

Memory Allocation Queue

History record

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What should be logged to keep track of memory allocations? Another document, *Memory Blocks*, illustrates a method of keeping track of what memory blocks have been allocated during system operation. An additional method can log allocations and disposals of memory blocks into a data stream queue.

Building on the *Memory Blocks* plan, the fields available are the address of the memory block, its size and type, its age, and additional information such as the name of the LA that allocated it for its static memory, or the requesting node that caused a data request block to be allocated.

4	address
2	size
2	type
4	age
4	info

Should the items logged be exactly those above that are maintained? The age is a problem, as the time of allocation might be better, which can be in the usual BCD accelerator time-of-day format. The address is important because it uniquely identifies each block, allowing one to match a corresponding release entry. Maybe the release record needs less data.

Allocation record

4	address
2	size
2	type
4	info
8	time-of-day

Release record

4	address
8	time-of-day

If both records are recorded in the same data stream queue, how can one tell whether a given record is an allocation or a release? One method is to use a variable length data stream queue, so that the length can be used to tell which form of record there is. This involves an extra two bytes that indicates the record length in each case, at least as seen in requester's buffer.

One problem occurs with allocation records. At the time a memory block is allocated, nothing much is known about its purpose. The only information available is the address, the size, and the time-of-day the allocation was made. So the only information is as follows:

4	address
2	size
8	time-of-day

Would a queue containing only this much information be useful? One could use the usual 16 bytes for a record size, in which the last 8 bytes is the time-of-day. Something else that could be useful is the number of the task that allocated it.