LHCb Interaction with WLCG Services

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On behalf of LHCb Computing

2013 WLCG Workshop
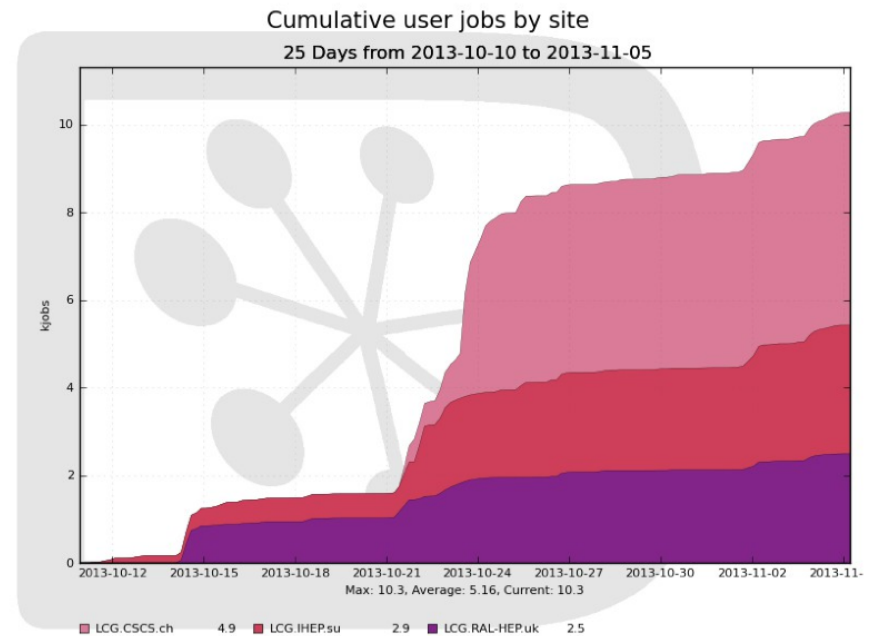
Major Production Activities

- During 2014 two more "stripping" campaigns foreseen
  - Spring (~Feb) and Fall (~Sep)
    - high stress on tape systems
      - staging in all 2011/12 reconstructed datasets
    - running at T1 sites
    - Duration 6-8 weeks
  - Currently ongoing "fall 2013 stripping" production is close to be finished

**Incremental Stripping Fall '13 - Number of Stripped Files**
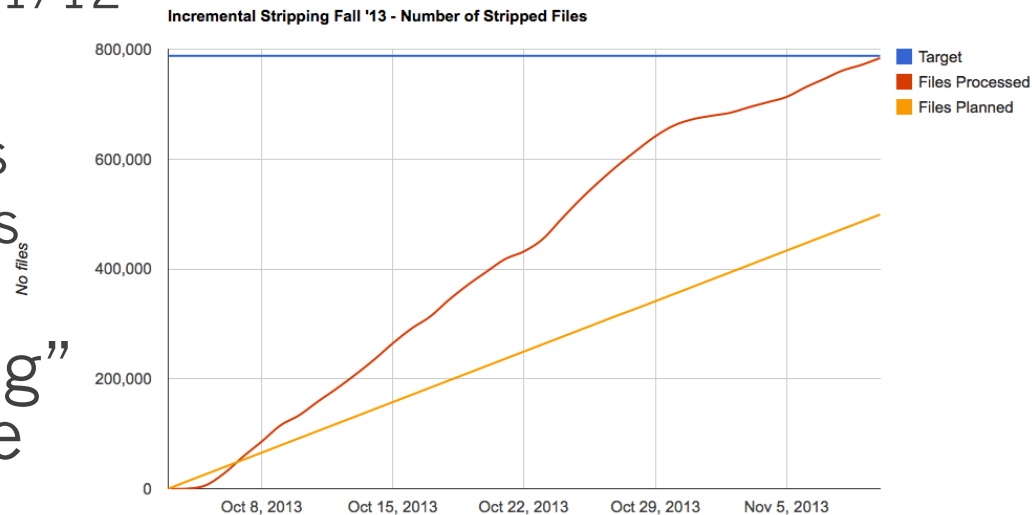
Tier2Ds (D=Disk)

- New Concept for Tier2 Sites
  - So far no Tier2 site provided disk for LHCb
  - Allow a minimum of 300 TB at selected sites
    - Replicate "production data" which will be used by user analysis jobs
  - First 5 sites are in production
    - Currently ramping up to pledged resources
    - File Transfers & User Jobs have started
  - For DPM sites
    - SRM resolving of the xrootd protocol is mandatory
      - Was not working intialliy, fix currently in preparation by the DPM team

Cumulative user jobs by site
25 Days from 2013-10-10 to 2013-11-05

Max: 10.3, Average: 5.16, Current: 10.3

LCG.CSCS.ch 4.9   LCG.IHEP.su 2.9   LCG.RAL-HEP.uk 2.5

IT-SDC

Monitoring

- Monitoring Bridge LHCbDirac -> WLCG was enabled
    - This will allow to provide more information about LHCb operations to the WLCG mon
    - First info about test workflows is enabled
        - More info to be provided from Dirac
    - Will be displayed on the WLCG monitoring web
        - (currently SUM)
- In the future will also read back info e.g. perfsonar
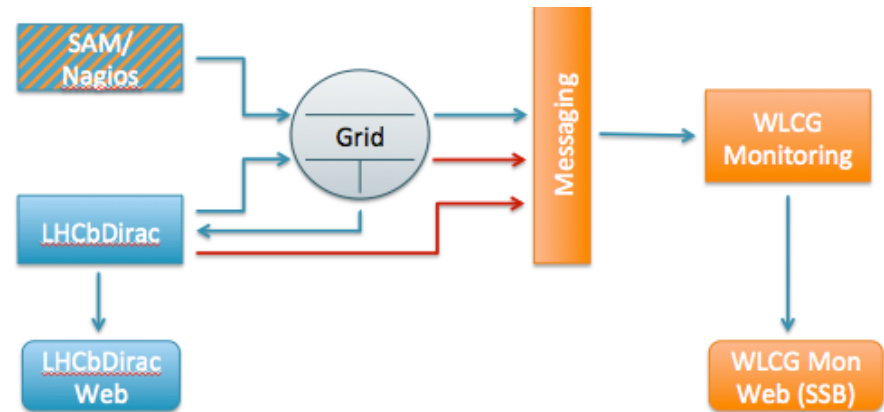
Information for Sites

- Resurrection of the WLCG/SSB pages has started
  - Goal to provide info about LHCb computing operations to interested people outside the VO
  - First simple page was setup with storage info
    - More information about computing operations to come with links to more info within LHCbDirac monitoring
- This is meant to be and entry point and information for site admins
  - Please provide input if you are missing info
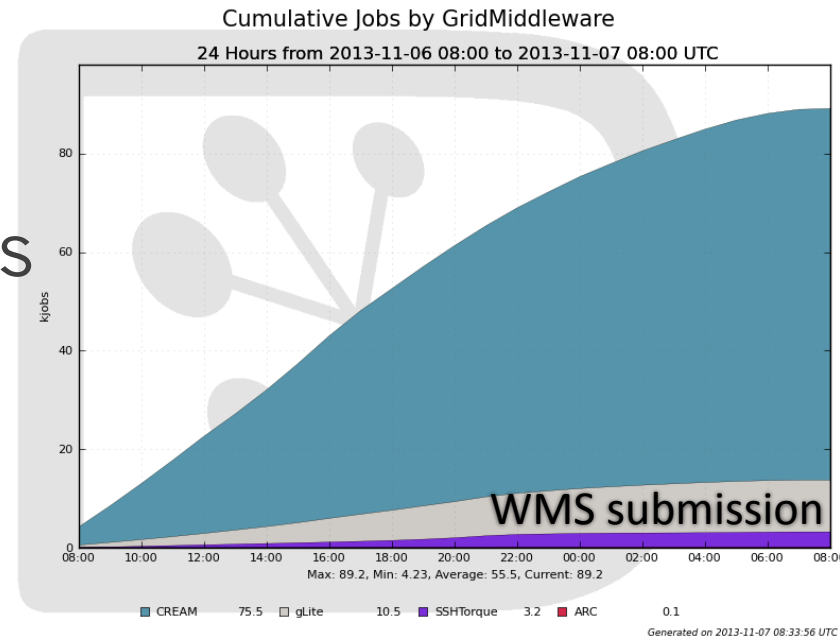
More Information for Sites

- CVMFS lhcb-conddb mount point can be removed at the discretion of the site
- Setup of a dedicated list for Tier2 sites lhcb-tier2@cern.ch
  - Meant for in depth discussions e.g. on Tier2Ds
  - Please subscribe via CERN/egroups if interested

- Note: LHCb uses the bi-weekly "WLCG Operations Coordination" meeting as main channel for broadcasting such information
  - https://twiki.cern.ch/twiki/bin/view/LCG/WLCGOpsCoordination#Meetings_and_minutes

SL6 Migration

- LHCb is able to run all workflows on both sl5 and sl6 platforms right now
- As the major sites have provided sl6 resources, user analysis jobs will soon switch to slc6 submission by default
  - Production activities were using both resources since long
- LHCb software stack will only be compiled on slc6 only as of January 2014
  - Ask remaining sites to move soon
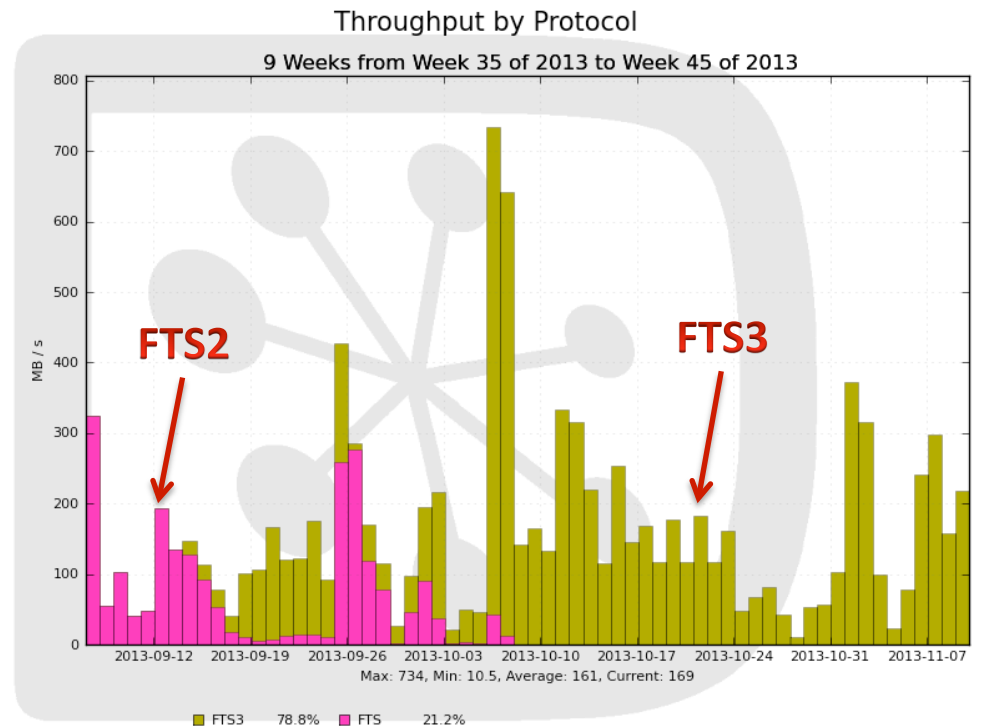 - Not backward compatible -> cannot use sl5 resources

WMS Decommissioning Status

- ## 90 % of grid computing are executed via direct submission

  - ### Remaining O(20) sites will be moved to direct submission gradually

  - ### IT/Nagios submissions currently worked on by the CERN/IT monitoring team

Cumulative Jobs by GridMiddleware
24 Hours from 2013-11-06 08:00 to 2013-11-07 08:00 UTC

WMS submission

Max: 89.2, Min: 4.23, Average: 55.5, Current: 89.2

| CREAM | 75.5 | gLite | 10.5 | SSHTorque | 3.2 | ARC | 0.1 |

Generated on 2013-11-07 08:33:56 UTC

FTS3

- Used in production for all WAN transfers since beginning October
  - Gradually moved parts of the overall transfer
  - Using CERN instance with
    - RAL as backup

Throughput by Protocol

9 Weeks from Week 35 of 2013 to Week 45 of 2013

FTS2

FTS3

Max: 734, Min: 10.5, Average: 161, Current: 169

FTS3 78.8%   FTS 21.2%

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LHCb File Catalogs

- **Bookkeeping Catalog**
  - LHCb-specific, provides full files and jobs provenance and used for defining datasets
  - Oracle-based, at CERN
    - DB optimisation on-going for scaling during run 2
- **Replica Catalog**
  - Currently one central LFC catalog at CERN with read-only and read-write instances
    - Several nodes for reduncancy and scalability
  - Considering replacing with the Dirac File Catalog
    - Much lighter and designed to fit exactly LHCb needs
      - No URL stored
      - Integrated "du" possibility
      - Metadata queries (e.g. "return me files at CERN in that directory")
    - Status
      - To be instantiated on DBOD (mySQL)
      - Plan ready for populating in parallel with LFC (a week to be in synch)

File streaming over WAN

- LHCb requires all sites to provide a WAN-enabled xrootd access
  - Single access point, to be agreed on with LHCb
  - As much as possible, LHCb would like to use only xrootd for data streaming, gsiftp for data transfers
    - Consider moving some transfers to xrootd as well
  - Still SEs have to be SRM
    - tURL "guessing" underway
    - Requires fixed and published xrootd access point
    - Not used for gsiftp due to the absence of redirection
      - Alternative: alias to a pool of gridftp servers (published and stable)

- Evaluation of http access foreseen in the future

Gaudi Storage Federation

- Use local replica first
- In case of failure, attempt to access remote replicas
  - Up to LHCbDirac to provide an ordered list of tURLs
- Status
  - Implemented, tested, still to be commissioned full scale
  - Requires adding monitoring information

Summary

- Put in production
  - First Tier2D sites
  - Switch to FTS3
- Currently Ongoing
  - Implement Storage federation
  - SSB for site admins
  - WMS decommissioning for last sites
- Future
  - Move to DFC
  - Only slc6 binaries as of Jan '14