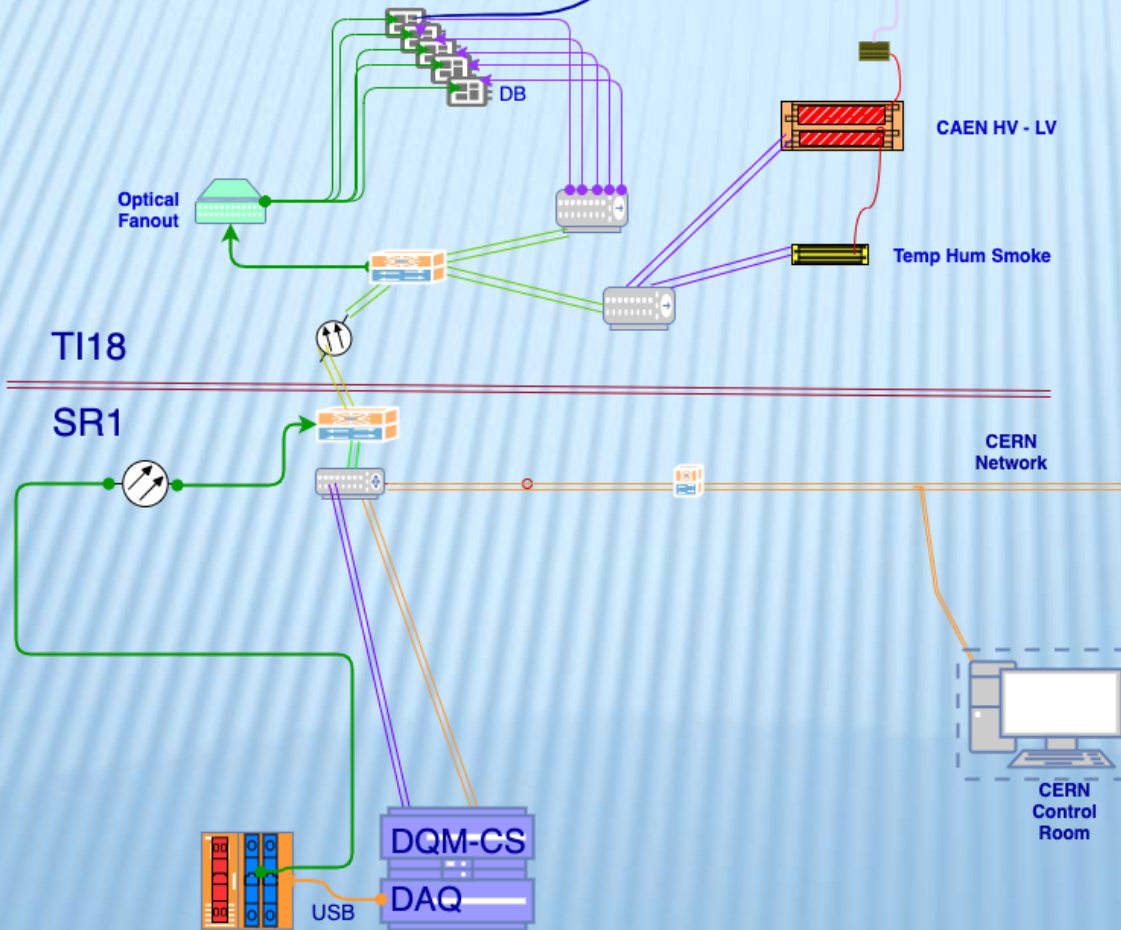
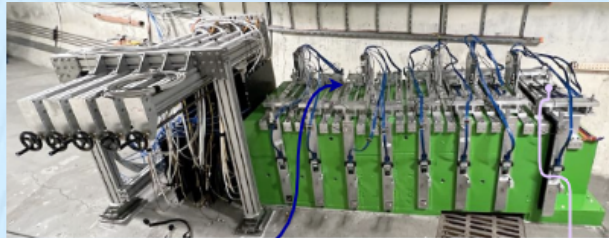


ONLINE INFRASTRUCTURES



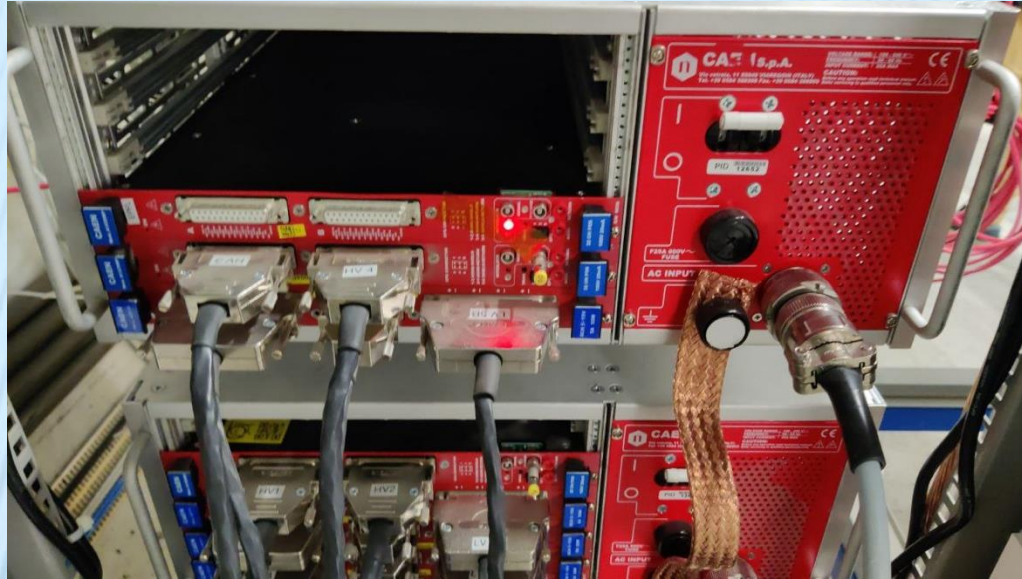
TI18

- 2 Optical fiber TTC
- 2 FO Ethernet Link
- 2 Network switch
- 2 Fiber splitter
- 3 CAEN SY5527

SR1

- 1 Network Switch
- 1 FO Ethernet
- VME Crate
- DAQ Server
- VMs - MON Server

ONLINE HARDWARE



✘ Muon – Veto Mainframe

We need to add a booster if we want use the empty slots

✘ HV and LV

2 HV for MDT - Check if we have 3 LV channel otherwise, we need by an extra LV module

✘ LV patch panel

ONLINE HARDWARE

× TTC Fibers

1 MDT and 1 DB (same length of the others in SND)

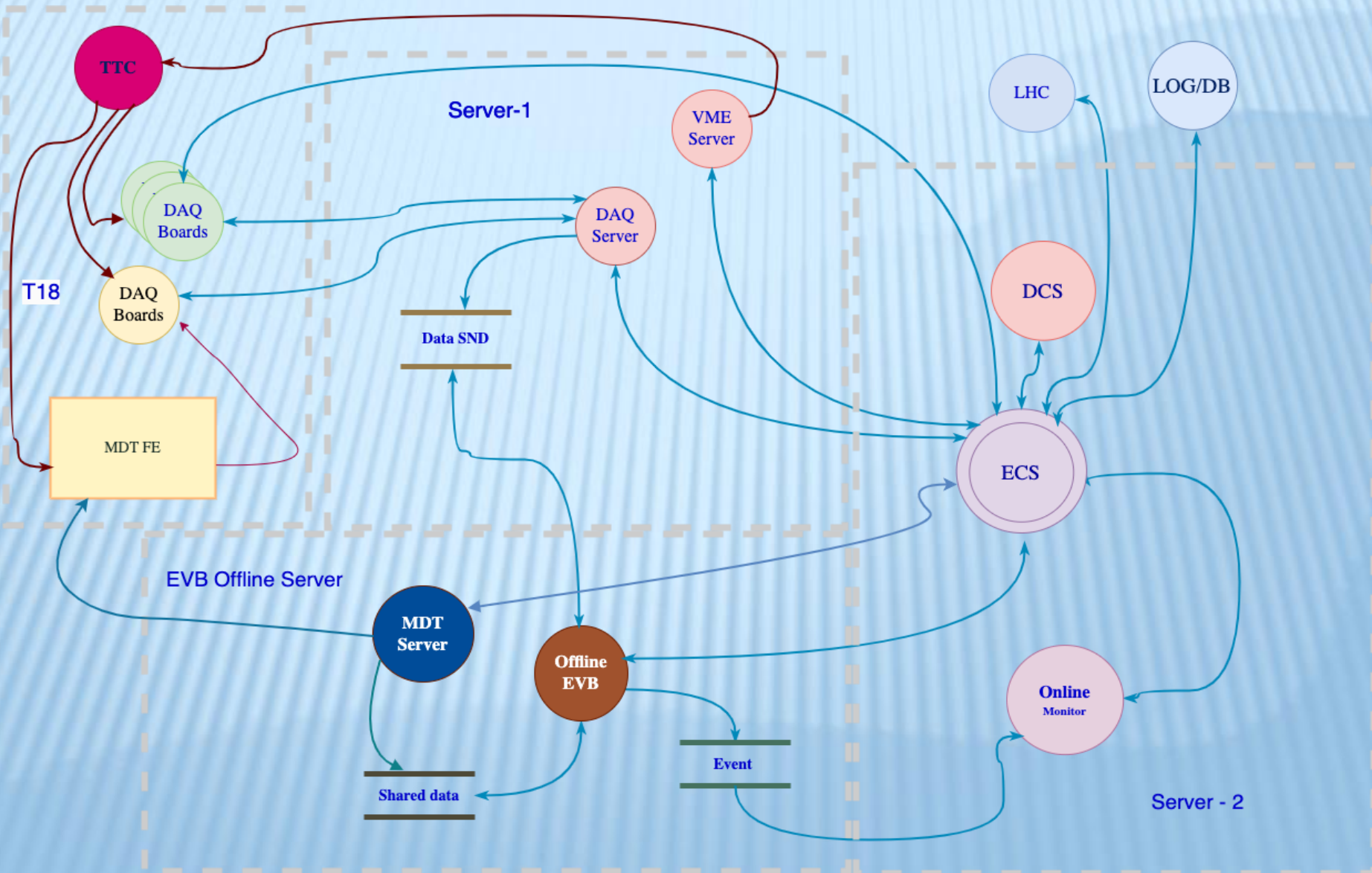
× Communication Network

Two switch (fiber input) in T18 we need check if are 10 Gbit socket, actually we have SND on the first one, RPC and SND “backup bridge” on the second.

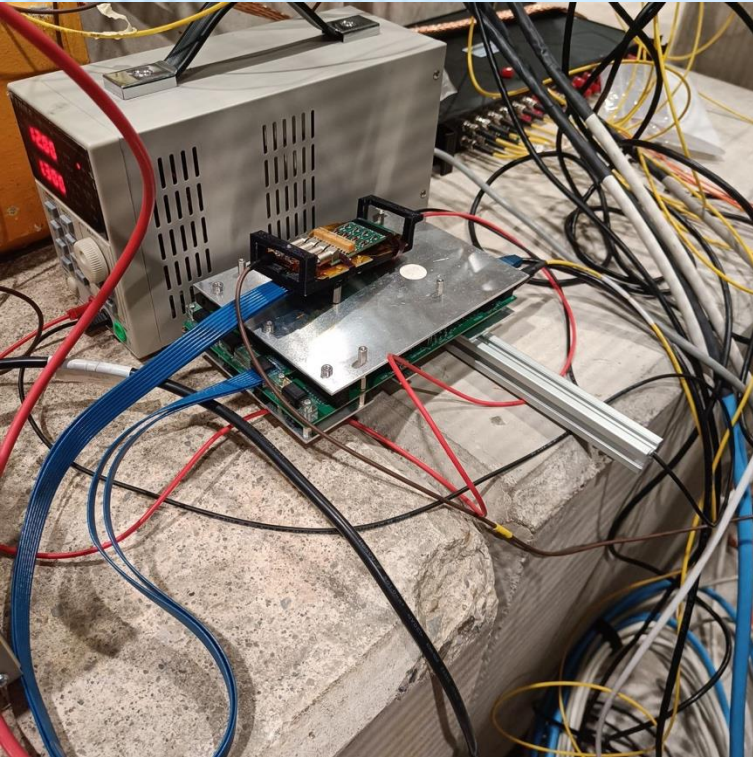
× DaqBoard

A new DaqBoard will be added to the SND readout. It will be connected to a tofpet with a custom board

Online Layout for mDT



DAQ – ECS - DCS



✘ Timestamp synch

We will use the TTC to synchronize the timestamp between SND and MDT. The reset of the timestamp and the start of run (Init from ECS) is based on TTC Bunch Counter Reset
TTC LV1 (each sec) can be used to resynch

✘ MDT tags

4 (?) signals are the inputs to custom adapter board plugged on a tofpet. This tofpet is connected to a DaqBoard.

✘ ECS (Experiment Control System)

• MDT Status Panel:

A dedicated ECS panel provides a quick overview of the MDT status:

- Specific commands can be sent to the MDT readout from the panel.
- A protocol layer between ECS and MDT readout will be required to allow shifters to recover directly from ECS.

• Plans:

- Use the embedded server in ECS to manage and receive data seamlessly.

✘ DCS (Detector Control System)

- **HV/LV Monitoring:**
 - **WinCC Usage:** Avoided unless specifically necessary.
 - Data is stored in an **Influx DB** with a 30-second history and visualized via **Grafana**.
 - During the YETS, alerting functionalities will be added.
- **Shifter Alerts:**

ECS already includes alerting mechanisms for the shifters, we need to organize a mechanism of communication between mDT and the ECS.

SND And MDT DAQ Synchronization



- **Separate Operation:**
SND and MDT DAQ systems operate independently, with synchronization relying solely on the TimeStamp .
- **Global TimeStamp Initialization:**
At the start of the run and during the “*Init*” phase, all TTCrx modules receive the **Bunch Count Reset** signal (synchronized with the orbit). This establishes the Global TS.
- **Event Data Synchronization:**
Data events are aligned using TS, but there is no direct correlation between the event numbers of the two readout systems.
- **Event Correlation:**
Correlation between events is determined through “tag signals” provided by the MDT DaqBoard.
- **Offline Event Builder:**
For offline event reconstruction:
 - Events from the two raw data files are matched using tags from the MDT DB.
 - A configurable time window (TBD) is applied, accounting for the MDT DB’s slower response compared to SiPM readout.