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Revision 2

From: Dave McIntyre
       Hewlett Packard, Disc Memory Division

To: The X3T9.2 Committee

After the discussion on Document 154 at the Working Group in Wichita, it was decided that my proposal was correct with a modification to enhance backward compatibility with previous wording. I include the original discussion to help anyone who is considering this proposal for the first time.

The values specified by a device beginning (originator) Synchronous Data Transfer Request (SDTR) negotiation should be the highest effective performance values (minimum transfer period and maximum REQ/ACK offset) that the originator can _receive_ successfully. It is up to the respondent in the negotiation to always transfer at a period equal to or greater (equal or slower transfer rate) than the period received during the negotiation and not to exceed the REQ/ACK offset limit received during the negotiation. The respondent then specifies its highest effective _reception_ performance values in the answering SDTR message **EXCEPT** if either of its values are 'greater' (shorter period or longer offset) than the originator, in which case the respondent 'echoes' the lower performance values sent by the originator. If the originator receives values from the respondent that are 'less' (longer transfer period or smaller offset), then the originator shall not exceed those values when transmitting; however no return SDTR message is required. No specification is made that each device specifying its maximum performance values will necessarily transfer always at those values, but only that it can receive data at that rate. Each device is free to transfer data out at ~~rates less~~ PERIODS GREATER THAN and at offsets less than ~~that~~ those specified. Therefore it is perfectly acceptable for each device after a negotiation to transfer data out at different PERIODS ~~rates~~ and offsets as long as each device does not exceed the values specified by the other party to the negotiation.

I apologize that I was not able to complete wording of the actual proposal by this date. I will make that wording available to the editors at or before the next working group. Thank you for your attention and indulgence.

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A pair of SYNCHRONOUS DATA TRANSFER REQUEST (SDTR) messages (Table 5-6) are exchanged between two devices on a bus whenever an SCSI device that can support synchronous data transfer recognizes that it has not communicated with the other SCSI device since receiving the last "hard" RESET condition or a BUS DEVICE RESET message. The SCSI devices may also exchange messages to establish synchronous data transfer when requested to do so. The message exchange establishes the permissible transfer periods and the REQ/ACK offsets for all logical units on the two devices.

The transfer period is the minimum time allowed between leading edges of^REQ [SUCCESSIVE] pulses and of successive ACK pulses to prevent device reception buffer overflow.

The REQ/ACK offset is the maximum number of REQ pulses allowed to be outstanding before its corresponding ACK pulse is received at the target. This value is chosen to prevent device reception buffer overflow. A REQ/ACK value of zero shall indicate asynchronous mode; a value of FFh shall indicate umlimited offset.

The device that originates the SDTR exchange is called the originator and the responding device is called the respondent. The originator sets the values in its SDTR message to its 'highest performance' values (minimum transfer period and maximum offset) that the originator can receive successfully. The respondent then replies with its SDTR message specifying the larger of either the originator's specified transfer period or the shortest transfer period that the respondent can successfully receive. The respondent's SDTR REQ/ACK offset is the smaller of the originator's specified offset or the respondent's maximum allowable offset. Both the originator and the respondent then shall not either transmit at a transfer period smaller or an offset greater than received from the other's SDTR. No specification is made that each device specifying its maximum performance values will necessarily transfer at these values, but only that it can receive data with these values. Each device is free to transfer data at rates less [WITH PERIODS GREATER THAN] and offsets less than that [THOSE] specified.

Respondent SDTR Values	Implied Agreement
(1) Non-zero REQ/ACK offset.	Each device transfers data at period equal to or greater [THAN] and offset equal to or less than the values received from the other device.
(2) REQ/ACK offset equal to zero.	Asynchronous transfer.
(3) MESSAGE REJECT	Asynchronous transfer.

If the initiator recognizes that negotiation is required, it asserts ATN and, if the target implements message transfers, sends a SDTR message to begin the negotiation process. After successfully completing the MESSAGE OUT phase, the target responds with the proper SDTR message. If an abnormal condition prevents the target returning one of the responses above, the initiator and the target shall go to asynchronous transfer mode.