

CSL Status

List of Current CSL Issues at:

<http://ncdf76.fnal.gov/chlebana/daq/cslUpgrade/commissioning/xmasTests.html>

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Performance Summary

Overall I think the CSL has been performing very well.

No major issues leading to lost data, no (few) calls to pager

→ We do see that occasionally the down stream logging stops
Problems with contacting the SAM DB Server.

By design we have very deep buffers so we can continue to buffer the data until the problem is fixed.

→ Several cases of truncated db files. Fixed by hand, later added cron to check for problems once per day.

→ Problems with events in a run section crossing files.

→ Some online system problems

Operational Issues

Run Section Problem

Offline has build in assumptions that all events belonging to a run section are contained in one file.

We can sometimes go over the 2 GB file size limit and we are forced to open a new file

er0387a6.009fphys					
1	231334	159	3034456	PhysicsEvent	282890
9177	231334	162	3112887	PhysicsEvent	185492
er0387a6_1.009fphys					
0	231334	162	3112973	PhysicsEvent	168056
9253	231334	166	3190253	PhysicsEvent	168752
er0387a6_2.009fphys					
0	231334	166	3190126	PhysicsEvent	176733
8848	231334	173	3330021	PhysicsEvent	230904
er0387a6.00aephys					
1	231334	174	3330347	PhysicsEvent	137068
4868	231334	177	3405958	PhysicsEvent	165544

In data taking the problem resulted from a trigger burst

Run Section	Events
normal	~1200
161	1230
162	8727 <- hot trigger
163	2489 <- hot trigger
164	1234

Investigating reducing the run section interval

Improving file boundary handling

Will need to handle files that were already taken...

Truncated db Files

See that the db file is truncated when we encounter a missing run section. This could happen when the run is paused.

Currently we have a cron job running once per day to look for truncated db files and repair them

Improved handling ready for testing...

Orphaned File Check

Does not handle the files that have the run section problem

Run Section DataBase

Old db files now entered in db

New db files are being copied to working directory

Run script on b0csl31

Add checks to PROCMon

Bad Event Handling

1) Bad events should be written to the local disk on the receiver node in the area

`/cdf/scratch/cslace/error`

2) If the bad event has a stream assigned it should also be sent to the destination stream, otherwise it will only be written to the the above mentioned error directory.

3) We should limit the number of bad events written to the error area

- a) write out every event for the first 10 events
- b) after the first 10 events write out every 1000th bad event

If we have a high rate of errors the first 10 events should be enough to tell us what is happening.

4) We need to have some way to alert the shift crew that there are problems

Is the number of bad event sent in the status message?

- if so we can select a threshold or some other criteria so that CSLMon alerts the shift crew to the problem
- status message sent to CSLMon
CSLMon determines if the error rate is too high

CSLMon send message to error handler

if number of errors is > 2 send warning

if fraction of bad events is greater than 0.005
percent send warning

Error handler alerts shift crew

5) We should have a cron job that will periodically clean out the error directory. If error directory becomes greater than xfile older than n days

Switch to Spare Logger

This was tested before the holidays and found not to work

Negative Rate in CSL Message

In the rundb.CslSummary message, the totalDataRate value is sometimes negative – near run boundaries.

Calibration CSL Smart Sockets Name

1. Change Calibration CSL to connect to `cdf_daq` project in the `rtserver`
2. Have Calibration CSL subscribe to a unique subject for `runControl` transitions.

ypbind

→ Contacted `sysadmin`, they restarted `ypbind`

Had problems logging into a logger node Monitoring was not working

b0spool

→ Paged `sysadmin`, they rebooted `b0spool`

Modified `cslmoncron.pl` to exit if there is already a copy running
Reduced the frequency from running every minute to every two minutes
Disk space cron job was running every minute, change to once per day

Code Management

UPS

CVS use to tag versions of the software

UPS used to define production and test versions in order to switch between versions.

```
> setup cs1  
> setup cs1 devel
```

UPS defines standard environmental variables

```
b0gateway.fnal.gov>printenv | grep CSL  
CSL_DIR=/cdf/onln/code/cdfprod/csl/v1_3  
SETUP_CSL=csl v1_3 -f Linux -z /cdf/onln/code/cdfprod/upsdb
```

Define Script/Executable Location

We have various scripts in different locations.

We should define the location for the scripts and make sure that they are added to cvs as part of the code package

Operating Procedures/Scripts

Scripts

Scripts need to be made more robust against exceptions

Exit and print an informative message when it fails...

do not proceed to the next step.

I had several problems with the script that restarts the CSL and the script that reconstructs bad db files.

I saw the scary message:

```
rm: cannot remove '/cdf/onln/home/cslace': Permission denied
```

Cron Jobs

One the logger nodes...

```
51:b0csl22 % crontab -l
MAILTO=""
*/2 * * * * /cdf/onln/home/cslace/cron/cslmoncron.pl
0 13 * * * /cdf/onln/home/cslace/cron/cleanUp.pl
0 10 * * * /cdf/onln/home/cslace/Script/runCorrdbfile.sh
```

Check for Truncated db file (runCorrdbfile.sh)

Clean up disk area (cleanUp.pl)

If disk usage is greater than 60% it will delete files files older than 14 days in the to_be_deleted area.

```
find /mnt/data2/logger/to_be_deleted -name '*' -mtime +$days
```

CSLMon (cslmoncron.pl)

Generates histograms and write status files

Monitoring

Clean up CSLMon

Remove debug print out

Make sure information is consistent

Make sure Smart Sockets messages are up to date

Move to a web based monitor

In general I think that the information that is available from:

`http://www-cdfonline.fnal.gov/ops/ace2help/cs12/`

Monitoring

gives us a good overview of how the CSL is running and can be used to pinpoint problems.

What else should be added?

We have other examples of web based monitoring that gets status information via smart sockets messages and displays the results on the web.

Misc

Recover "Bad Events"

We took two runs with debug code in place that marked good events as bad.

These events were written to disk in separate files.

We want to recover the data.

Install cdfsoft2 compiled for SL4.2

Older version of the offline software is linked against

```
libtcl8.3.so
```

which is not available on SL4.2

```
b0csl22.fnal.gov>ls /usr/lib/libtcl*  
-rwxr-xr-x 1 root root 681244 Feb 17 2005 /usr/lib/libtcl8.4.so  
-rwxr-xr-x 1 root root 139756 Feb 17 2005 /usr/lib/libtclx8.3.so
```

Enhancements

Link Aggregation

Increase bandwidth between L3 Output and CSL Switch from 120 → 240 MB/s.

Move to new tape drives in GCC

Eventually we will be writing to GCC

Need to add new nodes to the ACL list...