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# FELIX Basics

## FELIX application

The FELIX server application is in charge of managing the data received over point-to-point links from the WIBs and to dispatch the data to the appropriate Board Reader applications. In order to monitor the functioning of the FELIX applications you can look at the supervisor output via a browser (<http://np04-srv-0XX.cern.ch:9001>). If the application is not running you can try to start it from the browser. If this fails, call an expert.

## flxHealth - FELIX Health diagnostic tool

This should be first port of call for diagnosing problems with the FELIX nodes. `flxHealth` is set in the path of user `np04daq` and can simply be called without any setup

```
[np04daq@np04-srv-024 ~]$ flxHealth
### WOOOF -> This script is meant to be called with an argument: The server's ID to check the host
-> Other 2 possible args: [v] and [c] for toggling verbosity and colors
```

```
Example: flxHealth 25 v c
Result: Colored and verbose health-check of FLX in np04-srv-025
```

```
APA - FLX
  1 -
  2 - 28
  3 -
  4 - 27
  5 - 26
  6 - 25
CBOX - 30
```

- This provides useful information on which FELIX servers are connected to which APAs

More info can be requested for a particular node (25 in this example):

```
[np04daq@np04-srv-024 ~]$ flxHealth 25 v c
### WOOOF -> /nfs/sw/felix/FLXRPC/checkMonitors.py will check FLX health in server: 25
Connected
### WOOOF -> lspci
-> Device: 89:00.0 Communication controller: Xilinx Corporation FPGA Card XC7VX690T
-> Control: I/O+ Mem+ BusMaster+ SpecCycle- MemWINV- VGASnoop- ParErr+ Stepping- SERR+ FastB2
-> Status: Cap+ 66MHz- UDF- FastB2B- ParErr- DEVSEL=fast >TAbort- <TAbort- <MAbort- >SERR- <P
-> NUMA node: 1
### STATUS: OK

### WOOOF -> drivers_flx
-> Version: FLX driver 4.0.6 for RM4 F/W
-> CMEM: GFPBPA (size = 16384 MB, base = 0x0000002bb0c00000)
-> GIT hash : 0x742dbd8f
### STATUS: OK

### WOOOF -> Link alignment
-> Link info:

GBT CHANNEL ALIGNMENT STATUS (entire FLX-712/711):
Channel | 0 1 2 3 4 5
-----|-----
Aligned | YES YES YES YES YES NO
```

Channel	6	7	8	9	10	11
Aligned	YES	YES	YES	YES	YES	NO

### STATUS: OK

- The status of the PCIe and NUMA, the drivers, and the link alignment are shown
- **NUMA** - should be OK, *except for server 27* for which the ERROR can be ignored
- **drivers** - should be OK.
- **Link alignment** - should be OK for links 0-4 and 6-10 (totalling 10 links)

## Board Reader

The Board Readers for FELIX receive data from one WIB link each (2 FEMBs) and store them until an event building request arrives. The timestamp in the request is used to identify the WIB frames that need to be aggregated into a DAQ fragment and sent to the event builder. Optionally raw data can be compressed before being packed into a DAQ fragment. The Board Readers for FELIX run on **np04-srv-017** and **np04-srv-018**.

## More Information

The FELIX general users manual can be found [here](#).

-- GiovannaLehmannMiotto - 2018-02-13

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