

**From: Scott Smyers**

**X3T10/95-192r0**

**To: X3T10 Membership**

**Date: March 23, 1995**

**Subject: Public Review Comments on SBP (X3.268)**

The following are public review comments against SBP rev 18:

Section 4.0, 1st paragraph, last sentence should read:

Following the bus initialization the transaction layer services of IEEE 1394 are used to transfer commands, ~~and~~ data and status.

Section 5.2.3, 2nd paragraph: I would like to have the following sentence added to this paragraph:

In all cases the initiator shall not modify the CDS (with the exception of the abort bit) until the target returns status for that CDS.

Section 5.3.2, first paragraph, 2nd sentence; should read:

Isochronous data packets are defined ~~with in~~ in the IEEE 1394 document.

Section 6.1.1, first paragraph, first sentence, should read:

The tap protocol is the means by which an initiator sends the first 64 bytes of a the first CDS in a chain.

Section 6.1.1, 2nd paragraph, 2nd sentence should read:

The target shall not execute the ~~tap~~ CDS and ~~may shall~~ discard it once CDS status has been sent.

Section 6.2, 1st paragraph, last sentence should read:

Data may be moved using one of two transfer modes, asynchronous ~~and or~~ isochronous.

Section 6.2.1 heading, convert to heading format and include in table of contents.

Section 6.2.2., 1st paragraph, 1st sentence:

~~The initiator shall transfer data to the target's~~ target shall read data from the initiator's address space as specified within the CDS.

Section 6.3.1. Strike entire section text and replace with the following:

This section describes the protocol by which an SBP initiator performs a SAM ABORT TASK task management function.

To issue an abort task task management function, the initiator performs the following actions in the order listed:

1. In the CDS residing in initiator's address space that the initiator wishes to abort, set the ABORT TASK bit
2. Send a tap to the target containing a task management CDS with the abort task flag set and the tag value field set to the start address of the CDS to be aborted.

The target responds to the task management CDS in the following way:

1. Return a status block for the task management CDS with a CDS status of SCSI status invalid and an SBP status of no status to report.
2. If the CDS identified in the tag value field of the task management CDS is in a task set in the target, the target shall perform the following actions in the order listed:
  - a) Stop issuing transaction data requests for the affected CDS
  - b) Wait for any pending transaction data responses to complete
  - c) Return a status block for the affected CDS with a CDS status of SCSI status invalid and an SBP status of no status to report.

3. If the CDS identified in the task management CDS is not known to the target, the target shall continue normal operation.

Whenever the target encounters a CDS with the abort flag set the target shall not make that CDS active. The target shall return a status block for that CDS with a CDS status of SCSI status invalid and an SBP status of no status to report.

The initiator shall not reuse the address space occupied by the aborted CDS until the target returns a status block for that CDS.

Section 6.3.4, 2nd paragraph, 1st sentence should read:

To perform a clear ~~task set~~ ACA function an initiator sends a task management CDS with the clear ACA flag set (byte 22 bit 1=0).

Section 7.1.1, first paragraph, 2nd sentence should read:

The following ~~transaction request~~ request types are supported by the IEEE 1394 bus.

Section 7.1.3, first paragraph, 2nd sentence should read:

The following ~~transaction indication~~ indication types are supported by the IEEE 1394 bus.

Section 7.1.4, first paragraph, remove indent, and 2nd sentence should read:

The following ~~transaction response~~ response types are supported by the IEEE 1394 bus.

Section 7.1.4, remove BROADCAST WRITE response (there is no response for broadcast writes)

Section 7.2 - If the target handles the tap as a split transaction, it may issue a write response packet at a later time. Therefore, this section needs to document target action for each ack code that it might receive for the write response subaction.

Section 7.2 under retry limit, initiator case - fix formatting.

Section 7.3, first paragraph, 2nd sentence should read:

The source address and data length shall be within the limits of the address range of the CDS within initiator memory space.

Section 7.3, ACKNOWLEDGE MISSING, TARGET CASE should read:

TARGET CASE: Assume pending ack. This may result in a timeout condition. If so, target shall take timeout condition action.

Section 7.4.1, 1st paragraph should read:

The target, ~~upon request~~ as part of command processing shall transfer data to/from the initiator's address space by generating one or more transaction data requests. If data is to move from the target to the initiator, then the target SBP layer issues a TR\_DATA.request of type WRITE. If data is to move from the initiator to the target, the target issues a TR\_DATA.request of type READ. The ~~amount length~~ shall be consistent both with the transfer length specified within the data transfer control field of the associated SCSI CDS and the maximum data packet length for the IEEE 1394 bus speed used. The SBP application layer at the target takes the following exception condition processing upon receipt of the given confirmation associated with the original transaction request. The exception condition processing by the initiator applies only to the response subaction needed to satisfy the read or write request issued by the target.

Section 7.4.1, ACKNOWLEDGE MISSING section, TARGET CASE should read:

TARGET CASE: Assume pending ack. This may result in a timeout condition. If so, target shall take timeout condition action.

Sections 7.4.2 and 7.4.3 - If the initiator handles the login data transfer or the status block transfer as a split transaction, it may issue a write response packet at a later time. Therefore, these sections need to document initiator action for each ack code that it might receive for the write response subaction. Initiator action should be the same as documented in section 7.4.1.

Section 7.4.3, RETRY LIMIT and DATA ERROR - since both of these conditions assure that the status block did not make it to the initiator, there is no idempotence problem with the target doing a retry. Therefore, I propose the following text for these two areas:

RETRY LIMIT AND DATA ERROR: TARGET CASE: Retry request again, continue to retry until successful or until directed otherwise by the initiator.

Section 7.4.3, first paragraph, first sentence should read:

The target shall transfer a status block using an TR\_DATA.request of type WRITE with a data length of 16.

Section 7.5, delete second paragraph. This information is not needed here and is technically inaccurate.

Section 7.5.3, 2nd paragraph should read:

There is no intermediate status block associated with this mode of operation.

Section 7.5.4, 7th paragraph - replace all occurrences of the word "packet" with the word "block".

Section 7.5.4, table 4, replace all occurrences of the word "packet" with the word "block".

Section 7.5.5, first paragraph should read:

In this operation mode, upon encountering an ~~error~~ stream gap, the target generates an entry in the error log and immediately stops execution of the current command. The target returns a status block with the sense data sent flag set for the command indicating the error condition.

Section 8.1, table 5 last item in table should be:

4-n	<del>xxb11b</del>	Key (14h)	Unit dependent directory offset
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Section 8.1, table 6, last 2 items in table should be:

2	<del>xxb01b</del>	Key (21h)	Offset of asynchronous login FIFO
3	<del>xxb01b</del>	Key (22h)	Offset of isochronous login FIFO

Section 8.1, 7th paragraph after table 6, should read:

Note: The asynchronous login FIFO and the isochronous login FIFO may be at the same address ~~or may be implemented~~ or at different addresses from each other.

Section 8.2.1, 1st paragraph, last sentence should read:

The FIFO is a write only address that accepts a 64-byte tap.

Section 8.3.1, 1st paragraph, last sentence should read:

The FIFO is a write only address that accepts a 64-byte tap.

Section 8.3.2, 1st paragraph, 1st sentence should read:

The isochronous normal FIFO is used for receiving taps that contain ~~an SCSI command descriptor block~~ an isochronous SCSI read CDS or an isochronous SCSI write CDS defining a command to be executed.

Section 8.3.3, 1st paragraph, 1st sentence should read:

The isochronous urgent FIFO is used for receiving taps that contain ~~an SCSI command descriptor block that defines a command to be executed on a priority basis.~~ an isochronous control CDS.

Section 8.3.3, delete 2nd paragraph - this statement is false.

Section 8.3.4, 1st paragraph, 1st sentence should read:

The isochronous ACA FIFO is used for receiving taps that contain a tap type of ACA and an SCSI ~~command descriptor block~~ CDS with an ACA task attribute for the purposes of recovering from an exception condition

associated with the isochronous operation.

Section 9.1, table 9: "Tap rejected" should read "Tap slot rejected"

Section 9.1, items in table 9 are not described anywhere.

Section 9.3, 2nd paragraph, 1st sentence - delete this sentence; it is not a requirement.

Section 10.0, first paragraph should read:

All command data structures (CDS) formats are 72 bytes long. A tap contains the first 64 bytes of a CDS. CDS's are transported from the initiator to a target either as the contents of a tap, or via ~~a~~ the fetch protocol. When the target fetches a CDS, it may read all or any part (from 1 to 72 bytes). See the definition of the target fetch protocol in clause ~~40~~ 7.3 for more information. A target may re-fetch a CDS until it returns a status block for that CDS.

Section 10.0, 3rd paragraph, 2nd sentence should read:

This is a 16-byte field designated as ~~a~~ CDB(0) through CDB(15).

Section 10.1.1, table 15, 3rd line should read:

Format specified ~~Table 14~~ in this standard

Section 10.1.1, table 17 - add an entry for the isochronous control CDS type.

Section 10.1.2, 1st paragraph after table 18, 1st sentence should read:

The data transfer rate field specifies the maximum speed to be used when transferring data for this CDS.

Section 10.1.2, 2nd paragraph after table 19, 2nd sentence should read:

All other values, ~~0000b~~ 0001b through and including 1111b represent the value of an exponent of N ...

Same paragraph as above, append the following sentence:

A value of 0 means maximum packet size for bus speed.

Section 10.2.1, 1st paragraph after table 20, parenthetical note should read:

(See ~~8-2-1~~ table 23 protocol flags field)

Section 10.2.1, 5th paragraph after table 23 should read:

The data transfer order flag when set to one indicates that the target shall ~~transfer packets in sequential order to or from the initiator. If this bit has a value of zero, the target may transfer packets out of order.~~ perform read or write requests to the data buffer in sequential order, beginning at the base address of the data buffer. When clear, the target may perform read or write requests in any order while transferring data.

General note: SBP currently does not define any correlation between the media data described in the CDB and the data buffer described in the CDS. SBP should require that the target shall transfer media data to the data buffer such that the data with the lowest LBA goes to the starting address of the data buffer, increasing to the end of the data buffer.

Section 10.2.1, table 24, left column should read:

Byte
<u>0 to 3</u>
<u>4 to 7</u>
<u>8 to 11</u>
<u>12 to 15</u>

Section 10.2.1, 2nd paragraph after table 24 should read:

The transfer length field contains the ~~number of bytes which shall be transferred as a result of successful completion.~~ length in bytes of the data buffer segment found at the data buffer address.

Section 10.2.2, 1st paragraph after table 25 should read:

The address of the next CDS is valid if the M-flag is set. (See ~~8.2.1~~ table 23 protocol flags field)

Section 10.2.2, 2nd paragraph after table 25, 1st sentence should read:

The identifier field contains the initiator id returned by the target in response to an isochronous login request.

Section 10.2.2, 2nd paragraph after table 25, strike the last sentence which reads "This identifier value is returned during the isochronous login operation."

Section 10.2.2, 2nd paragraph after table 26, delete entire last sentence which begins "If the M-flag is cleared and the link bit in the SCSI command descriptor block ..."

Section 10.3, 1st paragraph after table 28, delete entire paragraph which begins "The I-flag, when set, indicates that the value ..."

Section 10.3, 8th paragraph after table 28 should read:

The AE sense length specifies the length in bytes of the sense data buffer to be returned to the initiator.

Section 10.3, 11th paragraph after table 28 should read:

The transfer length field specifies the length in bytes of the data to be returned to the initiator. The data to be returned is defined in table 29. If the transfer length is less than 32, the target shall return a status block with an SBP status of login error for this login CDS.

Section 10.4, 4th paragraph after table 32, delete entire note, which begins "NOTE: The tag value field ..."

Section 10.5, 2nd paragraph after table 34, delete entire last sentence of this paragraph which begins "The pause function does not affect ..."

Section 10.5, table 35, 3rd line - change "cycle number" to "cycle time"

Section 10.5, 2nd paragraph after table 35 should read:

The cycle ~~number~~ time value instructs the target to perform the specified action on the cycle ~~number~~ time contained in the ~~cycle number field of this CDS~~ seconds high count and seconds count/cycle count fields.

Section 10.5, 5th paragraph after table 35, 3rd sentence should read:

... the sy field of the isochronous packet header er has a value contained in ...

Section 10.5, 7th paragraph - change to occurrences of "cycle number" to "cycle time".

Section 11.0, 4th paragraph (counting indented items) 1st sentence should read:

Targets are not allowed to respond to most SBP control protocol requests from an initiator unless that initiator has previously obtained from the target either an identifier ~~from~~ for use with the asynchronous transfer protocol or an identifier ~~from~~ for use with the isochronous transfer protocol.

Section 11.1.1, 1st paragraph, 1st sentence should read:

Using the tap protocol, the initiator sends an ASYNCHRONOUS LOGIN CDS to the target's asynchronous login FIFO, thereby requesting an identifier ...

Section 11.1.1, 8th paragraph should specify that the SBP status block should contain the SBP status of login error.

Section 11.1.2, 1st paragraph, 1st sentence should read:

Using the tap protocol, the initiator sends an ISOCHRONOUS LOGIN CDS to the target's isochronous login FIFO, thereby requesting an identifier ...

Section 11.1.1, 8th paragraph should specify that the SBP status block should contain the SBP status of login error.

Section 11.1.3, 3rd paragraph should read:

Initiators are not required to limit their use of tap slots to the number they have been allocated. ~~However, if all initiators using the target are cooperating by staying within their allocations, then the availability of their tap slots occurs as a natural consequence of operation. In all other cases, tap slot accesses may result in rejections. In a cooperating, multi-initiator environment where all initiators stay within their allocation of tap slots, the target shall not reject a tap.~~

Section 11.1.3, 4th paragraph, delete 2nd sentence which begins: "A target that releases the tap slot at the first point ..."

Section 11.1.3 10th paragraph (last paragraph in this section), delete entire paragraph, which begins: "Cooperating initiators that limit themselves ..."

Section 11.2.1, 1st and 7th paragraphs - wording can be improved for clarity.

Section 11.2.2, 1st and 7th paragraphs - wording can be improved for clarity.

Section 11.3, 3rd paragraph, last sentence should read:

The new request supersedes the previous request with the new AE buffer address and length replacing the previous address and length.

Section 12.7, 1st paragraph, 1st sentence should read:

Note that ~~this~~ these FIFOs ~~is~~ are located at the same address ~~as the isochronous login FIFO described below.~~

Section 13, figures B-1 and B-2 would be more clear if they were graphical instead of text based.

Section 13.2, figure B-2 - replace all phrases in this figure stating "(optional, if initiator ack=pending)" with the following: "(only if initiator ack=pending)".

Section 14.1, 2nd paragraph should read:

talker - the source of the isochronous data being transferred on a given isochronous channel number. There shall only be at most 1 talker per isochronous channel number per isochronous cycle.

Supplemental:

Section 10.3, table 28 - the following should be inserted as the 4th paragraph after table 28 - Login flags field:

The packet length field defines the number of bytes in an isochronous data payload packet.

This paragraph is part of the isochronous proposal from Scott Smyers dated 7/15/94, but was not included in the text.

Table A-1, general - reformat this table to make each line a quadlet, subdivided as necessary to the various fields.

Table A-1, Bus\_Info\_Block node options, offset 8 should have a value of 00FF 0000h in order to be compliant with 1394 standard.

Table A-1, Node Unique ID key at offset 18h should have a value of 8Dh

Table A-1, Node Unique ID offset at offset 19h should have a value of 00 00 02