2x2 Slow Controls Update

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DAQ/Computing Meeting

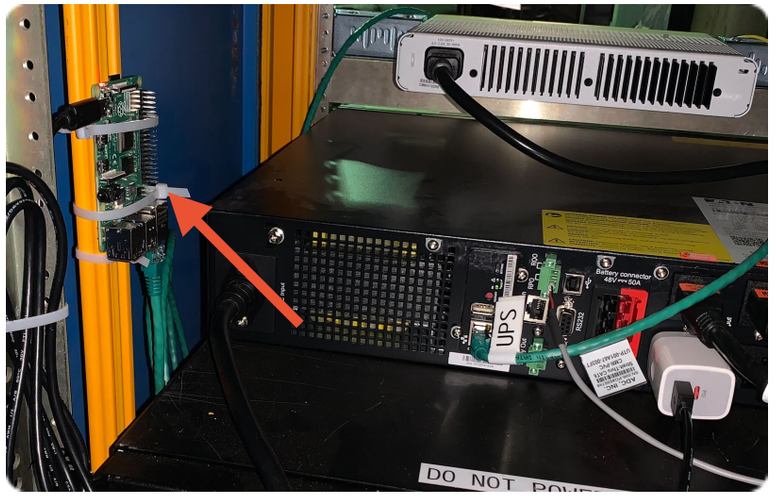
Thursday 08, August 2024

Logistics

- Mondays (biweekly) at 2PM CT.
  - Biweekly meetings. Online only. Next meeting 08/12
  - Email will be sent few days before meeting day.
- Subscribe* to the mailing list: ***DUNE-2X2-SLOW-CONTROLS***
- System is currently down due to power outage underground. Expect it to come back between tomorrow and Monday.

Slow Controls Activity List

- **Slow Controls pending tasks from last run:**
  - Push UPS ✅ , MPOD PM, and TTIs monitoring to influxDB and Grafana.
    - Thanks to Luis Mora and Brandon for helping setting this UPS.
    - UPS data is permanently displayed on IGNITION under the *Detector* tab.
    - Information recorded on the *ups_mpod1* Postgres table on the prd DB.
    - Grafana monitoring coming (very) soon as well.
    - First test of Grafana + Postgres stack!
- **(Ongoing) Goals for next beam run:**
  - Replace current GUI with EPICS for remote controls and configuration (more on next slides).
    Tests with devices **are needed**, need to coordinate with RC and subsystem experts.
  - Re-target slow controls data to be saved on PostgreSQL DB supported by Central Web Services at Fermilab rather than InfluxDB.
  - Allow Grafana login through SSO.
    - Need to meet with Kevin Retzke. Start by getting a grafana instance and see what's reachable.
  - ~~Setup IGNITION for testing on 2025~~.

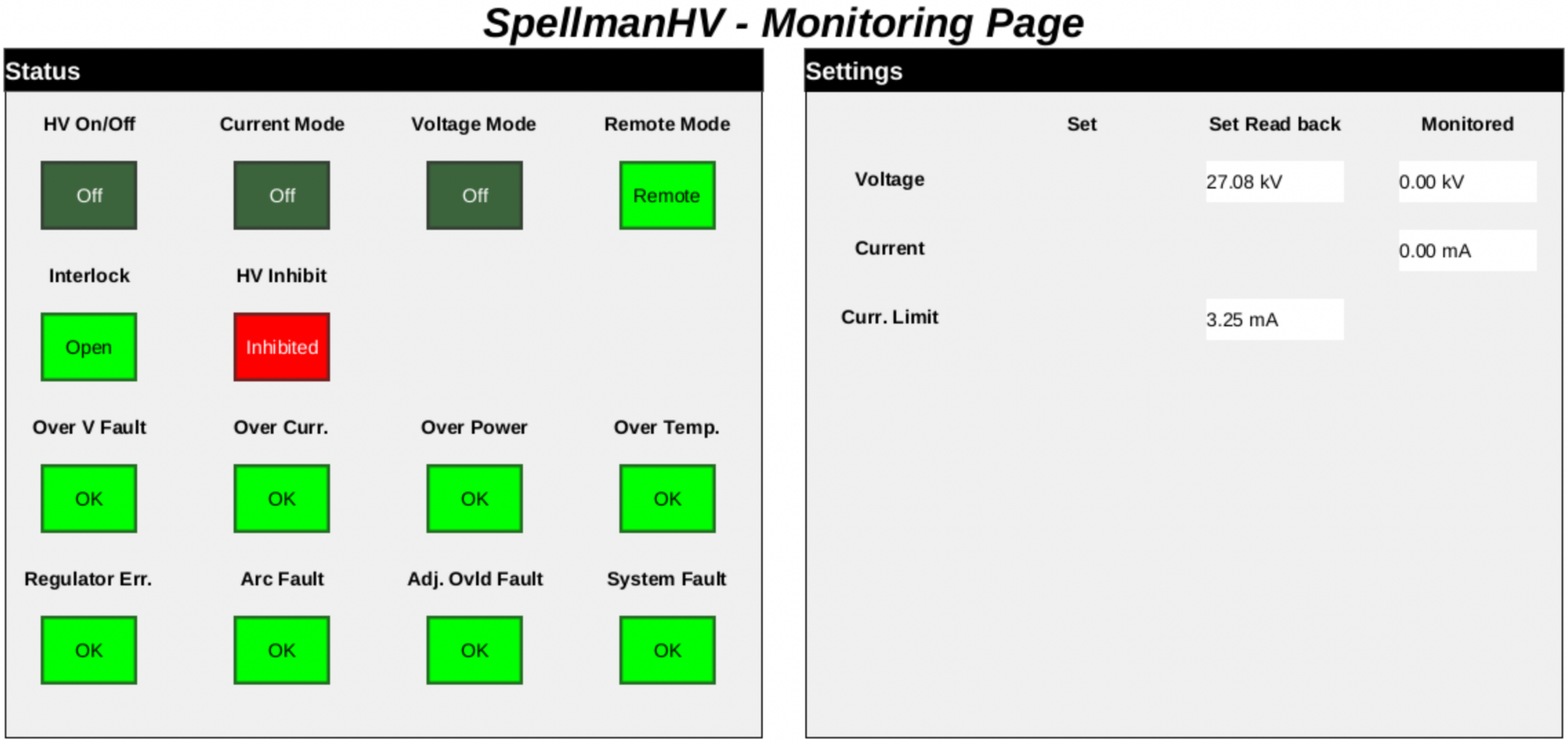


UPS Data From: 2024-08-06-10-13-37

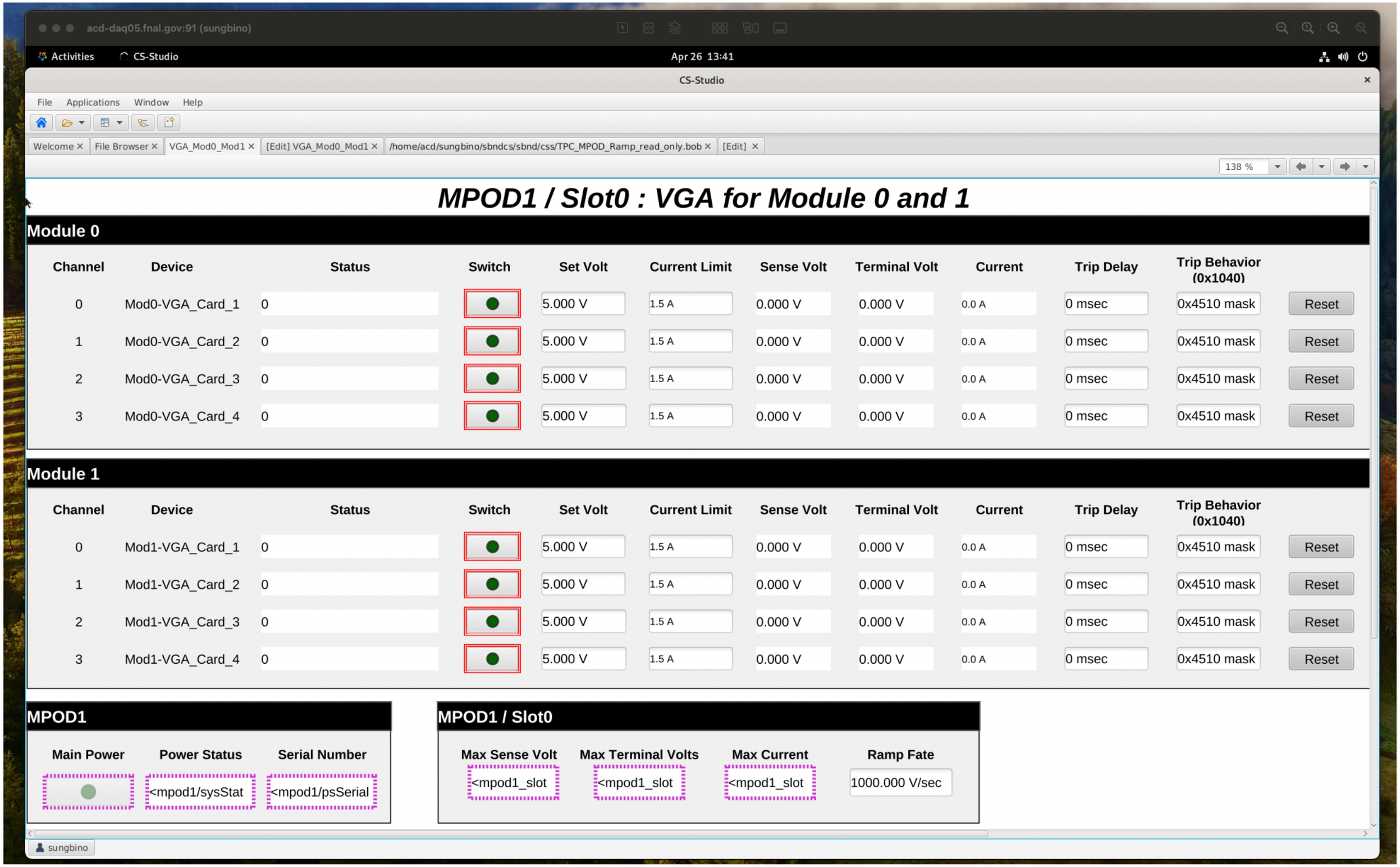
MPOD-1 UPS powering Module 2 and 3

Battery Charge:	99 percent
Battery Voltage:	52 Volts DC
Battery Time:	33.6 minutes
Output Current:	3 RMS Amps
Output Voltage:	121 RMS Volts
Output Power:	391 Watts
Input Current:	3 RMS Amps
Input Voltage:	121 RMS Volts

EPICS Progress (Thanks Sungbin!)



EPICS Progress (Thanks Sungbin!)



Backup

The Big Picture

UPS not included yet.

PM MPOD not included yet.

TTIs need more tests.

Data Sources

Units: Spellman HV

Units: Filter Pot, RTDs, UPS

Units: MPODs, VMEs

Units: TTIs

Units: GIZMO

Units: Servers

TCP/IP socket connection

SSH

SNMP

TCP/IP socket connection

SSH

HTTP

Data Collection

A

A C

A

A

A

B

Data Storage

A

B

C*

* Cryogenics and UPS data

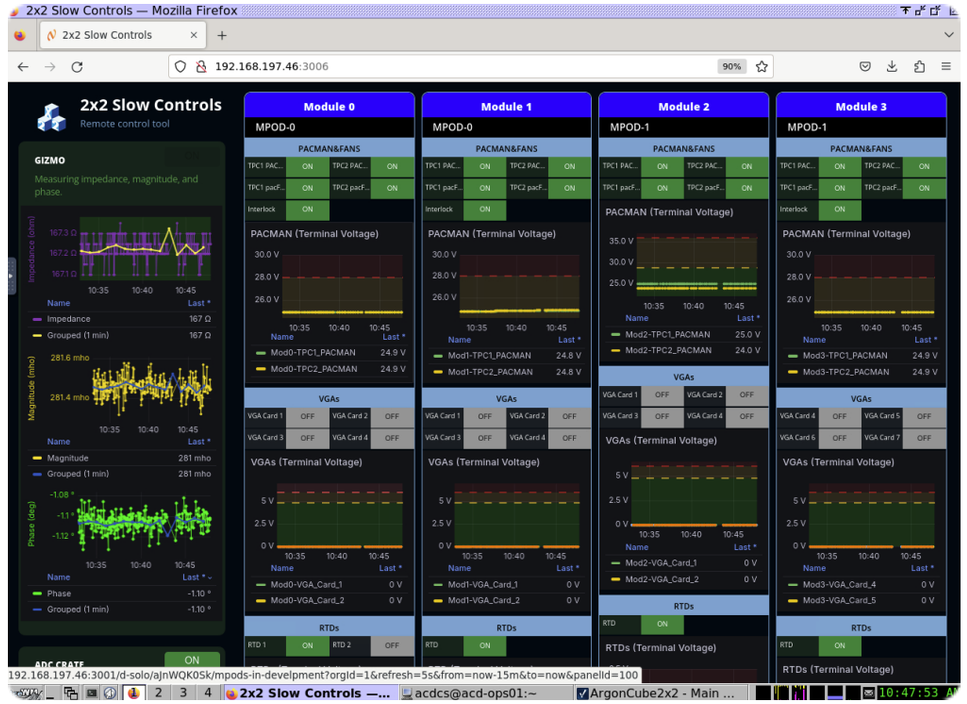
Data Action

Current Monitoring Setup

- Configuration is set by power cycling a channel on the GUI.
  - All configuration exists on a set of JSON files located at: */home/acd/acdcs/2x2/SlowControls2x2/GUI/Classes/Backend/CONFIG.*
  - Can also be accessed through GitHub.
- How to (currently) change one of these pre-defined values?
  - On the adcs area, create a new branch with any name of your preference.
  - Make the desired configuration changes on the JSON files.
  - Push your changes to git.
  - On GitHub, make a pull request to the main branch.
  - After merging with main, go back to the acdcs area and checkout to main again.
  - Pull changes to main.
  - Re-run the container by going to */home/acd/acdcs/2x2/SlowControls2x2/GUI/*
- This software hasn't been developed to make changes on the pre-defined configuration, that's why we don't have a 'user friendly' way to do it. We will have an expert tool in the future for this using EPICS or IGNITION.

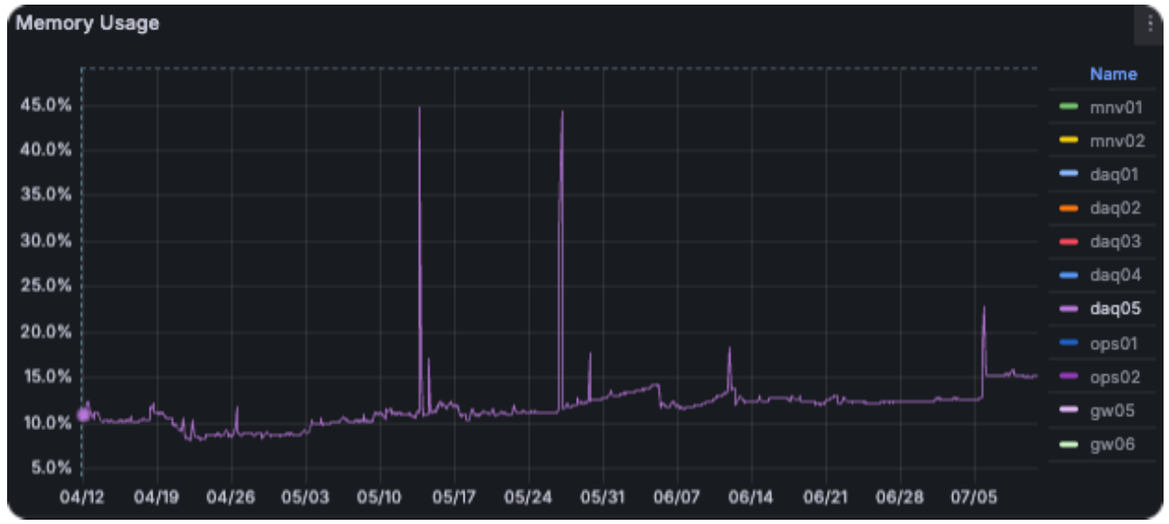
The Big Picture

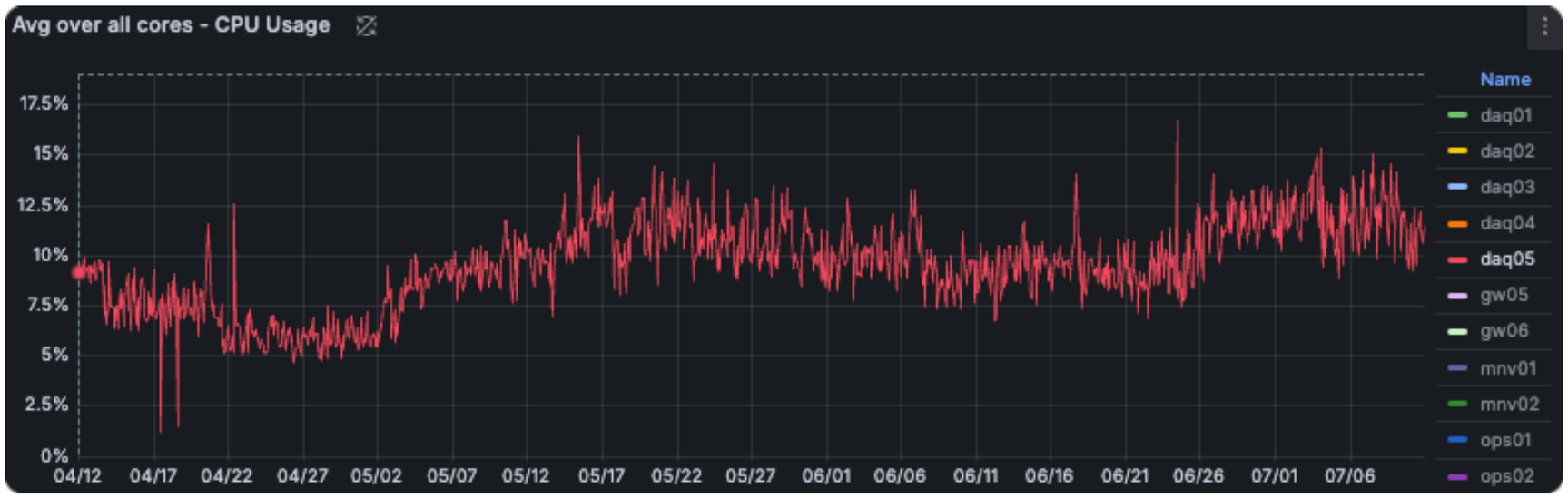
- System has proved itself to be stable and consistent.
  - Pros: It works.
  - Cons: Remote controls/config not optimal (HV).
  - Cons: Not scalable for DUNE ND slow controls

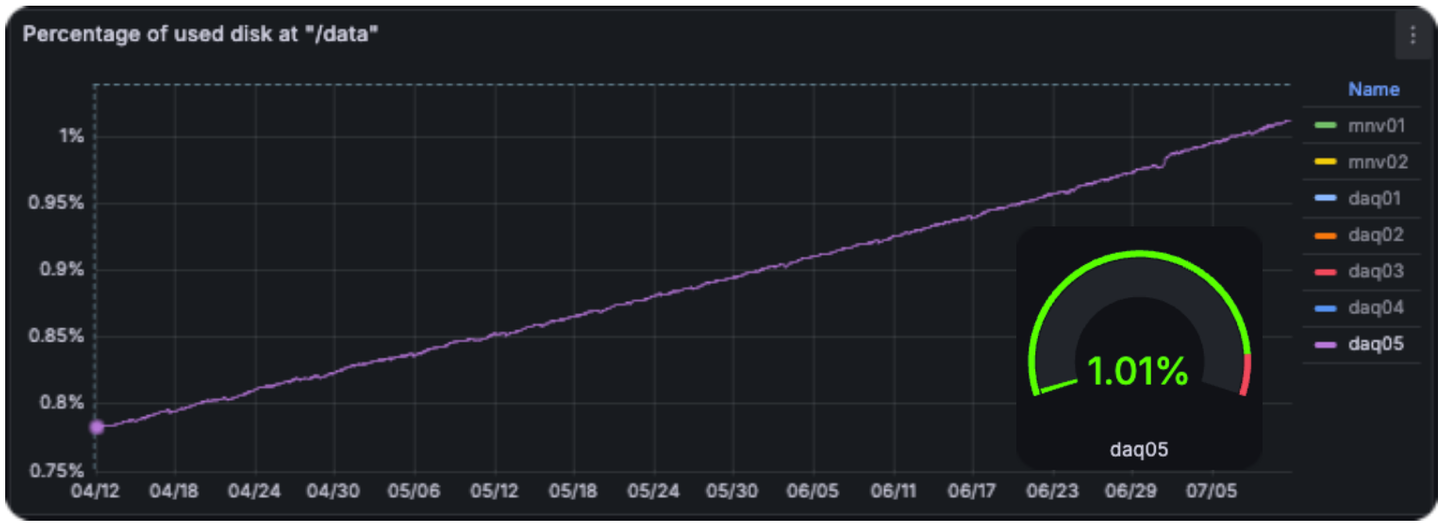


acd-daq05

- Resources consumption.
  - 1.1% of */data* used.
  - This is 104GB out of 10T available.







No resource limitations to start implementing new technologies such as EPICS or Prometheus.

Filesystem /data is backed on acd-daq05.fnal.gov. RITM2030156

Containers storage will be moved to the new /containers partition after July 12.