

Table of Contents

WIB Troubleshooting.....	1
FEMB Troubleshooting.....	1
Reporting Problems to the Elog.....	1
artDAQ Exception Glossary.....	1
Convert State.....	1
Timing System Endpoint State PDTS_STATE.....	3
More Advanced Commands from Dan Gastler.....	4

WIB Troubleshooting

- Make sure the WIB is powered on (and that the power supply output is enabled)
- Errors in the DTS CDS, like LOL=1 or LOS=1 could mean the timing signal isn't getting to the WIB. It could also mean that you are looking for the timing signal in the wrong place, i.e. the backplane instead of the front panel. If it takes a long time to initialize, that could mean the connection isn't good (like when you put a 8 deg fiber into a 0 deg interface)
- If the WIB gets stuck in W_RDY and W_ALIGN states, it could be because the timing group (partition) number isn't set correctly.
- Extra debug info: http://gauss.bu.edu/redmine/projects/dune-wib/wiki/Debug_help
- You can control the timing with the commands here: `~np04daq/notes/timing.txt` and the WIB timing status with the BUTool command: `status 10 DTS DTS_SI5344 DTS_CDS`

FEMB Troubleshooting

- If you aren't getting data from the FEMBs on the WIB, and random data from `spy_femb`, please try the following command.

"fread 1 VERSION_ID" to see if it properly returns the FEMB FW version and then do "fread 1 TIME_COMPILED" to see if it give a number different than the VERSION ID. If this all works then we know the FEMBs are up and the issue is someplace else.

- Check FEMB ADC synchronization: run `fread 1 ADC_ASIC_SYNC_STATUS` where 1 is the FEMB number (1-4). It should be all 0 if the ADCs are synchronized.

Reporting Problems to the Elog

Please describe the problem and attach the output of one of the following commands to an elog entry:

```
cd /nfs/sw/wib/WIBSoftwareTrunk
source env.sh
cd scripts/
dump_vst_wib_rce.sh # for VST RCE WIB
dump_vst_wib_felix.sh # for VST FELIX WIB
dump_coldbox_wibs.sh # for cold box WIBs
```

artDAQ Exception Glossary

Invalid name

you tried to use a register name that isn't in the register table

Bad File

you can't access the BUTool table files, source env.sh

Convert State

- On configuring:
 - ◆ If the timing system is locked in the RUN state:
 1. Start out in WAIT_FOR_SYNC 0x0

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2. Once receive a sync (or two) it goes into IN_SYNC
 - If another sync comes at the wrong time go into OUT_OF_SYNC
- ◆ if the timing system is not locked (W_RDY 0x6?) state:
 - ◇ Convert state is IDLE
- If in local clock mode, then there are corresponding FAKE_* modes

Timing System Endpoint State PDTS_STATE

Hex Code	Binary Code	Name	Description
0x0	0b0000	W_RST	Starting state after reset
0x1	0b0001	W_SFP	Waiting for SFP LOS to go low
0x2	0b0010	W_CDR	Waiting for CDR lock
0x3	0b0011	W_ALIGN	Waiting for comma alignment, stable 50MHz phase; CDR is locked but data is bad
0x4	0b0100	W_FREQ	Waiting for good frequency check
0x5	0b0101	W_LOCK	Waiting for 8b10 decoder good packet
0x6	0b0110	W_RDY	Waiting for time stamp initialisation
0x8	0b1000	RUN	Good to go
0xA	0b1100	ERR_R	Error in rx
0xB	0b1101	ERR_T	Error in time stamp check

The system should quickly cycle through some of these states. If an endpoint is stuck in one of these states, then:

Red means really bad, possible hardware problem. Check timing system is powered on and cables are connected. Could mean no timing signal or that the CDR has failed to lock

Yellow means time stamps syncs aren't being sent. Check timing system configuration (software problem). Short term fix is to login to np04-srv-012 and run:

```
source /nfs/sw/timing/pro/software/timing-board-software/tests/env.sh
pdtbutler master DUNE_FMC_MASTER send TimeSync
pdtbutler master DUNE_FMC_MASTER send TimeSync
```

Green means good. This is how it should be

More Advanced Commands from Dan Gastler

Something to check when you are having problems like this is to look at the FEMB data using "spy_". This dumps the raw FEMB links, so I usually check links 0, 4, 8, and 12 to look at the first link. If things are running, you should be able to see some FEMB frames in the data.

Look for something like the following:

```
0141: 0 0x1F
0142: 0 0xFE
0143: 0 0xE1
0144: 0 0x1F
0145: 0 0xFE
0146: 1 0x3C
0147: 1 0x3C
0148: 1 0x3C
0149: 1 0x3C
0150: 1 0xBC
0151: 1 0x3C
0152: 0 0x71
0153: 0 0xDD
0154: 0 0xC7
0155: 0 0x32
0156: 0 0x00
0157: 0 0x00
0158: 0 0x00
0159: 0 0x00
```

This is the end of one frame and the beginning of another. (1 0xBC followed by 1 0x3C is the start of a new frame)

It is also useful to see if the FEMBs are responding to the WIB fast commands.

If you write a '1' to the FEMB_CNC.FEMB_STOP then all the spy_femb dumps should just give "1 0x3C". Then writing a '1' to FEMB_CNC.FEMB_START should return them to something like the above dump.

You can also do "status 4 FEMB_CNT" to see if there are any counts in the bad RX Start or if the FEMB is not responding. Here is what it looks like now:

```
>status 4 FEMB_CNT
```

```
Process done
```

FEMB_CNT	FEMB FRAME	FEMB FRAME RATE	FEMB_INC_ERR	RX_BAD_RX_START
FEMB1 LINK1	0xCA739DE5	2000000	0	0
FEMB1 LINK2	0xCA73AA10	2000000	0	0
FEMB1 LINK3	0xCA73B663	2000000	0	0
FEMB1 LINK4	0xCA73C27F	2000000	0	0
FEMB2 LINK1	0xCA73CFEB	2000000	0	0
FEMB2 LINK2	0xCA73DC47	2000000	0	0
FEMB2 LINK3	0xCA73E87B	2000000	0	0
FEMB2 LINK4	0xCA73F4C5	2000000	0	0
FEMB3 LINK1	0xCA740171	2000000	0	0
FEMB3 LINK2	0xCA740D2D	2000000	0	0
FEMB3 LINK3	0xCA7419AF	2000000	0	0
FEMB3 LINK4	0xCA74258F	2000000	0	0
FEMB4 LINK1	0xCA743277	2000000	0	0
FEMB4 LINK2	0xCA743EEE	2000000	0	0
FEMB4 LINK3	0xCA744B83	2000000	0	0
FEMB4 LINK4	0xCA7458A4	2000000	0	0

```
SVN: 325
```

```
-- JustinHugon1 - 2017-11-02
```

This topic: CENF > WIBTroubleshoot

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