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# Tape reading efficiency gain by collocation

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Tape reading efficiency, defined as the ratio between the effective average data reading rate and the maximal data reading rate, is reduced by two operations the tape drive inevitably needs to do and during which it can not read any data. The first is mounting the tape containing the file into the drive, after possibly having unmounted the tape that was in it before. The second is spooling the tape to the position of the file to be read. In this presentation we will explore which factors determine this reading efficiency loss and what could be done to mitigate it. We will in particular look at collocation, i.e. the strategy of writing files that are likely to be recalled together without interleaving them with unrelated files. To validate our hypotheses we analysed one month (Feb 2025) of ATLAS tape recall activity totalling about 6 PB of data contained in 1.6 million files spread over 1800 datasets.

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