DUNE Timing System

DAQ expert training: Troubleshooting the Timing System

13/6/2024

Thanks to Diana Antic for slides

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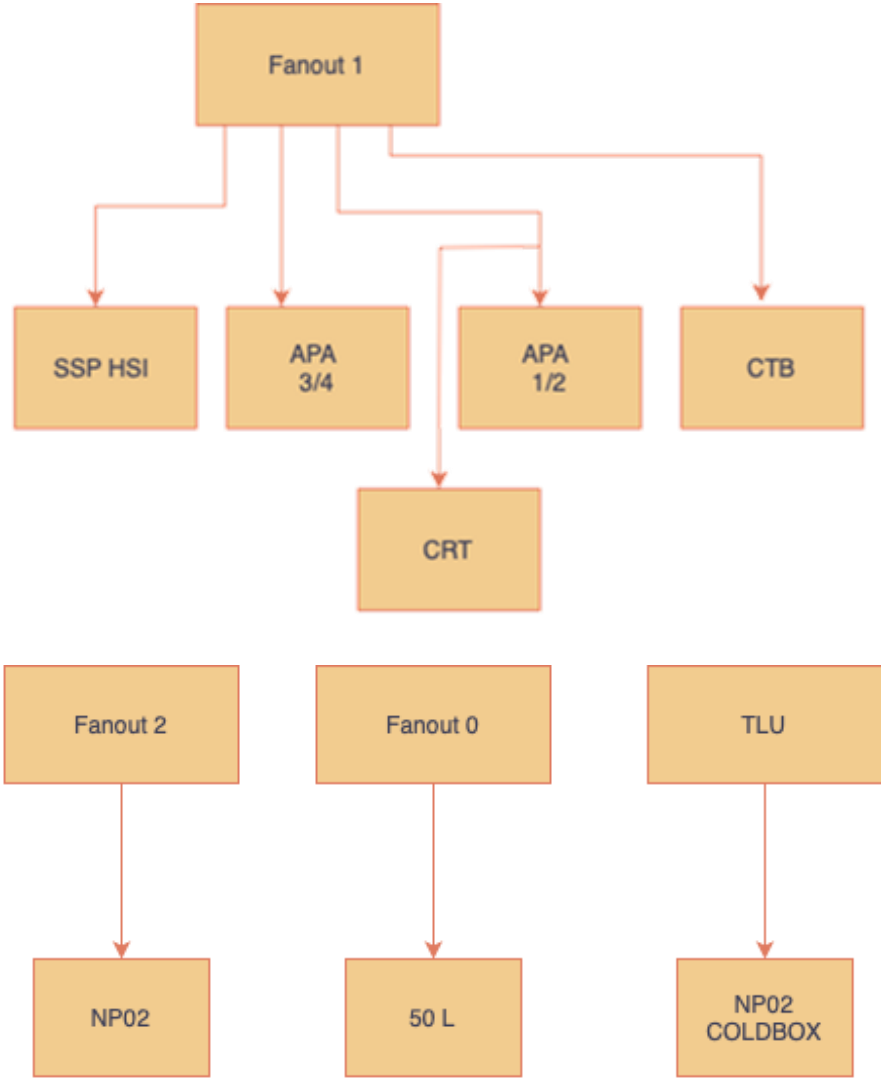
- Dune Timing System (DTS) outline
- Advice for DAQ experts
- Reconfiguring the timing

DUNE Timing System outline

- The DUNE Timing System (DTS) provides timing information across the NP04 experiment (and separately to i.e. NP02 coldbox).
- Bad timing means bad timestamps.
- Tends to go wrong during DAQ configuration.
  - Endpoints (i.e. WIBs) have a timing status.
  - Will raise problems if not in a good state (i.e. they don’t have a timing signal).

DTS hardware outline

- Fanout 1 for NP04 (with 10MHz clock coming from the WR-LEN driven by the beam-instrumentation WR network).
  - WIBs, DAPHNEs, CalCI
- TLU for coldbox.
- Fanout 2 for NP02.
- Full list of EHN1 timing endpoints:
  - https://cernbox.cern.ch/s/OOIoDZuX3FvdiXA

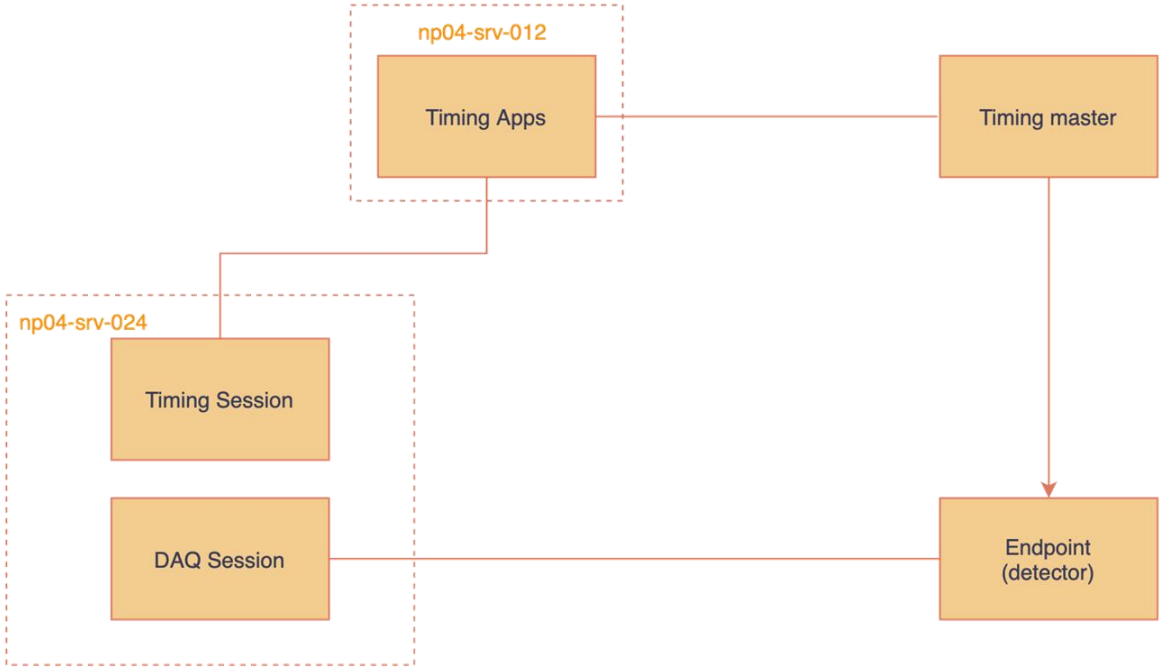


DTS expert advice

- Follow the official documentation twiki: https://twiki.cern.ch/twiki/bin/view/CENF/TimingUserGuide
- Please post your questions to #timing-integration slack channel.
  - Individuals may not be able to help as quickly as the group!
- In the twiki:
  - Reconfiguring the timing system using the timing sessions (these slides).
  - Starting devices from cold (in particular, the CRT rack has a device which must be manually restarted, and may be over-looked).
  - Contact experts via #timing-integration !

Reconfiguring the timing

- Timing sessions live on np04-srv-024.
  - Standard log in with np04daq.
- Timing sessions have tmux windows with “_timing_”.
  - NP04 tmux window: np04_**timing**_fanout_1

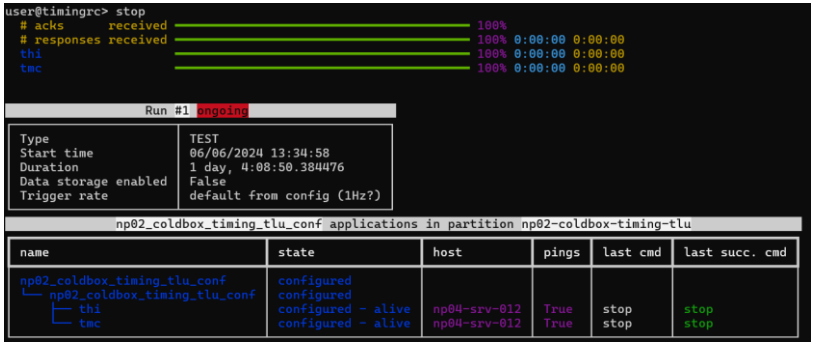


Reconfiguring the timing

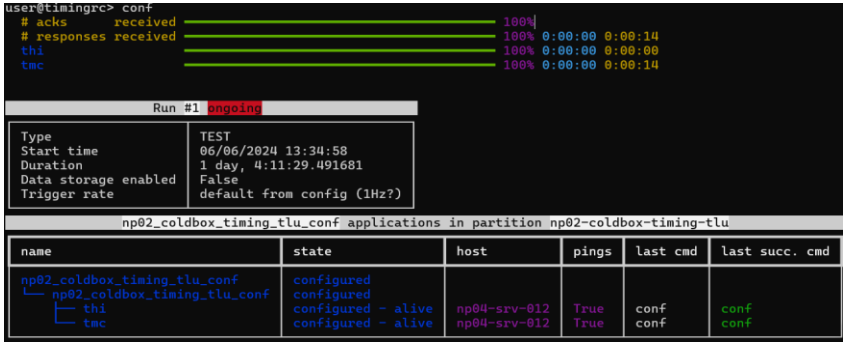
- Non-timing experts can attempt to reconfigure the timing system.
- Attach to the relevant tmux window, should have the timing session running.
- Run the following commands:
  - stop
  - scrap
  - conf
  - start
- Can fix common errors, and won’t interrupt the system if timing isn’t the problem.
- Further details in the twiki.

Reconfiguring the timing

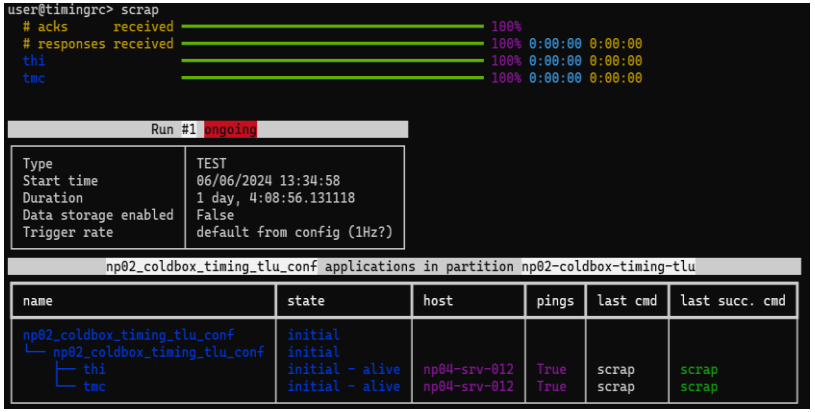
1. stop



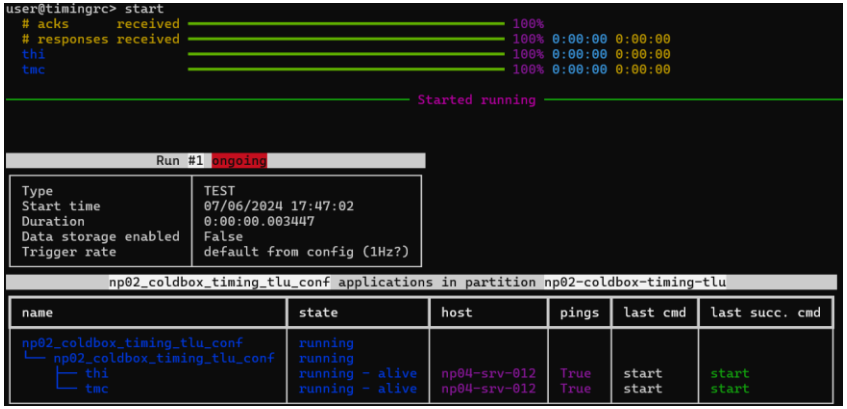
3. conf



2. scrap



4. start



Summary

- Bookmark the twiki!
  https://twiki.cern.ch/twiki/bin/view/CENF/TimingUserGuide

Thank you!