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A multi-port 10GbE PCIe NIC featuring UDP offload and GPUDirect capabilities.

NaNet-10 is a four-ports 10GbE PCIe Network Interface Card designed for low-latency real-time operations with GPU systems.

For this purpose the design includes a UDP offload module, for a fast and deterministic to clock-cycle handling of transport layer protocol, plus a GPUDirect P2P/RDMA engine for low-latency communication with nVIDIA Tesla GPU devices.

A dedicate module (Merger) can optionally process input UDP streams before data are delivered through PCIe DMA to their destination devices, e.g. coalescing payload data from different streams according to a reconfigurable algorithm.

NaNet-10 is going to be integrated in the NA62 CERN experiment in order to assess the suitability of GPGPU systems as real-time triggers, we will report results and lessons learned in this activity.

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