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Major changes to the LHCb Grid computing model in year 2 of LHC data

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The increase of luminosity in the LHC during its second year of operation (2011) was achieved by delivering more protons per bunch and increasing the number of bunches. This change of running conditions required some changes in the LHCb Computing Model. The consequences of the higher pileup are a bigger event size and processing time but also the possibility for LHCb to propose and get approved a new physics program, implying an increase in the trigger rate by 50%. These changes led to shortages in the offline distributed data processing resources such an increased need of cpu capacity by a factor 2 for reconstruction, higher storage needs at T1 sites by 70 % and subsequently problems with data throughput for file access from the storage elements. To accommodate these changes the online running conditions and the Computing Model for offline data processing had to be adapted accordingly.

This talk will describe in detail the changes implemented for the offline data processing on the Grid, relaxing the Monarc model in a first step and going beyond it subsequently. It will further describe other operational issues discovered and solved during 2011, present the performance of the system and conclude by lessons learned to further improve the data processing reliability and quality for the 2012 run. If available, first results on the computing performance from 2012 run will be presented.

Primary authors: ZHELEZOV, Alexey (Ruprecht-Karls-Universitaet Heidelberg (DE)); Dr TSAREGORODTSEV, Andrei (Universite d'Aix - Marseille II (FR)); REMENSKA, Daniela (NIKHEF (NL)); Dr BOUVET, David (Universite Claude Bernard-Lyon I (FR)); LANCIOTTI, Elisa (CERN); STAGNI, Federico (CERN); CLOSIER, Joel (CERN); CATTANEO, Marco (CERN); UBEDA GARCIA, Mario (CERN); CLARKE, Peter (University of Edinburgh (GB)); CHARPENTIER, Philippe (CERN); NANDAKUMAR, Raja (Rutherford Appleton Laboratory); GRACIANI DIAZ, Ricardo (University of Barcelona (ES)); Dr SANTINELLI, Roberto (CERN); Dr ROISER, Stefan (CERN); MENDEZ MUNOZ, Victor (PIC); BERNARDOFF, Vincent Roger Yvan (Univ. P. et Marie Curie (Paris VI) (FR)); ROMANOVSKIY, Vladimir (Institute for High Energy Physics (RU))

Presenter: Dr ROISER, Stefan (CERN)

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