

Storm-GPFS-TSM: a new approach to Hierarchical Storage Management for the LHC experiments

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In the framework of WLCG, the Tier-1 computing centres have very stringent requirements in the sector of the data storage, in terms of size, performance and reliability. Since some years, at the INFN-CNAF Tier-1 we have been using two distinct storage systems: Castor as tape-based storage solution (also known as the D0T1 storage class in the WLCG language) and the General Parallel File System (GPFS), in conjunction with StoRM as a SRM service, for pure disk access (D1T0). Commencing 2008 we have started to explore the possibility of employing GPFS together with the tape management software TSM as a solution for realizing a tape-disk infrastructure, first implementing a D1T1 storage class (files always on disk with a backup on tape), and then also a D0T1 (hence involving also active recalls of files from tape to disk). The first StoRM-GPFS-TSM D1T1 system is nowadays already in production at CNAF for the LHCb experiment, while a prototype of D0T1 system is under development and study. We describe the details of the new D1T1 and D0T1 implementations, discussing the differences between the Castor-based solution and the StoRM-GPFS-TSM one. We also present the results of some performance studies of the novel D1T1 and D0T1 systems.

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