WLCG HL-LHC Data Challenge 2024 - ALICE Preparation

1. ALICE and custodial storage - use cases

Writing to custodial storage: ALICE uses custodial storage to store the DAQ-produced Compressed Time Frames (CTF), which is the Run3 equivalent of RAW data. The bulk volume (~85%) and highest rate of data transfers is from CERN EOS (instance EOSALICEO2) to CTA@T0 and various other custodial backends @T1s with a share 70/30 of the data volume. Secondary use case is custodial storage of analysis containers (AODs), which represent low-rate continuous streams from all WLCG centres to T0 and T1s, depending on data location. Reading from custodial storage: CTF re-processing campaigns, a relatively low level activity during Run3. Most of the reprocessing requiring custodial access will be done during LS3.

2. Data challenge strategy

Replication of data from EOSALICEO2 buffer (CTF source) to custodial storage. In 2023 the CTF size increased from 2GB to 10GB/file, however the data model and rates did not change.

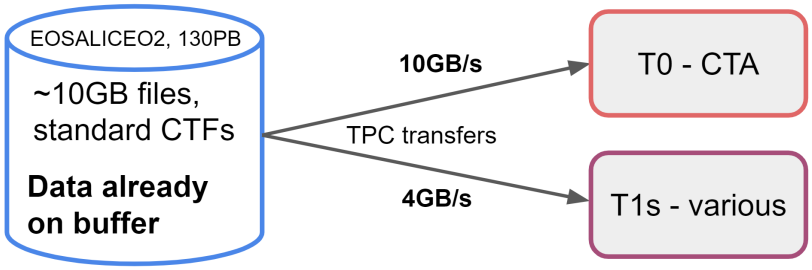

Figure 1 - Data source, targets and total rates.

3. Data rates and volume for DC-2024

Using the same nomenclature as in the previous DC: Highest rated is **A-DT** and we will aim for these. The Russian T1 **RRC-KI** will not be a target (unless conditions change) and its share will be distributed among the other T1s, Writes DT and Reads A-DT are at significantly lower rates, not important for this exercise. Table 1 lists the target rates for all computing centres providing custodial storage for ALICE.

Site	Reads (DT)	Writes (DT)	Reads (A-DT)	Writes (A-DT)
CERN	-	5	2	10
Total T1s	**-**	**3.2**	**1.1**	**3.2**
CNAF	-	0.8	0.3	0.8
IN2P3	-	0.4	0.1	0.4
KISTI	-	0.15	0.1	0.15
KIT	-	0.6	0.3	0.6
NDGF	-	0.3	0.1	0.3
NLT1	-	0.08	0.05	0.08
RRC-KI	-	0.4	0.1	0.4
RAL	-	0.08	0.05	0.08

Table 1 - Write rates to custodial storage. All rates in GB/sec.

4. Timeline, monitoring, contacts

The proposed time period - 2-3 weeks in March or April - is generally OK with ALICE with slight preference for March. During this period we will be in active transfers of data accumulated from the Pb-Pb period in 2023 Thus, nothing special to do for the DC-2024. If needed, some additional data will be injected to keep the rates stable. Transfer tools and monitoring - same as in previous data challenges.

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