Modern High Performance DAQ Solutions

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SkuTek Instrumentation

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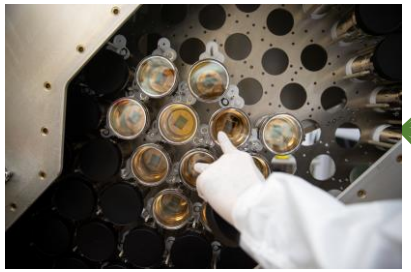
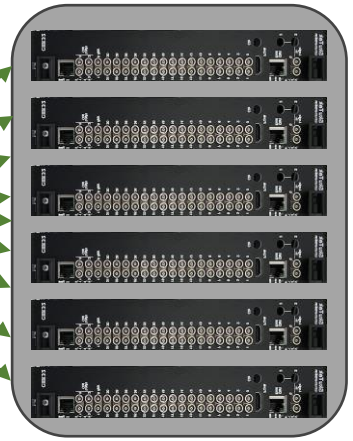
Where Science Meets Industry

The Modern DAQ Pipeline



Detector
(pictured: LuxZeplin)

Analog Signal

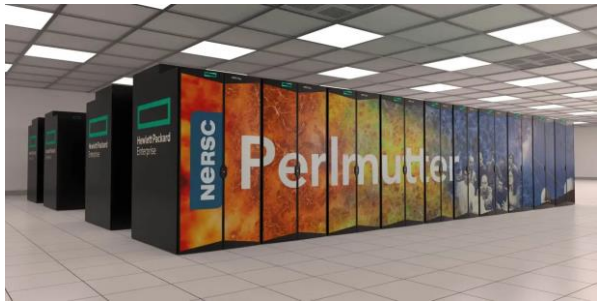


The DAQ
(digitizers)

Digitized UDP Streams

Onsite Data Management

File Transfer



Data Analysis at HPC Center
(pictured: NERSC)

Step 1: Concentrate data streams

Step 2: Capture data locally in software

Step 3: Transfer Data to HPC facility

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High Speed Streaming DAQs
for large scale science

Chickadee-32 High Speed Streaming DAQ

- Digitizes and streams up to 10 Gbps
  - 32 digitization channels in compact form factor
  - Sophisticated pulse processing and triggering firmware
  - Precise clock synchronization across units
- Control via EPICs or python RPC via embedded Linux computer

Parallelizable in arrays for 1000+ channel instruments

- Derived from digitizers we developed for the LZ dark matter experiment

32-Channel Digitizer Rear Transition Module

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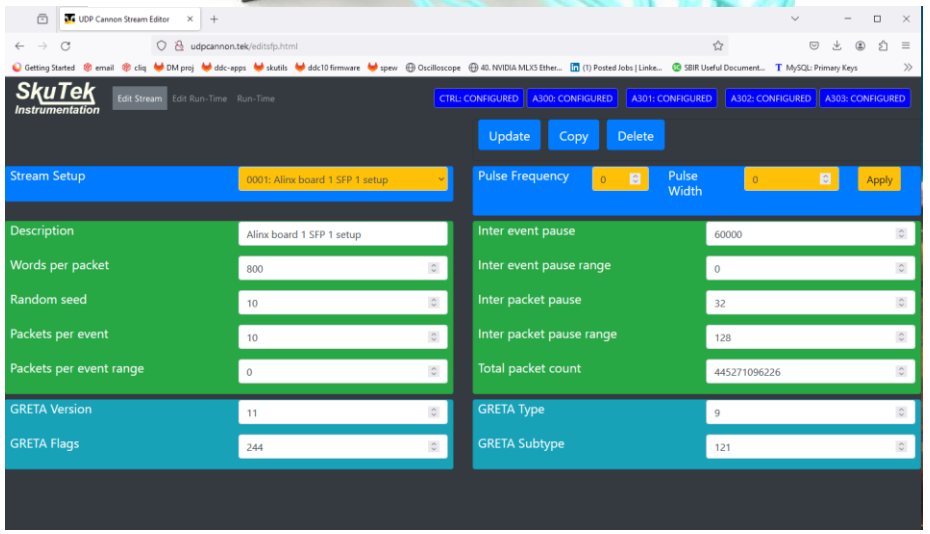
160 Gbps networked DAQ emulator

Solidago UDP Event Generator

- Streams synthetic UDP data to your data management system
  - 0-160 Gbps per unit. Configurable and parallelizable
  - FPGA-based system requires no network tuning
- Programmable via a Web Interface and REST

Ideal for testing data management systems or emulating your DAQ setup!

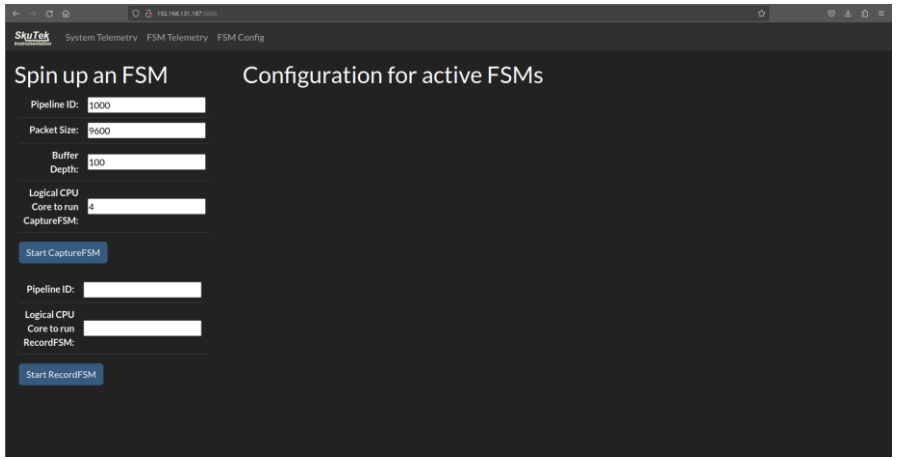
- Also ideal for stress-testing networking hardware



Lossless DAQ stream reception up to 80 Gbps

Liatris Collector Node

- Receives and stores data streams from your DAQ. Up to 80 Gbps sustained lossless UDP reception and recording per unit
  - Monitor data collections, rate, and pickoff data for inspection
  - Use in an array for terascale data collection
- Programmable via a WEB Interface and REST



Receives and stores your DAQ data before transfer to an HPC facility

Performant Data Movement over ESNet

Salix *Data Transfer Node*

- Moves recorded DAQ data between scientific facilities
  - Select from pre-tuned network configurations to optimize for your ESNet route
  - Monitor transfer rates and machine performance
- Programmable via a WEB Interface and REST

Moves your data to from the Detector Facility to the HPC center