EPICS Gateways for DRP

Overview

From Bruce Hill on March 2, 2023:

For DRP we setup this gateway:
drp on pscag03 serving PVs from 172.21.155.255 (a.k.a. the "152" subnet) subnet to hutches

Clients on daq-drp.pcdsn (the "152" subnet) are able to directly access hutch PVs using our standard EPICS_CA_AUTO_ADDR_LIST=YES via any of the pscag0* hosts which all have interfaces for these subnets.

In late 2023 ports were open so that ACR and S3DF can access DAQ EPICS across subnets without a gateway using EPICS_CA_ADDR_LIST and EPICS_PVA_ADDR_LIST (cpo has notes on how to do this from ACR, need to put those notes here).

We propose to export DAQ:NEH:tmo (read-only) from the tmo gateway. This is for variables like DAQ:NEH:tmo:0:DeadFrac created by the prom2pvs process. We also export DAQ:NEH:XPM (read-write) from the drp gateway so that control-level processes running on machines like tmo-daq can program XPM's.

On April 15, 2024 the drp gateway exposed DAQ:NEH:* and DRP:*, we will try removing these on April 22, 2024. There is also a DET:*, which we should try to remove as well on April 22, 2024.

There are special rules that are read-write from DRP:

```
mcc-daq.pvlist:EM1K0:GMD:HPS:BLD:PAYLOAD          ALLOW RWDRP
mcc-daq.pvlist:EM2K0:XGMD:HPS:BLD:PAYLOAD         ALLOW RWDRP
rix.pvlist:RIX:TIMETOOL:.*     ALLOW RWDRP 1
rix.pvlist:MR4K2:FIM:W8:.* ALLOW RWDRP 1
rix.pvlist:MR3K2:FIM:W8:.* ALLOW RWDRP 1
rix.pvlist:RIX:FIM:W8:03.* ALLOW RWDRP 1
rix.pvlist:RIX:CRIX:W8:.* ALLOW RWDRP 1
tmo.pvlist:DAQ:TMO:HSD:1_DA.*    ALLOW  RWDRP   1
tmo.pvlist:TMO:TIMETOOL:.*      ALLOW RWDRP 1
tmo.pvlist:MR2K4:FIM:W8:.* ALLOW RWDRP 1
tmo.pvlist:MR3K4:FIM:W8:.* ALLOW RWDRP 1
txi.pvlist:TXI:TIMETOOL:.*      ALLOW RWDRP 1

also this one for the tmo laser wave8:
las-amo.pvlist:LM1K4:W8:04:.*                ALLOW RWTMODAQ 1
```

cpo thoughts:

- gmd/xgmd should be removed, but I will confirm with the group
- RIX:RIM:W8 is old and should be removed (replaced by CRIX wave8)
- don't understand the TIMETOOL ones, but may be necessary. cpo will think.

When we make the changes, we will check:

- the daq runs
- grafana works
- TIMETOOL still works

Matt writes about the GMD/XGMD variables above: "Yes, these are the variables you describe (to determine the structure of the bld). I think read only should be fine. Also, I think pvget is expected to fail. I think the proper access is something like pvinfo." (although cpo tried and couldn't get either pvget or pvinfo to work). Matt later adds: "The PV is actually EM1K0:GMD:HPS:BLD_PAYLOAD which is still inaccessible. I think that's because the accelerator doesn't yet have a PVA gateway. Our bld process uses EPICS_PVA_ADDR_LIST=172.27.131.255 to access it directly" so the above entries in mcc-daq. pvlist are incorrect and can be removed completely.

Timetool arrays are in the cnf files. This allows the drp process to write to the timetool variable hosted by the hutch.

```
(ps-4.6.3) tmo-daq:scripts> grep TTALL tmo.cnf
 { host: 'drp-srcf-cmp026', id:'tmo_atmopal_0', flags:'spu', env:epics_env, cmd:drp_cmd0+' -l 0x1 -D opal -k
ttpv=TMO:TIMETOOL:TTALL'},
(ps-4.6.3) tmo-daq:scripts>
```

Work on April 23, 2024

Zach and cpo removed the bld-payload variables above since they were spelled incorrectly, and don't need to be writeable from the DAQ. Also removed the RIX:FIM:W8:03 since we believe that FIM as renamed to the CRIX fim. Also removed tmo.pvlist:DAQ:TMO:HSD:1_DA.* since it is only for one channel. Removed DET:*, *DRP.*, *DAQ:NEH.* (replaced the latter with DAQ:NEH:XPM) in drppvlist.

DAQ:NEH:tmo are the variables that Ric's prometheus exporter generates and are readable in tmo.pvlist. Added DAQ:NEH:rix to rix.pvlist. Restarted rix/tmo/drp/mcc-daq gateways.

Bypassing Gateways

Router work has been done to allow EPICS variables to be accessed using EPICS_CA_ADDR_LIST and EPICS_PVA_ADDR_LIST. Some details are here: ACR Realtime Feedback#RouterNetworkSupport