Tape Challenge

Alessandra Forti (Univ. of Manchester), Luca Mascetti (CERN), Maria Arsuaga Rios (CERN), Xin Zhao (BNL)

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Outline

- Goal and timeline
- The Plan
- Monitoring and beyond

Goal and Timeline

- Goal is to stress test readiness of WLCG tape sites (T0/T1s/T2?) and relevant central services (e.g. FTS), at the Run3 scale, for all experiments
  - Run3 scale : experiments estimates on tape throughput
- Target date is the second week of October (October 11~15)
- All experiments and most (if not all) tape sites will join
- Bookkeeping and communication
  - Google doc
  - tape challenge meetings
  - e-group : doma-data-challenges-development@cern.ch
  - Slack channel

Overall CERN objectives for RUN3:

Indicate in this table, the bandwidths required for CERN for reads and writes during data taking (DT) and right after data taking(A-DT).

VO	Reads (DT) GB/s	Writes (DT) GB/s	Reads (A-DT) GB/s	Writes (A-DT) GB/s
ALICE	0	5	2	10
ATLAS	0	10	12	0
CMS	TBD	10	12	TBD
LHCb		5.5	4.24	
Total		30.5	30.24	10

Overall T1s objectives for RUN3:

Indicate in this table, the bandwidths required for all T1s for reads and writes during data taking (DT) and right after data taking(A-DT).

VO	Reads (DT) GB/s	Writes (DT) GB/s	Reads (A-DT) GB/s	Writes (A-DT) GB/s
ALICE	0	3.2	1.1	3.2
ATLAS	2.5	9.6	8.4	5.1
CMS	TBD	7.6	12.3	TBD
LHCb		4.38	3.38	
Total	2.5	24.78	25.18	8.3

The Plan

- Each experiment decides on their own plan
  - Various workflows using tapes will be exercised, including both write and read to/from tapes, also cover both data-taking and after-data-taking modes
  - Mixture of production and test streams is expected
  - Experiment workflow management and data management systems will be used
    - Also a test of data distribution model for Run3
  - Detailed (preliminary) plans from ALICE/ATLAS/CMS
    - T0->T1 export is a big part in all experiment plans (coordinate the time window across experiments ?)
- Tape sites
  - Site survey conducted by WLCG ops team, on site availability and capacities
    - Some sites are migrating to new tape technologies, some don't have the Run3 hardware in place yet
  - Site production resources and services will be used in the challenge, to meet the expected rate
- Coordination between experiments and sites
  - Expected rates, data volume, which endpoints to use, and cleanup of test data from tapes afterwards

Monitoring and beyond

- Once the challenge starts, 4 experiments will be doing read and write with ~15 tape sites concurrently. We will rely on monitoring to not get lost.
  - Monitoring infrastructure itself is to be tested as well
  - We are trying to improve the central monitoring as much as possible before the challenge, esp. strengthen on the tape related activities.
  - In the meantime, we will collect any available VO and site specific monitoring tools, and use them as good complement.
- From monitoring, we'd like to know:
  - Can we meet the Run3 tape throughput targets ?
  - Each experiments has done more or less tape exercises by their own. When we are all heavily using tapes, will we step on each other's toes ?
  - Any other lessons we can learn that will help us all (experiments, sites) make better use of tape resources, so to be better positioned to scale up to future HL-LHC challenges.