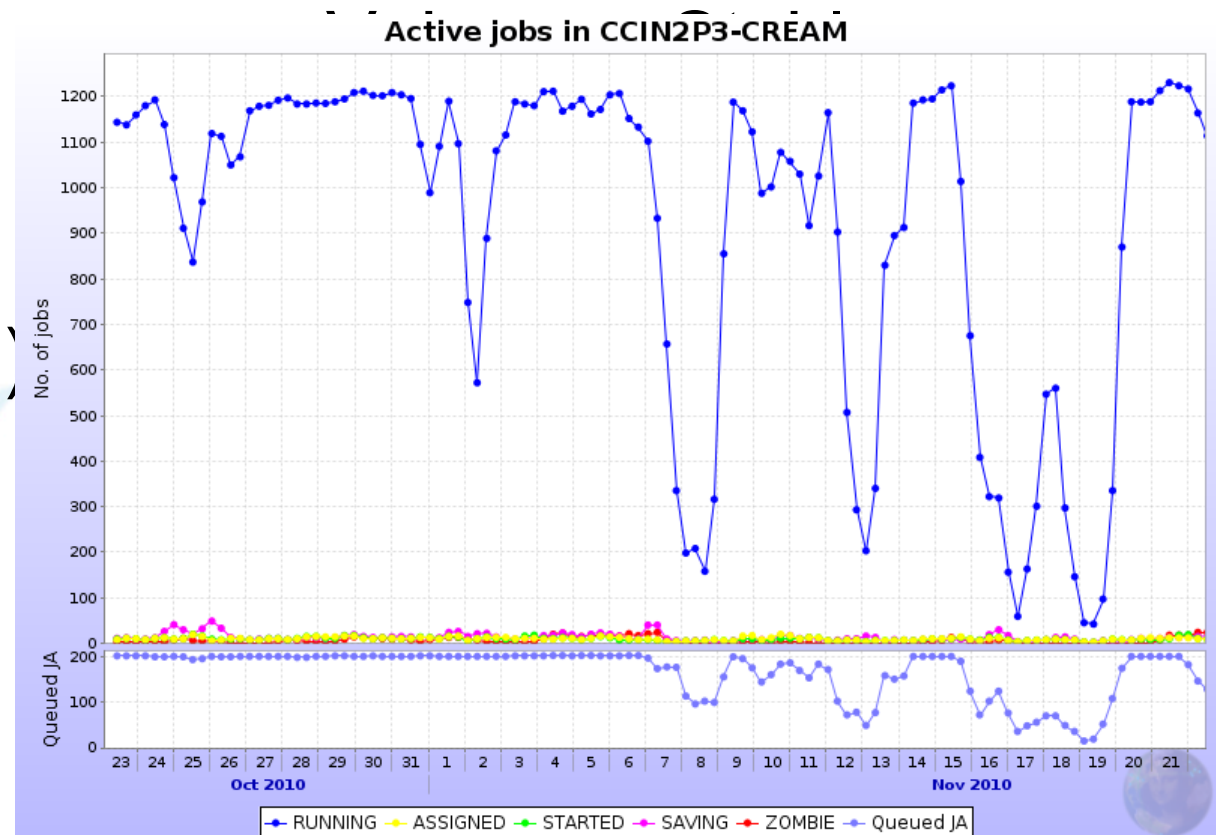




Alice CPU Usage



- Full usage of CREAMCE
- Pb: AFS stress
- Objectives (pledges)
 - Underused
 - Difficult to catch up
 - Because of the limitations on the resources per VO





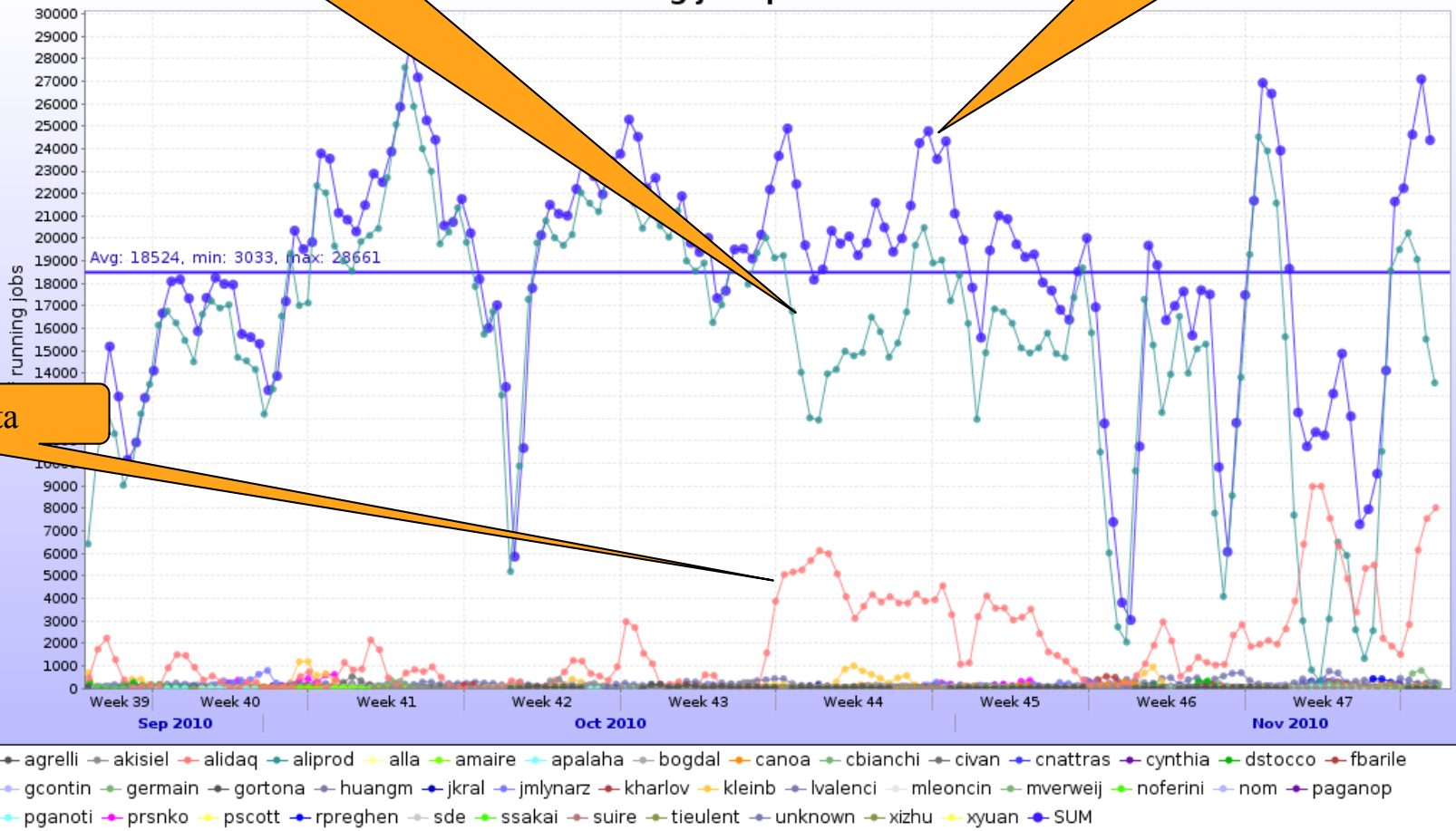
Alice per job types



Simulation+analysis train

User analysis

Running jobs per user



Repro RAW data



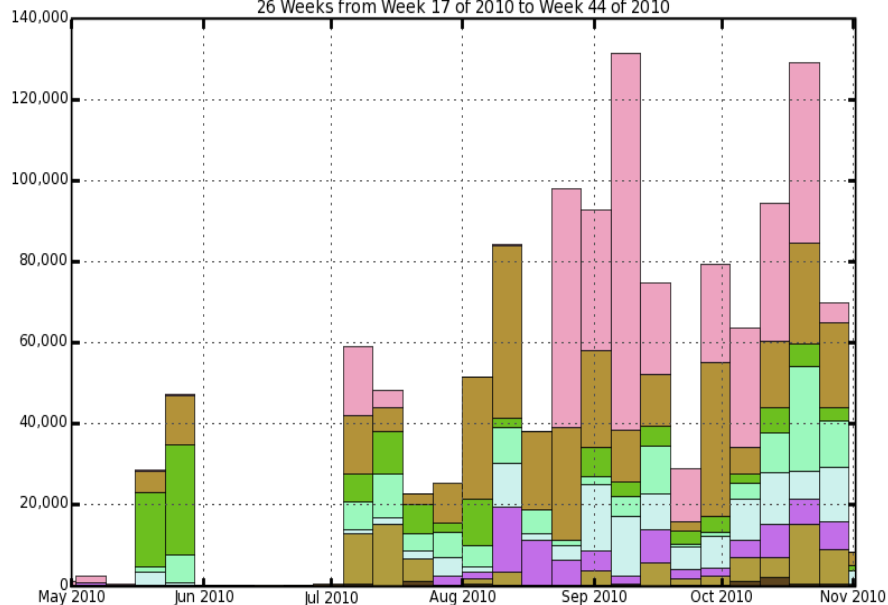
CMS JOBS @ T1(s)



PRODUCTION MC

Terminated jobs

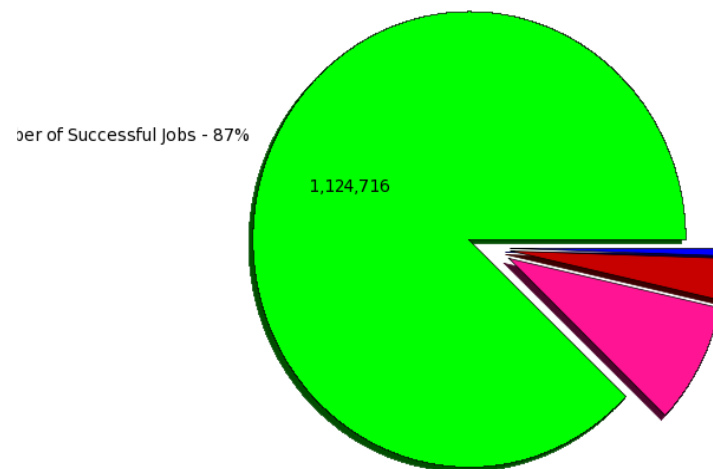
26 Weeks from Week 17 of 2010 to Week 44 of 2010



TI_US_FNAL TI_IT_CNAF TI_UK_RAL TI_ES_PIC TI_DE_KIT
 TI_TW_ASGC TI_FR_CCIN2P3 T0_CH_CERN

Maximum: 131,278, Minimum: 0.00, Average: 44,129, Current: 8,366

Number of Successful and Failed Jobs (Pie Graph) (Sum: 1,279,763)



Number of Successful Jobs - 87% (1,124,716)
 Number of GRID-Failed Jobs - 2% (37,641)

Number of Application-Failed Jobs - 8% (110,544)
 Number of Unknown-Status Jobs - 0% (6,862)

Jobs @ T1_FR_CC-IN2P3 :

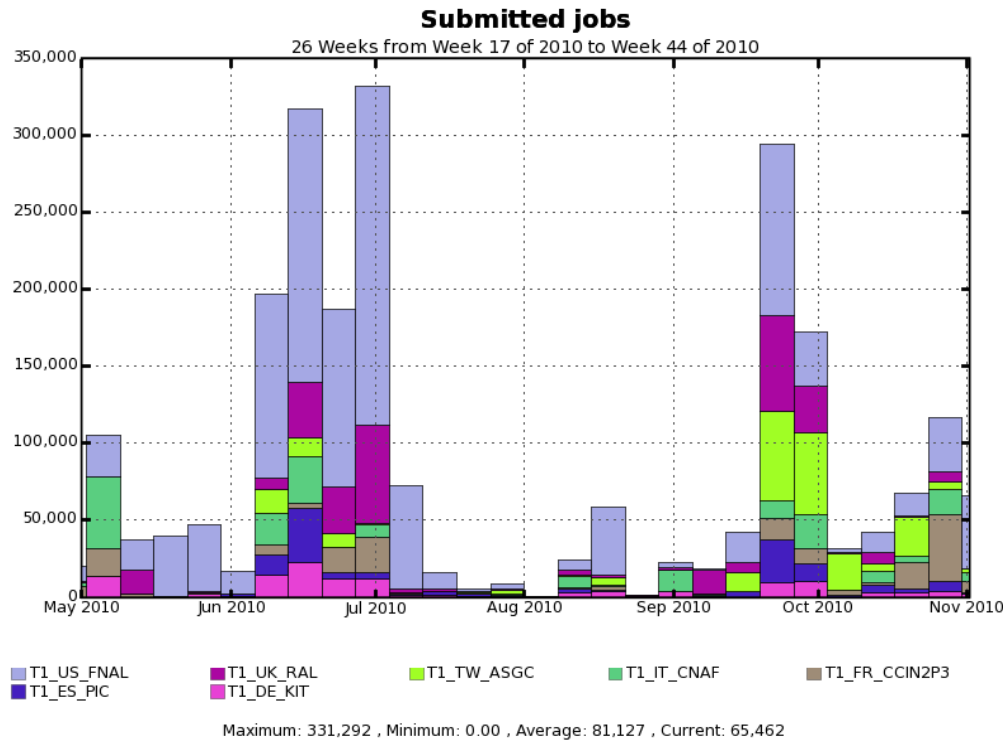
Average : 4 000 jobs/week
 Max : 15 000 jobs/week
 Success Rate : 89 %



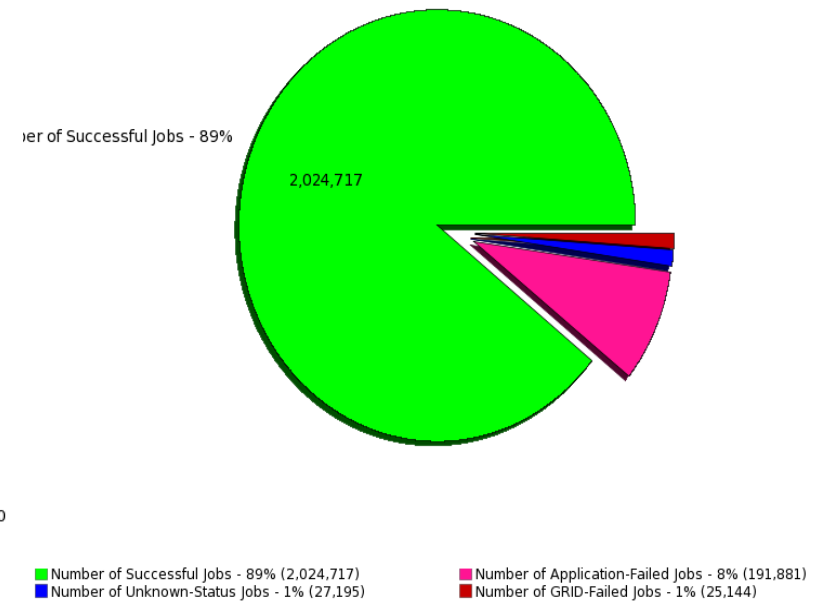
CMS JOBS @ T1(s)



Reprocessing



Number of Successful and Failed Jobs (Pie Graph) (Sum: 2,268,937)



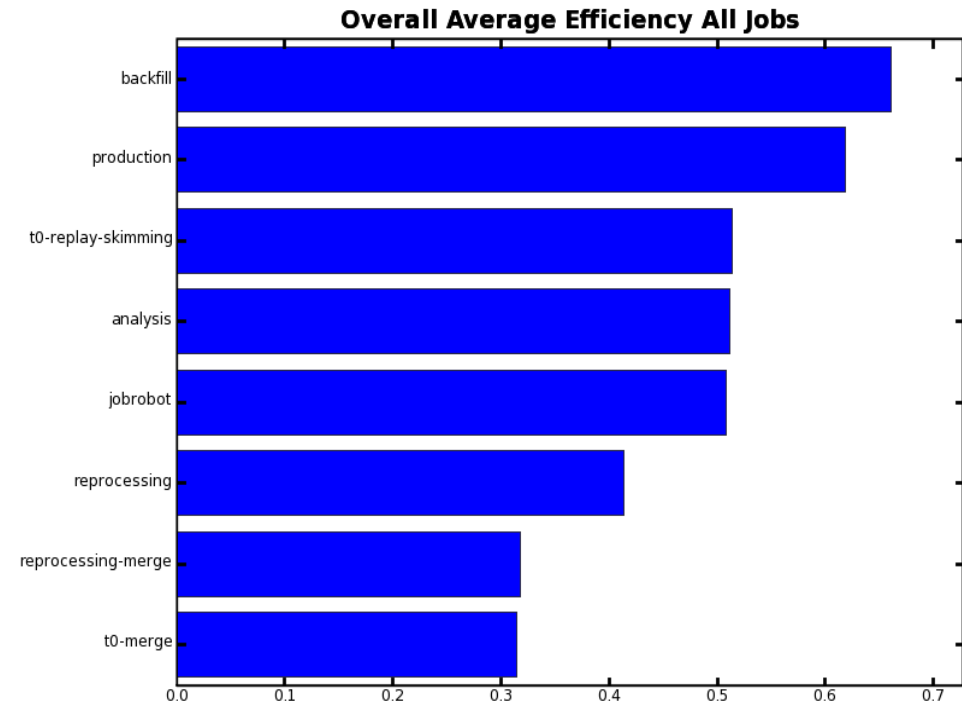
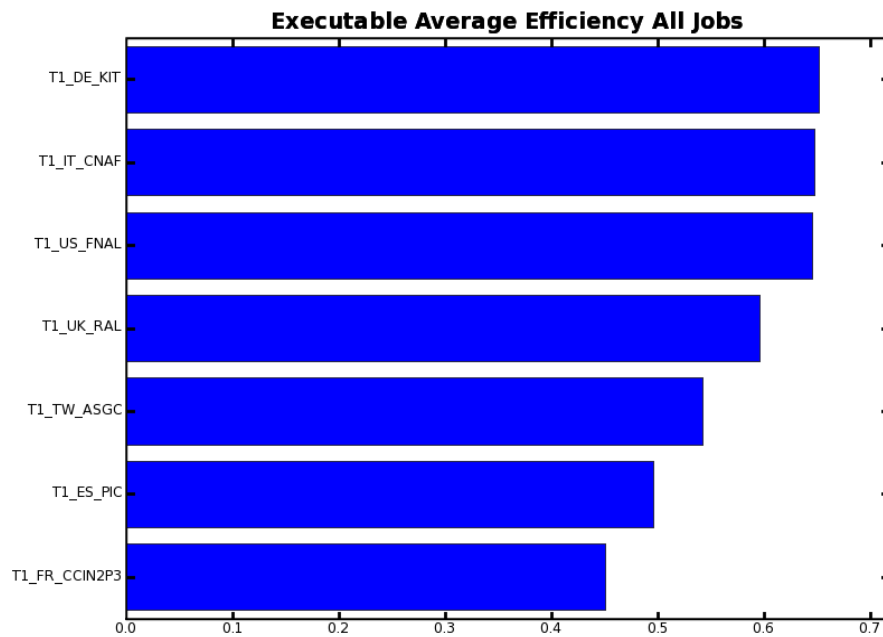
Jobs @ T1_FR_CC-IN2P3 :
 Average : 7 500 jobs/week
 Max : 42 000 jobs/week
 Success Rate : 89 %



CMS JOBS @ T1_FR_CCIN2P3



Low Efficiency Study



Low Efficiency < 0.5
for PIC and CCIN2P3 : dcache technology

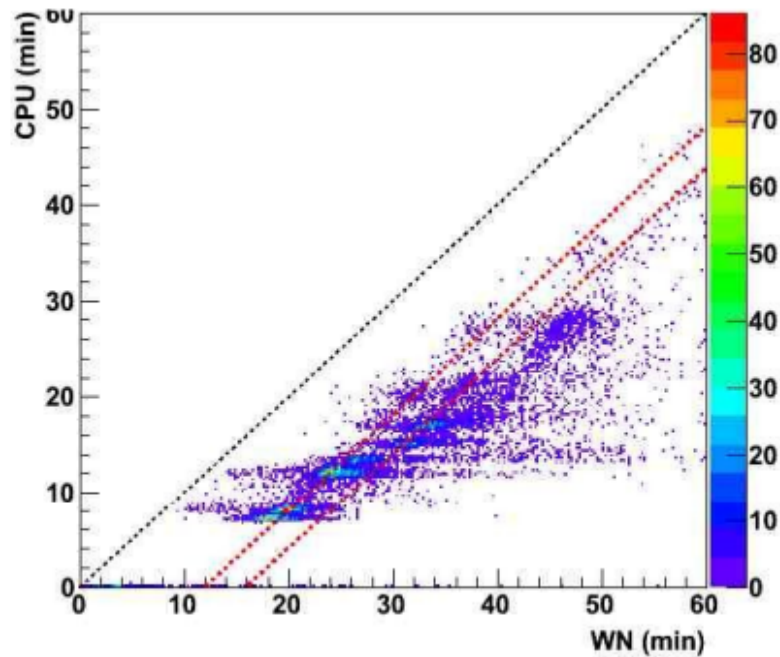
Efficiency by activity



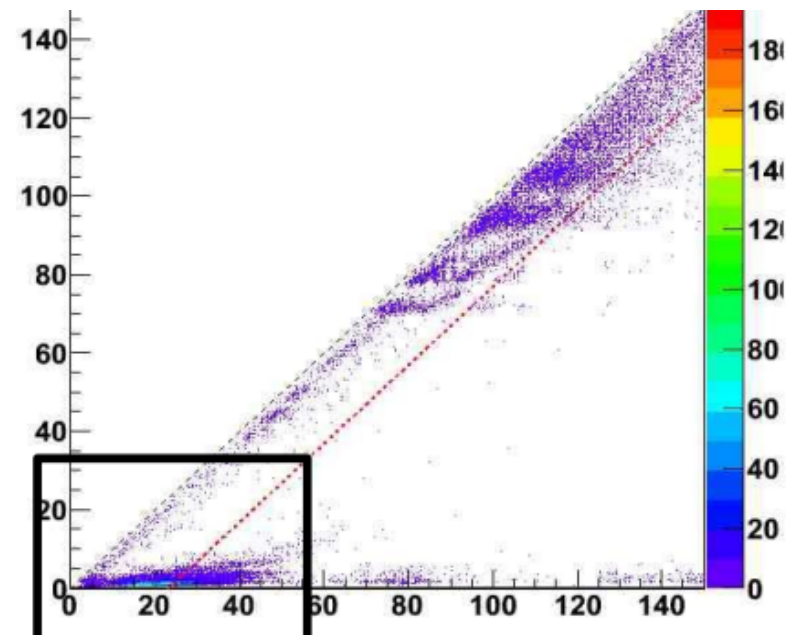
CMS JOBS @ T1_FR_CCIN2P3



Low Efficiency Study in progress



Job Robots :
Shifted in time !
=> Some waiting times
during the jobs



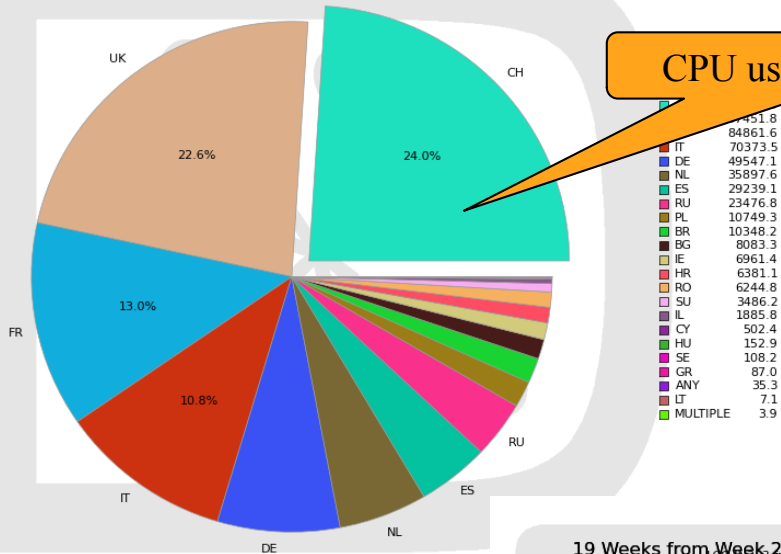
Reprocessing 2 modes :
* Shifted in time !
=> Some waiting times during the jobs
* Very small slope :
=> Waiting through all the job

LHCb: Distribution of Jobs @ Tier 1



CPU days used by Country

19 Weeks from Week 26 of 2010 to Week 46 of 2010

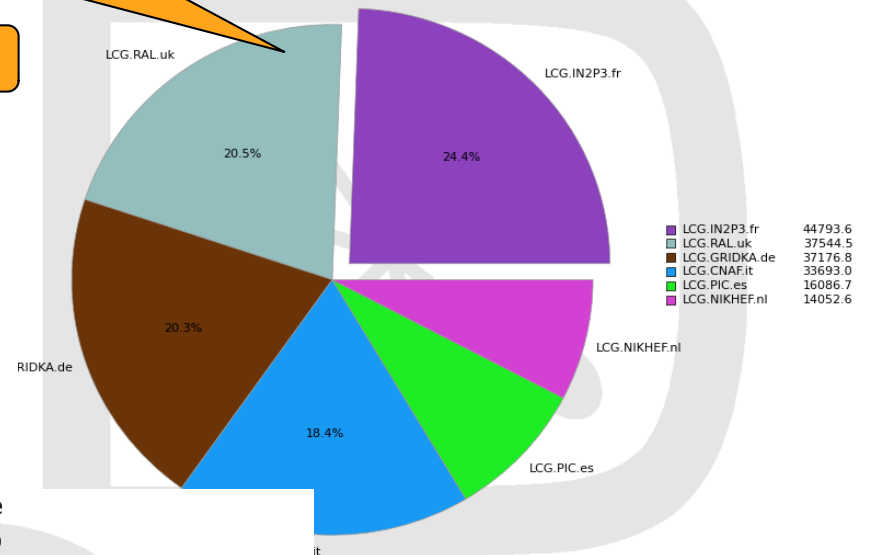


CPU used per country

CPU used per T1

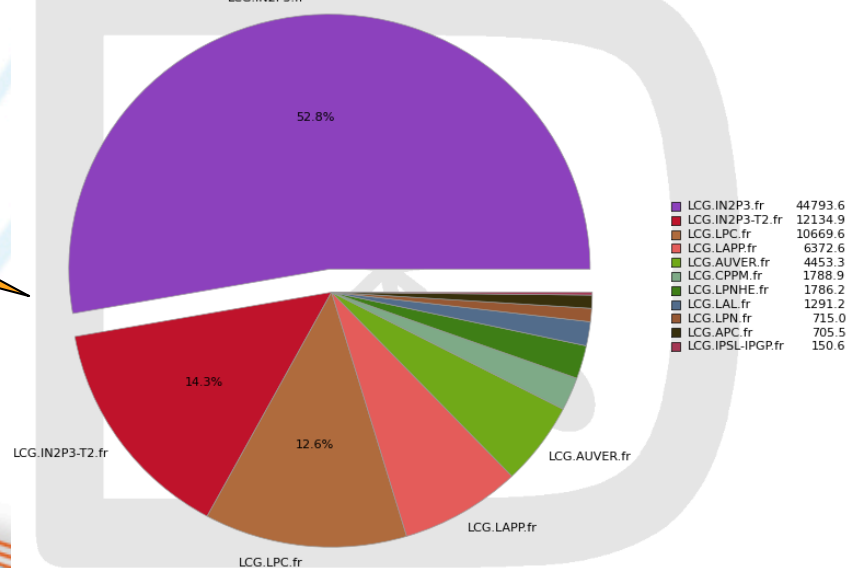
CPU days used by Site

Week 26 of 2010 to Week 46 of 2010



CPU days used by Site

19 Weeks from Week 26 of 2010 to Week 46 of 2010



CPU used per french site

Generated on 2010-11-17 10:27:36 UTC

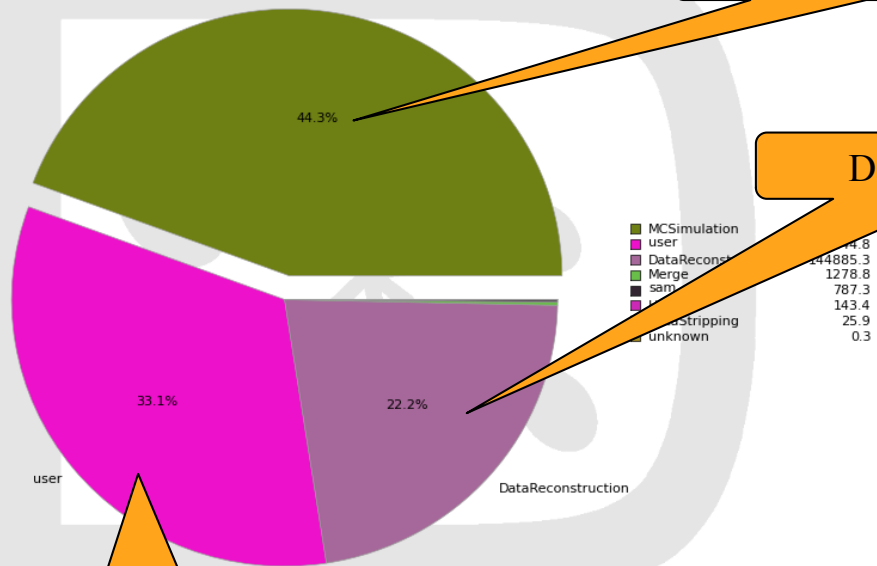
Generated on 2010-11-17 10:24:51 UTC

LHCb : Distribution per Job types



CPU days used by JobType

19 Weeks from Week 26 of 2010 to Week 46 of 2010



MC

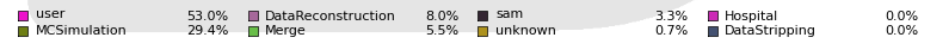
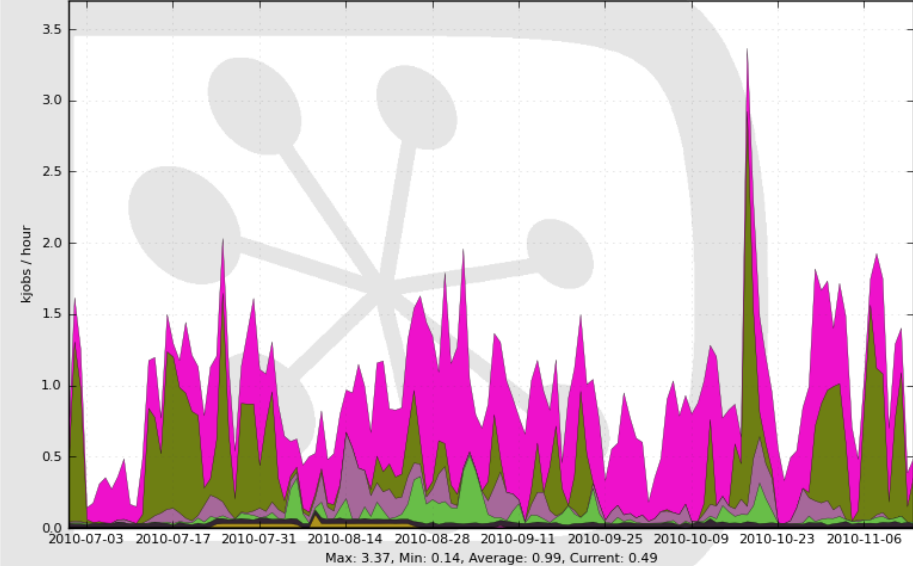
Data reprocessing

User

Generated on 2010-11-17 10:17:17 UTC

Jobs by JobType

19 Weeks from Week 26 of 2010 to Week 46 of 2010



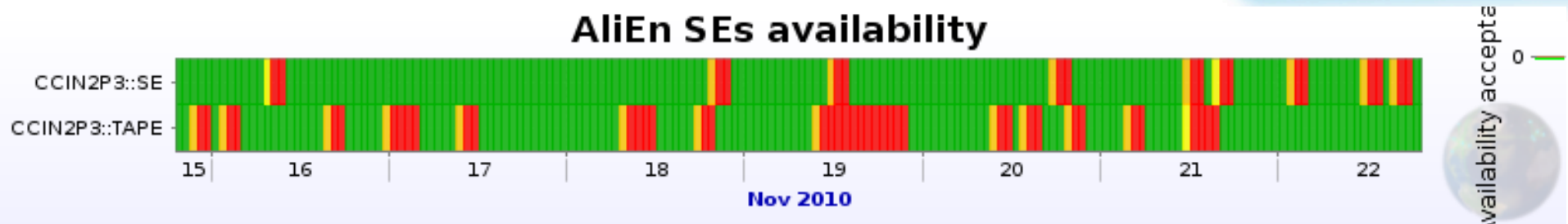
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TRANSFERS



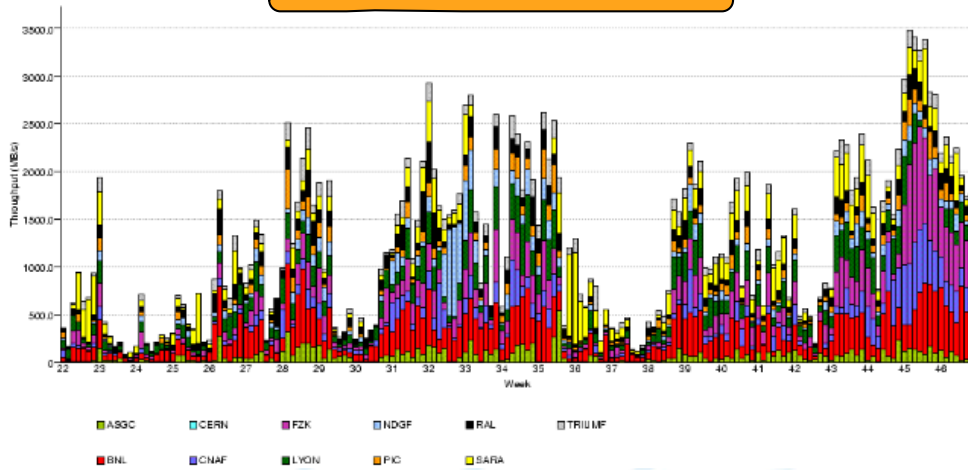
AliEn SEs availability



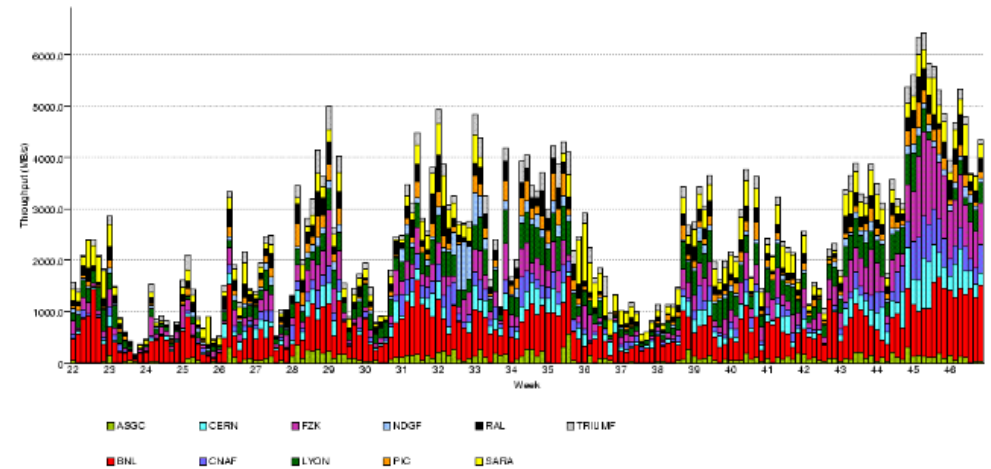
- Tier1 activity: Transfers from CERN to TAPE.
 - Frequent failures of copy from CERN servers
- Tier2: Storage on T2 OK:
 - 72 TB used
 - Transfert IN: 50MB/s; OUT:30MB/s



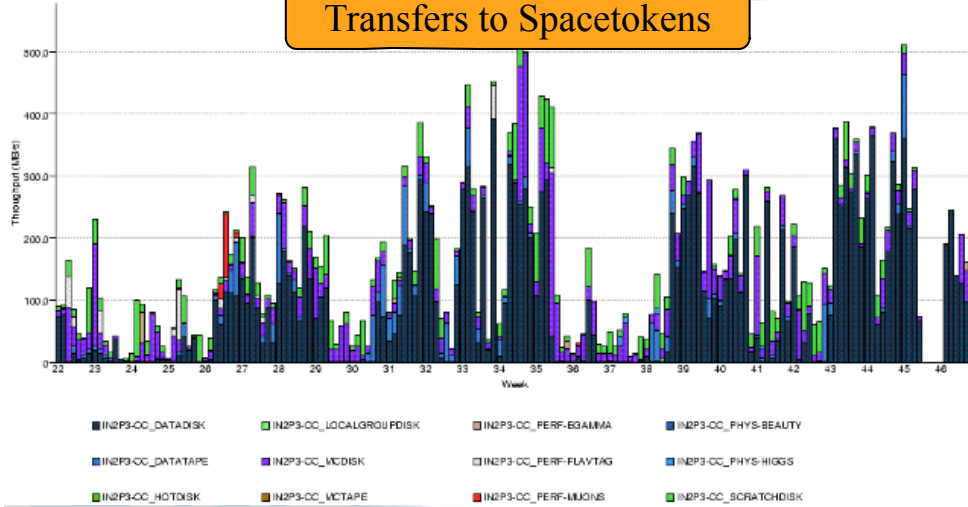
Transfers to Tier 1s



Transfers to ALL sites



Transfers to Spacetokens

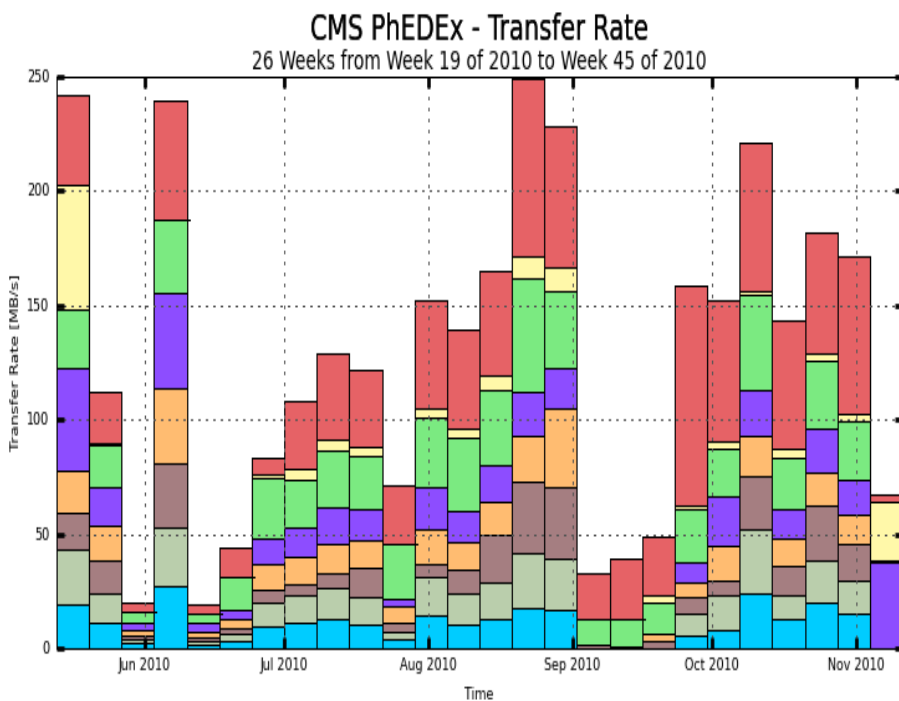




CMS: TRANSFERS - Import



T0 -> T1s

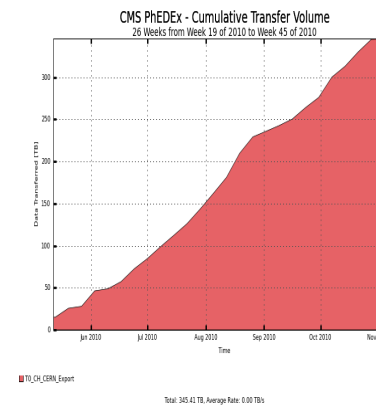
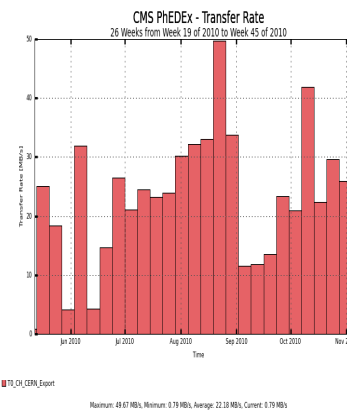


- T0_CH_CERN_Export to T1_US_FINAL_Buffer
- T0_CH_CERN_Export to T1_FR_CCIN2P3_Buffer
- T0_CH_CERN_Export to T1_TW_ASGC_Buffer
- T0_CH_CERN_Export to T1_UK_RAL_Buffer
- T0_CH_CERN_Export to T2_CH_CAF
- T0_CH_CERN_Export to T1_DE_KIT_Buffer
- T0_CH_CERN_Export to T1_IT_CNAF_Buffer
- T0_CH_CERN_Export to T1_ES_PIC_Buffer

Maximum: 249.49 MB/s, Minimum: 19.10 MB/s, Average: 128.58 MB/s, Current: 67.22 MB/s

T0 -> CC-IN2P3

Average transfer rate : ~ 23 MB/s
 Maximum transfer rate : ~ 50 MB/s
 Transfer Volume : ~ 300 TB



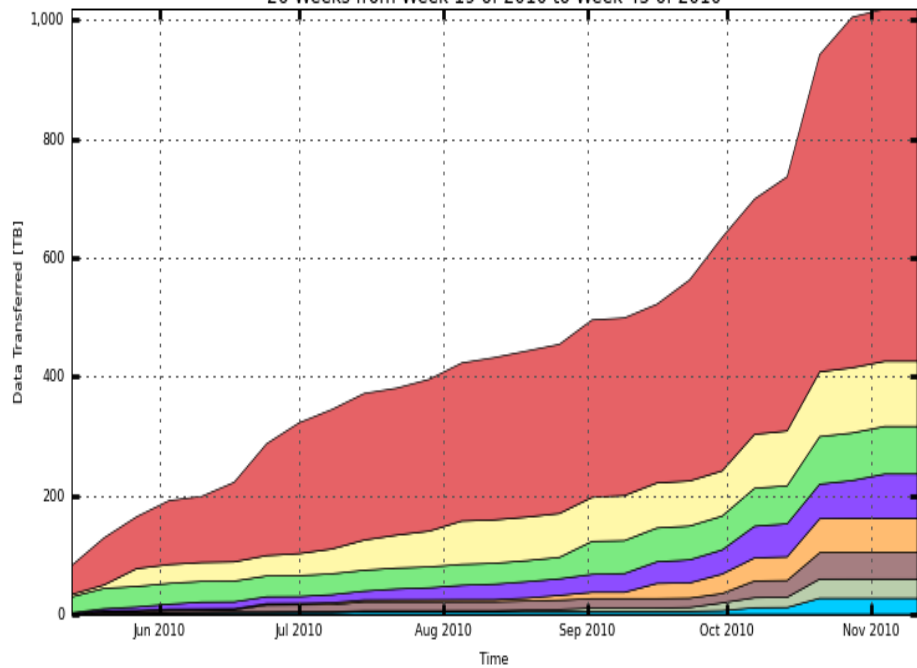


CMS: TRANSFERS - Import



all T1(s) -> Each T1

CMS PhEEx - Cumulative Transfer Volume
26 Weeks from Week 19 of 2010 to Week 45 of 2010



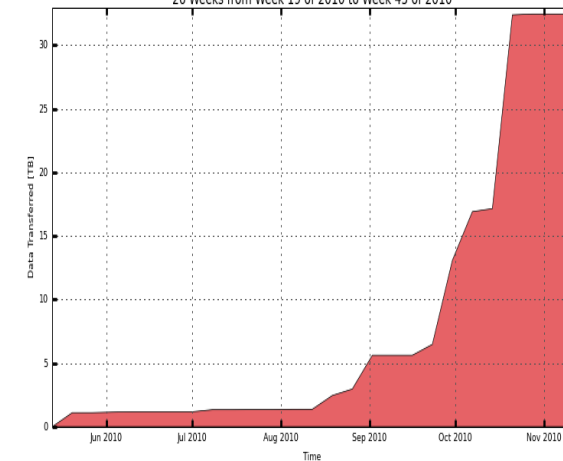
■ T1_US_FNAL_Buffer ■ T1_IT_CNAF_Buffer ■ T1_DE_KIT_Buffer ■ T1_CH_CERN_Buffer ■ T1_TW_ASGC_Buffer
■ T1_ES_PIC_Buffer ■ T1_FR_CCIN2P3_Buffer ■ T1_UK_RAL_Buffer

Total: 1,018 TB, Average Rate: 0.00 TB/s

all T1(s) -> CC-IN2P3

Average transfer rate : ~ 2.5 MB/s
Maximum transfer rate : ~ 26.41 MB/s
Transfer Volume : ~ 30 TB

CMS PhEEx - Cumulative Transfer Volume
26 Weeks from Week 19 of 2010 to Week 45 of 2010



■ T1_FR_CCIN2P3_Buffer

Total: 32.45 TB, Average Rate: 0.00 TB/s

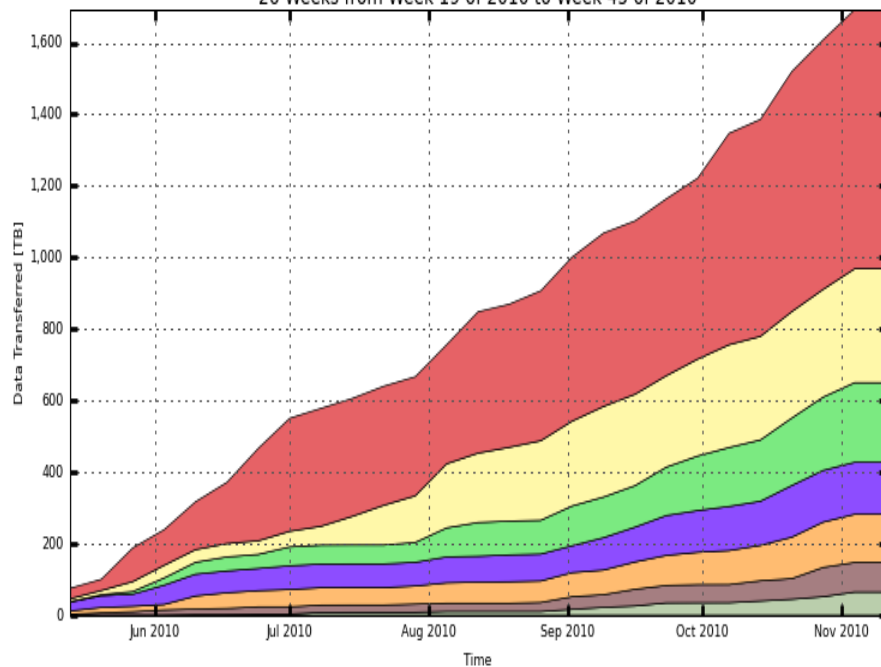


CMS: TRANSFERS - Import



all T2(s) -> T1s

CMS PhEEx - Cumulative Transfer Volume
26 Weeks from Week 19 of 2010 to Week 45 of 2010



T1_US_FNAL_Buffer T1_JT_CNAF_Buffer T1_FR_CCIN2P3_Buffer T1_DE_KIT_Buffer T1_ES_PIC_Buffer
T1_TW_ASGC_Buffer T1_UK_RAL_Buffer T1_CH_CERN_Buffer

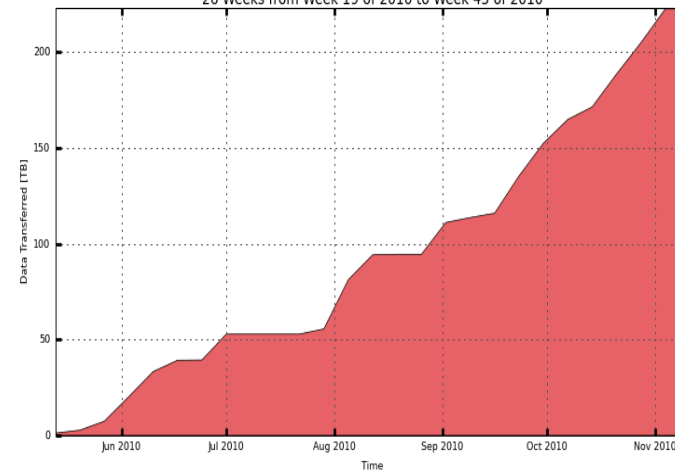
Total: 1,692 TB, Average Rate: 0.00 TB/s

all T2(s) -> CC-IN2P3

Average transfer rate : ~ 15 MB/s

Transfer Volume : ~ 223 TB

CMS PhEEx - Cumulative Transfer Volume
26 Weeks from Week 19 of 2010 to Week 45 of 2010



T1_FR_CCIN2P3_Buffer

Total: 222.57 TB, Average Rate: 0.00 TB/s

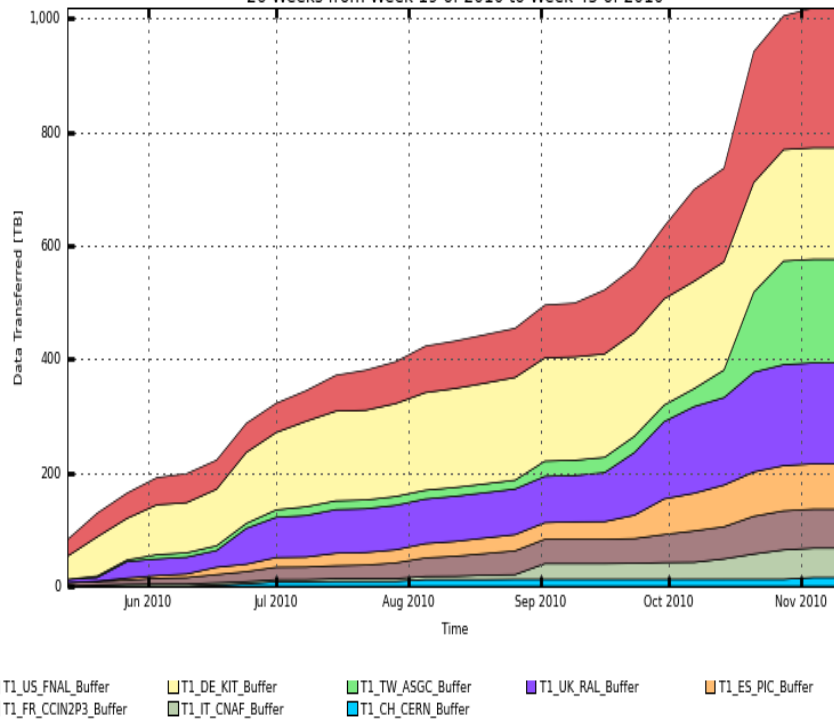


CMS: TRANSFERS - Exports



T1s<-> T1s

CMS PhEEx - Cumulative Transfer Volume
26 Weeks from Week 19 of 2010 to Week 45 of 2010

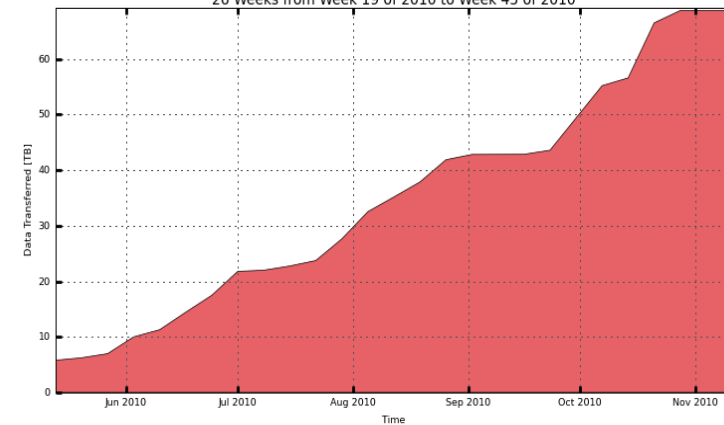


Total: 1,018 TB, Average Rate: 0.00 TB/s

CC-IN2P3 -> all T1(s)

Average transfer rate : ~ 5 MB/s
Maximum transfer rate : ~ 17.14 MB/s
Transfer Volume : ~ 70 TB

CMS PhEEx - Cumulative Transfer Volume
26 Weeks from Week 19 of 2010 to Week 45 of 2010



T1_FR_CCIN2P3_Buffer

Total: 68.68 TB, Average Rate: 0.00 TB/s

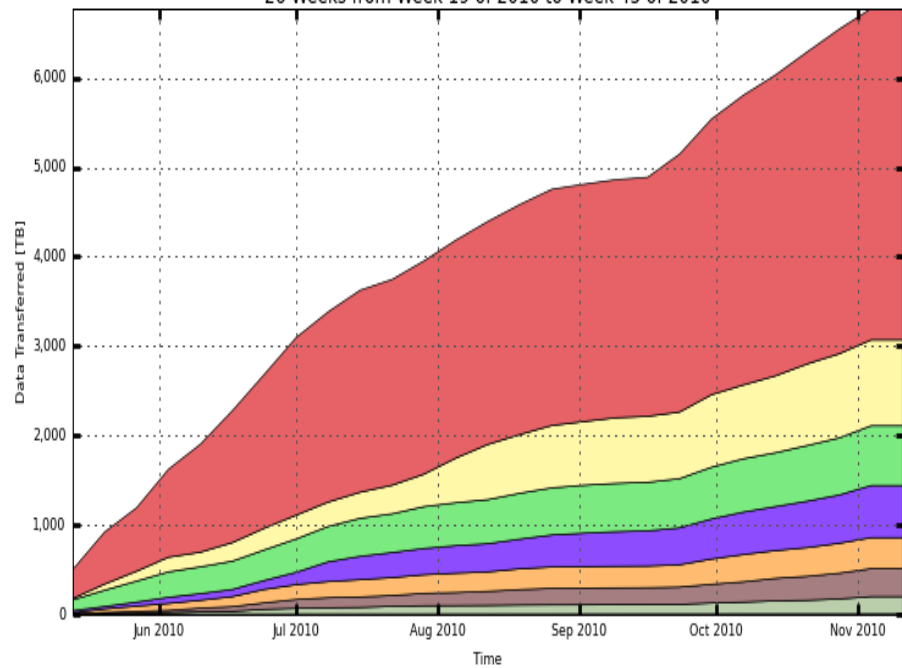


CMS: TRANSFERS - Exports



Ts1 -> Ts2

CMS PhEX - Cumulative Transfer Volume
26 Weeks from Week 19 of 2010 to Week 45 of 2010



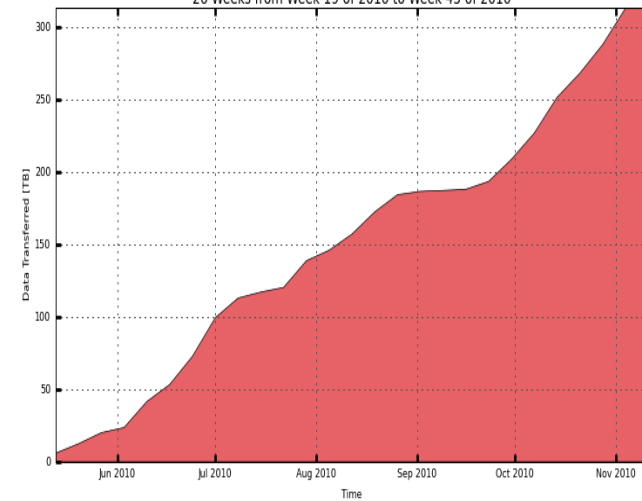
■ T1_US_FNAL_Buffer ■ T1_IT_CNAF_Buffer ■ T1_DE_KIT_Buffer ■ T1_UK_RAL_Buffer ■ T1_ES_PIC_Buffer
■ T1_FR_CCIN2P3_Buffer ■ T1_TW_ASGC_Buffer ■ T1_CH_CERN_Buffer

Total: 6,773 TB, Average Rate: 0.00 TB/s

CC-IN2P3 -> all T2(s)

Average transfer rate : ~ 21 MB/s
Maximum transfer rate : ~ 46 MB/s
Transfer Volume : ~ 312 TB

CMS PhEX - Cumulative Transfer Volume
26 Weeks from Week 19 of 2010 to Week 45 of 2010



■ T1_FR_CCIN2P3_Buffer

Total: 312.66 TB, Average Rate: 0.00 TB/s



Summary



- Sustained activity from the VOs with increase on the second part of the year.
- CC has filled it's fulfilllements as T1, T2 and user's platform.
 - Large and more than planned usage of the CC by production, MC, users.
 - Pbs appearing at the end of the year.
- Some recurrent problems: AFS, SRM...
- Infrastructure requires level of expertise and human intervention (cf. Pierre talk) hardly sustainable on the long range.



Remerciements ...



- Particuliers à Luisa Arrabito, Farida Fassi, Damien Mercier, Renaud Vernet