A brief explanation on indexes on the record engine (this will probably go to the wiki, headers, somewhere at some point, when I figure out how to properly explain this and perhaps rename the methods)

There a number of ways a channel might be indexed. They have their order in their origin processor, the order in which they’re added to the record node, the order in which they’re being saved or the relative order in which they’re being saved for their source processor. Also, although all channels in the chain are added to record node, not all are recorded.

The best way to show how all indexes relate is with a graphic example. Let’s suppose we have a signal chain with 2 8-channel processors (a source and a mapper, for example), of which only a subset of each is recorded and a third channel, in the middle, which records nothing. The channel indexes would be as follow:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Recorded? | OriginalIndexing | RecordNodeIndex | writeIndex | writeProcIndex | processorIndex |
| Processor 1 | | | | |  |
| Yes | 1 | 1 | 1 | 1 | 1 |
| Yes | 2 | 2 | 2 | 2 | 1 |
| Yes | 3 | 3 | 3 | 3 | 1 |
| Yes | 4 | 4 | 4 | 4 | 1 |
| No | 5 | 5 |  |  |  |
| No | 6 | 6 |  |  |  |
| No | 7 | 7 |  |  |  |
| No | 8 | 8 |  |  |  |
| Processor 2 | | | | | |
| No | 1 | 9 |  |  |  |
| No | 2 | 10 |  |  |  |
| No | 3 | 11 |  |  |  |
| No | 4 | 12 |  |  |  |
| Processor 3 | | | | |  |
| Yes | 1 | 13 | 5 | 1 | 2 |
| Yes | 2 | 14 | 6 | 2 | 2 |
| No | 3 | 15 |  |  |  |
| No | 4 | 16 |  |  |  |
| Yes | 5 | 17 | 7 | 3 | 2 |
| Yes | 6 | 18 | 8 | 4 | 2 |
| No | 7 | 19 |  |  |  |
| No | 8 | 20 |  |  |  |

* OriginalIndexing is the order in their source processors.
* RecordNodeIndex is the order in which the channels are stored inside the record node. Called “realChannel” in some RecordEngine functions
* writeIndex is a relative order for the channels that are actually written, called “writeChannel” in some RecordEngine functions
* writeProcChannel is the channel order of the written channels, relative to their source processor (useful when, for example, you have a dataset for each processor and need to know the column number that corresponds to a channel).
* processorIndex is the processor index, it only counts processors from which at least one channel is being recorded, completely ignoring ones which do not record channels

The methods to access those indexes and channel info are (All documented in RecordEngine.h, all protected methods to the engines):

* Channel\* getChannel(int RecordNodeIndex) to get a pointer to a channel structure, needs the channel index in the record node
* int getRealChannel(int writeIndex) gets a RecordNodeIndex from a writeIndex
* int getNumRecordedChannels() gets the total number of recorded channels
* int getNumRecordedProcessors() gets the number of processors from which at least one channel is being recorded
* int getProcessorFromChannel(int writeIndex) gets the processorIndex from a channel writeIndex
* int getChannelNumInProc(int channel) gets the writeProcIndex from a writeIndex
* const RecordProcessorInfo& getProcessorInfo(int processorIndex) gets a structure containing information about the processor. That struct cointains the processor ID and an array with all the writeIndex that correspond to that processor.