

Combine Small Files from DAQ:

Requirements:

- (1) The event builders will attempt to combine files from a single run if they are less than a size threshold (200MB)
- (2) The combined files will not cross data-streams. (ie. A "physics" file can only be combined with other "physics" files. A "hlt" file can only be combined with other "hlt" files.)
- (3) The combined files will not cross runs.
- (4) The events in the combined files will be ~time ordered. I peel events from the start of each file, ensuring that the earliest event available is the next event in the combined file. If there are out-of-time events in an existing file, then these events will remain out-of-time.

Note that this does NOT mean that there will be no small files. There will be small files whenever the combined size of all files < threshold_size within a stream remains small.

Filename for combined files:

The filename for the combined files will follow the standard convention:

```
st_<stream>_<adc>_<run#>_raw_<NSSXXXX>.daq
```

The stream, run, and "adc" values will share the same values as the originating files.

N, the event builder number will be set to 0, only for combo files.

SS, is typically calculated by the following convention. Each stream has a number 0-9. The "adc" file for corresponding streams have the values 10-19. This number is then multiplied by the number of disks on the event builder machine. The number $SS = \text{stream_id} * \text{number of disks} + \text{diskNumber}$

The difficulty here, is that this definition of SS depends on the event builder. Typically all event builders use 4 disks, but this is not guaranteed, as disks fail, and upgrades are possible. So the convention will be that I reuse the SS value from one of the merged files.

XXXX is a sequential number starting from 1. This will always be 1.

Database Modifications:

- (1) The two tables that are relevant to daq files are:

```
RunLog_daq::daqFileTag  
RunLog_daq::daqsumTrgFiles
```

daqFileTag:

isCombo	comboFile	hpss	
0	NULL	Y	regular file > size threshold
1	NULL	Y	The merged file, contains multiple files as built by evb
0	filename	N	A small file as built by EVB, events are actually stored in <filename>

Event counts, and begin/end events are stored in all records as appropriate to the file. Note that summing the counts in all files will result in double counting for merged files.

daqsumTrgFiles:

- the entry for original files will be unchanged.
- there will be no entries for combo files