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# The CMS ECAL data acquisition system and its performance at LHC Run 2

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In 2017 the Large Hadron Collider (LHC) at CERN has provided an astonishing 50 fb-1 of proton-proton collisions at a center-of-mass energy of 13 TeV. The Compact Muon Solenoid (CMS) detector has been able to record 90.3% of this data. During this period, the CMS electromagnetic calorimeter (ECAL), based on 75000 scintillating PbWO4 crystals and a silicon and lead preshower, has continued exhibiting excellent performance with a very stable data acquisition (DAQ) system. The ECAL DAQ system follows a modular and scalar schema: the 75000 crystals are divided in sectors (FED), each of them controlled by 3 interconnected boards. These boards are responsible for the configuration and control of the front-end electronics configuration, the generation of trigger primitives for the central CMS L1 trigger, and the collection of data. A multi-machine distributed software configures the electronic boards and follows the life cycle of the acquisition process. The ECAL electronics modular configuration is reflected in the software where a tree control structure is applied. Through a master web application, the user controls the communication with the sub-applications which are responsible for the off-detector board configurations. Since the beginning of Run 2 in 2015, many improvements to the ECAL DAQ have been implemented to reduce occasional errors, as well as to mitigate single event upsets in the front-end electronics, and to improve the efficiency. Efforts at the software level have been made to introduce automatic recovery in case of errors. These procedures are mandatory to have a reliable and efficient acquisition system.

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