### Multiple link technologies
- Standard: 1GBe (100Base-T), working on 10GBe (10Gbase-R).
- Custom: APElink (>20 Gs/s QSFP), deterministic latency KM3link (2.5 Gs/s optical).
- Network protocol offloading
  - UDP, Time Division Multiplexing.
  - Processing on data stream
    - e.g. rearrange event data (size and alignment) in a GPU-friendly style.
- 6 ports full crossbar switch
  - 10 simultaneous 2.9 Gb/s data streams
  - Trigger and timing distribution system with HSMC daughtercard.
- GPUDirect P2P/RDMA
  - Direct data transfer between network and GPU memory (no bounce buffers on CPU memory).
- PCI Express x8 Gen2
  - Working on PCI Express x8 Gen3.

### NaNet-10 (four 10GBe SFP+ Ports)
- ALTERA Stratix V dev board.
- PCI Express x8 Gen3 (8 GB/s).
- 4 SFP+ ports (Link speed up to 10Gb/s).
- Implemented on Teraic DES-5NET board.
- GPUDirect P2P/RDMA capability
- UDP offload supports
- Available 2Q2015.
- Planned 4Q2016 development.

### NaNet-10 Link
- A fully UDP/IP 10GbE link (IEEE 802.3-2005 compliant) has been implemented in hardware.
  - ALTERA 10GBASE-R PHY Block
  - ALTERA 10 GbE MAC layer
  - 10 GbE UPI/PCI Core adapted from 1 GbE UPI/PCI core at www.opencores.org
  - AXI-lite data interface working at 156.25MHz
  - Fully customizable IP and MAC address
  - ARP level functionalities. 256 entry cache for IP-to-MAC address translation
  - PHY block tested with an optical cable 3m long
  - NaNet Transmission Control Logic
    - TX paths: APEnet/AIX/UDP protocol translation

### NaNet-1
- Implemented on ALTERA Stratix IV dev board (EP4SGX230K2F40C2).
- 1GBe PHY Marvell 88E1111
- TTC daughtercard with HSMC connector for timing (clock, S08/E08) and trigger signals.
- Supports additional 3 APELink channels (20 Gb/s each) with HSMC daughtercard.

### NaNet-1 in RICH low level trigger processor
- Implemented on ALTERA Stratix IV dev board (EP4SGX230K2F40C2).
- Supported 1GBe PHY Marvell 88E1111
- TTC daughtercard with HSMC connector for timing (clock, S08/E08) and trigger signals.
- Supports additional 3 APELink channels (20 Gb/s each) with HSMC daughtercard.

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### Software/Hardware Overview

### NaNet-10 Software
- Linux Kernel Driver
  - Status/Configuration registers.
  - TX registers interface.
  - Custom Event Queue management

### NaNet-10 Firmware
- New BSP for NaNet10 board.
- Initialization of NaNet10 channels.
- Management of 4 concurrent data streams