Overview

Motivation

New Detectors
- Support 20 or more of the next gen. detectors (up to 10GB/sec)
- Millions of files per experiment
- Even more demanding detectors upcoming: Eiger, Lambda, AGIPD
- Images generated with kHz frequencies
- SMB, NFS not fast enough (regardless of network technology)
  - The data has to be drained from the detectors fast enough

Experimental conditions and setup
- Support next generation of experiment setup (e.g. more than one detector per beamline,...)
- Decouple persistent storage and selective image collection
- Experiment conditions have to be monitored/analyzed in close to
  - real time to prevent the collection of unfavorable data

HiDRA

HiDRA (High Data Rate Access) is a generic tool set for high performance data multiplexing with different qualities of service and based on Python and ZeroMQ
- Directly store the data in the storage system
- Send data to online monitoring or analysis framework
- Modular architecture (divided into event detectors, data fetchers and receivers)
  - This gives the possibility to adapt the software to specific detectors directly
- Facility independent: Adaptable to other photon sources and storage systems
- Open source
- Performance limits not yet hit (saturate a 10 GE link, is able to handle 2000 Hz)
- Usage of multiple network links in development
- Successful usage in multiple experiments

Architecture
Available event detectors:
- Based on inotifyx library (Linux)
- Based on watchdog library (Linux/Windows)
- Get events with HTTP Get
- Get events via an API (C/Python)

Available data fetchers:
- Read from file system
- Get data with HTTP Get
- Get data via an API (C/Python)

Available receiver types:
- Store as files
- Forward to an application
- Build HDF5 (in development)

easily expandable