

LHCb Data Flow - IT storage

Round table

LHCb

DAQ archive expected rates for 2023:

- Proton
- Heavy Ion

HLT buffer was filling at 40GB/s: 8.8PB (no more than 80% full), **targetting average of 10GB/s**

EOS

- What is the expected throughput from P8 to T0-disk? Is it still 10GB/s? YES
- Is the average file size going to change?
 - Not changing: 5GB and 10GB. Straight copies of runs: there is no control other the size.
- How many streams do you plan to use?
 - Cannot be predicted
- What is going to change between the Proton-Proton run and the Heavy Ion run?
 - Changes will probably be marginal
- Are you happy with the current situation regarding EOSLHCb?
 - Still issues with transfer timeouts in the case the load from the datamovers is increased (amount of parallel stream per machine is increased).
 - To do: a test with the verbose output of the xrdcp command.

EOSCTA

eosctalhcb

- Automatic cleanup of test data after 6 months in eosctalhcb/eos/ctalhcb/archivetest/
 - Ongoing cleanup of last data challenge Feb 2022
- HTTP TAPE REST deployed on March 7
 - Needed to enable *Check On Tape* for HTTP archive transfers
 - Ongoing test:
 - archive: [32c47bf6-bd8f-11ed-b793-fa163e2373ae \(https://fts3-lhcb.cern.ch:8449/fts3/ftsmon/#/job/32c47bf6-bd8f-11ed-b793-fa163e2373ae\)](https://fts3-lhcb.cern.ch:8449/fts3/ftsmon/#/job/32c47bf6-bd8f-11ed-b793-fa163e2373ae)

- [fa163e2373ae](#)
- staging: [c8800dc0-bdaf-11ed-b935-fa163e2373ae \(https://fts3-lhcb.cern.ch:8449/fts3/ftsmon/#/job/c8800dc0-bdaf-11ed-b935-fa163e2373ae\)](https://fts3-lhcb.cern.ch:8449/fts3/ftsmon/#/job/c8800dc0-bdaf-11ed-b935-fa163e2373ae)
- DIRAC-CTA namespace consistency check:
 - eosctalhcb namespace dumps generated every week: [LHCB latest.xz \(https://cta.web.cern.ch/namespace_dumps/exports/eosctalhcb/LHCB/latest.xz\)](https://cta.web.cern.ch/namespace_dumps/exports/eosctalhcb/LHCB/latest.xz)
 - Documentation in [KB0007876 \(https://cern.service-now.com/kb_view.do?sysparm_article=KB0007876\)](https://cern.service-now.com/kb_view.do?sysparm_article=KB0007876)
- *xrootd TPC gateway* for *xrootd* transfers with delegation should go away and be replaced by HTTP transfers for T1s
- Review default configuration for FTS parameters and links
 - Archive timeout: 86400
 - Bringonline timeout: currently set to 259200 (3 days)
 - Will need to be increased for large staging activities
- LHCb interest in *archive metadata* discussions?
 - Free lunch: archive metadata can be added to all archive files and FTS will ignore it for non HTTP traffic
 - Adding archive metadata after the transfer is not useful as it is too late for tape endpoint scheduling decisions (useful for the next repack)
 - hierarchical collocation hints: MC/DAQ? run number? tracks? data type?
 - scheduling hints: archive priority to prioritize DAQ data over MC, user traffic...

CTA @ RAL

Plans would be to put in place a similar protocol configuration as CERN one:

- deploy and configure HTTP REST API
- majority of the data: local traffic antares <-> echo using *xrootd*
- marginal fraction: antares <-> other T1s using HTTP
 - remove the need for *xrootd* TPC gateways, delegation

FTS

- Configuration validation for primary and secondary FTS servers used by DIRAC:
 - CERN FTS LHCB: <https://fts3-lhcb.cern.ch:8449>
 - CERN FTS team can fire up a new instance with restored configuration
 - RAL FTS LHCB: <https://lcfsts3.gridpp.rl.ac.uk:8449> (not in use currently, not configured)
 - no other FTS instances
- Gfal2 on Alma9 + OpenSSLv3 is much slower than CC7 + OpenSSLv1

- LHCb uses Conda for their batch environment (instead of the system version), which follows closely the latest versions
- Soon enough, OpenSSLv1 reaches EoL, upon which Conda moves to OpenSSLv3
- LHCb very likely to need this sooner than ATLAS
- Davix: libneon vs libcurl?
 - Currently, libneon is the one used by FTS. *May change soon*

Network

- current Network connection between LHCb (Bldg 2885) and Datacentre (Bldg 513) is 4x100Gbps (all active, with automatic redundancy/load balancing) \Leftrightarrow 4x12.5=50GBps
- Monitoring of those network lines is available at: <https://monit-grafana.cern.ch/d/2xz9zR-nk/lhcb-cdr?orgId=14&from=now-1d&to=now>
- Design:

**CDR link between CERN Computer center
and LHCb (Bld 2885)
Since April 29th 2022**

