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A Lossless Network for Data Acquisition [1]

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The bursty many-to-one communication pattern, typical for data acquisition systems, is particularly demanding for commodity TCP/IP and Ethernet technologies. We expand the study of lossless switching in software running on commercial-off-the-shelf servers, using the ATLAS experiment as a case study. In this paper we extend the popular software switch, Open vSwitch, with a dedicated, throughput-oriented buffering mechanism for data acquisition. We compare the performance under heavy congestion on typical Ethernet switches to a commodity server acting as a switch. Our results indicate that software switches with large buffers perform signi?cantly better. Next, we evaluate the scalability of the system when building a larger topology of interconnected software switches, exploiting the integration with software-de?ned networking technologies. We build an IP-only leaf-spine network consisting of eight software switches running on distinct physical servers as a demonstrator.
Technical document file:
07882723.pdf [2]

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