FEB2 v2 Startup

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Permanent documentation for slice testboard at:

https://twiki.nevis.columbia.edu/twiki/bin/view/ATLAS/V2FEB2Prototype

Git Repository for GUI software:

https://gitlab.cern.ch/feb2/gui-new

Required Setup Components

The startup instructions here are assuming the following items are present in the setup:

- v2 slice testboard
- Power connector and cable
- Power supply capable of >3A current output at 18V
- 3 MPO fanout cables
- Fiber patch box
- 1 MPO to MPO fiber cable
- PC running CentOS 7 Linux (tested with CentOS 7.8.2003)
- FELIX card FLX-712 installed in PC PCIe slot

Fiber Mapping

MTP 1 (bottom, right side of FEB2, furthest from power input connector)

MTP fanout fiber #	**lpGBT #, type**
1	1, uplink
2	2, uplink
3	3, uplink
4	4, uplink
5	5, uplink
6	6, uplink
7	7, uplink
8	8, uplink
9	9, uplink

10	10, uplink
11	11, uplink
12	Unused

MTP 2 (middle)

MTP fanout fiber #	**lpGBT #**
1	unused
2	unused
3	unused
4	unused
5	lpGBT12, uplink
6	lpGBT12, downlink
7	unused
8	unused
9	unused
10	unused
11	lpGBT13, uplink
12	lpGBT13, downlink

MTP 3 (top, left side of FEB2, closest to power input connector)

MTP fanout fiber #	**lpGBT #**
1	14, uplink
2	15, uplink
3	16, uplink
4	17, uplink
5	18, uplink
6	19, uplink
7	20, uplink
8	21, uplink
9	22, uplink

10	23, uplink
11	24, uplink
12	Unused

Power Connector

Varies by power configuration

Basic Startup Procedure

(orginally from slice-testboard repo README)

1. If starting completely from scratch, begin by downloading and compiling the FLX software package from here: https://gitlab.cern.ch/atlas-tdaq-felix/software. (If needed, change flx_setup1.sh to point to the proper paths). The libflx-lpgbt package is also required, obtained from

2. Configure the FLX with the proper firmware. Following the instructions in Chapter 4 of the flx manual available at:
https://twiki.nevis.columbia.edu/twiki/pub/ATLAS/SliceTestboard/felix-user-manual.pdf
Note that on flx-srv-atlas the Vivado suite and bitstream files are in the atlas-group account, while the GUI software is in the dawillia account:
Vivado version: software/Xilinx/Vivado/2018.1/settings64.sh
The current bitstream file is:
FLX712_LpGBT_RM0406_24CH_LOCALCLK_GIT_master_a5c8df7_1_240314_16_58.bit
It can be found here:
https://www.nevis.columbia.edu/~bkirby/FLX712_LpGBT_RM0406_24CH_LOCALCLK_GIT_master_a5c8df7_1_240314_16_58.bit

Once the firmware is programmed, reboot (soft reboot - a hard reboot will wipeout the firmware configuration you just did!).

3. Setup the anaconda environment as follows:

If the computer is already setup but you just (soft) rebooted, start here!
4.
cd /home/dawillia/FLX/software/drivers_rcc/script
 sudo ./drivers_flx_local start
flx-init
cd /home/dawillia/FLX/feb2/gui-new/feb2_gui
fpepo 0x66d0 0x102

If the computer is already on and configured, start here!
5. Activate the environment with `conda activate coluta`

6. Run the GUI with `python main.py`