General Update

- SPR
  - domain setup
  - SNAPs
  - Developing capture code for voltage stream design (hashpipe)

- ATA signal chain verification

  - Power drop investigation ISM 902-928MHz
  - Called PG&E nothing new yet!
  - Further work in localization
  - ISM band measurements within the main Building

- Observation

  - Pulsar observation at low frequency
  - Talk at FRB conference 2020

- ATA integration into GNU Radio (Ellie)

  - Setting up server and installing software
  - Testing control of ATA antennas and building GNU Radio control blocks

Antonio Feed update

- 3C – replacement of pyramid with new tip-link and modified, preconditioned coaxial wiring.

  - Inner feed assembly, LNA module (Minex)
  - Installation into feed base
  - Firmware 5.4
  - Initial testing / installation on antenna/ TSYS

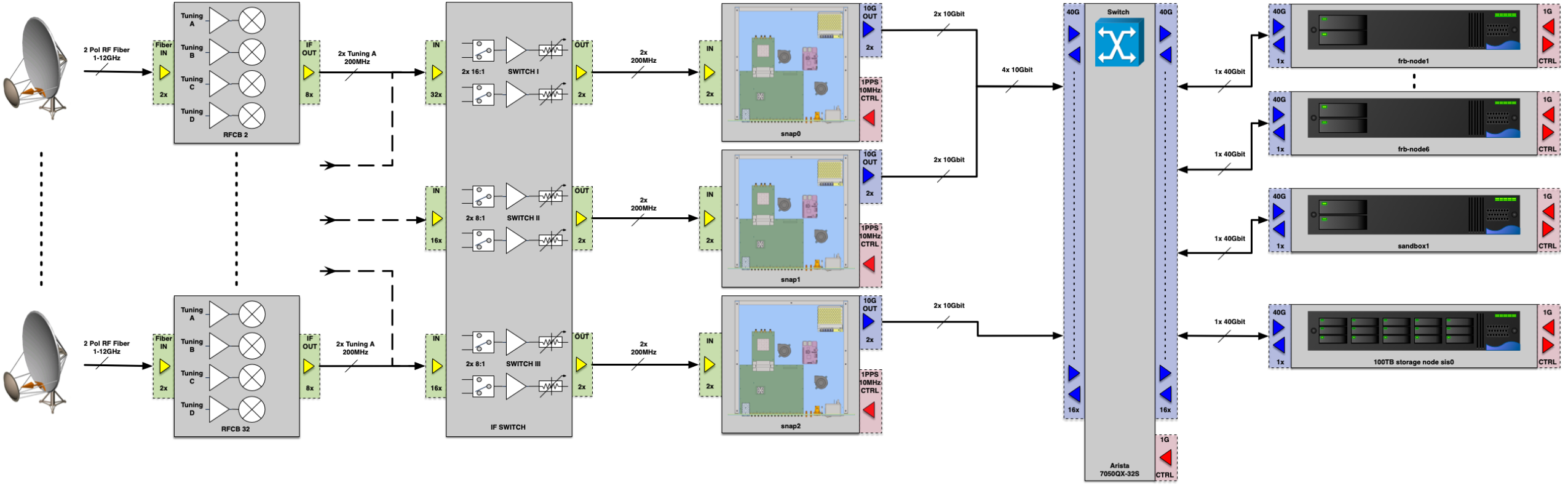
- 4J – replacement of base plate and pyramid with new tip-link and modified, preconditioned coaxial wiring.

  - Inner feed assembly, LNA module (Minex)
  - Replace base plate
  - Firmware 5.4
  - Tuning Cryocooler

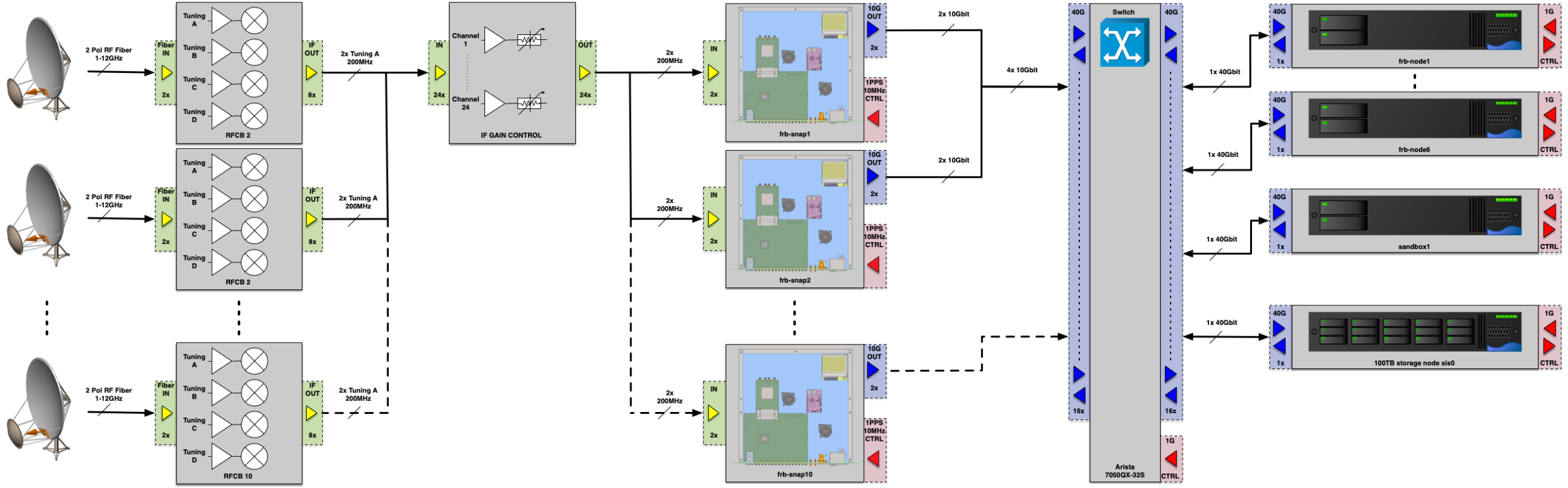
- 1K – replacement of base plate and pyramid with new tip-link. Installation revised wiring harness.

  - Inner feed assembly, Link-Tip (Minex)
  - Replace base plate
  - Tuning Cryocooler
  - New wiring harness (3x)
  - Assembly of feed base and vacuum test

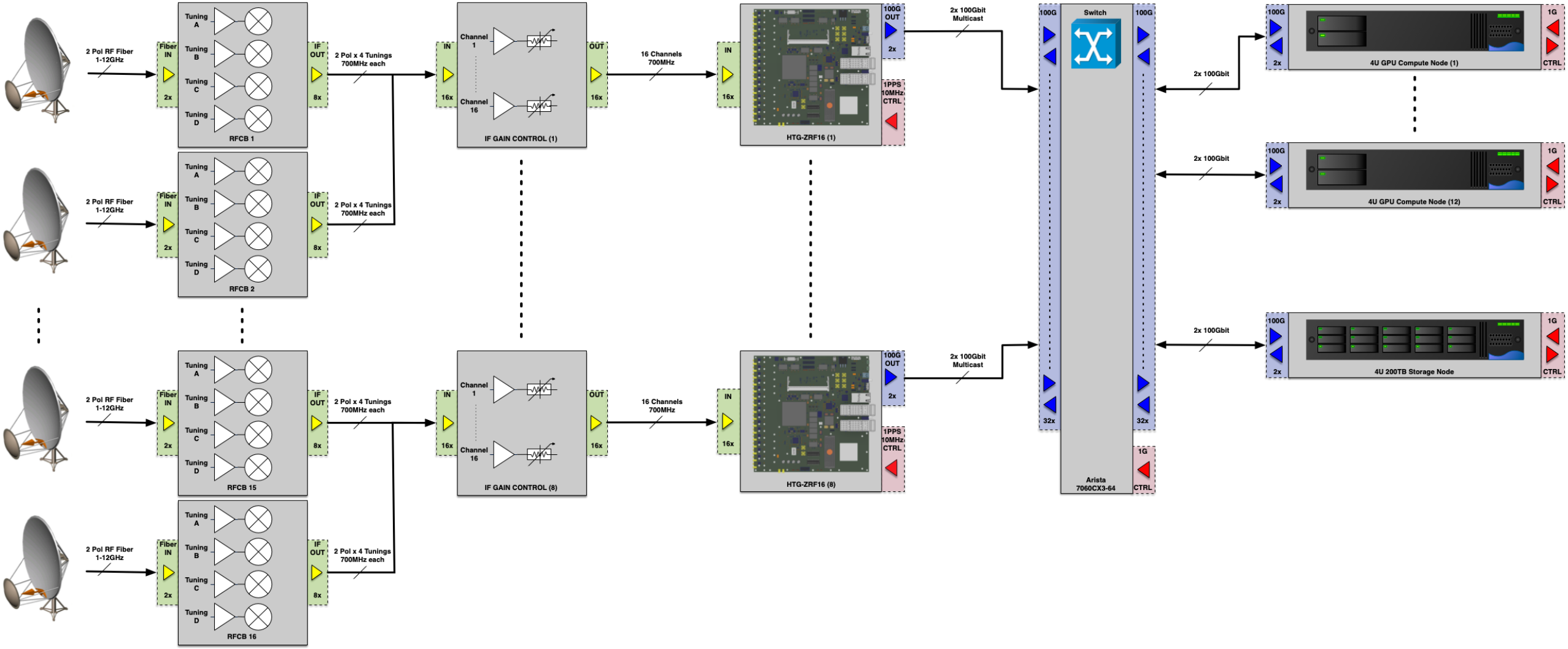
Existing IF-Switch DSP Backend



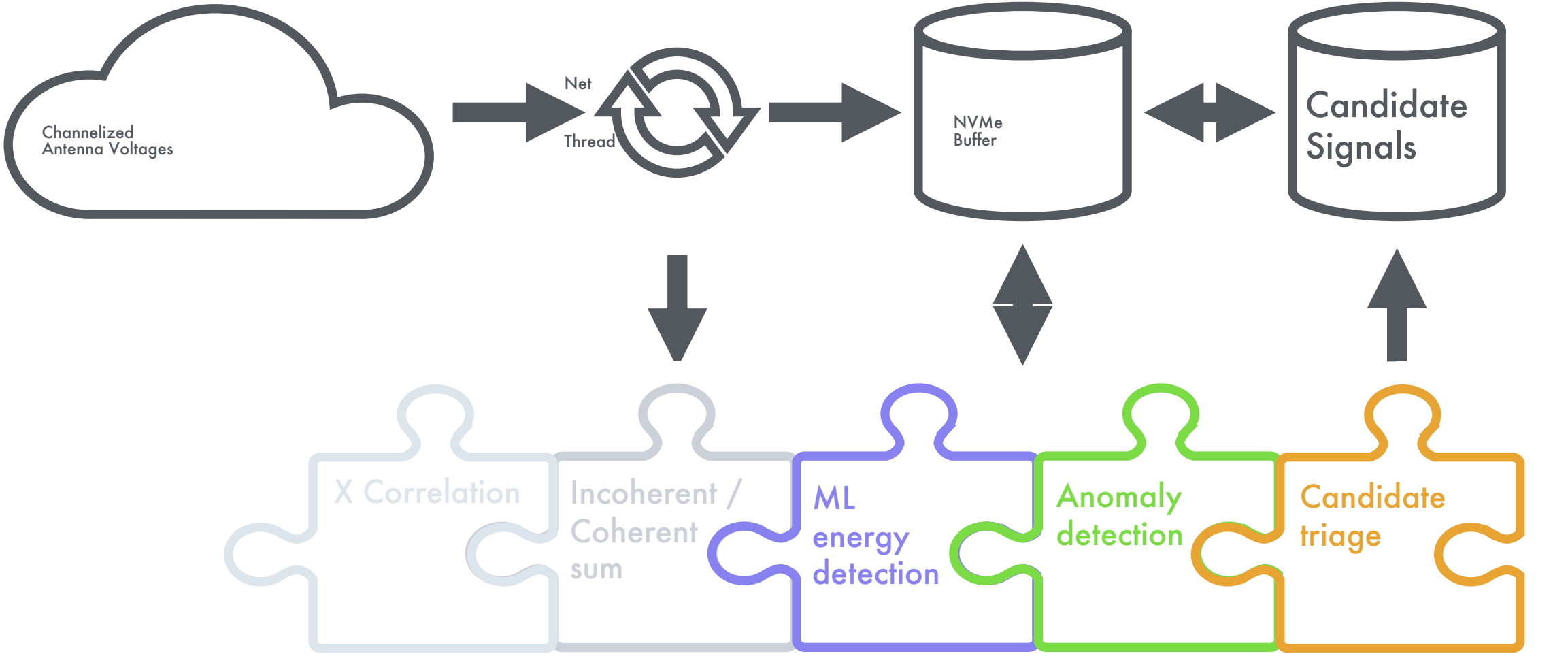
Existing FRB DSP Backend



Proposed Multi Mode DSP Backend



MM Digital Backend Software Architecture



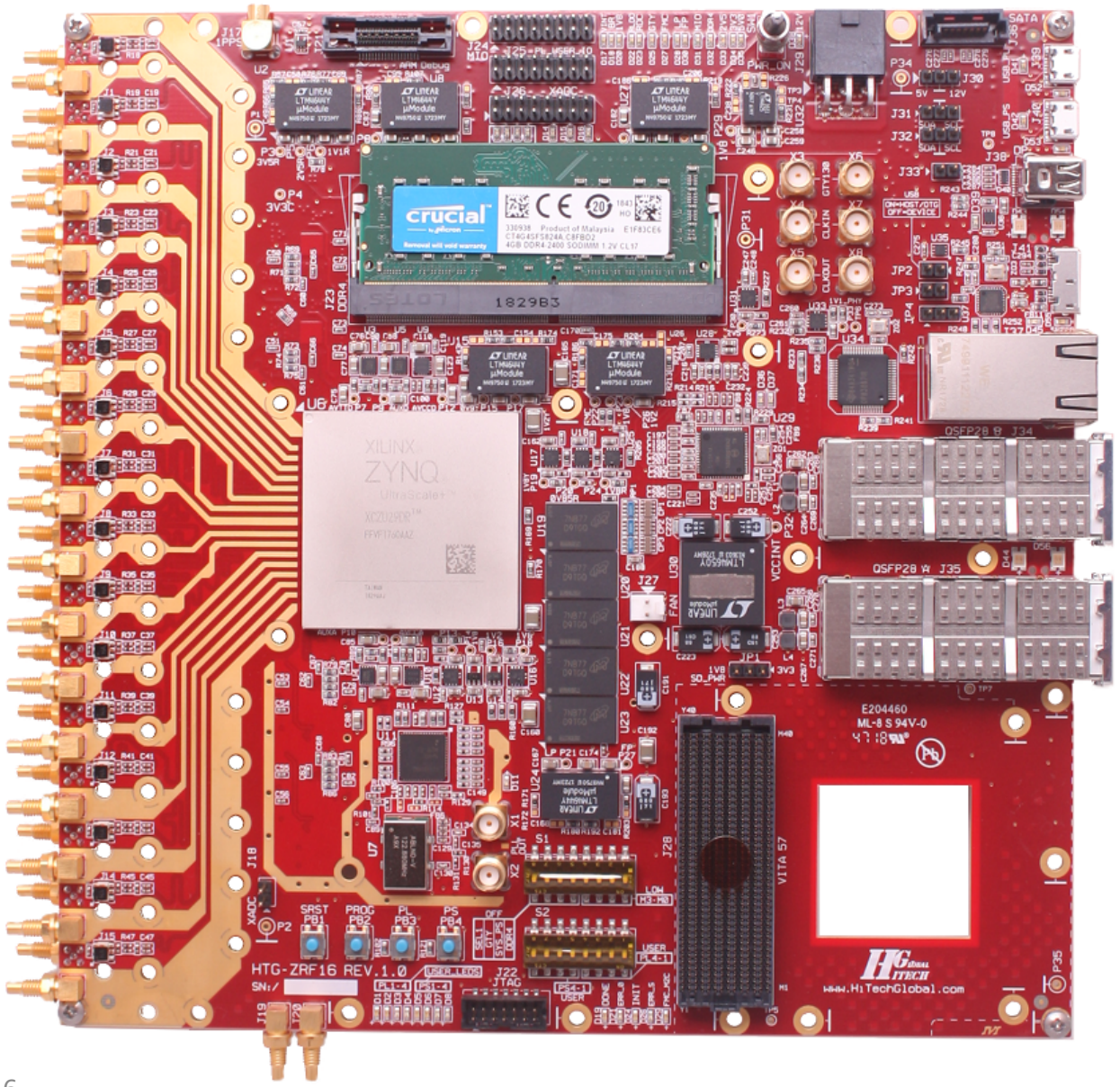
D. Czech (BL - MeerKAT)

MM Digital Backend Detail

- **Based on RFSoC hardware**
  - **16x ADC 12bit @2Gsps**
  - **2x QSFP28 100G Network**

- **Supported operations:**
  - **Correlation**
  - **Baseband capture**
  - **Beamforming**
  - **DSN modem**
  - **…**

- **Multicast Ethernet architecture allows for multiple compute nodes to make use of digitized data.**



MM Digital Backend Compute Node

- 1x 4U GPU Server 4124GS-TNR

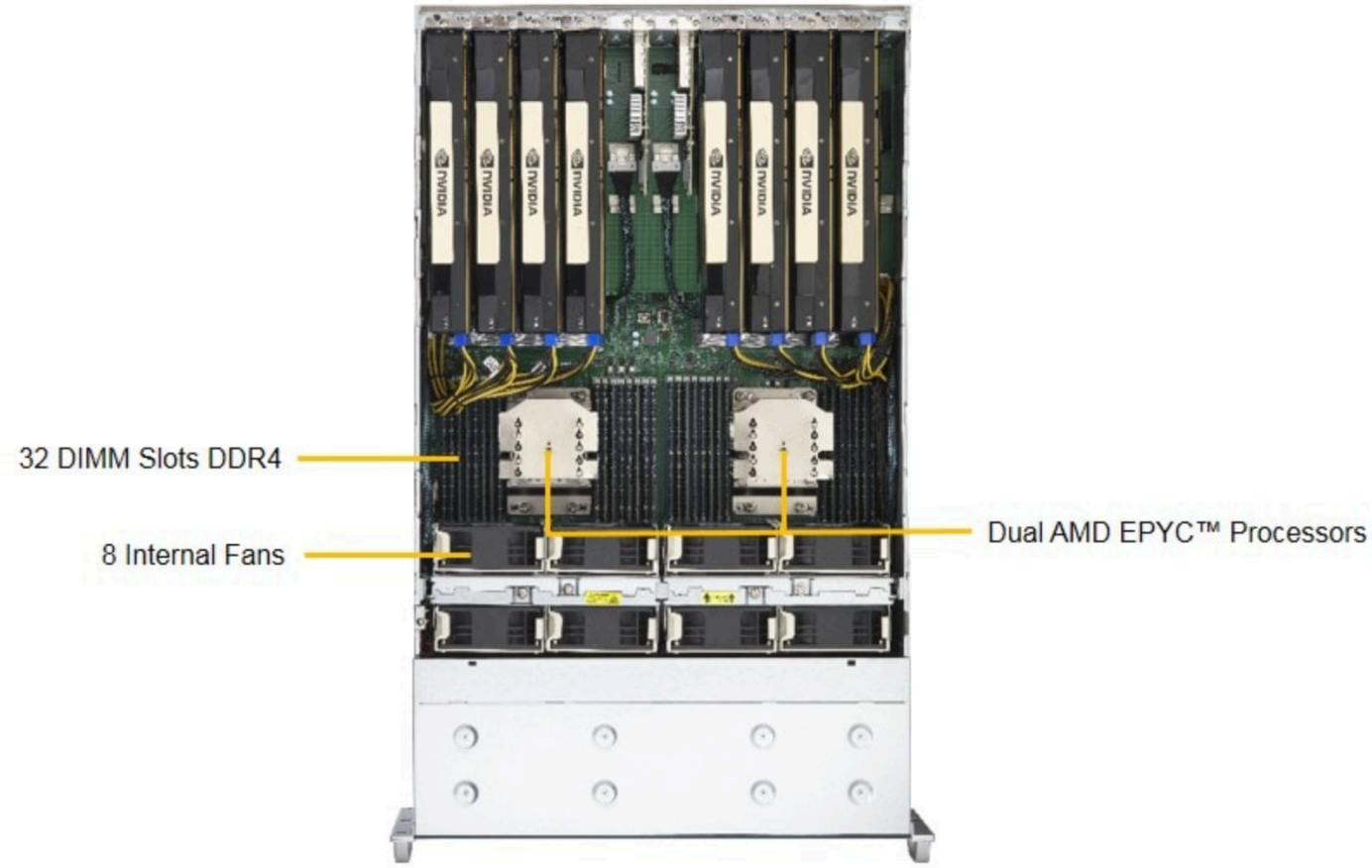
- 2x AMD EPYC 7302 16Cores 32Threads 3.0GHz
- 32x 16GB (512GB) DDR4-3200MHz RAM

- 2x Mellanox ConnectX-5 100GbE Network Interface

- 2x Asus HYPER M.2 X16 GEN 4 PCIe 4.0/3.0 (256Gbps)
- 4x 1TB NVMe M.2

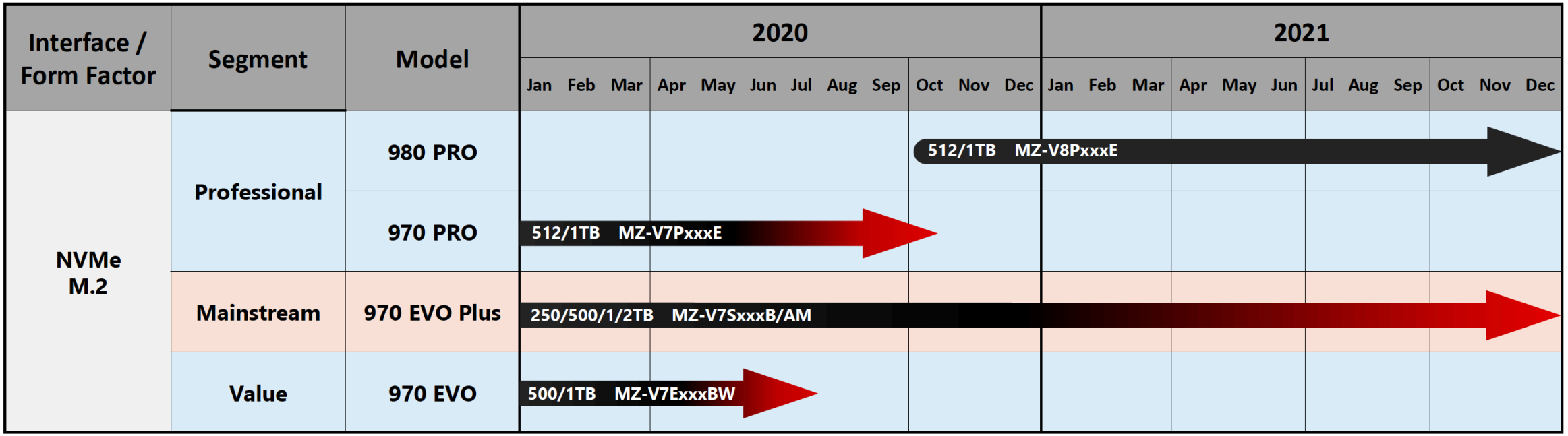
- 4x 1TB SSD

Slot	Description
1	PCI-E 4.0 x8 (CPU1)
2 ... 5	PCI-E 4.0 x16 (FHFL CPU1)
8 ... 11	PCI-E 4.0 x16 (FHFL CPU2)
6 7	PCE-E 4.0 x8 (FHFL, CPU 1 and 2 respectively)



MM Digital Backend Compute Node

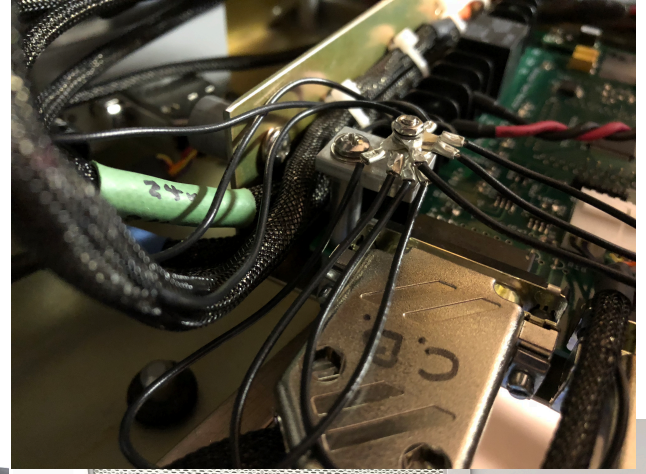
Samsung Product Roadmap – Internal NVMe SSD

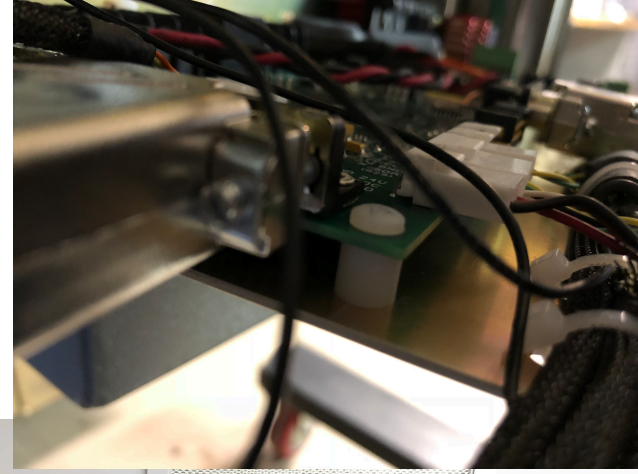


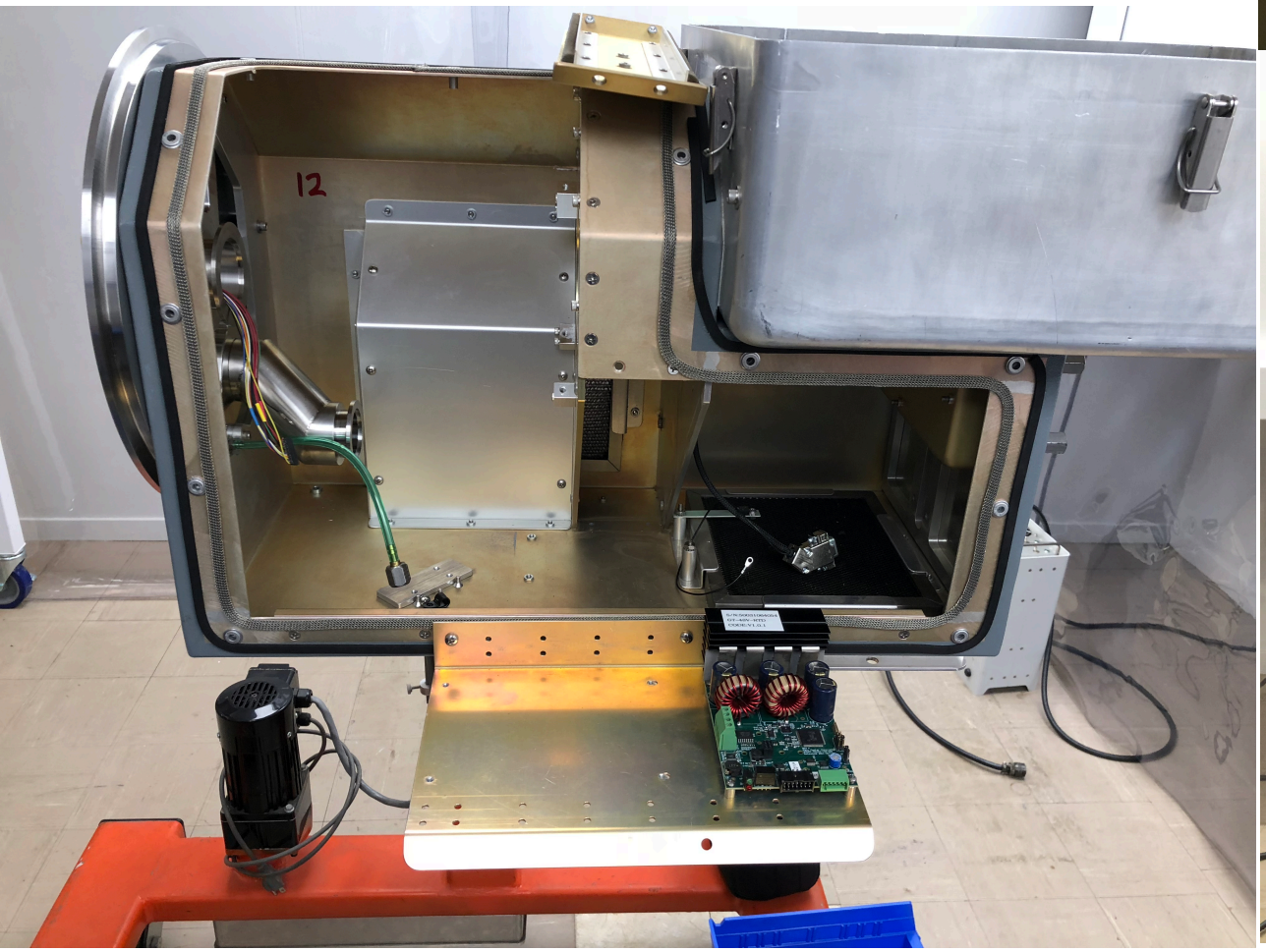
- 980 Pro PCIe 4.0 - 5 GBps writes (160 Gbps in RAID configuration)

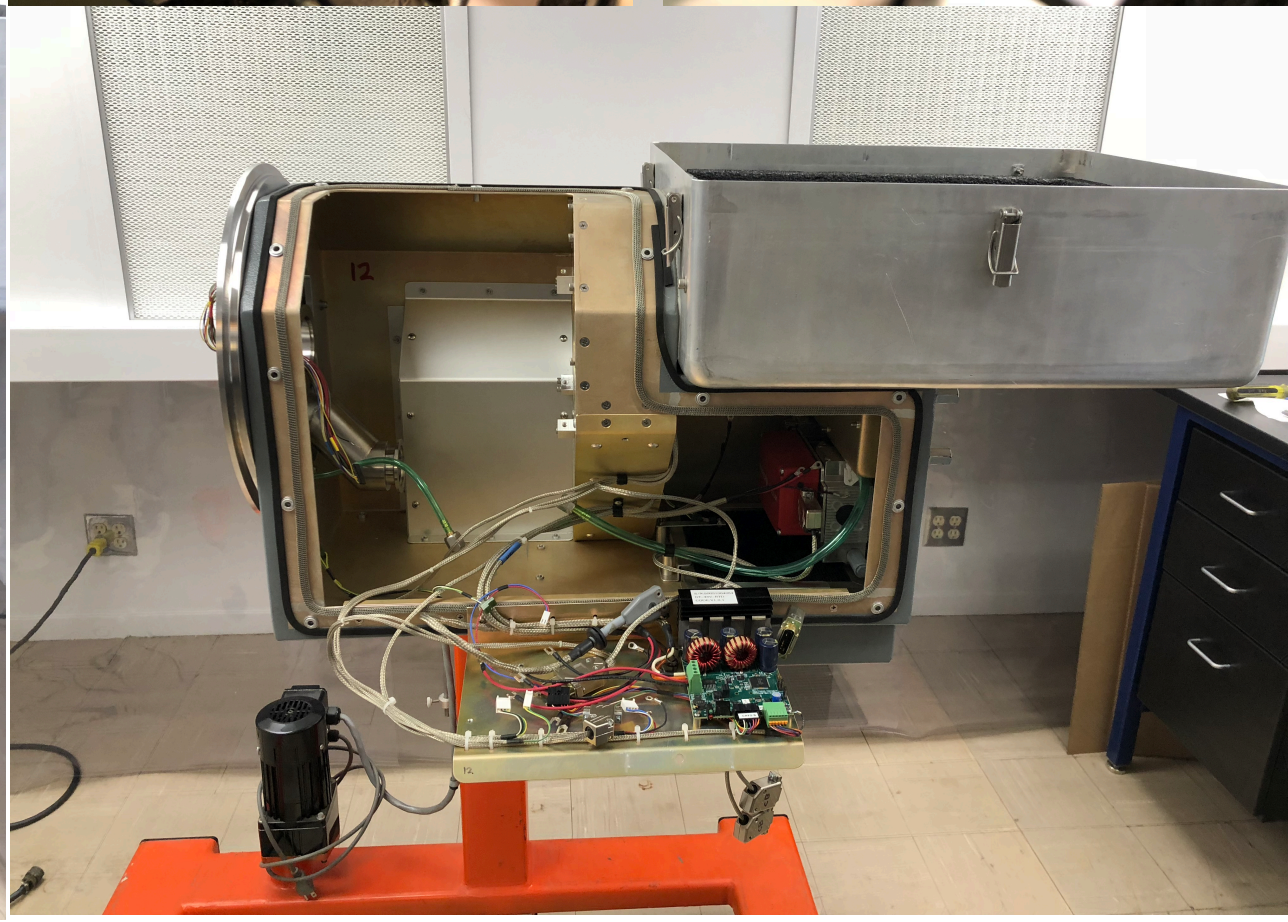
1K Refurbishment

- In process of being build up again









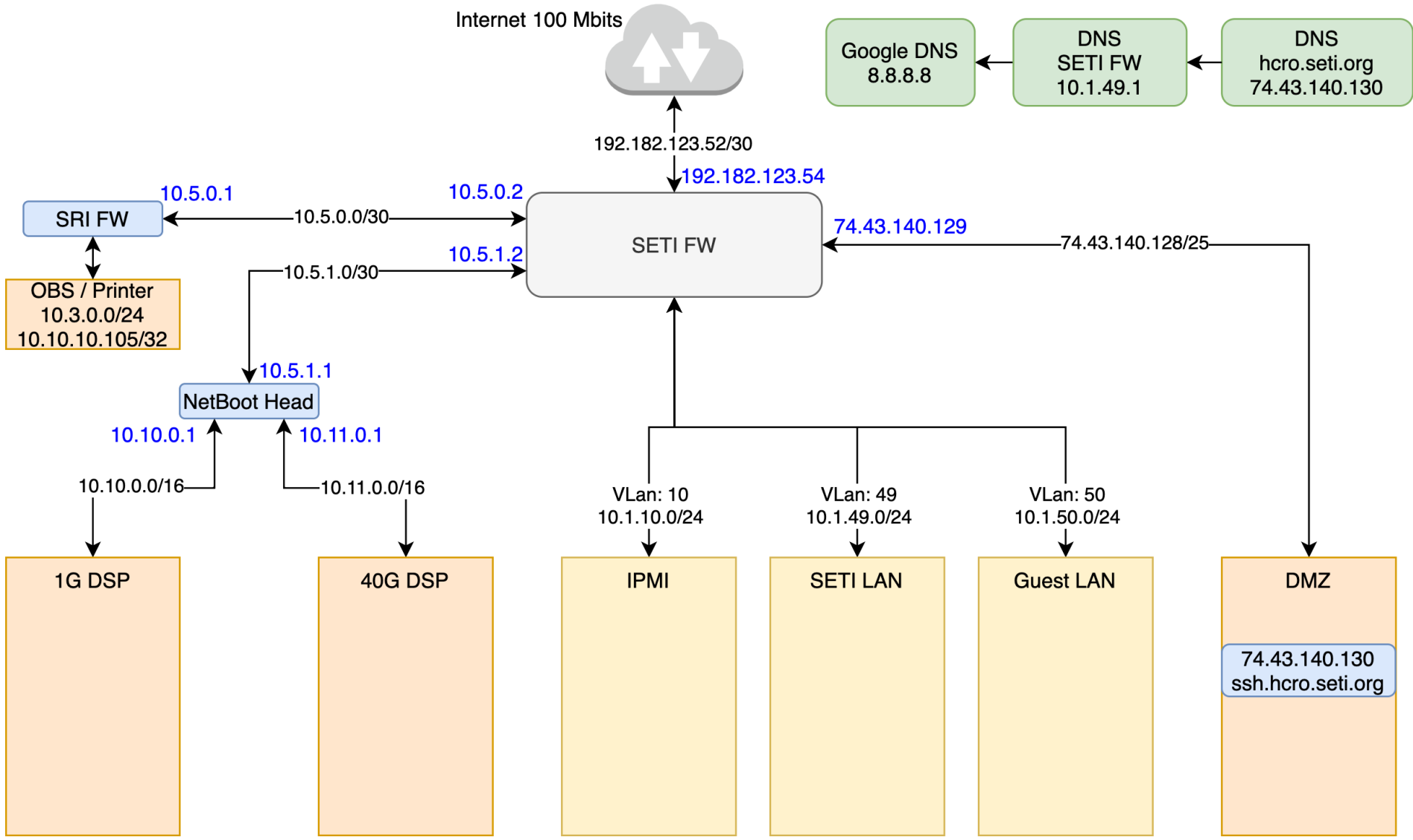
Update

Network changes:

- DNS implemented
- Network range changed
- Integrated 40G NIC into 100 TB storage

ToDo:

- Setup compute node to analyze data
- Implementing of VLans and updating of switch configuration



Update

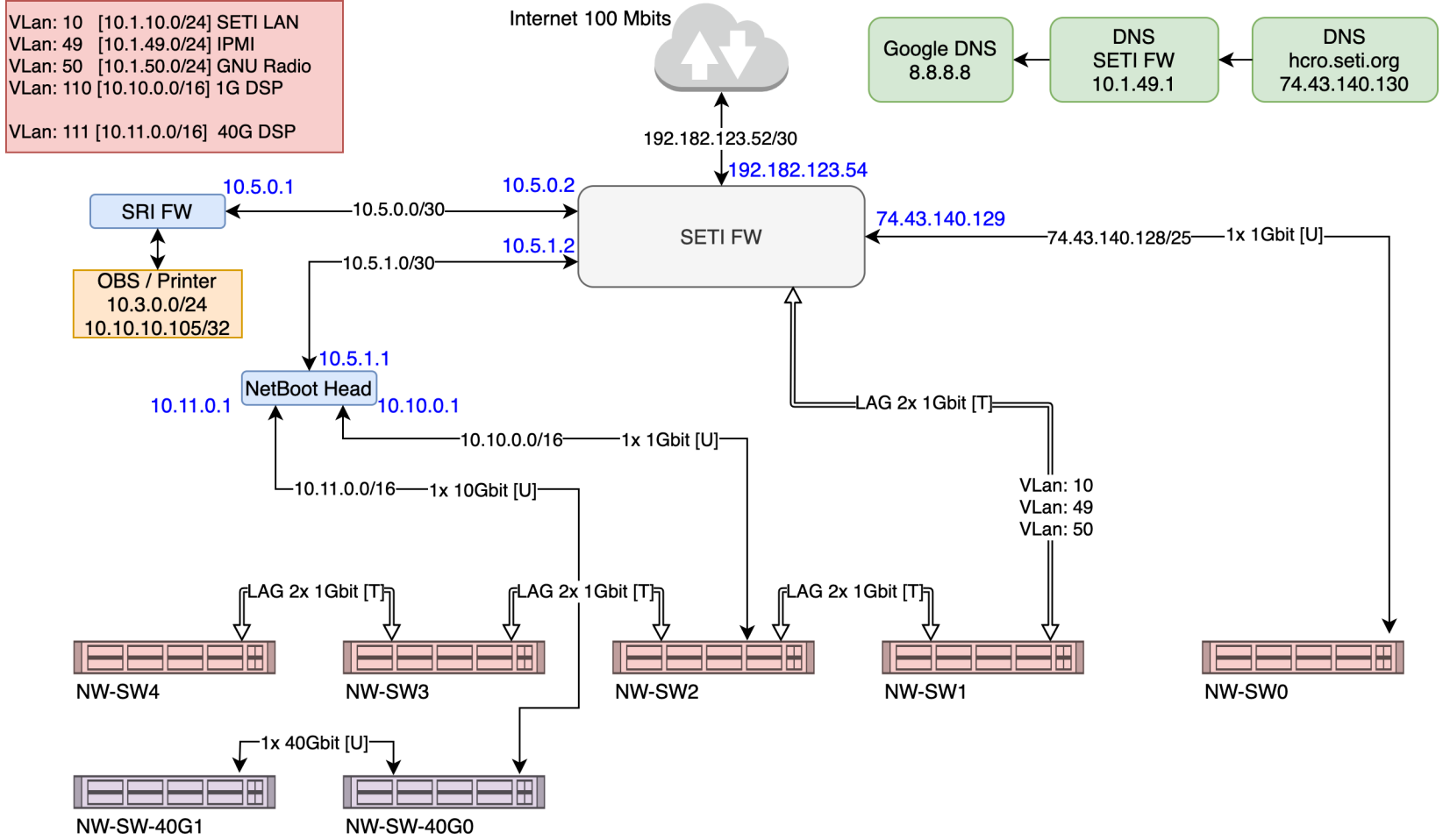
Network changes:

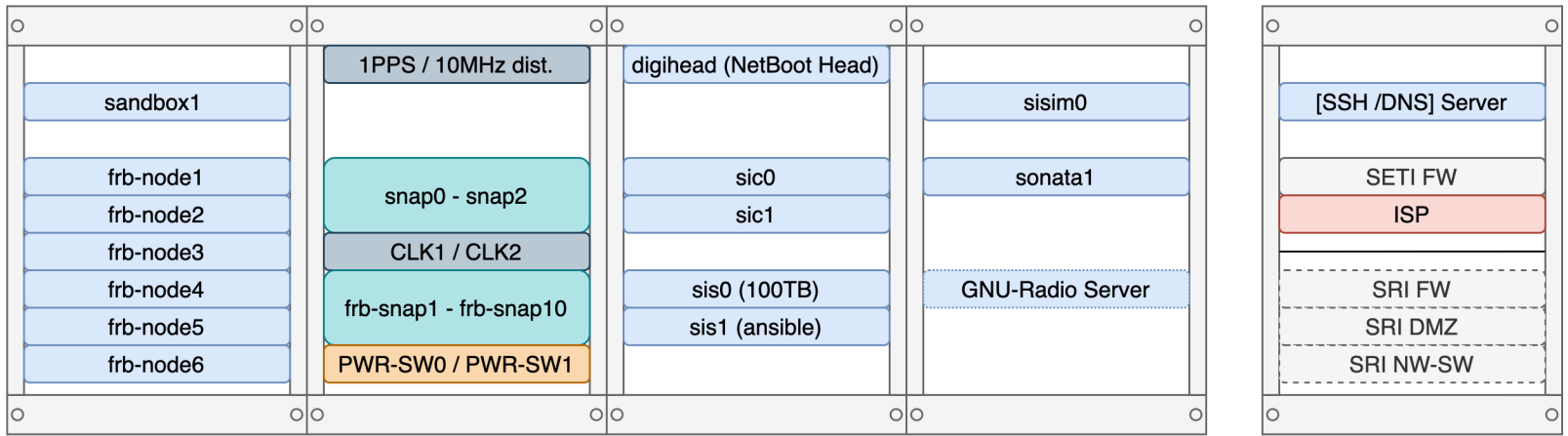
- DNS implemented
- Network range changed
- LAG 2x 1Gbit implemented
- VLANs implemented

- Setup SIC1 to analyze data

To Do:

- Setup IPMI
- Setup DNS domain (hcro.seti.org)





Student Projects and Internships:

Name	Type	Duration (dd/mm/yyyy)	Description	Status
Olivia Durrett	Internship	15/06/2020 to TBC	Astronomical observations and data analysis of pulsars and FRBs	
Sarah Schoultz	Internship	01/07/2020 to 15/10/2020	Outreach, update of posters at ATA, local RFI monitoring	
Daniel Allspach	REU SETI	07/06/2020 to 15/08/2020	Astronomical observations and data analysis of pulsars and FRBs	
Ellie White	REU Berkeley	08/06/2020 to 14/08/2020	GNU Radio Enabled Capabilities for RFI Monitoring and Beamforming	
Hellen Peng	URAP Berkeley	24/02/2020 to 01/05/2020	Software development to control digital step attenuator for IF power leveling	Finished