Contribution ID: **10** Type: **not specified**

ALICE and the CTA Garbage Collectors

Wednesday 3 March 2021 10:00 (20 minutes)

In the standard layout of an EOSCTA deployment there are two SSD buffers in front of the tape drives. One is called the "default"space and is used for writing files to tape and the other is called the "retrieve"space and is used for reading them back. These buffers prevent direct file transfers between HDDs and tape drives. Such direct transfers would suffer from the unacceptable performance penalties incurred by mixing the preferred access patterns of disk and tape. A HDD usually has thousands of concurrently open files with data bandwidth being shared across them. A tape drive on the other hand simply reads or writes one file at a time at high speed. The mechanical thrashing of a HDD that is associated with thousands of open files may be acceptable to end users but it is unacceptable to a tape drive requiring high bandwidth for a single file.

The lifetime of the files within the two SSD buffers is relatively short. Files being written to tape are deleted from the default space as soon as they have been safely stored on tape. Files being retrieved from tape are deleted from the retrieve space as soon as they have been copied to their destination system.

The layout of the EOSCTA deployment for ALICE experiment is different from the standard layout because it has an additional HDD disk cache called the "spinners"space which sits between the retrieve SSD buffer and the ALICE end users. The spinners space is a true disk cache because the lifetime of files within it are relatively long. These files are automatically deleted by one of two garbage collectors when space needs to be freed up in order to make room for newly retrieved files. This workshop presentation describes the ALICE HDD disk cache and the automatic garbage collectors that free up space within it.

Author: MURRAY, Steven (CERN)

Co-authors: BAHYL, Vladimir (CERN); CANO, Eric (CERN); DAVIS, Michael (CERN); FERNANDEZ ALVAREZ, David (CERN); GOUNON, Aurelien (CERN); KEEBLE, Oliver (CERN); LEDUC, Julien (CERN); YURCHENKO, Volodymyr (National Academy of Sciences of Ukraine (UA)); CAFFY, Cedric (CERN)

Presenter: MURRAY, Steven (CERN)

Session Classification: CTA