

DAQ / Online Integration

- So far this year one integration shift daily 5pm to midnight (normally to 9pm)
 - Running calibrations
 - Test new DAQ / run control features
 - Take extended cosmic ray runs
 - Special requests (trigger masking, ...)
 - Identify rate/bandwidth limitations
- Frequently have the problem that many resources are not available. It should be clear that during this time resources are made available to the people on shift
 - Crates go off in the middle of the run, crates are booked or just powered down
 - Need more involvement from detector people to ensure that their system is working
- Have run with a large system for long times, even over night
 - All L3 subfarms, jet filter + 10% random, readout all calorimeters, L1, L2, muons, SVX (DEMs),
→ Used L2 for prescaling
- Working on reestablishing the muon trigger
- Would benefit from detector groups organizing their own calibration shifts, at least until we ramp to 24 hour shifts - one half shift is too short for everything!
- Some kind of trigger shift may be useful (calorimeter bad tower masking etc.)

DAQ / Run Control

- Have **not** extensively run with
 - XFT, SVT, SVX, CLC, CMP, CMX, IMU
 - Many COT crates
- **Stability and robustness significantly improved** since commissioning run
- The **run control interface is much too complicated** - hiding many of the expert features is going to be a major effort
- Also a lot of work is needed for the error handler before it can reliable identify and fix problems
 - The run control state manager is being modified to allow easier (automated) error recovery, fix single clients/crates
- Work is also in progress to collect end-of-run summaries from all relevant components (EVB, L3, CSL, L1, L2, ...) - **Where are events lost?**
- **Run start failures** ("TS failed to run ...") can be reproduced at Yale, being worked on
- Went through the exercise of rebuilding cdfvme packages that rely on run control code → went smoothly, but some not properly versioned
- ... and please, use the **FixList eLog** for any **DAQ problems!**

Readout and Calibrations

- For the commissioning run, getting things going was top priority, now working on **filling in missing pieces and optimizing the code**
 - **SMXR** coherent noise correction and zero channel suppression - needs to be validated offline
 - **Calorimeter**: updated E_T summing code, fetch LER values etc. from DB, ..., still being debugged
 - **TOF** readout and calibrations; again, data need to be validated
 - Still have many kludges, hardcoded constants etc. in the code, e.g. XTRP, L2, Not everything will be in place by March 1st!
- **Bug in FISION library** caused a lot of trouble for the peaceful cohabitation of SVT spy monitor and run control readout code → **fixed**
- Silicon DAQ
 - Using DEMs in daily integration tests
 - Currently integrating calibrations in run control
 - Awaiting/preparing for real data challenge
- Still don't use **Error crosspoint** regularly. This is crucial in detecting certain error conditions in some boards

Readout and Calibrations: TDC's

- **TDC review** yesterday (→ Ron's talk)
- Big progress, **TDC task force** extremely useful, but still a way to go
 - ▶ **Solutions to all (?) major problems found** (see TDC talk)
 - * "Early Done" mode (read/write to event FIFO conflicts, block transfers)
 - * VME conflicts between DSP/readout (→ no more delays in readout code)
 - * TDC hangs when getting many hits (noise)
 - * bunch counter errors (most of them)
 - * software bugs, ...
 - ▶ With the newest fixes that cured the "**TDC hang" problem**, we seem to have a new (?) sort of hang, during/after initialization ... hopeful that it's again curable in software
 - ▶ Still have problems using Tracer "SPY mode" capability, will need to investigate with improved VRB firmware
 - ▶ See **bunch counter glitches** at low level
 - ▶ Need to understand TDC impact on deadtime, work on optimization, timing studies ... definitive answers only after some time with beam

Event Builder / Level 3

- Review yesterday; general progress/issues:
 - Lots of work invested in understanding various **corrupt data problems** with VRB's. Finally, we believe to have a **reliable version of the VRB firmware**
 - **Time for state transitions**
 - * Event builder is usually fast, except 1st partitioning after Proxy start (40-60 sec)
 - * **Level 3** takes a long time, especially **Partitioning and Coldstart** (up to 4 minutes). Would benefit from speeding this up for commissioning (many short runs). Parallel relay mechanism (gateway → L3 nodes) is under development
 - Hardware failures are rare (< few/month)
- **EVB and Level 3 are very robust and stable** when taking few long runs, but **problems occur when taking many short runs**, Abort's etc.
- Need to understand **rate/throughput limitations**, and improve datalink error handling (Level3 / run control error handler)
- Monitoring tools and documentation are in place
- EVB large event fragments through ATM switch: being tested
- Support multiple partitions: todo
- First new nodes (of 100 ordered) expected Jan 26
- **Software EVB** still sends TRYBOS data, ongoing work to integrate data conversion

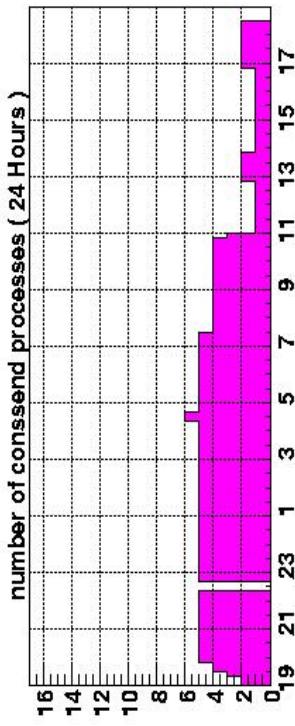
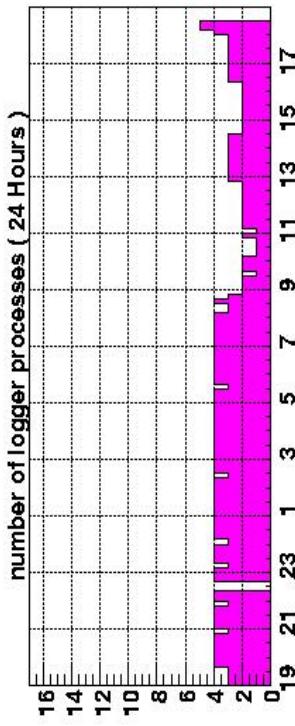
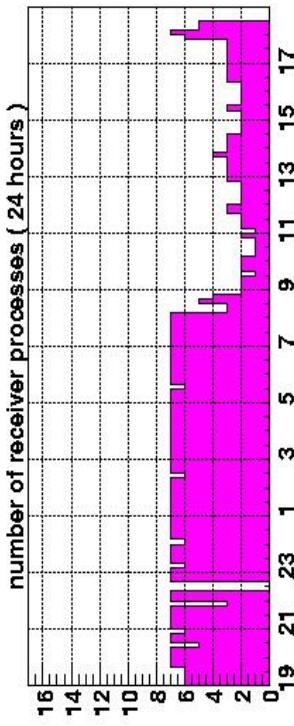
CSL and Consumers

- Consumer Server/Logger **very stable** so far, running 24x7 since 1999
- **Peak rates about 25MB/sec**, sustained rates slightly lower
- For monitoring, the known GUI and a **new history monitor** are developed
 - Further documentation (guidelines for problem solving) needs to be written
 - Error/warning messages are sent to the run control error handler
- Bad events from L3 go to both normal data stream and error stream
- **Spare parts (disks/controllers)** are here. Spare CSL host (b0dau31) will need upgrades to allow a quick exchange
- One issue being sorted out currently: how and if to save data taken with the integration database (e.g. consistent run numbers ...)
- Some **near-term plans**:
 - Multi-stream high-rate testing in a realistic environment
 - Changes in how consumers receive events: optimize handshaking, allow different-priority consumers,, move "calibration CSL" (guarantees all events to a consumer) to dedicated machine
- **Consumer framework and consumer monitors covered in Mike's talk**

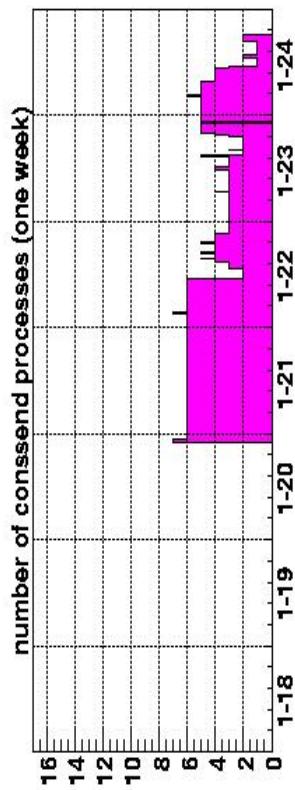
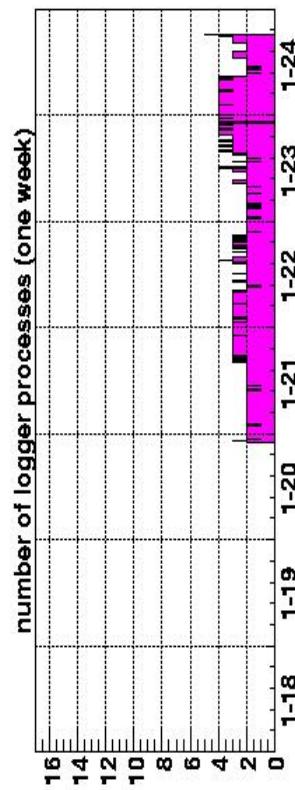
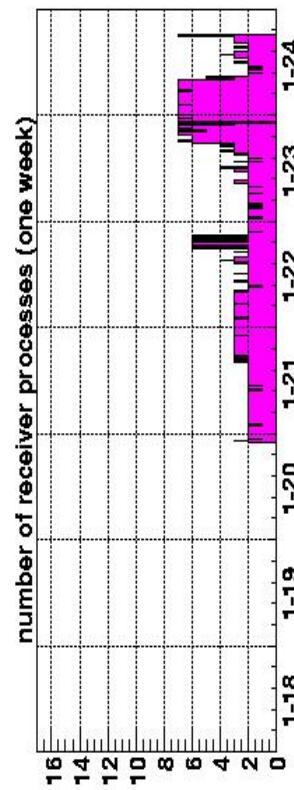
CSL History Monitor

Arnd Meyer
Jan 25, 2001

18:27:13-Wed-24-Jan-2001



18:17:12-Wed-24-Jan-2001



DAQ / Online: Not-a-Summary

- **Assorted Plans**
 - Continue to exercise complete system to find and fix problems
 - Work on establishing Level 2 triggers
 - Test new Level 3 filters
 - Include modified TDC's as they become available, see if low rate problems occur
 - Understand remaining VRB/datalink problems
 - Understand rate limitations (~380 Hz currently)
 - ...
- **There is a lack of validation tools in the control room**
 - Which are the key histograms to check for each component?
 - TrigMon is an essential tool to understand the trigger; should be running continuously, and the output should clearly identify problems
 - Need to consolidate efforts on this!