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SPL Meeting: DAQ Status

Developed faster recovery procedures

Try to avoid having to restart a run

→ VRB Bus Error

→ TDC not responding

→ Auto Halt-Recover-Run

→ Auto Shepherding (being developed)

Errors that can be recovered during a run

Many errors during data taking are handled by an automatic Halt-Recover-Run sequence issued by the error handler

1 sec delay before getting a done timeout

10 sec for clients to go through the transitions

→ 3 HRR/Hour will contribute about 1% deadtime

Bunch Counter Errors

Currently about 50% of the errors leading to a HRR are the result of a Bunch Counter Error.

Next most common errors are about 5% of the total

Distributed across many different crates/cards
Most likely a problem with the signal on the VME backplane.

A BC error indicates that data from one of the cards does not come from the same crossing (this has not been verified).

Do not set the done, recovered with automatic HRR

The BC resync after the next B0 marker $\rightarrow$ *can ignore it in the front end and will resync after the next B0*

These errors occur for crates with TDCs and ADMEMs

More details can be found at:
http://ncdf76.fnal.gov/~chlebana/daq/problems/BCErrors.html

$\rightarrow$ Have added more diagnostic printout
$\rightarrow$ Able to reproduce the error in a test stand crate
$\rightarrow$ Getting more experts involved in understanding the problem

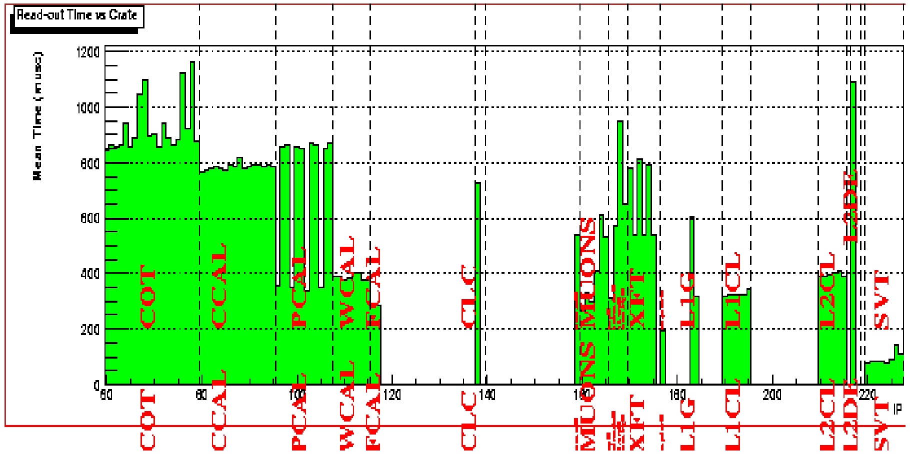
Errors that require restarting a run
10-20 Minutes to recover
$\rightarrow$ Scanner Manager Timeout (not so often lately...)

Other sources of deadtime
$\rightarrow$ Trigger tests
$\rightarrow$ High deadtime due to trigger (CSL logging rate)
$\rightarrow$ A number of "infrequent" problems
$\rightarrow$ Need to emphasize stability...

Current readout times

Used readout lists to limit the readout of large diagnostic banks to special triggers

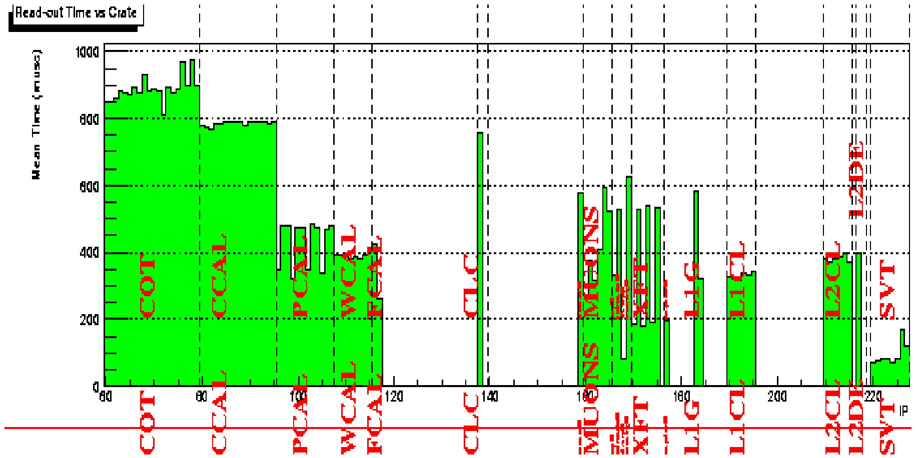
Replace 2300 crate CPUs with faster 2400s



Run: 154594

LStart = 28E30 → 11E30

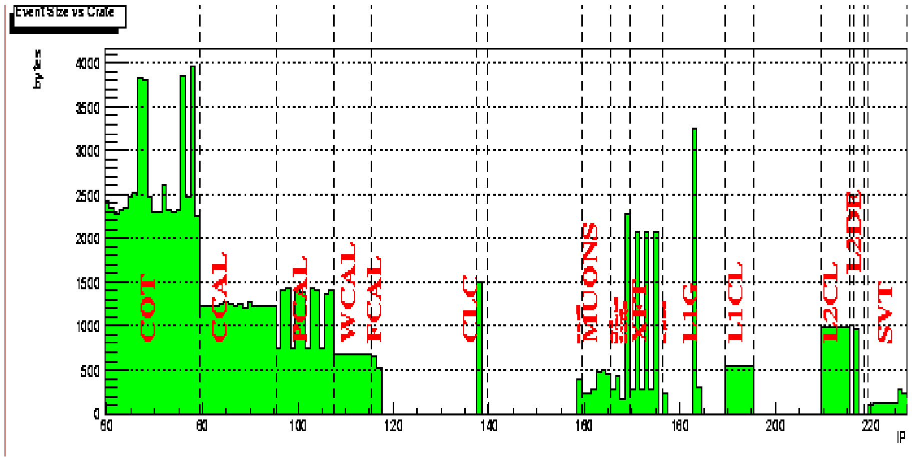
Using 2301, no diagnostic bank supression, TDCs readout in SPY mode



Run: 162480

LStart = 34E30 → 15E30

Using 2400, with diagnostic bank supression, TDCs readout in SPY mode



Data size from the front end crates

The data volume increases with increasing luminosity. In the following table the average COTD bank size is shown for the first 500 events in the run for different starting luminosities.

Run	LStart	COTD (bytes)	COTD/20*300	COTD/20*1000
162498	39.1E30	54932	0.8 MB/s	2.7 MB/s
162393	38.3E30	53241		
162312	17.8E30	45320		

DSP processing time and data volume lead to slow readout

Meeting on Wed to discuss ways to improve the TDC readout

- Simplify the data format to reduce DSP processing time, processing moved to L3?
- Get fast clear to work
- Use readout lists for the FADC banks

Central Calorimeter

→ Change data format of the CCAL crates.

→ Do not attach channel IDs but always readout all channels.

→ Offline code and recognize the bank version and the accessors can return the correct data for the two different bank formats.

→ Use 2400's in CCAL crates

CLC crate

→ Use 2400's in CCAL crates

→ Use two TDCs

Plans during the summer shutdown

→ Upgrade online computers to Fermi Redhat 7.3.1 several days

Have started the process by upgrading some of the online PCs, consumers running on two PCs that have been upgraded.

Ordered a new L3 Build node → can work on moving to the new L3 build node while keeping dap31 working...

→ Rearrange the online computers in new racks 2-3 days

→ Make a clone system disk for the database machine 8 hours

RedHat recently announced that they will only provide one year support for releases 7.3.1 is an old release and will be unsupported by the end of the year

Fermilab said they will provide support on a "best effort" basis.

Not happy about this...