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The Software Defined Online Storage System at the GridKa WLCG Tier-1 Center

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The computing center GridKa is serving the ALICE, ATLAS, CMS and LHCb experiments as one of the biggest WLCG Tier-1 centers world wide with compute and storage resources. It is operated by the Steinbuch Centre for Computing at Karlsruhe Institute of Technology in Germany. In April 2017 a new online storage system was put into operation. In its current stage of expansion it offers the HEP experiments a capacity of 23 Petabytes of online storage distributed over 16 redundant storage servers with 3900 disks and 50TB SSDs. The storage is connected via two redundant infiniband fabrics to 44 file servers which in turn are connected each via 40Gbit/s and several 100Gbit/s ethernet uplinks to the GridKa backbone network. The whole storage is partitioned into few large file systems, one for each experiment, using IBM Spectrum Scale as software-defined-storage base layer. The system offers a combined read-write performance of 70Gbyte/s. It can be scaled transparently both in size and performance allowing to fulfill the growing needs especially of the LHC experiments for online storage in the coming years.

In this presentation we discuss the general architecture of the storage system and present first experiences with the performance of the system in production use. In addition we present the current plans for expansion of the system.

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