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Performance of the CMS Event Builder

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The data acquisition system (DAQ) of the CMS experiment at the CERN Large Hadron Collider (LHC) assembles events at a rate of 100 kHz. It transports event data at an aggregate throughput of ˜100 GB/s to the high-level trigger (HLT) farm. The CMS DAQ system has been completely rebuilt during the first long shutdown of the LHC in 2013/14. The new DAQ architecture is based on state-of-the-art network technologies for the event building. For the data concentration, 10/40 Gb/s Ethernet technologies are used together with a reduced TCP/IP protocol implemented in FPGA for a reliable transport between custom electronics and commercial computing hardware. A 56 Gb/s Infiniband FDR CLOS network has been chosen for the event builder. We report on the performance of the event builder system and the steps taken to exploit the full potential of the network technologies.

Tertiary Keyword (Optional)

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