

**Date:** June 9, 1994

**FROM:** Gerald A. Marazas

**TO:** Members of X3T10

**Subject:** Proposed Disposition of review comments received regarding Document 992D, SCSI - 3 Serial Bus Protocol (SBP), Revision 16, dated April 4, 1994

Per John Lohmeyer, the SBP Letter Ballot Results are:

Yes, with comment: Apple, Quantum

No: Digital Equipment, IBM

Did not respond: AMD, Compaq, DPT, Harbor Electronics, Maxtor,

This document contains proposed responses to the subject review comments received from the following organizations:

- Apple
- Digital Equipment
- IBM
- Seagate

All comments are included herein verbatim. The order of organizations, above, indicates the order of presentation of comments and proposed responses within this document. Proposed disposition is preceded by the symbol ">".

The responses and associated editing of Document 992D has been done by Gerald Marazas, Scott Smyers, and Ron Roberts. Revision 17 of document 992D incorporated the disposition indicated in this document to the subject comments.

Below start the comments and the proposed disposition.

+++++ Start of comments from Apple +++++

Apple comment:

My comment is that there needs to be a section describing the format of the isochronous control CDS. I propose specific text for this section, which will be forwarded separately to the officers of X3T10 and to the current editors of SBP.

> Comment accepted. Text supplied by Scott Smyers and incorporated into revision 17.

+++++ End of comments from Apple +++++

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+++++ Start of comments from Quantum +++++

Quantum comment:

Our comment is that this approval, like our approval of FCP, is given reluctantly given the lack of approval of SAM.

> Comment noted, no editorial response needed.

+++++ End of comments from Quantum +++++

+++++ Start of comments from Digital Equipment +++++

Digital Equipment comment:

My no vote on forwarding SBP is based on the following comments, which identify areas where SBP is not compliant with SAM.

1. Section 6.3, Task Management Services

The task management services in this section do not define the protocol for executing the TERMINATE TASK task management function.

According to the last paragraph in section 5 on page 61 of SAM R13:

"All SCSI-3 protocol specifications shall provide the functionality needed for a task manager to implement all of the task management functions defined above."

- > Comment accepted. Section 6 edited to contain explicit pointer to the SBP Task management CDS
- > which is the SBP facility used to provide the required SAM service. Additional editorial changes
- > made for the purpose of providing more explicit emphasis as to Task management services
- > provided by SBP.

2. Section 6.3.6, "Clear Auto Contingent Allegiance", second sentence.

The sentence states:

"It is an error for an Auto Contingent Allegiance CDS to be received at a target unless that target is in the state such that an ACA condition is true."

The quoted sentence has the following problems:

- 1. An ACA is a task set condition, not a target condition.

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2. As specified in section 5.3 of SAM, a CLEAR ACA task management function is not an error if there is no ACA in effect for the task set.

> Comment accepted. Subject sentence removed.

I will be submitting a more detailed set of comments next week.

> Based on discussion with Charles Monia, these additional comments are anticipated to be mostly > editorial in nature. these comments will be processed as received.

+++++ End of comments from Digital Equipment +++++

+++++ Start of comments from IBM +++++

**Editorial note** from Gerald Marazas regarding editorial depiction of the several IBM comments which immediately follow. To facilitate reference to individual comments, I have taken the liberty of providing sequential reference numbers for each comment. My numbering is provided in bold so as to distinguish this addition from the commentor's original text. The full text of each individual comment appears within this comments resolution document.

IBM comment:

My vote is not to forward SBP because I believe that several critical characteristics are omitted. The problems which I found are indicated and changes have been suggested.

Thank you.

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Items preceded by "\*" are technical. Others are editorial.

**Number (1).** 3.2. Define CDS & ATA

> Comment accepted, definitions provided. Note, ATA is intended to be ACA per comment submitter.

**Number (2).** \*5.2.1. Add a sentence: "In a cooperative multi-initiator environment in which no initiator is exceeding its tap slot allocation, a target must never reject a tap."

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (3a).** \*6.1.1: Paragraph 1: Add the sentence: "A target must always have the ability to receive a CDS and examine its contents."

(Without this requirement, a target cannot return a status block as specified because it would not know the status address.)

> Comment accepted, change made in a modified form, per discussion with comment submitter.

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**Number (3b).** Also, the fact that the busy/retry protocol may have been carried out before the tap was received should be clarified by addition of the following sentence:

"As in any P1394 transaction, the busy/retry protocol may be carried out before the application responds to the tap."

(The best place to insert these two sentences is after the last sentence of the paragraph.)

- > Comment processed. Based upon discussion with submitter, the proposed sentence was not added to the SBP document.

**Number (3c).** Paragraph 2: Add the sentence: "In a cooperative multi-initiator environment in which no initiator is exceeding its tap slot allocation, a target must never reject a tap."

- > Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (4a).** \*6.1.2.Paragraph 2 should be replaced by:

"If the target SBP receives FROM ITS TRANSACTION LAYER anything other than COMPLETE, then....."

The reason for this is because, as defined in P1394 section 7.1.2.2, transaction data confirmations go from the transaction layer to the application layer within a target or an initiator, they do not go from initiators to targets or vice versa.

- > Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (4b).** Also, the words "FROM ITS TRANSACTION LAYER" are needed to stress the fact that the busy/retry protocol inside the transaction layer may have been executed before the COMPLETE response was sent up to the application layer. As mentioned in comment 6.1.1, this can be clarified by adding the following sentence at the end of paragraph 2: "As in any P1394 transaction, the busy/retry protocol may be carried out before the application responds to the tap."

- > Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (5a).** \*6.2.1 As in comment 6.1.2, paragraph 3 should be replaced by:

"If the target SBP receives FROM ITS TRANSACTION LAYER anything other than COMPLETE, then....."

Please see comment 6.1.2 for the explanation.

- > Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (5b).** Also as mentioned in comment 6.1.1, the fact that the busy/retry protocol may have been carried out before the COMPLETE response was sent to the application layer should again be made clear. This can be done by adding the following sentence at the end of paragraph 3: "As in any P1394 transaction, the busy/retry protocol must be carried out before the COMPLETE response is returned."

- > Comment processed, change made in a modified form, per discussion with comment submitter.

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**Number (5c).** Finally, the case in which the target's transaction layer responds with DATA ERROR should also be included. As specified in section 6.3.5, if the target's transaction layer returns DATA ERROR, then the target retries the transaction indefinitely.

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (6).** \*6.2.2 Paragraph 3. Please refer to comment 6.2.1 above.

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (7).** \*6.3.5. Paragraph 3 and following. The "Deal with ..." phrase seems to be out of context. This phrase and the all the following paragraphs should be either be removed from SBP, or completely revised.

Here are some problems with the information.

All the definitions seem to imply that TR\_DATA.confirmations go from an initiator to a target. P1394 section 7.1.2.2 defines them as going from a target's (or an initiator's) transaction layer to its application layer. When this definition is applied, the "TARGET CASE" and "INITIATOR CASE" headings are reversed. Also, as mentioned above, section 6.2.1 needs to be made compatible with these definitions.

> Comment accepted. Subject text judged to be redundant with nearly identical text appearing in  
> section 7. Subject text in section 6.3.5 deleted and replaced with pointer to appropriate pointer to  
> section 7.

**Number (8).** \*7. Please see comment 6.3.5.

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (9).** \*7.1. Paragraph 3. Please see comment 6.1.1, equivalent revisions are needed.

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (10a).** \*7.3.1. Paragraph 3:

Please refer to comment 6.2.1. As stated, a more appropriate wording would be:

"If the target SBP receives FROM ITS TRANSACTION LAYER anything other than COMPLETE with rcode of resp\_complete, then....."

(Please refer to comment 6.2.1 for justification.)

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (10b).** Also, the text describing the busy/retry and DATA ERROR cases needs to be included as in 6.2.1.

> Comment accepted, change made in a modified form, per discussion with comment submitter.

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**Number (11).** \*7.3.2. Please refer to comment 7.3.1.

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (12).** \*7.4. Please refer to comment 7.3.1

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (13).** \*8.2.1. Add a sentence: "In a cooperative multi-initiator environment in which no initiator is exceeding its tap slot allocation, a target must never reject a tap."

> Comment rejected for application in stated section. Intent of comment captured better in response  
> given to comment number 14, following.

**Number (14).** \*8.2.2. Add a sentence: "In a cooperative multi-initiator environment in which no initiator is exceeding its tap slot allocation, a target must never reject a tap."

> Comment accepted, change made.

**Number (15).** \*9.1 Table 8 The "Tap slot available" flag is defined here to mean that a tap slot previously used by the initiator is available for reuse. This is the correct function of this bit and this function should be made clear. (Note also that section 6.1.1 seems to imply that this flag is used for telling the initiator that the tap slot it just attempted to use was unavailable. This usage conflicts with the definition in Table 8.)

> Comment accepted. The determination was made that a more appropriate change is to provide a  
> new code value (code value 12h) within table 9, SBP Status. The new entry of code value 12h  
> explicitly indicates that a Tap was rejected.

**Number (16).** \*9.1 Table 13 Residue over and underrun field definitions do not indicate what value is placed in this field. I suggest borrowing the wording in FCP rev.008a for the definitions.

> Comment accepted. Appropriate text from FCP incorporated into SBP.

**Number (17).** 10.1 Table 14 As in FCP, it would be helpful to refer to SAM for the definition of the command byte count. Please see SAM R13, section 4.3.1.

> Comment accepted, appropriate change made.

**Number (18).** \*10.1.1 Table 19-20 These fields deal with physical parameters of the underlying transport medium and should not be put in the SBP ULP command protocol unless absolutely required. These parameters should be established at login. If this is done, then the ULP will not need to manage physical configurations except at login time.

> Comment considered. The IEEE 1394 environment consists of nodes on the same bus which may  
> operate at different data transfer rates. In this circumstance, it is necessary to indicate within the  
> CDS the specific data transfer rate which the responder shall use in relation to the requester, >

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Change made in the CDS to define a transport media dependent field for specification of the relevant physical parameter. >

**Number (19).** \*10.2. The CDS Codes field is not defined in this section.

> Comment accepted, appropriate change made.

**Number (20).** 10.3. Either remove or expand on the words "rkr notes" on p. 27.

> Comment accepted. Subject text relocated to an annex.

**Number (21).** 10.3 Table 26. The "Number of Slots" field is not defined properly. I think the intent is that this field is the REQUESTED number of slots which the initiator is requesting to be allocated to it.

> Comment accepted. A new code value is defined for the Tap slot rejection purpose.

**Number (22).** \*11.1.3. Last paragraph seems vague. I think wording such as this might better express the intent:

"Initiators are not required to limit their use of tap slots to the number they have been allocated. If all initiators using the target are cooperating by staying within their allocations, then the availability of their slots is guaranteed. In all other cases, tap slot accesses may result in rejections."

> Comment accepted, change made in a modified form, per discussion with comment submitter.

**Number (23).** Notes:

**Number (23a).** 1. All references to P1394 refer to revision 6.8v1.

> Comment considered. Appropriate reference is to IEEE 1394 version 7.0. As needed, references > adjusted.

**Number (23b).** 2. Please fix Scott Smyers telephone number on the front of the document. The FAX number is listed twice.

> Comment accepted, change made.

**Number (23c).** 3. It would be useful to add an implementers note somewhere in the document (perhaps in section 6.1) discussing the setting of RETRY LIMIT. This should mention 1) that P1394 REQUIRES implementation of at least one retry for each transaction, 2) that setting the retry limit too high may result in wasting bus bandwidth on transactions which may never successfully complete anyway, and 3) setting it too low may waste an application's resources by causing the application to repeatedly perform retries best done at the lower protocol layers.

> Comment considered.

+++++ End of comments from IBM +++++

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+++++ Start of comments from Seagate +++++

Comment from Seagate

I am concerned that the changes suggested by IBM might be put in verbatim. They need editorial work at least by replacing the "musts" with "shalls".

- > Comment processed. Examination has been made of entire SBP document, not just the proposed
- > IBM changes with regard to the concern raised. Appropriate changes have been made.

+++++ End of comments from Seagate +++++

Respectfully submitted,

Gerald Marazas