Resource utilisation

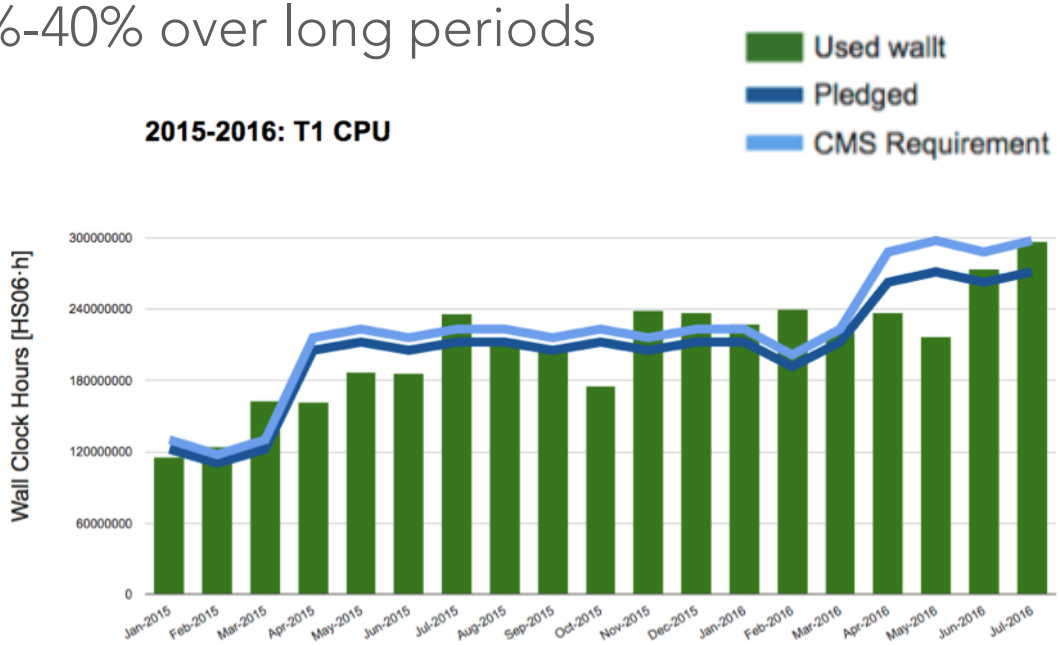
Resource utilisation continues to be very high

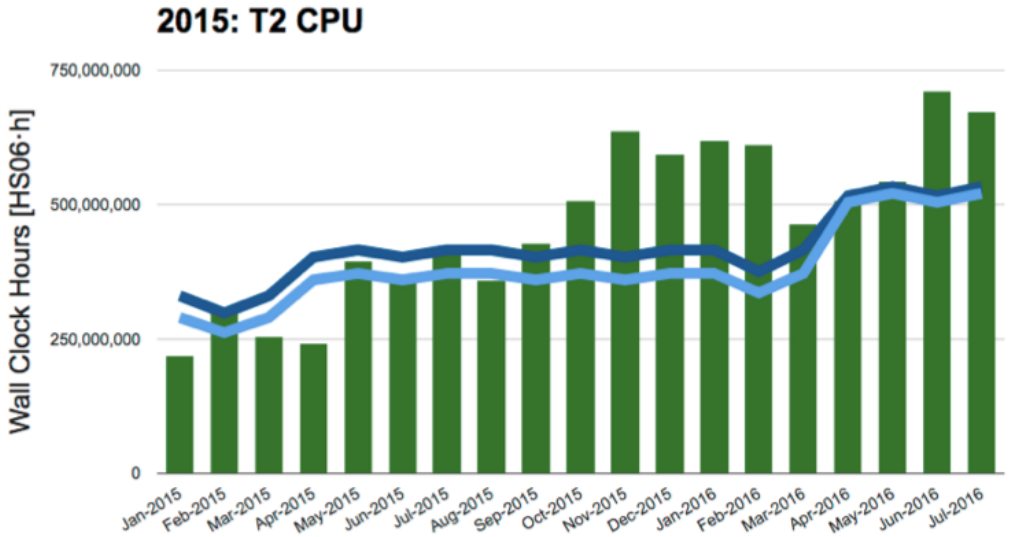
- production vs analysis share at 60%-40% over long periods

Average CPU usage at T1 level over last year was **~103%**

- note that T1s are **under-pledged** in CPU/Disk/Tape, situation to be addressed with the help of the CRSG

Over last year, CMS used **~122%** of the pledges at the T2 level

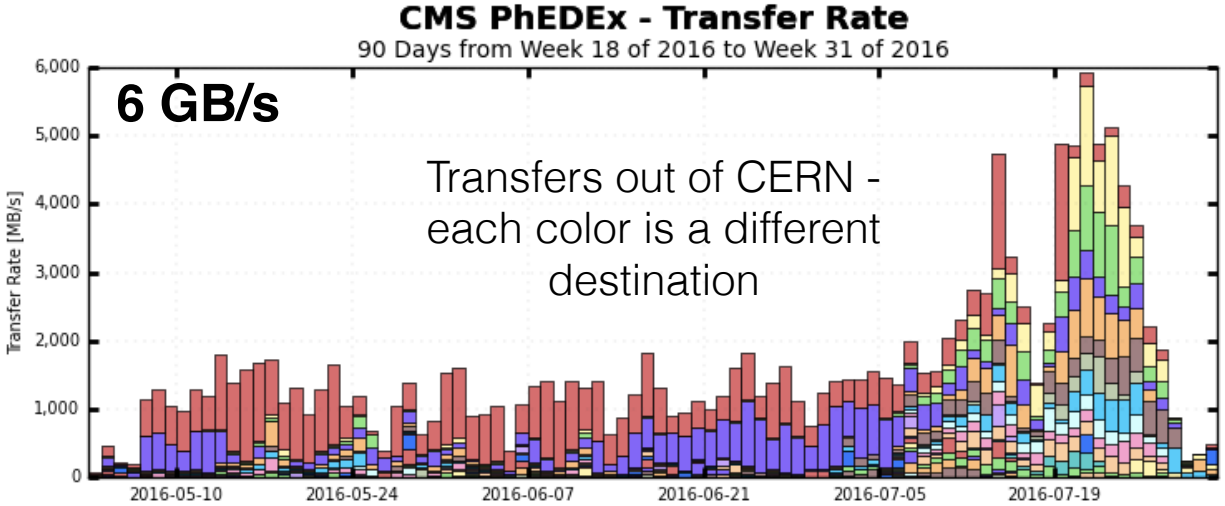


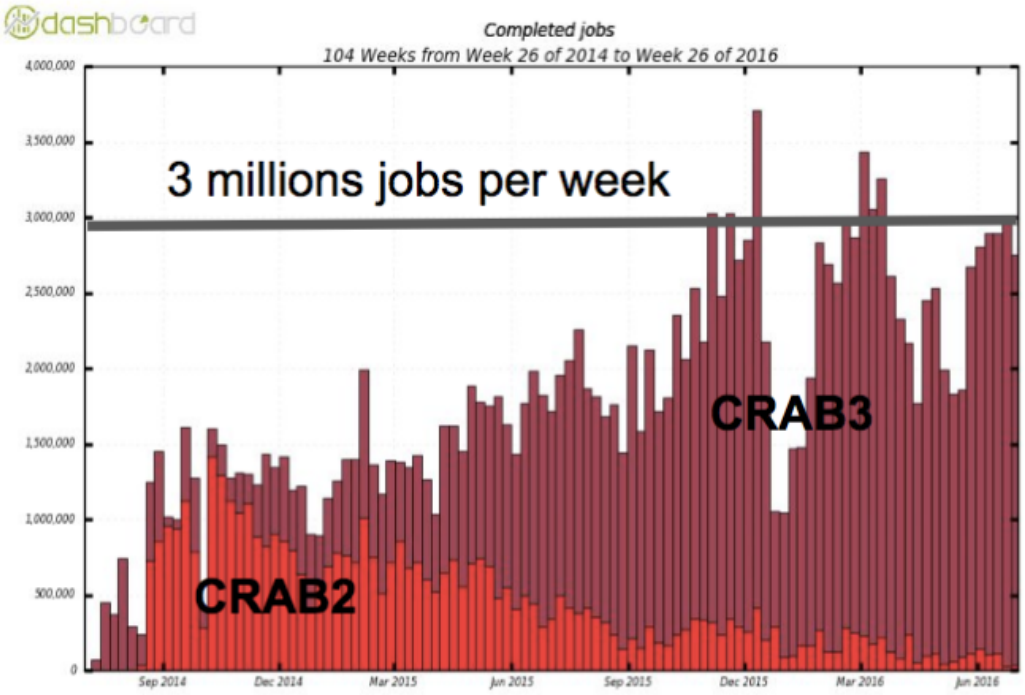


A couple of operations highlights

Unprecedented rates out of CERN

- close debugging of EOS, Network and other middleware components allowed to hugely increase export capabilities from CERN to all Tiers





Consistent load from distributed analysis users

- Successfully completed migration to CRAB3, the latest version of the CMS Grid analysis toolkit
- Analysis is ramping up again at Run-1 levels

Computing resources in 2017/18

Higher LHC live time and performance pose challenges

- increase of requests with respect to the Spring'16 requests
- resource requests docs submitted to the CRSG - under scrutiny

Many actions to mitigate the increase in resource requests have been taken already

- we exploited the flexibility in the CMS Computing Model
  - e.g. very aggressive tape deletion campaigns (with all the associated risks), reduction of AOD replicas on disk to <1, etc
- allowed already to achieve an increase in resource requests of **+20% overall instead of +40%** (as it would have been by just applying straight new LHC performance projections)

But CMS is short of resources in 2016 already

- data taking in 2016 much better than we could anticipate as from the LHC performance projections, so we are of course short now
- small contingency from 2015, and no contingency left for 2017
- NOTE: we are (since at least 3 years) underpledge at T1s
  - REBUS: CPU -6%, Disk -7%, Tape -12%. And actually really installed (end of Jul) a few % less.