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High throughput data acquisition with InfiniBand on x86 low-power architectures for the LHCb upgrade.

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The LHCb Collaboration is preparing a major upgrade of the detector and the Data Acquisition (DAQ) to be installed during the LHC-LS2. The new Event Builder computing farm for the DAQ requires about 500 nodes, and have to be capable of transporting order of 32 Tbps. The requested performance can possibly be achieved using high-bandwidth data-centre switches and commodity hardware.

Several studies are ongoing to evaluate and compare network and hardware technologies, with the aim of optimising the performance and also the purchase and maintenance costs of the system. We are investigating if x86 low-power architectures can achieve equivalent performance as traditional servers when used for multi gigabit DAQ. In this talk we introduce an Event Builder implementation based on InfiniBand network and show preliminary tests with this network technology on x86 low-power architectures, such as Intel Atom C2750 and Intel Xeon D-1540, comparing measured bandwidth and power consumption.

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