

ACR Realtime Feedback

- [Options](#)
- [Router Network Support](#)

Options

(Aug. 2, 2021 brainstorming with Alberto, Bruce, Silke, Valerio, Matt, Dan D., Chris)

Given the known difficulties with realtime epics gateway behavior we discussed more sustainable longterm solutions for realtime acr feedback from photon side. We thought these 3 options might be feasible:

- (1) use daq software (similar to what Dan wrote) to fill a BSA buffer readable by ACR matlab. Likely have network security issues writing from the photon side to a BSA buffer that Alberto can read
- (2) run ACR matlab on photon side and get all ACR data (smaller) that they need into the DAQ (likely via BLD). cpo will work with IT to get matlab running there. alberto should check with greg white if matlab can use PVA structures. alberto should also identify what other timestamped data needs to be sent to photon side via BLD (non-trivial lead-time)
- (3) change network security to allow epics connections through network routers

We also considered a direct network connection to the DRP subnet (perhaps like the soft/hard XTCAV) but Alberto felt that would constrain too much where their software could run.

The thinking was that (2) is likely most feasible and conceptually most future proof, since large data in the future will likely be on the photon side so we will try that (i.e. move the software to the data). ACR should consider using psana-python in the future, but they will need additional tools developed for that (algorithms and a "playback buffer" that they can analyze in different ways).

Router Network Support

This Jira ticket shows the network changes that were implemented: https://slacprod.servicenowservices.com/now/nav/ui/classic/params/target/incident.do%3Fsys_id%3Dfe3008a31b2135901c3262cfe54bcba%26sysparm_stack%3Dincident_list.do%3Fsysparm_query%3Dactive%3Dtrue

After those changes this approach worked for CA EPICS (courtesy of Jesse Bellister):

```
Try with either appending the port 5064 to the ADDR_LIST or setting the EPICS_CA_SERVER_PORT to 5064, it's set to a non-standard port (5068) by default on lcls-srv01:

[softegr@lcls-srv01 ~]$ EPICS_CA_ADDR_LIST=172.21.152.78:5064 EPICS_CA_AUTO_ADDR_LIST=NO cainfo TMO:ACR:WAVEFORM
TMO:ACR:WAVEFORM
State: connected
Host: 172.21.152.78:5064
Access: read, no write
Native data type: DBF_FLOAT
Request type: DBR_FLOAT
Element count: 1026

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