

Pixel Online Software Update

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Installing Error Diagnostics and Reporting System

- Installed and worked with help and instructions from Stefan Spanier!
- New XDAQ Application called GlobalErrorDispatcher introduced. This gets all error messages from the Supervisors and distributes them to file, Chainsaw or DB.
- Have used Chainsaw to see these log messages.
 - XDAQ runs on cmsfpix2.cern.ch:1973 while Chainsaw runs on cmsfpix2.cern.ch:1975. Chainsaw receiver's name is “pixel”
- Yet to turn all cout statements into “DiagSystem” calls which sends error messages to the GlobalErrorDispatcher.

Physics Data Taking and Error FIFO Reading

- PixelFEDSupervisor now has a “workloop” that can be run in an independent thread. This workloop can be fed with tasks which get executed cyclically.
- So far I've written a task that does this:
 - 1 Finds the FED boards within this crate which have been configured at Configure time
 - 2 Waits for the event counter on any FED to increase. (No way to tell when this will happen because we use external triggers.)
 - 3 Read data on all FED Error FIFOs
 - 4 Read data on all FED Spy FIFO 3s
 - 5. Append data to the files: pixel/PixelRun/PhysicsDataFEDx.dmp and pixel/PixelRun/ErrorDataFEDx.dmp where x = FED number
 - 6. return to step 2
- Workloop can be “Paused”, “Resumed”, “Halted” etc. It crashed if I do “Pause” -> “Halt”. This won't be a problem with the latest proposed state machine, but I know why this is happening and will need some time to think of a way to fix this in the current state machine.

Physics Data Taking and Error FIFO Reading

I haven't tried this workloop with external triggers and the Sr 90 source. I tried it with cyclic L1As from PixelTTCSupervisor and this is what I see (converted 64 bit Slink words -> human readable format)

--- Slink Header.

--- Slink Trailer

--- Slink Header.

FED Channel = 39, ROC ID = 26, Row = 80, Column = 32, ADC = 0

--- Slink Trailer

--- Slink Header.

--- Slink Trailer

--- Slink Header.

--- Slink Trailer

--- Slink Header.

FED Channel = 50, ROC ID = 18, Row = 80, Column = 32, ADC = 0

--- Slink Trailer

- Spurious hits which don't make sense...

Physics Data Taking and Error FIFO Reading

Unpacked word count does not match actual.. mbuffer[mwdcnt]=26 and mwdcnt=31. Will dump the first 50 words in the buffer:

mbuffer[0]=5000fcf5

mbuffer[1]=1

mbuffer[2]=1

mbuffer[3]=1

mbuffer[4]=1

mbuffer[5]=1

mbuffer[6]=5000fcf6

mbuffer[7]=1

mbuffer[8]=1

mbuffer[9]=1

mbuffer[10]=1

mbuffer[11]=1

..

mbuffer[32]=a000001a

mbuffer[33]=a000001a

..

- New event comes in before trailer of previous event can be written! I couldn't find a way to disable spy FIFO 3 using FED Interface.

Physics Data Taking and Error FIFO Reading

Unpacked word count does not match actual.. mbuffer[mwdcnt]=26 and mwdcnt=45

Will dump the first 50 words in the buffer:

mbuffer[0]=5005a1b0

mbuffer[1]=1

mbuffer[2]=1

..

mbuffer[42]=1

mbuffer[43]=1

mbuffer[44]=1

mbuffer[45]=a000001a

- We also see mismatches between wordcounts from Slink trailer and length.
- This almost goes away to 1 in 3300 events when we reduce L1A's prescale from 0 to 100.
- Maybe we don't see these in PixelAlive or GainCalibration scans because we check to see if FED Channel #, row #, column # make sense before accepting hits?