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Improvement of Flow Control

The current "give back" - "return" scheme seems to put the cart before the horse in that the "return" command indicates the amount of space the sending host is returning rather than the amount of space it has left after decrementing by the amount specified in the "give back" command. Considering the fact that allocation counters at sending and receiving hosts may get out of synchronization and the fact that the receiving host has a preemptive priority in the allocation of its resources, it is only logical that the receiving host be able to find out exactly how much of its buffer space a sending host thinks it can claim.

If the "return" command is to accurately reflect a sending host's current allocation, and if successive "give backs" are to produce "return" commands which can be properly interpreted, certain race conditions must be avoided. A "give back" must be answered by a "return" and no more "give backs" can be issued until that "return" is received. In some sense, a "return" command as here proposed is really a give back reply, and, perhaps, should implemented under that name. On the sending side, the "return" command must not be issued as long as a data RFNM is awaited on the link to which the "return" refers. As soon as the net is clear of data messages, the "return" may be sent and data transmission may continue when the RFNM for this message containing the "return" command is received.

The current "give back" command uses fractions and has a format different from the "allocate" and "return" commands making processing unnecessarily complicated. By adopting the convention that allocations can not be decremented below zero, one can safely specify absolute decrements in a format like that of the "allocate" command. If the receiving host's estimate of a suitable decrement is inaccurate, no harm is done and the "return" command in response to the "give back" provides immediate corrective information.

SUMMARY

	Proposal	Advantage
1	"Return" specifies amount of space left after decrementing.	Provides more pertinent information and a means of resynchronization other than closing connection.
2	"Give Back" must get "return" in reply and "return" must not be sent with data on the link.	Provide more accurate allocation information by eliminating race conditions.
3	Eliminate fractions from "give back".	Eliminate messy math and provide symmetry to allocation commands making processing easier.