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Recent and planned changes to the LHCb computing model

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The LHCb experiment has taken data between December 2009 and February 2013. The data taking conditions and trigger rate have been adjusted several times to make optimal use of the luminosity delivered by the LHC and to extend the physics potential of the experiment.

By 2012, LHCb was taking data at twice the instantaneous luminosity and 2.5 times the high level trigger rate than originally foreseen. This represents a considerable increase in the amount of data to be handled compared to the original Computing Model from 2005, both in terms of compute power and in terms of storage.

In this paper we describe the changes that have taken place in the LHCb computing model during the last 2 years of data taking to process and analyse the increased data rates within limited computing resources. In particular a quite original change was introduced at the end of 2011 when LHCb started to use for reprocessing compute power that was not co-located with the RAW data, namely using Tier2 sites and private resources. The flexibility of the LHCbDirac Grid interware allowed to easily include these additional resources that in 2012 provided 40% of the compute power for the end-of-year reprocessing. Several changes were also implemented on the Data Management model in order to limit the need for accessing data from tape, as well as in the data placement policy in order to cope with a large imbalance in storage resources at Tier1 sites.

We also discuss changes that are being implemented during the LHC Long Shutdown 1 to prepare for a further doubling of the data rate when the LHC restarts at a higher energy in 2015.

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