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Tier-1 and Tier-2 Real-time Analysis experience in CMS Data Challenge 04

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During the CMS Data Challenge 2004 a realtime analysis was attempted
at INFN and PIC Tier-1 and Tier-2s in order to test the ability of
the instrumented methods to quickly process the data.

Several agents and automatic procedures were implemented to perform
the analysis at the Tier-1/2 synchronously with the data transfer
from Tier-0 at CERN. The system was implemented in the Grid LCG-2
environment and allowed on-the-fly job preparation and subsequent
submission to the Resource Broker as new data come along.
Running job accessed data from the Storage Elements through POOL via
remote file protocol, whenever possible, or copying them locally with
gridftp.
Job monitoring and bookkeeping was performed using BOSS.
Details of the procedures adopted to run the analysis jobs and the
expected results are described.

An evaluation of the ability of the system to maintain an analysis
rate at Tier-1 an Tier-2 comparable with the data transfer rate is
also presented.
The results on the analysis timeline, the statistics of submitted
jobs, the overall efficiency of the GRID services and the overhead
introduced by the agents/procedures are reported. Performances and
possible bottlenecks of the whole procedure are discussed.

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