

ENDL TEXAS

Date: 7 May 2002
To: T10 Technical Committee
From: Ralph O. Weber
Subject: Response to T10 Letter Ballot comments on SAM-2

This document contains the responses to the T10 Letter Ballot comments on forwarding SAM-2 to first public review. The summary of the T10 Letter Ballot results can be found in 02-123r1.

All references to SAM-2 PDF pages are based on sam2r23.pdf.

Comments that need to be discussed during the next T10 meeting week are:

- Highlighted in red in the list titled "Unresolved Comments List"; or
- Listed in the section titled "The Editor Recommends Reviewing the Responses to the Following Comments".

The number in square brackets at the end of each comment description counts all the comments discussed in this document.

Revision History

- r0 All comments from 02-123r1 included. Some comments noted for discussion during the May T10 meeting week. Many comments unprocessed.
- r1 Resolutions or preliminary resolutions added for all comments discussed during the May T10 meeting week.

The Editor Recommends Reviewing the Responses to the Following Comments

Ophidian 8) Define the lifetime of a task management function 80

Unresolved Comments List

Cisco 6) Remove definition of 'implementation'	14
Cisco 8) REPORT LUNS shall be accepted by logical unit 0.	15
Cisco 9) Recommend Device ID VPD pg 2h or 3h in SAM-2.	15
Cisco 11) Extend CRN to Application Client	15
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EMC 4) Is the service delivery subsystem anything more than the interconnect subsystem?.	31
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HP 12) SCSI device identifier cannot be synonymous with SCSI port identifier	51
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HP 8) 'I/O system' not defined	50
HP 9) 'device identifiers' are 'LU identifies'	50
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HP 11) Nexus is just a relationship	51
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HP 16) Change hierarchy diagrams to UML 52
HP 17) LUN is a UML attribute not an object. 52
HP 21) ORDERED task attribute is irrelevant 53
HP 23) Initiator port name is a UML attribute. 53
HP 24) Add protocol attribute to SCSI ports 53
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Cisco 4) 'Application Client' s/b synonymous to a 'Class Driver' 14
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Cisco 5) 'Client' is not a SAM-2 object	14
Cisco 7) Add cross reference for AER acronym	14
Compaq 14) Move 'task router' description to target device clause.	18
Compaq 17) Do not capitalize logical unit	19
EMC 8) 'deliver' s/b 'delivery'	32
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HP 3) 'SCSI Protocol' s/b 'SCSI Transport Protocol'	49
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Accepted With Noted Changes Non-Substantive Comments List

Cisco 3) 'SCSI Protocols' s/b 'SCSI Transports' 14

Compaq 15) Default logical unit description not complete. 18

EMC 1) Peculiar definition of 'protocol' 31

EMC 2) Does task manager sequence tasks? 31

EMC 10) Typo? 'ACA' s/b 'CA'. 33

EMC 12) Can multiple Send Data Ins be active concurrently? 33

EMC 15) Eliminate defeatism 34

HP 4) Figure 2 'Roadmap' is not a roadmap 49

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HP 6) 'aborted command' s/b 'aborted task'. 49

HP 13) Missing 'that' 51

HP 30) What is the default logical unit. 54

IBM 2) Not just any figure, figure 2 62

IBM 3) Figure 2 says nothing about applicability of standards and transports. 62

IBM 13) Task manager definition 63

IBM 23) Do not capitalize logical unit. 64

Ophidian 3) Remove "pending" from 'suspended information' def. 78

Ophidian 7) 'Tendered commands' changed to 'pending commends'. 79

Ophidian 8) Define the lifetime of a task management function 80

TI 2) Extra comma 83

TI 3) Eliminate 90% of 'also'. 83

TI 4) 'However' is over used. 83

TI 5) 'That' is over used 84

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HP 1) That which is not SAM-2	49
Ophidian 6) Pending status and sense data	79

1. Brocade Communications Systems, Inc.

Brocade Communications Systems, Inc. principle representative Brian Forbes submitted a Yes vote with the following comments.

Brocade 1) description not established (Unprocessed) [1]
PDF page 23, page 1, clause 1.1, paragraph 1

reference to clause 1.2 should be to 1.3.

Brocade 2) description not established (Unprocessed) [2]
PDF page 23, page 1, clause 1.2, paragraph 1

comma should be omitted.

Brocade 3) description not established (Unprocessed) [3]
PDF page 24, page 2, clause 1.3, Shared Command Set

"prescribe" should be "prescribes"

Brocade 4) description not established (Unprocessed) [4]
PDF page 25, page 3, clause 1.3, FC-AL-2

"Loop -2" should be "Loop - 2" to be consistent with other entries

Brocade 5) description not established (Unprocessed) [5]
PDF page 27, page 5, clause 2.3, paragraph 1

suggest "status or availability of a document" instead of "status of the document, or regarding availability"

Brocade 6) description not established (Unprocessed) [6]
PDF page 29, page 7, clause 3.1.20, Control mode page

suggest "The Control mode page identifies" instead of "The Control mode page that identifies"

Brocade 7) description not established (Unprocessed) [7]
PDF page 29, page 7, clause 3.1.26, Device Server

suggest "within a logical unit" instead of "within the logical unit", also makes it consistent with 3.1.132

Brocade 8) description not established (Unprocessed) [8]
PDF page 38, page 16, clause 3.6.1, paragraph at top of page

should be "approximate; detailed" instead of "approximate, detailed"

Brocade 9) description not established (Unprocessed) [9]
PDF page 49, page 27, clause 4.7.3, figure 13

Application Client box should be shaded

Brocade 10) description not established (Unprocessed) [10]
PDF page 54, page 32, clause 4.11.2, paragraph 2

omit comma after "target ports" in last sentence

Brocade 11) it's s/b its (Accepted, Editorial) [11]
PDF page 55, page 33, clause 4.11.4, last paragraph on page

"it's" should be "its"

Brocade 12) it's s/b its (Accepted, Editorial) [12]
PDF page 56, page 34, clause 4.11.5, paragraph following figure 18

"it's" should be "its"

Brocade 13) description not established (Unprocessed) [13]
PDF page 59, page 37, clause 4.11.7, paragraph 1 and Note 1

"an SCSI" is used multiple times here, "a SCSI" is used elsewhere, e.g. 2nd paragraph of 4.12.1 (personally prefer the latter but either way as long as it's consistent)

Brocade 14) description not established (Unprocessed) [14]
PDF page 63, page 41, clause 4.12.4, paragraph 1

omit commas after "commands" and "client"

Brocade 15) description not established (Unprocessed) [15]
PDF page 63, page 41, clause 4.12.4, Note 2

"A SCSI device may filter commands to prevent an application client from issuing" seems to be a sentence fragment

Brocade 16) description not established (Unprocessed) [16]
PDF page 63, page 41, clause 4.12.4, Note 3

Font size seems to be larger at beginning of note, see also Note 5

Brocade 17) description not established (Unprocessed) [17]
PDF page 65, page 43, clause 4.12.5, paragraph at top of page

font size suggest a continuation of Note 5 but text seems to be the final paragraph of 4.12.5

Brocade 18) description not established (Unprocessed) [18]
PDF page 65, page 43, clause 4.12.6, paragraph following table 9

dangling "to"; suggest "The LUN field indicates the address of the logical unit to which the current level shall direct the received command"

Brocade 19) 'deliver' s/b 'delivery' (Accepted, Editorial) [19]
PDF page 68, page 46, clause 4.14, Physical interconnect layer

"deliver subsystem" should be "delivery subsystem"

Brocade 20) description not established (Unprocessed) [20]
PDF page 71, page 49, clause 5.1, Autosense Request

"request" should be "requests" in last sentence

Brocade 21) description not established (Unprocessed) [21]
PDF page 75, page 53, clause 5.3.1, paragraph 1

omit commas after "status" and "MET"

Brocade 22) description not established (Unprocessed) [22]
PDF page 83, page 61, clause 5.6.3, paragraph 3

"established," should be "established;"

Brocade 23) description not established (Unprocessed) [23]
PDF page 85, page 63, clause 5.7.2, figure 30

should the label between events 6 and 7 on the lower level be "Task A" instead of "Task"?

Brocade 24) description not established (Unprocessed) [24]
PDF page 87, page 65, clause 5.8.1.2, paragraph 2

"dormant and enabled" should be "dormant or enabled"

Brocade 25) description not established (Unprocessed) [25]
PDF page 92, page 70, clause 5.8.1.6, Note 7

font size too large?

Brocade 26) description not established (Unprocessed) [26]
PDF page 99, page 77, clause 6.2, ABORT TASK function call

ABORT TASK function call: closing parens seem to be in a different font and/or emphasis (how's that for a nit). See also function calls for ABORT TASK SET, CLEAR ACA, CLEAR TASK SET, LOGICAL UNIT RESET, TARGET RESET, and WAKEUP

2. Cisco Systems, Inc.

Cisco Systems, Inc. principle representative David Peterson submitted a No vote with the following comments.

Cisco 1) description not established (Unprocessed) [27]
PDF page 24, page 2, clause 1.3, para 2

What is the definition of a transport? I suggest deleting the whole sentence.

Cisco 2) description not established (Unprocessed) [28]
PDF page 24, page 2, clause 1.3

Are references to CAM still needed in the architecture? Command sets have been phasing out CAM, why stop here.

Cisco 3) 'SCSI Protocols' s/b 'SCSI Transports' (Accepted, Editorial) [29]
PDF page 25, page 3, clause 1.3, Global

"SCSI Protocols" s/b "SCSI Mapping Protocols" or "SCSI Transports". SCSI protocol is too broad for the text definition provided. My view is that the command sets are also part of the "SCSI Protocol". Also refer to the list of SCSI Protocols below.

Editor's Note: Change "SCSI Protocols" to "SCSI Transport Protocols" throughout.

Cisco 4) 'Application Client' s/b synonymous to a 'Class Driver' (Accepted, Substantive) [30]
PDF page 28, page 6, clause 3.1.4

I think the definition of an application client s/b: "An entity that is the source of SCSI commands." The document states that an application client has a finite lifetime. This concept would be better labeled as an application thread. As such, an application client should be an entity that does not have a pre-defined lifetime and is synonymous to a "class" driver (e.g., a SCSI tape driver).

Editor's Note: Define an Application Client "thread" that is the peer of a Task. Define Application Client to be a peer of the Device Server.

Cisco 5) 'Client' is not a SAM-2 object (Accepted, Editorial) [31]
PDF page 28, page 6, clause 3.1.11 & Global

s/b: "An entity that requests a service from a server." If accepted, the use of the terms object (and entity) should be reviewed throughout the document.

Cisco 6) Remove definition of 'implementation' (Unresolved) [32]
PDF page 30, page 8, clause 3.1.46

Is a definition for implementation really needed? If so, something like: "The physical realization of an entity."

Cisco 7) Add cross reference for AER acronym (Accepted, Editorial) [33]
PDF page 35, page 13, clause 3.2

To be consistent with the other acronyms, provide a reference for AER.

Cisco 8) REPORT LUNS shall be accepted by logical unit 0 (Unresolved) [34]

PDF page 55, page 33, clause 4.11.3

"The REPORT LUNS commands (see SPC-2) shall be accepted by logical unit 0 from any SCSI target port and shall return the logical unit inventory available via that SCSI target port."

Don't believe any change is needed for SAM-2, but this requirement needs to be enforced by the device models (e.g., SBC-2 SMC-2).

Cisco 9) Recommend Device ID VPD pg 2h or 3h in SAM-2 (Unresolved) [35]

PDF page 55, page 33, clause 4.11.3

"The availability of the same logical unit through multiple SCSI target ports is discovered by matching SCSI port identifier values in the INQUIRY command Device Identification VPD page (see SPC-2)."

A recommendation that a world wide unique identifier is highly desirable (e.g., a type 2h or 3h).

Alternatively, each device model should specify this.

Cisco 10) description not established (Unprocessed) [36]

PDF page 59, page 37, clause 4.12.1, first itemized list

Make all a,b,c lists consistent with regards to ending the item with a ";" and an "or" or "and" in the appropriate spot.

Cisco 11) Extend CRN to Application Client (Unresolved) [37]

PDF page 71, page 49, clause 5.1

The concept of CRN should be extended to the application client level (i.e., not the I_T_L nexus level). This will allow for true application client to logical unit ordering across multiple transports. This would be like an "A_L nexus".

A proposal is forthcoming.

Cisco 12) description not established (Unprocessed) [38]

PDF page 105, page 83, clause 7.1, itemized list

Make all a,b,c lists consistent with regards to ending the item with a ";" and an "or" or "and" in the appropriate spot.

Cisco 13) description not established (Unprocessed) [39]

PDF page 106, page 84, clause 7.4.1, itemized list

Make all a,b,c lists consistent with regards to ending the item with a ";" and an "or" or "and" in the appropriate spot.

Cisco 14) Is it acceptable to use color? (Rejected) [40]

PDF page 109, page 87, clause 7.6, figure 33

Is it acceptable to use color?

Reason for Rejection: It is acceptable to use color to improve readability provided the following conditions are met:

- 1) The document is still legible when printed in black and white; and
- 2) The color is not used as the only means to convey a requirement.

Cisco 15) description not established (Unprocessed) [41]

PDF page 115, page 93, clause A.1, itemized list

Make all a,b,c lists consistent with regards to ending the item with a ";" and an "or" or "and" in the appropriate spot.

Cisco 16) Should object identifier sizes be specified? (Unresolved) [42]

PDF page 116/117, page 94/95, clause A.3/A.4, table A.3/A.4

Although the notes are correct today, may be a bad idea to state the sizes. Are the notes really needed?

3. Compaq Computer Corp.

Compaq Computer Corp. principle representative Robert C. Elliott submitted a No vote with the following comments.

Compaq 1) Incorporate 02-134 (Unresolved) [43]

PDF page 1, page i, General

Incorporate 02-134 Clearing effects of I_T nexus loss

Compaq 2) description not established (Unprocessed) [44]

PDF page 1, page i, General

Number PDF pages to match printed pages

Compaq 3) description not established (Unprocessed) [45]

PDF page 22, page xxii, Introduction

add periods on each sentence (or ;)

Compaq 4) description not established (Unprocessed) [46]

PDF page 23, page 1, clause 1.2, Figure 1

The gray and black arrows are not very distinguishable. Try adding color and dashes.

Compaq 5) description not established (Unprocessed) [47]

PDF page 24, page 2, clause 1.3, Figure 2

Remove Common Access Method, which was a SCSI-2 standard. (also remove paragraph below the figure referring to it)

Add color to the picture like SBC-2.

Compaq 6) description not established (Unprocessed) [48]

PDF page 29, page 7, clause 3.1.20

Delete "Control" from "The Control mode page that..."

Compaq 7) description not established (Unprocessed) [49]

PDF page 35, page 13, clause 3.2

Delete duplicate: SSC SCSI-3 Stream Commands (see 1.3)

Compaq 8) description not established (Unprocessed) [50]

PDF page 36, page 14, clause 3.4, Global

Some section headers like this one capitalize each word, while others like "4.2 The SCSI distributed service model" only capitalize the first word.

Compaq 9) description not established (Unprocessed) [51]
PDF page 39, page 17, clause 3.6.3, Figure 4

The state diagrams in 7.6 place conditions under the S0:S1 transition labels. This usage should be reflected in figure 4.

Compaq 10) description not established (Unprocessed) [52]
PDF page 39, page 17, clause 3.6.3

Remove "It is particularly important to note that"

Compaq 11) description not established (Unprocessed) [53]
PDF page 42, page 20, clause 4.3, Figure 6

Change Initiator to Initiator device and Target to Target device

Compaq 12) Blank comment (No Action) [54]
PDF page 42, page 20

Compaq 13) description not established (Unprocessed) [55]
PDF page 47, page 25, clause 4.7.1

Change: "An application client is the source of commands and task management functions."

to (plural):

"Application clients are the sources of commands and task management functions."

or (singular):

"An application client is the source of a command or task management function."

Compaq 14) Move 'task router' description to target device clause (Accepted, Editorial) [56]
PDF page 49, page 27, clause 4.7.5

This single-paragraph section should be moved into 4.7.2 where the rest of the target device objects are described.

Compaq 15) Default logical unit description not complete (Accepted, Editorial) [57]
PDF page 49, page 27, clause 4.7.5

"Any task that is sent to a logical unit that is not known to the task router shall be routed to a default logical unit (e.g., LUN 0)."

This statement leads one to believe that a task may run on the wrong logical unit, although 5.8.3 clarifies what really happens. Put in a cross reference or remove this sentence altogether.

Editor's Note: Change the cited sentence to:

"Any task that is sent to a logical unit that is not known to the task router [is handled as described in 5.8.3](#)."

Compaq 16) Logical unit numbers and Access Controls (Accepted, Substantive) [58]

PDF page 51, page 29, clause 4.8

There is a conflict between:

"A logical unit contains ... a) a logical unit number"

and

"A logical unit number is a field containing up to 64 bits that identifies the logical unit within a SCSI target device."

With access controls, a logical unit may contain more than one LUN. Each LUN identifies the logical unit for accesses through a target port.

It should say:

"a) a logical unit number per target port;"

and

"A logical unit number...within a SCSI target device when accessed through a target port"

The Logical Unit Number block in Figure 14 should have a shadow indicating one or more.

Editor's Note: Accepted with the following changes:

1. Change Figure 14 and cited sentence as described in comment; and
2. Change list entry a) as follows:
 - a) a logical unit number
 - A) If access controls (see SPC-3) are not in effect, one logical unit number per logical unit; or
 - B) If access controls are in effect, up to one logical unit number per target port;

Compaq 17) Do not capitalize logical unit (Accepted, Editorial) [59]

PDF page 51, page 29, clause 4.8

Change "Logical Unit" to "logical unit"

Compaq 18) Require Flat Space addressing (Accepted, Substantive) [60]

PDF page 51, page 29, clause 4.8

Table 1 and associated text about Single Level LUN structure

This section requires Peripheral addressing method for 0 to 256 logical units. It should also require the Flat Space addressing method be used for 256 to 16384 logical units.

Either:

1) Add:

"If a SCSI target device contains more than 256 and less than or equal to 16384 logical units, none of which are dependent logical units or extended addressing logical units, then it shall support the Hierarchical Logical Unit Number format and use the format shown in table 1b, which is a single level subset of the format described in 4.12."

And create Table 1b, with address method 01b and 14 bits for the LUN.

or:

2) Merge 4.12, the dependent logical unit model, into 4.8. Make logical unit numbers a separate section from logical units. Move the single-level logical unit number text from 4.8 (along with the text proposed in part 1) of this comment) into the new section. Move the hierarchical logical unit number text and the address method sections into the new section.

Editor's Note: Change as proposed in option 1) in the comment.

Compaq 19) description not established (Unprocessed) [61]
PDF page 59, page 37, clause 4.12

Move these into separate sections:

- 1) model for dependent logical units
- 2) logical unit number format definitions

They're not necessarily related. The Peripheral device addressing method is required for devices with ≤ 256 non-dependent logical units (and the Flat Space addressing method should be for ≤ 16384). This has nothing to do with dependent logical units.

Compaq 20) description not established (Unprocessed) [62]
PDF page 60, page 38, clause 4.12.1

At any level of the tree, address method 11b may also be used.

Change:

"; and

c) Device type specific."

to: ";

c) Flat space address method (see 4.12.6); or

d) Device type specific."

Compaq 21) description not established (Unprocessed) [63]
PDF page 60, page 38, clause 4.12.1, Figure 23

Change "Initiator" to "Initiator port" twice

Compaq 22) description not established (Unprocessed) [64]
PDF page 71, page 49, clause 5.1

This section should refer to Execute Command as a device service per 4.3

Compaq 23) Remove CRN (Unresolved) [65]

PDF page 71, page 49, 5.1

PDF page 77-78, page 55-56, 5.4.2

Remove Command Reference Number (CRN).

This is only implemented by Fibre Channel. iSCSI has lots of sequence numbers to guarantee ordering, making CRN redundant.

InfiniBand is an ordered network, making CRN unnecessary.

The recognition of such a feature at the Execute Command layer may be a bit that says "precise delivery required", but the application client (in this RPC model) should not be required to provide the sequence numbers.

Compaq 24) description not established (Unprocessed) [66]

PDF page 72, page 50, clause 5.1

"The application client shall not assume that the buffer contents are valid unless the command completes with a status of GOOD, INTERMEDIATE, or INTERMEDIATE-CONDITION MET."

Add CONDITION MET.

Although the only command using this status is PRE-FETCH, a no-data command, others could be added that provide read data. Besides, INTERMEDIATE-CONDITION MET is listed.

Compaq 25) description not established (Unprocessed) [67]

PDF page 72, page 50, clause 5.1

LINKED COMMAND COMPLETE

The description should also mention that the task has not ended.

Compaq 26) description not established (Unprocessed) [68]

PDF page 75, page 53, clause 5.3.1

INTERMEDIATE

INTERMEDIATE-CONDITION MET

add "or" between "FULL, BUSY" in both sections

Compaq 27) description not established (Unprocessed) [69]

PDF page 75, page 53, clause 5.3.1

BUSY

"This status shall be returned whenever a logical unit is unable to accept a command from an otherwise acceptable initiator (i.e., no reservation conflicts)."

i.e. is too strong, implying that RESERVATION CONFLICT has priority over BUSY.

This status is also used when the target is too busy to even consider the command - a blind retry.

Change to "This status shall be returned whenever a logical unit is temporarily unable to accept a command".

Compaq 28) description not established (Unprocessed) [70]
PDF page 75, page 53, clause 5.3.1

BUSY

TASK SET FULL

RESERVATION CONFLICT

"unless such a unit attention condition is already pending."

Does "such a unit attention" mean only unit attentions with PREVIOUS BUSY STATUS additional sense code, or unit attentions with any of the PREVIOUS nnn STATUS additional sense codes? (three times)

Compaq 29) description not established (Unprocessed) [71]
PDF page 75, page 53, clause 5.3.1

CHECK CONDITION

Remove "Autosense data may be delivered (see 5.8.4.3)."

This is not directly related to the status codes. All CHECK CONDITIONS result in sense data (which is not mentioned). That the status code may be accompanied in some protocols by sense data (not "autosense data") is not helpful here.

Compaq 30) description not established (Unprocessed) [72]
PDF page 75, page 53, clause 5.3.1

INTERMEDIATE

Add "This status is the equivalent of GOOD status for linked commands."

Compaq 31) description not established (Unprocessed) [73]
PDF page 75, page 53, clause 5.3.1

Every status code section should include "indicates the task has ended" (except for INTERMEDIATE and INTERMEDIATE-MET)

(Perhaps a column in table 22 would stand out better)

Compaq 32) description not established (Unprocessed) [74]
PDF page 75, page 53, clause 5.3.1

Add a column indicating the service response necessary to return each status code:

- TASK COMPLETE for most
- LINKED COMMAND COMPLETE for INTERMEDIATE and INTERMEDIATE-MET

Compaq 33) Status precedence wrong for ASC 29h (Unresolved) [75]

PDF page 76, page 54, clause 5.3.2

In most implementations of persistent reservations, a CHECK CONDITION reporting POWER ON OCCURRED (or any ASC 29h code) is given before a RESERVATION CONFLICT. This arguably violates the precedence rule.

The BUSY description has an i.e. that implies that RESERVATION CONFLICT takes precedence over BUSY.

Editor's Note: Discussions during the May T10 meeting week resulted in an agreement to rewrite precedence rules to allow the cited BUSY example and a specified list of 29/xx ASC/ASCQ. Resolution of this comment is not complete until the rewritten text is included here.

Compaq 34) description not established (Unprocessed) [76]

PDF page 76, page 54, clause 5.3.1

ACA ACTIVE - shouldn't this also generate a unit attention interlock?

Compaq 35) description not established (Unprocessed) [77]

PDF page 76, page 54, clause 5.3.1

TASK SET FULL

in should be into in: "prevents accepting a received tagged task from that initiator in the task set," (three times)

Compaq 36) description not established (Unprocessed) [78]

PDF page 76, page 54, clause 5.3.1

TASK SET FULL

Change "queued command" to "command in the task set"

Compaq 37) description not established (Unprocessed) [79]

PDF page 76, page 54, clause 5.3.1

RESERVATION CONFLICT

Remove "with a conflicting reservation type for another SCSI initiator." It needs to say I_T not "SCSI initiator". Best to just drop the words and leave the SPC-2 reference to figure out what reserved means.

Compaq 38) description not established (Unprocessed) [80]

PDF page 76, page 54, clause 5.3.1

RESERVATION CONFLICT

"The recommended initiator recovery action is to issue the command again at a later time. Removing a persistent reservation belonging to a failing initiator may require the processing of a PERSISTENT RESERVE OUT command with the Preempt or Preempt and Clear service actions (see SPC-2)."

The recommended recovery action is not simply to issue the command again; it depends on the reservation type in use.

Remove the text and let the reference to SPC-2 cover these command-specific details.

Compaq 39) description not established (Unprocessed) [81]
 PDF page 76, page 54, clause 5.3.1

INTERMEDIATE-CONDITION MET

Change "operation requested by a linked command is satisfied" to "requested operation specified by a linked command" to match the CONDITION MET wording.

Compaq 40) description not established (Unprocessed) [82]
 PDF page 78, page 56, clause 5.4.2

Change "Autosense data (see 5.8.4.3" to "sense data (see 5.8.4)". Per SRP discussion, there is no such thing as "autosense data".

Compaq 41) What is the state of "background" tasks? (Unresolved) [83]
 PDF page 82, page 60, clause 5.6

Several SCSI commands (e.g. SEND DIAGNOSTIC, FORMAT UNIT) invoke background tasks. What is the state of these? Are they considered to still be in the task set? Which task management functions cause these to be aborted? LOGICAL UNIT RESET and TARGET RESET clear them. What about ABORT TASK SET and CLEAR TASK SET? George says LU reset/target reset does not clear format unit. Probably does clear self test.

Compaq 42) description not established (Unprocessed) [84]
 PDF page 82, page 60, clause 5.5

The long list describes when the application client assumes tasks no longer exist. For logical unit and target resets, it only knows if it sent the appropriate task management function.

Change item f from:

f) a service response of FUNCTION COMPLETE in response to a LOGICAL UNIT RESET or TARGET RESET

to:

f) a service response of FUNCTION COMPLETE following a LOGICAL UNIT RESET task management function directed to the logical unit;

g) a service response of FUNCTION COMPLETE following a TARGET RESET task management function directed to a target port with access to the logical unit

Compaq 43) description not established (Unprocessed) [85]
 PDF page 82, page 60, clause 5.6.1

Add to the "following events" list:

d) logical unit reset (see 5.8.7);

e) hard reset (see 5.8.6)

Compaq 44) description not established (Unprocessed) [86]
PDF page 82, page 60, clause 5.6.1

The last list is supposed to list initiator actions, but includes:

- d) A logical unit reset (see 5.8.7); or
- e) A hard reset (see 5.8.6).

Change to:

- d) Completion of a LOGICAL UNIT RESET task management function directed to the logical unit;
- e) Completion of a TARGET RESET task management function directed to a target port with access to the logical unit

(The generic logical unit reset/hard reset move into the first list; see previous comment)

Compaq 45) description not established (Unprocessed) [87]
PDF page 82, page 60, clause 5.5

"linked command complete" after item f should be small caps.

Compaq 46) description not established (Unprocessed) [88]
PDF page 92, page 70, clause 5.8.2

Keep the NOTES on one page.

Compaq 47) description not established (Unprocessed) [89]
PDF page 95, page 73, clause 5.8.5

On items b, c, e, f, g, add "(see SPC-2)"

Many of the items listed as reported via unit attention conditions should be left to the command set standards to document.

Compaq 48) description not established (Unprocessed) [90]
PDF page 98, page 76, clause 6.1

Task managers should not be allowed to return FUNCTION COMPLETE for unsupported functions; FUNCTION REJECTED should not be "optional".

Every protocol to date supports FUNCTION REJECTED; SPI uses the MESSAGE REJECT message, serial protocol Response IUs include this reason in the RSP_CODE field.

Compaq 49) description not established (Unprocessed) [91]
PDF page 98, page 76, clause 6.1

Why is note 12 here? 5.6 Aborting tasks already provides this information, as do 6.x describing each of the TMFs.

Compaq 50) description not established (Unprocessed) [92]
PDF page 98, page 76, clause 6.1.

Service Response = Function name (IN (nexus))

Having only one argument called "nexus" may not be complete.

For Execute Command(), the nexus argument clearly selects which I and T should be used by the protocol services to implement the command. The L tells where to run the command, and the Q is just a label for it.

For task management functions, it is not clear that the I and T must be used by the protocol services to implement the function.

Can a protocol define an ABORT TASK IU that carries an alternate initiator port identifier, target port identifier, LUN, and tag?

This would lead to

Service response = Function name (transport nexus, object nexus)

transport nexus: selects the nexus to use to process the function always an I_T_L, since the task manager is defined as being inside an L in 4.2

object nexus: selects what to operate on I_T for Target Reset, Wakeup I_T_L for Abort Task Set, Clear ACA, Clear Task Set, Logical Unit Reset I_T_L_Q for Abort Task

Some protocols may require the transport nexus I_T_x to match the object nexus I_T_x. Perhaps this should be required of all protocols, avoiding the need for the changes above.

Compaq 51) description not established (Unprocessed) [93]
PDF page 99, page 77

6.2 ABORT TASK

6.3 ABORT TASK SET

"The task manager shall abort all tasks in the task set that were created by the initiator as described in 5.6"

6.3 points to 5.6 Aborting tasks, but 6.2 does not. They should do the same.

Compaq 52) description not established (Unprocessed) [94]
PDF page 99, page 77, clause 6.3

Remove "serviced by the logical unit"

Compaq 53) description not established (Unprocessed) [95]
PDF page 99, page 77, clause 6.3

"that were created by the initiator"

The argument to the RPC is I_T_L Nexus.

Which of these is intended?

a) abort all tasks from the specified initiator port sent through any target port (treats the RPC argument like an I_n_L); or

b) abort all tasks from the specified initiator port sent through the specified target port (honors the T in I_T_L)

I think a) is intended. The T is only used to choose which target port to use for the protocol services exchanges.

Compaq 54) description not established (Unprocessed) [96]
PDF page 100, page 78, clause 6.4

Remove "serviced by the logical unit".

Compaq 55) description not established (Unprocessed) [97]
PDF page 101, page 79

6.7 TARGET RESET

6.8 WAKEUP

Since TARGET RESET and WAKEUP only use I_T, which "task manager" do they go to?

Possibilities:

- a) create a target-port level task manager to handle these.
- b) say these two are forwarded to the task managers of ALL logical units.

Compaq 56) description not established (Unprocessed) [98]
PDF page 101, page 79, clause 6.6

Remove "A unit attention condition for all initiators that have access shall be created on the logical unit and dependent logical unit(s), if any, as specified in 5.8.5." This is already mentioned in 5.8.7

Compaq 57) description not established (Unprocessed) [99]
PDF page 101, page 79, clause 6.7

Remove "A unit attention condition for all initiators that have access shall be created on each of these logical units as specified in 5.8.5."

This is already mentioned in 5.8.7.

Compaq 58) description not established (Unprocessed) [100]
PDF page 102, page 80, clause 6.9

"Request sent by an initiator and application client to a target's task manager:"

The request is from application client to task manager. Don't mention initiator or target.

Compaq 59) description not established (Unprocessed) [101]
PDF page 103, page 81, clause 6.9

"Response from task manager to initiator and application client:" Don't mention initiator

Compaq 60) description not established (Unprocessed) [102]
PDF page 103, page 81, clause 6.9

"Since the nexus may not uniquely identify the transaction,"

Does this mean "Nexus" in each of the 4 steps can change? Or just that the confirmation nexus may be I_T_L rather than I_T_L_Q?

The second sentence implies that I_T vs I_T_L is not a problem.

Compaq 61) description not established (Unprocessed) [103]
PDF page 103, page 81, clause 6.9

Last paragraph: change initiator to application client.

Compaq 62) description not established (Unprocessed) [104]
PDF page 103, page 81, clause 6.9

Change the name of the confirmation from "Received Function-Executed" to "Received Task Management Function Executed" to match the response called "Task Management Function Executed".

Also change in 6.10 item 4, and at top of 6.9.

Compaq 63) description not established (Unprocessed) [105]
PDF page 115, page 93, clause A.1

Delete

"There needs to be a clear understanding of what SCSI identifiers and names are and how those relate to the objects defined in this standard and SCSI protocol standards."

Compaq 64) description not established (Unprocessed) [106]
PDF page 115, page 93, clause A.2

Table 2 in 4.10 The nexus object defines this better than A.2. Remove A.2.

Compaq 65) description not established (Unprocessed) [107]
PDF page 115, page 93, clause A.1

Sort the a)-e) list in a more logical order - the logical unit as a), then the ports, then the devices, for example.

Compaq 66) description not established (Unprocessed) [108]
PDF page 116, page 94, clause A.3, Table A.2

The text mentions "this standard or SPC-2" but the table says:

"b There are no names currently defined in this standard."

"this standard" should be "this standard or SPC-2" to match the intro text.

But that's not correct - SPC-3 defines the logical unit name. Refer to SPC-3 for that cell.

Compaq 67) description not established (Unprocessed) [109]
PDF page 116, page 94, clause A.3

"packetized transfers" is not used in SPI-4; use "information unit transfers"

Compaq 68) description not established (Unprocessed) [110]
PDF page 116, page 94, clause A.3, Table A.3

"4 bits" doesn't match note a or the description in the next table, which implies "16 bits" should be used.

Compaq 69) description not established (Unprocessed) [111]
PDF page 116, page 94, clause A.3, clause Table, clause and

Change max to maximum

Compaq 70) description not established (Unprocessed) [112]
PDF page 117, page 95, clause A.3, Table A.4, clause and

Add dash in "EUI 64"

Compaq 71) description not established (Unprocessed) [113]
PDF page 117, page 95, clause A.3

Table A.5 Object name size for each protocol

Table A.7 Object name format for each protocol

Change "initiator name" to "initiator device" and "target name" to "target device". The table header already refers to "name".

Compaq 72) description not established (Unprocessed) [114]
PDF page 118, page 96, clause Table

The Logical unit name row is not correct.

This is protocol-independent and is always the Device Identification VPD page name (see SPC-2).

SBP-3 "as specified in this standard" makes no sense.

4. Congruent Software, Inc.

Congruent Software, Inc. principle representative Peter Johansson submitted a No vote with the following comments.

Congruent 1) Establishing CA/ACA always depends on TST (Unresolved) [115]

PDF page 87, page 65, 5.8.1.2, table 24

The row that describes $QErr = 1$ should distinguish between $TST = 0$ and $TST = 1$. In the latter case, there's a separate task set for each initiator and an event that aborts one initiator's task set should not affect the other initiators' task sets. Also, this table row is in apparent contradiction with Table 23 footnote c.

Congruent 2) Implicit Control Mode Page (Unprocessed) [116]

No page specified

I am at a loss to suggest the appropriate home in SAM-2 for this new feature, but I believe that SAM-2 should require that all SCSI transport protocols (e.g., FCP, SBP, SPI etc.) define an "implicit" Control mode page. The implicit Control mode page would serve two purposes: a) it would document all the control mode values in effect for a device that does not implement the Control mode page and b) it would profile and draw the implementer's attention to control mode values or combinations of values that, in the context of the SCSI transport protocol, are nonsensical or ill-advised. Although one could argue that SPC-3 could also be home to such a requirement, I think the requirement is architectural in nature and better served by inclusion within SAM-2.

5. EMC Corp.

EMC Corp. alternate representative David Black submitted a Yes vote with the following comments.

EMC 1) Peculiar definition of 'protocol' (Accepted, Editorial) [117]

PDF page 31, page 9, clause 3.1.76

3.1.76 protocol: The requirements governing the content and exchange of information passed between distributed objects through the service delivery subsystem.

That's a peculiar definition, equating "protocol" to a set of "requirements". Borrowing from Peterson and Davie's book, an alternate possibility is: A specification and/or implementation of an interface between entities running on different nodes[machines?] as well as the communication service that those entities provide.

Editor's Note: Change the cited definition to:

3.1.76 protocol: [A specification and/or implementation of the](#) requirements governing the content and exchange of information passed between distributed objects through the service delivery subsystem.

EMC 2) Does task manager sequence tasks? (Accepted, Editorial) [118]

PDF page 43, page 21, clause 3.1.132

3.1.132 task manager: A server within a logical unit that processes task management functions.

That seems inconsistent with the statement in Section 4.8 on p.29 that "The task manager controls the sequencing of one or more tasks within a logical unit." as tasks (3.1.125) are not in general task management functions (3.1.129).

Editor's Note: Change the cited definition to:

3.1.132 task manager: A server within a logical unit that [controls the sequencing of one or more tasks and](#) processes task management functions.

EMC 3) description not established (Unprocessed) [119]

PDF page 45, page 23, clause 4.5

A SCSI domain is composed of at least one SCSI device, at least one target port and at least one initiator port interconnected by a service delivery subsystem (see figure 9).

The "at least one" language is inconsistent with the diagonal stripe shading of the SCSI Target Port and SCSI Initiator Port boxes in Figure 9.

EMC 4) Is the service delivery subsystem anything more than the interconnect subsystem? (Unresolved) [120]

PDF page 45, page 23, clause 4.6

The service delivery subsystem connects SCSI ports (see 3.1.94) and is composed of an interconnect subsystem (see figure 10).

What is the point of introducing the concept/term "interconnect subsystem" if it is identical to service delivery subsystem?

EMC 5) description not established (Unprocessed) [121]
PDF page 55, page 33, clause 4.11.3

The REPORT LUNS commands (see SPC-2) shall be accepted by logical unit 0 from any SCSI target port and shall return the logical unit inventory available via that SCSI target port.

I believe it to be the case that the logical unit inventory may vary by SCSI target port. If correct, that would be a useful clarification to add to this text. This comment also applies to the corresponding text in 4.11.5.

EMC 6) description not established (Unprocessed) [122]
PDF page 58, page 36, clause 4.11.6

However, the methods available to application clients to distinguish between the configuration shown in figure 20 and the configuration shown in figure 19 are beyond the scope of the SCSI family of standards.

I would have thought that in a simple case, each Initiator Port in Figure 19 would discover that it can communicate with two Target Ports, whereas each Initiator Port in Figure 20 would discover that it can communicate with only one Target Port. So, I guess this is a statement that discovery is outside the scope of the SCSI family of standards, which would be useful to state explicitly.

EMC 7) description not established (Unprocessed) [123]
PDF page 66, page 44, clause 4.13.2

The byte numbering in Table 15 is not consistent with Tables 12-14.

EMC 8) 'deliver' s/b 'delivery' (Accepted, Editorial) [124]
PDF page 68, page 46, clause 4.14

Physical interconnect layer: Comprised of the services, signaling mechanism and interconnect subsystem needed for the physical transfer of data from sender to receiver. In the SCSI model, the physical interconnect layer is known as the service **deliver** subsystem.

Typo in last line: "deliver" --> "delivery".

EMC 9) description not established (Unprocessed) [125]
PDF page 73, page 51, clause 5.2.1

For all commands, if the logical unit detects an invalid parameter in the CDB, then the logical unit shall complete the command without altering the medium.

"medium" is not a defined term in Section 3, perhaps it should be added rather than changing the above text to use "media information". This sentence seems a little narrow, as I think one would want to exclude other effects (e.g., changing which media is loaded in a removable media device) in this situation.

EMC 10) Typo? 'ACA' s/b 'CA' (Accepted, Editorial) [126]

PDF page 74, page 52, clause 5.2.3

If the NACA bit is set to one but the logical unit does not support ACA, the logical unit shall complete the command with a CHECK CONDITION status, sense key of ILLEGAL REQUEST, an additional sense code of INVALID FIELD IN CDB and establish a CA condition. The requirements for handling the resulting [ACA](#) condition shall be in accordance with the supported bit value.

How does a logical unit that "does not support ACA" nonetheless get into a "resulting ACA condition"?? Was "resulting CA condition" intended?

Editor's Note: Change:

The requirements for handling the resulting ACA condition shall be in accordance with the supported bit value.

to:

The requirements for handling the resulting [CA](#) condition shall [be as described in 5.8.1](#).

EMC 11) description not established (Unprocessed) [127]

PDF page 79, page 57, clause 5.4.3.1

For any specific data transfer SCSI protocol service request, the Byte Count Requested by Device Server is less than or equal to the combination of Application Client Buffer Size minus the Application Client Buffer Offset.

Should that "is" be a "shall be" with a discussion of the error case in which the sentence is false?

EMC 12) Can multiple Send Data Ins be active concurrently? (Accepted, Editorial) [128]

PDF page 80, page 58, clause 5.4.3.1

The LLP confirmed services specified in 5.4.3.2 and 5.4.3.3 are used by the device server to request the transfer of command data to or from the application client. The initiator SCSI protocol service interactions are unspecified.

If more than one Send Data In or more than one Receive Data Out service is active for a single command at the same time, the confirmations lack the ability to specify which of the multiple services completed. If this was intended, its implications should be discussed. If this was not intended, some sort of optional argument should be added to match confirmations with service invocations.

Editor's Note: Add the following new paragraph at the end of 5.4.3.1:

[The model provides only for the transfer phases to be sequential. Provision for overlapping transfer phases is outside the scope of this standard.](#)

EMC 13) Clarify TST and QERR definitions (Unresolved) [129]

PDF page 87, page 65, clause 5.8.1.2

When a CA or ACA condition is established, tasks in the dormant and enabled task states (see 7.4) shall either be aborted or blocked based on the contents of the TST and QERR field in the Control mode page (see SPC-2) as shown in table 24.

In addition to the detailed specification of each case, a high level summary of the functional meaning of each TST and QERR value would be helpful. (e.g., TST value of 001b means that task set actions such as CA or ACA estab-

ishment are not to affect tasks from other initiators, or something like that). It's hard to puzzle out the meaning of these individual values from the detailed descriptions in Table 24. TST also shows up in Tables 28 and 29, and hence an explanation of it beforehand will help.

Editor's Note: The May CAP working group agreed to add one sentence descriptions of TST and QERR fields to the end of the cited paragraph complete with one cross reference to SPC-2 for **each** of the field names. Resolution of this comment will not be complete until the new text is included here.

EMC 14) description not established (Unprocessed) [130]
PDF page 90, page 68, clause 5.8.1.5

initiator when CA or ACA is in effect

Footnote c should be extracted from Tables 28 and 29 and added to the text at the beginning of Section 5.8.1.5 for clarity.

EMC 15) Eliminate defeatism (Accepted, Editorial) [131]
PDF page 94, page 72, clause 5.8.4.2

NOTE 11 - A SCSI device that is capable of producing asynchronous event reports at initialization time should provide means to defeat these reports.

"disable production of" might be a better phrase than "defeat".

Editor's Note: To SCSIfy this, change to 'disable generation of'.

EMC 16) Update iSCSI reference (Accepted, Editorial) [132]
PDF page 118, page 96, clause A.4.4

It should be -12 by the time this comment reaches the editor. This should also mention that IETF will eventually issue iSCSI as an RFC.

6. Exabyte Corp.

Exabyte Corp. principle representative Joe Breher submitted a Yes vote with the following comments.

Exabyte 1) INCITS not NCITS (Accepted, Editorial) [133]
PDF page 3, page iii, Editorial

"National Committee for Information Technology Standards"
s/b
InterNational Committee for Information Technology Standards

Exabyte 2) description not established (Unprocessed) [134]
PDF page 21, page xxiii, Editorial

"At the time of it approved this standard, INCITS had the following members:"

suggested text:

At the time of approval of this standard, INCITS had the following members:

Exabyte 3) description not established (Unprocessed) [135]
PDF page 23, page 1, clause 1.1, 1st sentence, Editorial

"The set of SCSI standards consists of this standard and the SCSI implementation standards described in 1.2."

s/b

The set of SCSI standards consists of this standard and the SCSI implementation standards described in 1.3.

Exabyte 4) description not established (Unprocessed) [136]
PDF page 23, page 1, clause 1.2, figure 1, Editorial

Hard to discern arrow styles

Suggested change

Use dashed or dotted arrows for wither Generic Requirements or Implementation Requirements.

Exabyte 5) description not established (Unprocessed) [137]
PDF page 29, page 7, clause 3.1.20, Editorial

"3.1.20 Control mode page: The Control mode page that identifies..."

s/b

3.1.20 Control mode page: The mode page that identifies...

Exabyte 6) description not established (Unprocessed) [138]
PDF page 29, page 7, clause 3.1.26, Technical

"3.1.26 device server: An object within the logical unit that processes SCSI tasks according to the requirements for task management described in clause 7."

s/b

3.1.26 device server: An object within the logical unit that processes SCSI commands according to the requirements for task management described in clause 7.

discussion:

This one may be controversial. There are several areas of the specification that indicate that the device server has knowledge of all the tasks in the task set, and there are other areas that indicate that it does not. This comment essentially boils down to a view of the allocation of responsibilities among the objects that compose the logical unit (e.g. the device server, and the task manager and task set).

My own view is that the device server has no knowledge of the task set - it merely works on one command at a time. The rationale for this is as follows: 1) The task management rules are independent of device type. 2) The task manager is already intricately coupled with the task set. To tightly couple another object seems problematic from an evolutionary standpoint. 3) The device server encapsulates all device type specific behavior. Accordingly, it would make sense to remove any possible responsibility for universal behavior from it. 4) The device server is already a busy beaver. Accordingly, this argues for allocating a chunk of responsibility (task set management) away from him, to the task manager.

Items in the spec supporting this view:

"3.1.13 command: A request describing a unit of work to be performed by a device server."

4.3 - "An application client may request processing of a SCSI command through a request directed to the device server within a logical unit."

4.8 - "A device server is the object that processes the operations requested by the received commands."

5.2.1 - "The CDB defines the operation to be performed by the device server."

Exabyte 7) description not established (Unprocessed) [139]
PDF page 30, page 8, clause 3.1.59, Editorial

"3.1.59 logical unit: A target-resident object that implements a device model and processes SCSI commands sent by an application client."

s/b

3.1.59 logical unit: A target-resident object that processes SCSI tasks sent by an application client.

Exabyte 8) description not established (Unprocessed) [140]
PDF page 31, page 9, clause 3.1.67, Editorial

"3.1.67 name: A label of an object that is unique within a specified context and should never change (e.g., the term name and world wide identification (WWID) may be interchangeable)."

s/b

...name and world wide identifier (WWID) may be...

Exabyte 9) description not established (Unprocessed) [141]
 PDF page 32, page 10, clause 3.1.93, Editorial

"3.1.93 SCSI initiator port: A SCSI initiator device object acts as the connection between..."

s/b

3.1.93 SCSI initiator port: An object within a SCSI initiator device that acts as the connection between...

Exabyte 10) description not established (Unprocessed) [142]
 PDF page 32, page 10, clause 3.1.94, Editorial

"...SCSI port is synonymous with port and either a SCSI initiator port (see 3.1.93) or a SCSI target port (see 3.1.103)."

suggested:

...SCSI port is synonymous with port. A SCSI port is either a SCSI initiator port (see 3.1.93) or a SCSI target port (see 3.1.103).

Exabyte 11) description not established (Unprocessed) [143]
 PDF page 33, page 11, clause 3.1.115, Editorial

suggest eliminating this definition - used only in definition of 'destination device'. Also, the term 'destination device' is used only once - consider whether to use 'receiver' instead.

Exabyte 12) description not established (Unprocessed) [144]
 PDF page 34, page 12, clause 3.1.126, Technical

The way this is worded, a task abort event cannot abort a task - it is merely an indication that a task has been aborted - is this intended?

Exabyte 13) description not established (Unprocessed) [145]
 PDF page 35, page 13, clause 3.2, Editorial

Eliminate redundant entry for SSC

Exabyte 14) description not established (Unprocessed) [146]
 PDF page 37, page 15, clause 3.6.1 and figure 3, Technical

"A Preface contains zero or more Figure(s) as well as one instance of Outline or one instance of Introductory Text or one instance of Outline and one instance of Introductory Text."

discussion:

This notation is deficient. Following these rules, one would conclude from figure 8 that a logical unit without a device server, or a logical unit without a task manager are legal, as long as one of the two are present.

Exabyte 15) description not established (Unprocessed) [147]
 PDF page 42, page 20, clause 4.3, 1st sentence, Editorial

"As shown in figure 6, each SCSI target device provides device services performed by the logical units under the control of the target and task management functions performed by the task manager."

s/b

"As shown in figure 6, each SCSI target device provides device services performed by the logical units under the control of the device server and task management functions performed by the task manager."

rationale:

The target is now synonymous with target port as per 3.1.119. Target ports are not the part of the SCSI target device which performs device services.

Exabyte 16) description not established (Unprocessed) [148]
PDF page 46, page 24, clause 4.6.2, 3rd paragraph, Editorial

"The manner in which ordering constraints are established is vendor specific."

s/b

The manner in which ordering constraints are established is implementation specific.

Exabyte 17) description not established (Unprocessed) [149]
PDF page 49, page 27, clause 4.7.3, figure 13, Technical

Application client should be shaded

rationale:

Its multiplicity is 0..*, not 1..*

Exabyte 18) description not established (Unprocessed) [150]
PDF page 50, page 28, clause 4.7.6, 1st sentence, Technical

"A SCSI device name is an optional name (see 3.1.67) for a SCSI device that is world wide unique within the protocol of a SCSI domain in which the SCSI device has SCSI ports."

s/b

A SCSI device name is an optional name (see 3.1.67) for a SCSI device that is world wide unique within the protocol(s) of each SCSI domain in which the SCSI device has SCSI ports.

Exabyte 19) description not established (Unprocessed) [151]
PDF page 50, page 28, clause 4.8, item d, Editorial

"One or more task sets each may contain zero or more untagged tasks or a combination of zero or more tagged tasks and zero or more untagged tasks."

s/b

One or more task sets, each of which may contain...

Exabyte 20) description not established (Unprocessed) [152]

PDF page 51, page 29, clause 4.8, 1st paragraph below table 1, Technical

"When the single level subset format is used, the HISUP bit shall be set to one in the standard INQUIRY data (see SPC-2) returned by logical unit 0."

s/b

...the HISUP bit shall be set to zero...

discussion:

Seems backwards to me. Perhaps I just don't understand?

Exabyte 21) description not established (Unprocessed) [153]

PDF page 52, page 30, clause 4.9.1, 1st paragraph, Editorial

"A tagged task is represented by an I_T_L_Q nexus ... An untagged task is represented by an I_T_L nexus..."

s/b

A tagged task has as an attribute a specific I_T_L_Q nexus... An untagged task has as an attribute a specific I_T_L nexus...

discussion:

This is basically fallout from trying to let the term 'nexus' mean different things to different people. Perhaps the definitions should be altered as well, but it is probably too late for this doc. However, we tend to waffle word our way around the definition of nexus - is it an object? a relationship? In meetings, we agree to disagree as to whether nexii are persistent to ephemeral. The definition in 4.10 claim that a nexus *object* is a *relationship*. Experience in OOAD tells us that if we try to ascribe state or behavior to a relationship, we don't quite understand our model.

Either way, the original text allows only for a nexus being an object.

Exabyte 22) description not established (Unprocessed) [154]

PDF page 52, page 30, clause 4.9.1, 4th paragraph, Editorial

there is an orphaned parenthesis

Exabyte 32) Nexus object *is* relationship s/b *represents* (Accepted, Editorial) [155]

PDF page 52, page 30, clause 4.10, 1st sentence, Editorial

"The nexus object is a relationship..."

s/b

The nexus object represents a relationship...

See comment Exabyte 21).

Exabyte 33) description not established (Unprocessed) [156]

PDF page 53, page 31, clause 4.10, table 2, Editorial

"Identifiers that form nexus"

s/b

Identifiers that specify nexus

Exabyte 34) description not established (Unprocessed) [157]
PDF page 55, page 33, clause 4.11.3, 1st paragraph, Technical

also doc 43, PDF 56, 2nd paragraph

"Two-way communications shall be possible between all logical units and all SCSI target ports,"

s/b

Two-way communications may be possible...

rationale:

Market demand for devices that present different LU inventory from each attached port. Also conflicts with sentence in same paragraph:

"The REPORT LUNS commands (see SPC-2) shall be accepted by logical unit 0 from any SCSI target port and shall return the logical unit inventory available via that SCSI target port." (emphasis on '...THAT SCSI target port.')

Exabyte 35) description not established (Unprocessed) [158]
PDF page 55, page 33, clause 4.11.3, 1st paragraph, Technical

also doc 43, PDF 56, 2nd paragraph

"The availability of the same logical unit through multiple SCSI target ports is discovered by matching SCSI port identifier values in the INQUIRY command Device Identification VPD page (see SPC-2)."

s/b

The availability of the same logical unit through multiple SCSI target ports is discovered by matching SCSI port name values in the INQUIRY command Device Identification VPD page (see SPC-2). If port name is not supported by a given protocol, the port identifier may be a usable substitute.

Exabyte 36) description not established (Unprocessed) [159]
PDF page 57, page 35, clause 4.11.6, Editorial

"A SCSI target device may be connected to multiple domains such that a SCSI initiator port is only allowed to only communicate with logical units using a single SCSI target port."

suggested text:

A SCSI target device may be connected to multiple domains such that any given SCSI initiator port is only able to communicate with logical units using a single SCSI target port.

Exabyte 37) description not established (Unprocessed) [160]
PDF page 59-60, page 37-38, clause 4.12.1, Editorial

What does the term 'expandable' mean in this context?

Exabyte 38) description not established (Unprocessed) [161]
PDF page 59, page 37, clause 4.12.1, items a & b, Editorial

"a)... One of the SCSI devices is a dual ported SCSI bridge controller.", "b)... One of the SCSI devices contains a dual ported SCSI bridge controller."

question: One *is*, the other *contains*. Is there a difference?

Exabyte 39) description not established (Unprocessed) [162]
PDF page 63, page 41, clause 4.12.4, 1st paragraph, Editorial

and doc 42, PDF 64, 4.12.5, 1st paragraph

"All SCSI commands are allowed when the logical unit address method is selected, however logical units are only required to support mandatory SCSI commands."

question:

Does this sentence add any value? Would the doc be unchanged technically if it was removed?

Exabyte 40) description not established (Unprocessed) [163]
PDF page 63, page 41, clause 4.12.4, 1st paragraph, Editorial

and doc 42, PDF 64, 4.12.5, 1st paragraph

"Devices are not required to relay commands, from the application client, to a dependent logical unit."

s/b

Devices are not required to relay commands from the application client to a dependent logical unit.

Exabyte 41) description not established (Unprocessed) [164]
PDF page 63, page 41, clause 4.12.4, NOTE 2, Editorial

and doc 42, PDF 64, 4.12.5, Note 4

"A SCSI device may filter commands to prevent an application client from issuing (e.g., a write command to a specific logical unit)."

suggested text:

A SCSI device may filter commands to prevent any particular command (e.g. a write command) issued by an application client from reaching a specific logical unit.

Exabyte 42) description not established (Unprocessed) [165]
PDF page 64, page 42, clause 4.12.5, Editorial

"When the BUS IDENTIFIER field is greater than zero, the command shall be relayed to the logical unit zero within target (TARGET/LUN field value) located physical interconnect (BUS IDENTIFIER field value)."

suggested text:

When the BUS IDENTIFIER field is greater than zero, the command shall be relayed to the logical unit zero within the target specified in the TARGET/LUN field, which is located on the physical interconnect specified by the BUS IDENTIFIER field.

discussion:

Perhaps I just don't understand. Seems very unclear to me.

Exabyte 43) description not established (Unprocessed) [166]
PDF page 65, page 43, clause 4.12.5, 1st sentence, Technical

"The SCSI device located within the current level shall be addressed by a BUS IDENTIFIER field and a TARGET/LUN field of all zeros, also known as LUN 0 (see 4.12.2)."

s/b

The logical units located within the current level shall be addressed by a BUS IDENTIFIER field of all zeros.

question:

Is it really intended to artificially limit the number of LUs within the device at the current level to a single LU?

Exabyte 44) description not established (Unprocessed) [167]
PDF page 65, page 43, clause 4.12.6, last sentence, Editorial

"The LUN field indicates the address of the logical unit the current level shall direct the received command to."

suggested:

The LUN field indicates the address of the logical unit to which the current level shall direct the received command.

Exabyte 45) description not established (Unprocessed) [168]
PDF page 68, page 46, clause 4.14, figure 25, Editorial

Bottom layer is labeled "Interconnect Layer", text below describes "Physical interconnect layer".

suggested:

use same term both places

Exabyte 46) description not established (Unprocessed) [169]
PDF page 68, page 46, clause 4.14, 2nd paragraph below figure 25, Editorial

should end with semicolon

Exabyte 47) description not established (Unprocessed) [170]
PDF page 68, page 46, clause 4.14, 4th paragraph below figure 25, Editorial

"...is known as the service deliver subsystem."

s/b

...is known as the service delivery subsystem.

Exabyte 48) description not established (Unprocessed) [171]
PDF page 69, page 47, clause 4.14, Editorial

"SCSI Protocol service confirmation: ... may be used to convey a response from the ULP peer."

add:

...This confirmation may be a positive confirmation or a negative confirmation.

Exabyte 49) description not established (Unprocessed) [172]
PDF page 72, page 50, clause 5.1, last sentence, Technical

"If the application client issues the next command without waiting for one of the linked command complete responses, the overlapped command condition described in 5.8.2 may result."

s/b

If the logical unit receives the next command, issued by the application client before receiving one of the linked command complete responses, the overlapped command condition described in 5.8.2 shall result.

Exabyte 50) description not established (Unprocessed) [173]
PDF page 75, page 53, clause 5.3.1, Technical

"GOOD. This status indicates that the device server has successfully completed the task."

s/b

GOOD. This status indicates that the logical unit has successfully completed the task.

or

GOOD. This status indicates that the device server has successfully completed the command, or series of linked commands.

note:

This change valid only if you believe me when I say that device servers know of commands, and do not know of tasks.

Exabyte 51) description not established (Unprocessed) [174]
PDF page 75, page 53, clause 5.3.1, Editorial

"INTERMEDIATE. This status or ... unless the command is terminated with CHECK CONDITION, RESERVATION CONFLICT, TASK SET FULL, BUSY status."

s/b

INTERMEDIATE. This status or ... unless the command is terminated with CHECK CONDITION, RESERVATION CONFLICT, TASK SET FULL, or BUSY status."

Exabyte 52) description not established (Unprocessed) [175]
PDF page 76, page 54, clause 5.3.1, Editorial

"INTERMEDIATE-CONDITION MET. This status or ... unless the command is terminated with CHECK CONDITION, RESERVATION CONFLICT, TASK SET FULL, BUSY status."

s/b

INTERMEDIATE-CONDITION MET. This status or ... unless the command is terminated with CHECK CONDITION, RESERVATION CONFLICT, TASK SET FULL, or BUSY status."

Exabyte 53) description not established (Unprocessed) [176]
PDF page 78, page 56, clause 5.4.2, under Send Command Complete, Editorial

"Sense Data: If present, this argument instructs the target's service delivery port to return sense information to the initiator automatically (see 5.8.4.3)."

s/b

Sense Data: If present, this argument instructs the target port to return sense information to the initiator automatically (see 5.8.4.3).

rationale:

'service delivery port' is no longer a defined term.

Exabyte 54) description not established (Unprocessed) [177]
PDF page 81, page 59, clause 5.4.3.3 under Data-Out Delivery Service, Editorial

"Device Server Buffer: Buffer from which data is to be transferred."

s/b

Device Server Buffer: Buffer to which data is to be transferred.

Exabyte 55) description not established (Unprocessed) [178]
PDF page 81-82, page 59-60, clause 5.5, Technical

Change instances of 'device server' to 'logical unit' or even 'task manager'

rationale:

More on my potentially controversial view that device servers do not know tasks, they know merely commands. This is an attempt to reduce the complexity of the logical unit implementation. If task managers create tasks, then device servers do not need to know about tasks. If we use the term 'logical unit', it allows for either allocation of responsibilities among the internal logical unit objects. See comment 6.

Exabyte 56) description not established (Unprocessed) [179]
PDF page 83, page 61, clause 5.6.3 last paragraph, Technical

"When a device server is aborting one or more tasks from an initiator with the TASK ABORTED status..."

s/b

When a task manager is aborting one or more tasks from an initiator with the TASK ABORTED status...

rationale:

As if to underscore my argument about the device server and tasks, it is explicit elsewhere in the doc that the task manager is the entity which carries out an ABORT TASK task management function. (3.1.132, et al)

Exabyte 57) description not established (Unprocessed) [180]
PDF page 84, page 62, clause 5.7.1, item 2), Editorial

replace 'device server' with 'logical unit'

Exabyte 58) description not established (Unprocessed) [181]
PDF page 85, page 63, clause 5.7.1, item 2), Technical

"The target's service delivery port issues SCSI Command Received to the device server."

s/b

The target port issues SCSI Command Received to the logical unit.

rationale:

- a) 'service delivery port' no longer a defined term.
- b) There is no direct connection between the target port and the device server.

Exabyte 59) description not established (Unprocessed) [182]
PDF page 85, page 63, clause 5.7.1, item 2), Technical

"The device server creates a task (Task A) and enters it into the task set."

s/b

The task manager creates a task (Task A) and enters it into the task set.

or

The logical unit creates a task (Task A) and enters it into the task set.

commentary:

Alt 1 preferred. Whole comment is moot if you don't buy into my argument that device servers don't know tasks, only commands.

Exabyte 60) description not established (Unprocessed) [183]
PDF page 88-91, page 66-69, clause 5.8.1.3-5.8.1.5, tables 25, 26, 27, 28, 29, Editorial

Eliminate rightmost column in each table

rationale:

Each entry is covered by one simple rule, already explicit in the first paragraph of 5.8.1.2. The additional reinforcement of this rule in the tables only serves to obfuscate the unique information contained therein.

Exabyte 61) description not established (Unprocessed) [184]
PDF page 89, page 67, clause 5.8.1.4, table 26, note c, Technical

"The CA condition is cleared upon completion of any new task regardless of status."

s/b

The CA condition is cleared upon reception of any new task regardless of status.

explanation:

prevention of deadlock

Exabyte 62) description not established (Unprocessed) [185]
PDF page 90-91, page 68-69, clause 5.8.1.5, tables 28 and 29, notes c, Editorial

"The device server shall permit (i.e., not terminate) the processing of specified commands from initiators other than the faulted initiator while a CA condition is established. The device server shall process a PERSISTENT RESERVE OUT command with a PREEMPT AND ABORT service action (see SPC-2) from an initiator other than the faulted initiator during a CA condition."

s/b

The device server shall permit (i.e., not terminate) the processing of specified commands from initiators other than the faulted initiator while a CA condition is established. The only command that currently is defined as having this behavior is PERSISTENT RESERVE OUT command with a PREEMPT AND ABORT service action.

Exabyte 63) description not established (Unprocessed) [186]
PDF page 93, page 71, clause 5.8.3, items a) and b), Editorial

"a) The target does not support the logical unit (e.g., some targets support only one peripheral device). In response to any other command except REQUEST SENSE and INQUIRY, the target shall terminate the command with CHECK CONDITION status. Sense key and additional sense code shall be set to the values specified for the REQUEST SENSE command in item b);

b) The target supports the logical unit, but the peripheral device is not currently attached to the target. In response to an INQUIRY command the target shall return the INQUIRY data with the peripheral qualifier set to the value required in SPC-2. In response to a REQUEST SENSE command, the target shall return sense data. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to LOGICAL UNIT NOT SUPPORTED. In response to any other command except REQUEST SENSE and INQUIRY, the target shall terminate the command with CHECK CONDITION status. Sense key and additional sense code shall be set to the values specified for the REQUEST SENSE command in item b);

s/b

a) The target does not support the logical unit (e.g., some targets support only one peripheral device). In response to any other command except REQUEST SENSE and INQUIRY, the target shall terminate the command with CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to LOGICAL UNIT NOT SUPPORTED;

b) The target supports the logical unit, but the peripheral device is not currently attached to the target. In response to an INQUIRY command the target shall return the INQUIRY data with the peripheral qualifier set to the value required in SPC-2. In response to a REQUEST SENSE command, the target shall return sense data. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to LOGICAL UNIT NOT

SUPPORTED. In response to any other command except REQUEST SENSE and INQUIRY, the target shall terminate the command with CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to LOGICAL UNIT NOT SUPPORTED;

Exabyte 64) description not established (Unprocessed) [187]
PDF page 103, page 81, clause 6.9, Technical

The parameter Service Response for both the Task Management Function Executed() and Received Function-Executed() protocol services should allow for returning a value of SERVICE DELIVERY OR TARGET FAILURE.

Exabyte 65) description not established (Unprocessed) [188]
PDF page 105, page 83, clause 7.1, last paragraph, Editorial

"The requirements for task set management only apply to a task after it has been entered into a task set. A task shall be entered into a task set unless a condition exists that causes that task to be completed with a status of BUSY, RESERVATION CONFLICT, TASK SET FULL, or ACA ACTIVE. A CHECK CONDITION status caused by the detection of an overlapped command or certain protocol specific errors also should not keep a task from being entered in the task set."

This whole paragraph seems odd to me. I suppose that it is legitimate to define everything that happens to a task before it is entered into the task set as outside the scope of Task Management, but to what aim? Also, it seems false to me to say that "...an overlapped command...should not keep a task from being entered into the task set. 5.8.2 states "A task manager that detects an overlapped command shall abort all tasks for the faulted initiator in the task set and the device server shall return CHECK CONDITION status for that command." As such, an overlapped command condition does indeed prevent a task from being entered into the task set.

Of course, I'm the guy with the funny ideas about the relationship between task managers and device servers.

Exabyte 66) description not established (Unprocessed) [189]
PDF page 107, page 85, clause 7.4.6

"Assuming in each case the task completes with a status of GOOD at time C, the state observed by the application client for case 1 shall be indistinguishable from the state observed for case 2."

I think this may be misleading. This statement would be false if the initiator issues an ABORT TASK to the relevant task in between times A and B.

Exabyte 67) description not established (Unprocessed) [190]
PDF page 111-114, page 89-92, clause 7.7, Editorial

I would suggest:

1) Change "Fill, shape and line weight are used to distinguish task states and attributes are shown in table 31." to Fill, shape and line weight are used to distinguish task states and attributes.

2) eliminate table 31

3) add word indicating task state as applicable to each task icon in figures 34, 35, 36, 37

Exabyte 68) description not established (Unprocessed) [191]
PDF page 117, page 95, clause A.3, text outside table, Editorial

"See table A.6 for a list of the formation of the names for each SCSI protocol."

s/b

See table A.6 for a list of the format of the names for each SCSI protocol.

7. Hewlett Packard Co.

Hewlett Packard Co. principle representative Randy Haagens submitted a No vote with the following comments.

HP 1) That which is not SAM-2 (No Action) [192]

PDF page 23, page 1, clause 1.2, first para

There's a general discussion about "implementation standards" in this section even while acknowledging that this document itself contains certain implementation aspects (and thus can be interpreted as an implementation standard itself). I would much prefer to refer everything that's non-SAM-2 as a "SCSI protocol standard". [But that unfortunately leads to some ambiguity since SCSI transport protocols are also called "SCSI protocols". More on this in a follow-up comment.]

HP 2) description not established (Unprocessed) [193]

PDF page 23, page 1, clause 1.1

Since this document positions itself as the first document that a SCSI practitioner should read first, it is desirable to define at least what "SCSI" stands for in this clause.

HP 3) 'SCSI Protocol' s/b 'SCSI Transport Protocol' (Accepted, Editorial) [194]

PDF page 24, page 2, clause 1.3, last word in the para right after Figure 2

This calls the SCSI protocol as "transport". On a related note, I would be very pleased if we call a SCSI protocol as a "SCSI transport protocol" everywhere since the former is too vague.

HP 4) Figure 2 'Roadmap' is not a roadmap (Accepted, Editorial) [195]

PDF page 24, page 2, clause 1.3, Figure 2

Figure 2 does not represent a "roadmap" - that implies a timeline. This looks like a relationship representation?

Editor's Note: Change 'roadmap' to 'structure' in the figure 2 title.

HP 5) Figure 2 bashing (Accepted, Editorial) [196]

PDF page 24, page 2, clause 1.3, p 2

This paragraph contradicts the obvious interpretation of the picture. If the paragraph is true, the figure 2 is not representative. If figure 2 is good, the paragraph is nonsense.

Editor's Note: Resolved as described in the response to comment IBM 3).

HP 6) 'aborted command' s/b 'aborted task' (Accepted, Editorial) [197]

PDF page 28, page 6, clause 3.1.1, aborted command

Given that there's only the ABORT TASK task management function defined, it is useful to extend this to an "aborted task".

Editor's Note: Since there are no uses of 'aborted command' in SAM-2, delete the cited glossary entry.

HP 7) Current task is not protocol specific (Rejected) [198]
 PDF page 29, page 7, clause 3.1.21, last sentence

It doesn't sound right that each SCSI protocol should define protocol-specific conditions under which a task is considered a current task. Per clause 7.4.2, the transition from Enabled state to current task happens completely in the ULP domain depending on the SCSI ordering decisions - and by then it's all beyond the SCSI protocol.

Reason for Rejection: By definition, a 'current task' is a task that has a data transfer SCSI protocol service request in progress or is in the process of sending command status. This is not another task state, but function that a task may perform while in the Enabled task state. The definition of 'current task' is strictly defined in SPI and that definition motivates the existing definitions and usage in SAM-2. Since the SCSI transport protocols that packetize protocol service functions do not have the same strict definition of 'current task' found in SPI, the definition of 'current task' is absolutely protocol specific.

The reference to 7.4.2 represents a misreading of the following text:

A task in the enabled task state **may become a current task and** may complete at any time, subject to the task completion constraints specified in the Control mode page (see SPC-2).

The misreading attempts to apply the "subject to the task completion constraints specified in the Control mode page (see SPC-2)" to both the cyan text and the black text, whereas the structure of the sentence is such that it applies only to the black text.

HP 8) 'I/O system' not defined (Rejected) [199]
 PDF page 29, page 7, clause 3.1.29

What's an I/O system? "domain" is a poorly defined concept here.

Reason for Rejection: The lack of definition for 'I/O system' is intentional. The goal of SCSI is to support as wide a variety of I/O systems as possible. Therefore, anything that claims to be an I/O system probably is.

HP 9) 'device identifiers' are 'LU identifies' (Rejected) [200]
 PDF page 29, page 7, clause 3.1.24

It's unclear what is meant to be implied here - SPC-2's "device identifiers" (which are actually LU identifiers - and I prefer them being called such in this document), or identifiers of "SCSI devices"? In either case, this definition is wrong.

Reason for Rejection: As with many of the glossary entries that describe synonyms, the glossary entry for 'device identifier' allows those familiar with SAM-1 to relate to the terminology that was added in SAM-2 to accommodate SCSI devices with multiple ports.

In SAM, a device identifier would have been either an initiator identifier or a target identifier. Therefore, changing the wording to discuss logical unit identifiers would defeat the purpose of the glossary entry.

HP 10) initiator synonymous with initiator port is a poor punt (Rejected) [201]
 PDF page 30, page 8, clause 3.1.49

This is a poor way to punt the correction of the vagueness of terms in the document as a whole. The term "initiator" should be explicitly qualified throughout this document, instead of punting it to this definition. If this is true, then "initiator port" would be translated to "initiator port port".

Reason for Rejection: The glossary entry for 'initiator' allows those familiar with SAM-1 to relate to the terminology that was added in SAM-2 to accommodate SCSI devices with multiple ports. Even if all the uses of initiator

in SAM-2 were corrected to be initiator port, the glossary entry would have to remain as a guide to those familiar with past versions SCSI. Furthermore, changing all occurrences of 'initiator' to 'initiator port' will serve mostly to confuse those who have a long history with SCSI.

HP 11) Nexus is just a relationship (Rejected) [202]

PDF page 31, page 9, clause 3.1.68

This definition isn't consistent with the use of 'nexus. Nexus is simply a relationship'. The type of nexus defines what it's a relationship between.

Reason for Rejection: The definition is correct as written. In SCSI all nexus relationships involve both targets and initiators and all nexus relationships involve objects within the related targets and initiators.

HP 12) SCSI device identifier cannot be synonymous with SCSI port identifier (Unresolved) [203]

PDF page 32, page 10, clause 3.1.88

This can't be true, since a device can contain multiple ports!

Editor's Note: There are several terms in the SAM-2 glossary that are present to maintain continuity with SAM. Consideration of the issue during the May T10 meeting week led to the conclusion that the glossary is not the right place to handle this. A new annex will be written that relates SAM terms to SAM-2 terms. The resolution of this comment will not be complete until details about that annex are provided here.

HP 13) Missing 'that' (Accepted, Editorial) [204]

PDF page 32, page 10, clause 3.1.93

The first sentence is incorrect (or unclear). Define as "SCSI port thru which application client requests are issued."

Editor's Note: Defining a SCSI initiator port as a SCSI port is too circular for these purpose. However the lack of clarity is real, and due to a missing 'that'.

Change from:

A SCSI initiator device object acts as the connection between application clients and the service delivery subsystem through which requests and responses are routed.

to:

A SCSI initiator device object [that](#) acts as the connection between application clients and the service delivery subsystem through which requests and responses are routed.

HP 14) Use layering in service delivery subsystem definition (Unresolved) [205]

PDF page 33, page 11, clause 3.1.112

"service delivery subsystem" should be defined using layering terms - this is the transport fabric??

HP 15) SCSI target port definition is self referential (Rejected) [206]

PDF page 33, page 11, clause 3.1.103

Can't define a SCSI target port by saying "it's a SCSI target port"! Define as SCSI port thru which application client requests are serviced.

Reason for Rejection: The definition as written is not self referential.

A SCSI target device object that contains a task router and acts as the connection between device servers and task managers and the service delivery subsystem through which requests and responses are routed.

HP 16) Change hierarchy diagrams to UML (Deferred to SAM-3) [207]

PDF page 37, page 15, clause 3.6.1

This should be upgraded to use UML Class diagram conventions, and could then point the user to external documentation for further explanation and examples.

Editor's Note: The effort to convert the SAM-2 hierarchy models to UML is too significant to be undertaken as part of Letter Ballot comment resolution. By agreement of the CAP working group, the UML changes are being deferred to SAM-3.

HP 17) LUN is a UML attribute not an object (Deferred to SAM-3) [208]

PDF page 40, page 18, clause 4.1, p 5

According to the UML modeling logic, a LUN is not an object, it's an attribute of an LU object, or an attribute of an I_T_L nexus.

Editor's Note: See the response to comment HP 16).

HP 18) description not established (Unprocessed) [209]

PDF page 41, page 19, clause 4.2, p 2, s 2

This sentence is missing an "which"- it should read "The procedure is processed by the server which returns outputs and a procedure status."

HP 19) Incorporate 02-153 (Unresolved) [210]

PDF page 42, page 20, Figure 6 (and other figures)

Layering diagrams are many, they have apparently conflicting terminology, and they don't identify where the protocol lives. We are also very much concerned about the multiplicity of terms used to denote one object/layer in several figures. HP's T10 proposal 02-153r0 illustrates the current contradictions, and proposes consistent terminology and layering diagrams everywhere.

Editor's Note: During the May T10 meeting week, agreement was reached to defer changes to the overall model hierarchy to SAM-3 where UML modeling will be used. Some changes were agreed to Figure 6, but the editor failed to record a clear definition of those changes. This subject will have to be revisited in July.

HP 20) description not established (Unprocessed) [211]
 PDF page 45, page 23, Figure 10 in clause 4.6

The service delivery subsystem model is incomplete. There are other objects that comprise a service delivery subsystem such as a SCSI protocol subsystem. The picture is currently suggesting that service delivery subsystem is indeed just the interconnect subsystem. Please refer related comment HP 19).

HP 21) ORDERED task attribute is irrelevant (Deferred to SAM-3) [212]
 PDF page 46, page 24, clause 4.6.2 second para and the fourth para

Second para here describes the hazards of out-of-order responses by an example of abort. But the fourth para asserts that the SCSI architecture model does not require in-order delivery as a requirement from the service delivery subsystem. Besides, the ORDERED task attribute functionality definition in SAM-2 is completely irrelevant if ordering behavior is not required of the service delivery subsystem.

Editor's Note: The ORDERED task attribute has been a part of SAM and SCSI-2. It can be viewed as having relevance on the parallel SCSI bus because command delivery is interlocked in that transport protocol. Since the goal of SAM-2 is to be the last SAM-n that covers the parallel SCSI bus, it is appropriate to leave the ORDERED task attribute in SAM-2 but prepare to consider changes in SAM-3.

HP 22) Synchronizing client and server states (Unresolved) [213]
 PDF page 46, page 24, clause 4.6.1

This clause is somewhat unclear without an example. It is not even clear how a SCSI state change can be held off until a transport confirmation is received.

Editor's Note: Write an example based on Send Command Complete and Command Complete Received. The resolution of this comment will not be complete until the new text is included here.

HP 23) Initiator port name is a UML attribute (Deferred to SAM-3) [214]
 PDF page 47, page 25, Figure 11

The Initiator Port Name optional object shown in the hierarchy is an attribute, but not an object.

Editor's Note: See the response to comment HP 16).

HP 24) Add protocol attribute to SCSI ports (Deferred to SAM-3) [215]
 PDF page 47, page 25, Figure 11 and Figure 12

To make the point that each SCSI port can be associated with only one transport protocol, I suggest that we add the "Protocol" attribute to the SCSI ports in these two pictures.

Editor's Note: See the response to comment HP 16).

HP 25) Remove description of initiator port identifier and device name (Unresolved) [216]
 PDF page 47, page 25, clause 4.7.1, p 2-3

Why are terms being defined here? They are already defined in section 3, and these definitions are worse than those in section 3. Delete these definitions (initiator port identifier, initiator port name, initiator device name)

HP 26) No need to define target/initiator device (Deferred to SAM-3) [217]

PDF page 47, page 25, clause 4.7, p1

I maintain there is no need to define a third device role that is a "target/initiator device". This paragraph should be "A SCSI device is a SCSI target device, a SCSI initiator device, or both." Defining a "target/initiator" device as a separate object implies that there are behaviors and actions of this "target/initiator" device that are not shared by a target device or an initiator device. I can't find where this is so. In my investigation, in the case where a SCSI device acts as both, it is merely switching roles, i.e. acting as a target device, then acting as an initiator device. There is no time when commands/behaviors are exhibited that are specific to a "target/initiator device" that need to be addressed by defining a "third device type".

Editor's Note: The target/initiator device arises from the limitations of the current modeling language. It may be possible to eliminate the separate target/initiator device as part of the conversion to UML that will be undertaken in SAM-3.

HP 27) description not established (Unprocessed) [218]

PDF page 47, page 25, c4.7,p2

This paragraph is unnecessarily complicated. The last two sentences can be expressed by saying "To be functional, a SCSI domain needs to contain at least one SCSI target port and at least one SCSI initiator port."

HP 28) Figure 12 disagrees with Figure 8 (Unresolved) [219]

PDF page 48, page 26, Figure 12

This differs from the depiction of SCSI target port in Figure 8. While Figure 8 correctly does not show Target Port Name, Target Port Identifier in the object hierarchy, this one does. I consider both these as attributes than objects themselves. Similar comment for Target Device Name.

HP 29) No need to define target/initiator device (Unresolved) [220]

PDF page 48, page 26, 4.7.3

See comment HP 26).

HP 30) What is the default logical unit (Accepted, Editorial) [221]

PDF page 49, page 27, clause 4.7.5

"default logical unit" is not defined anywhere - can this be task type-sensitive?

Editor's Note: See the resolution for comment Compaq 15)

HP 31) description not established (Unprocessed) [222]

PDF page 49, page 27, clause 4.7.3

3rd para on this page "may or may not be identical"

Having both target and initiator port names identical would violate the world-wide unique property for the protocol of the domain - which is stated as a requirement in the first sentence of clause 4.7.7.

HP 32) description not established (Unprocessed) [223]
 PDF page 49, page 27, clause 4.7.4

It would be useful to add recommendations about designing port identifiers (for ex., embedding protocol-specific address is okay?), similar to the guidelines on port names in later clauses.

HP 33) description not established (Unprocessed) [224]
 PDF page 49, page 27, clause 4.7.4

The first sentence defines identifier by saying ... "is the object name". So which is it, a name or an identifier? And who defines it? SCSI or the transport?

HP 34) description not established (Unprocessed) [225]
 PDF page 50, page 28, clause 4.7.6, second para, first sentence.

Suggest s/b "include" w/ "associate".

HP 35) LUN s/b an attribute (Deferred to SAM-3) [226]
 PDF page 50, page 28, Figure 14

Logical Unit Number is more appropriate to be an attribute, not an object.

HP 36) description not established (Unprocessed) [227]
 PDF page 50, page 28, clause 4.7.6, p1, s3

device name "may be used to persistently identify a SCSI device..." Why isn't this 'may' a 'must'?

HP 37) description not established (Unprocessed) [228]
 PDF page 50, page 28, clause 4.7, General comment on this section

SAM2 defines device name and port name as optional, but is silent as to whether or not device identifier is mandatory. One of these constructs must be mandatory or how would commands be addressed to a device? SAM needs to be more explicit about it's requirements here - and the relationship of port name to identifier (one to one? one to many?) Table 2 in c4.10 seems to imply that identifiers are mandatory and must be unique, but this is never spelled out anywhere.

HP 38) description not established (Unprocessed) [229]
 PDF page 51, page 29, clause 4.8, first sentence on this page.

This sentence implies that LUN is an absolute identifier of an LU within the scope of a target device for all initiators on all ports. Suggest appending the phrase - "for a given initiator accessing via a given SCSI target port".

HP 39) description not established (Unprocessed) [230]
 PDF page 51, page 29, clause 4.8, last phrase in the last sentence in the para after Table 1.

The phrase "logical unit 0" is used in several places in the document. It would be useful to define it as a "logical unit whose LUN is zero" in the definitions section.

HP 40) description not established (Unprocessed) [231]
 PDF page 51, page 29, clause 4.8, para right after Table 1, last sentence

Should the HISUP bit be set to zero or one? SPC-2 states that HISUP set to zero would mean no hierarchical addressing of LUs, which to me implies that single level subset format must be used.

HP 41) description not established (Unprocessed) [232]
 PDF page 52, page 30, clause 4.10

This does not describe when each of the nexus objects comes into existence, and when it is destroyed (issue raised in 02-078r1). The following is suggested - I_T nexus object is instantiated upon the first successful instantiation of an I_T_L_x nexus object as indicated by the SCSI protocol layer interactions. The I_T nexus object is destroyed on receiving the "I_T Nexus loss" notification from the SCSI protocol (Rob Elliott's 02-134r0). The I_T_L nexus object is instantiated when the first valid task to the LU is received and accepted (i.e. the task enters the Dormant state) and destroyed when the corresponding I_T nexus object is destroyed. The I_T_L_Q nexus object is instantiated when the corresponding I_T_L nexus object is already instantiated (thus exists) and when a task with a tag Q is issued on the nexus. The I_T_L_Q nexus object is destroyed on the conclusion of the said task, or when the I_T_L nexus object is destroyed.

HP 42) description not established (Unprocessed) [233]
 PDF page 53, page 31, Figure 15

This picture clearly shows the ports to be in the application layer above the PSI. But the SCSI protocol layer assigns the port identifiers and port names, that seems somewhat contradictory. If indeed that's deliberate, then I suggest a Port structure in the service delivery subsystem whose identifier/name is in 1-to-1 correspondence with that of the "SCSI port".

HP 43) description not established (Unprocessed) [234]
 PDF page 53, page 31, Figure 15

As a further query: If the SCSI Ports are in the application layer as shown in this figure, then the "I_T nexus" object, which represents the relationship between the SCSI ports, must be in the application layer as well. Please confirm that it is so.

HP 44) description not established (Unprocessed) [235]
 PDF page 54, page 32, clause 4.11.1, first sentence on the page

S/b "it's" W/ "its"

HP 45) description not established (Unprocessed) [236]
 PDF page 54, page 32, clause 4.11.2, first para, second sentence

S/b "single SCSI target port ..." W/ "single physical SCSI target port" - since that's what's implied. It is currently confusing since it says a single SCSI target port's model may be in fact that of multiple SCSI target ports. Also, in such a case, would it not be appropriate to specify that the multiple (logical) SCSI ports be all part of one service delivery subsystem, hence will be serviced by one SCSI (transport) protocol?

HP 46) description not established (Unprocessed) [237]
 PDF page 54, page 32, clause 4.11.2, second para, "How a multiple port SCSI device..."

Suggest s/b "multiple port" W/ "multi-port" (as in the previous sentence). Similar comments for the title of subclause 4.11.3 (basically where the phrase is used in the adjective sense).

HP 47) description not established (Unprocessed) [238]
 PDF page 54, page 32, clause 4.11.2, p 1

The first sentence in this paragraph is redundant - it says a device with multiple ports is a device with multiple ports. The last two sentences incorrectly uses word "model" (the first sentence defines the model) Suggest rewording as "A SCSI device may contain multiple SCSI ports. A SCSI port may be addressed by one or more

SCSI identifiers." Finally, is this really meant? Can one SCSI port have multiple identifiers - what's the point in having "port identifier" in the first place?

HP 48) description not established (Unprocessed) [239]

PDF page 55, page 33, clause 4.11.3, last sentence in the first para on this page

This suggests using VPD page for port identifier comparison. Clause 8.4.4, first sentence in SPC-2 doesn't lead one to believe that the VPD page holds the identifiers of a port - it states that the identifiers of the logical unit are held in this page. S/b "port identifier" W/ "device identifier". Similar comments are applicable to similar wording in 4.11.5.

HP 49) description not established (Unprocessed) [240]

PDF page 55, page 33, clause 4.11.4, last sentence on the page

This suggests that target methods of discovering multi-ported nature of the communicating initiator is beyond any SCSI standards in the family. I think this is an overstatement, since SCSI protocols could always specify ways to construct a port identifier/name off the device identifier/name (as iSCSI does), thus making this target discovery process guaranteed by the protocol. In fact, iSCSI only exchanges device names and other protocol constructs that aid in constructing a port name by the target. So, suggest S/b "...beyond the scope of any standards in the SCSI family of standards" W/ "...left to be specified by individual SCSI protocols of the domains that the SCSI device operates in". Similar comments are applicable to a similar statement in clause 4.11.5.

HP 50) description not established (Unprocessed) [241]

PDF page 56, page 34, clause 4.11.5, p 3

?? a target port can't communicate with a target port, so why does this sentence mention "SCSI target/initiator device"? It should just say "SCSI initiator device".

HP 51) description not established (Unprocessed) [242]

PDF page 57, page 35, clause 4.11.6, p 1

What is this paragraph trying to say? A target device with multiple ports to the same SCSI domain may also restrict an initiator port to only one of those ports. So what's the point here?

HP 52) description not established (Unprocessed) [243]

PDF page 57, page 35, clause 4.11.6, p 3

There's an unstated assumption here that each initiator port has a nexus with both target ports - the text of the paragraph should clearly state that. And figure 19 doesn't represent that - it could be interpreted that one initiator port is connected to one target port, and the other initiator port is connected to the other target port, I don't think that's what's intended.

HP 53) description not established (Unprocessed) [244]

PDF page 58, page 36, clause 4.11.6, first para, last sentence

I am not sure that this assertion about the initiator's ability to distinguish the scenario in Figure 19 to that of Figure 20 is correct. It appears to me that failure to establish the I_T nexus with the Target Port in the other domain would lead one Initiator Port to confirm that indeed there are two domains.

HP 54) description not established (Unprocessed) [245]

PDF page 58, page 36, clause 4.11.6, last sentence on this page

I am not sure about this assertion either - that initiator ports can't distinguish a multi-ported target device from multiple target devices. It appears to me that if the same Logical Unit can be gotten to, initiator ports would be able to discern the multi-ported nature by using the VPD page.

HP 55) description not established (Unprocessed) [246]

PDF page 58, page 36, clause 4.11.6, p 4, last sentence

This sentence compares figures 19 and 20, but I think it means to compare 20 and 21, because 19 has two initiator devices and 20, 21 show a single initiator device.

HP 56) description not established (Unprocessed) [247]

PDF page 59, page 37, clause 4.11.7, first sentence

Editorial: "An SCSI..." and "A SCSI..." are both used in this document - with the latter appearing most of the time (and which is my preference as well).

HP 57) description not established (Unprocessed) [248]

PDF page 59, page 37, clause 4.11.7, first sentence

Again, this sentence makes a statement that isn't applicable to iSCSI - so perhaps "does not" should be substituted by "may not". Also, the NOTE1 below this para should state "may be" instead of "will be" in the last sentence.

HP 58) description not established (Unprocessed) [249]

PDF page 59, page 37, clause 4.12.1, first para after Figure 22

The sentence that starts with "A device server that ..." differs from SPC-2's phrasing of HISUP. While the wording in SAM-2 implies that only the LUs that support the dependent logical units need to set the HISUP bit to 1 (which could be only 1 in a target device), SPC-2 suggests that the HISUP bit shall be set to 1 for all LUs which support the hierarchical LUN structure (which would be all LUs in the same example target device). This sentence should ideally be removed, or the sentence in SPC-2 be repeated here.

HP 59) description not established (Unprocessed) [250]

PDF page 59, page 37, Figure 22

It appears to me that this picture is missing the Task router/relay functionality since Logical Units at multiple levels may have to route the command to the destined (and dependent) Logical Unit - for ex., as is true with Logical Unit addressing method. I suggest the box currently named "Task Manager" be renamed as "Task Manager/Task Relay". This may need additional changes in the original model of Logical Unit captured in 4.8 as well.

HP 60) description not established (Unprocessed) [251]

PDF page 60, page 38, clause 4.12, last para on this page.

This refers to "physical interconnects". I am not certain this holds in the hypothetical example of iSCSI being used in the back-end. I would recommend "physical/logical interconnects" instead.

HP 61) description not established (Unprocessed) [252]

PDF page 60, page 38, Figure 23

It is unclear why each of the SCSI devices shown in this picture have "(LUN 0)" in them. It can incorrectly lead a reader to conclude that only a single-LUN device is being referred to in this picture, which is not the case since

each may have multiple LUNs as described in the subsequent addressing methods (for ex., Table 7). Recommend dropping "(LUN 0)" in all the boxes shown in this Figure.

HP 62) description not established (Unprocessed) [253]
 PDF page 60, page 38, clause 4.12.1, first para after Figure 23

This para introduces the three addressing methods for dependent Logical Units. But it is unclear if all the methods shall be supported by a target, I assume it's not the case and it's incumbent upon the initiator to use the method that the target supports as evidenced in the REPORT LUNS response.

HP 63) description not established (Unprocessed) [254]
 PDF page 63, page 41, clause 4.12.4, first two paras

The wording doesn't seem consistent to me as far as the requirement on a "device" to relay a command to dependent LUs is concerned. The second para states that the device "shall" relay the command "if not filtered" - but in the first para, it allows that the devices pretty much can choose what is to be "filtered" - since the language doesn't seem to limit the filtering only to the "unsupported commands". As an extreme case, is an implementation allowed to discard commands based on load? I think it should clearly state that except for unsupported commands and those disallowed due to access controls, all other commands shall be relayed. That also matches the intent of the specified ASC.

HP 64) description not established (Unprocessed) [255]
 PDF page 63, page 41, clause 4.12.4, Note 2

It is unclear as to the "configuration requirements" that are being referred to here - are they outside the scope of SCSI, or are they access controls? Also, I suggest rewording the first sentence since the filters can not "prevent ...from issuing" - they can "prevent the commands from executing when issued by the application client".

HP 65) description not established (Unprocessed) [256]
 PDF page 64, page 42, clause 4.12.5, first three paras

Similar comments as on 4.12.4. The text should clearly define when to discard vs. relay a command.

HP 66) description not established (Unprocessed) [257]
 PDF page 64, page 42, clause 4.12.6, last three paras on the page

>From this discussion, it appears to me that it's illegal to have a non-zero (n+1) level addressing bytes if level n has a BUS IDENTIFIER of zero. I suggest this should be clearly called out with an appropriate CHECK CONDITION ("LOGICAL UNIT NOT SUPPORTED"?).

HP 67) description not established (Unprocessed) [258]
 PDF page 65, page 43, clause 4.12.6, second para

Two periods in the sentence.

HP 68) description not established (Unprocessed) [259]
 PDF page 66, page 44, clause 4.13.2, Table 15, Editorial

This table starts from byte "0" whereas the three previous tables start from byte "n".

HP 69) description not established (Unprocessed) [260]
 PDF page 68, page 46, clause 4.14, Figure 25

The picture shows SAM to pertain to the SCSI application layer only. I think SAM should shown vertically along the whole height of the picture.

HP 70) description not established (Unprocessed) [261]
 PDF page 68, page 46, clause 4.14, second para from the bottom of the page

While Figure 25 defines an "Interconnect Layer", this para incorrectly defines a "Physical interconnect Layer". This also incorrectly states that Physical interconnect layer is the service delivery subsystem. SDS consists of the SCSI protocol layer + interconnect layer, not just the interconnect layer. Finally, I am troubled that no distinction is being made between interconnect services that are defined by the SCSI standards (as in the case of pSCSI), vs. those that are not defined by the SCSI standards (as in the case of TCP/IP for iSCSI). At a minimum, this distinction should be called out in a sentence here.

HP 71) description not established (Unprocessed) [262]
 PDF page 69, page 47, clause 4.14

The entire reference to ULP and LLP should be dropped, to avoid using multiple names for the same layer - which the current discussion does. I would have understood if ULP is used to simply indicate a higher layer wrt the one below (generically to represent either application-to-protocol, or protocol-to-interface), but defining ULP=application seems inviting redundancy for no reason.

HP 72) description not established (Unprocessed) [263]
 PDF page 71, page 49, clause 5.1, Autosense Request

If I understand the first sentence correctly, it says that the presence of this argument itself is a request for autosense of sense data. But the last sentence is implying something different - that Autosense is a flag that can be set to yes/no. Only one (preferably the former, as this is an optional argument) idea should be consistently described.

HP 73) description not established (Unprocessed) [264]
 PDF page 71, page 49, clause 5.1, first sentence

This sentence states that the application client "invokes" the RPC. It is incorrect, in fact the SCSI protocol services described in clause 5.4 are the real "invoked" procedures. The RPC call is a mere abstraction of a bunch of protocol services to build a conceptual model. Suggest rewording to: "An application client executes a SCSI command by invoking the SCSI protocol services described in clause 5.4, the collective functionality of which is conceptually modeled in the following remote procedure call:"

HP 74) description not established (Unprocessed) [265]
 PDF page 73, page 51, clause 5.2.1, second para, first sentence

It is incorrect to require that non-zero reserved fields within the CDB shall result in CHECK CONDITION. This squarely precludes upward compatibility for implementations, as newer versions of Standards define previously-reserved fields. Instead, a sentence stating the upward compatibility challenge in doing so should be added - leaving the current (compliant) implementations to remain compliant.

HP 75) description not established (Unprocessed) [266]
 PDF page 73, page 51, clause 5.2.1

This CDB clause describes check conditions on illegal opcodes, and stipulates not altering the medium on an invalid parameter in the CDB. But this is also specified in SPC-2/3. I also notice that the illegal LUN case is not

described here (I realize that it's not strictly in CDB, but that's what the CDB is being sent to). In short, it is unclear as to the logic applied in choosing the content presented here.

HP 76) description not established (Unprocessed) [267]
PDF page 75, page 53, clause 5.2.3, first sentence in the page

This historical statement about an obsoleted bit should be removed.

HP 77) description not established (Unprocessed) [268]
PDF page 81, page 59, clause 5.5, third para

The para lists two conditions titled "The task shall exist until:". Currently, it is unclear from whose perspective (target/initiator). The sentence should be reworded to state that "The task shall exist for the device server until:".

HP 78) description not established (Unprocessed) [269]
PDF page 84, page 62, clause 5.7.1, second sentence.

Figure 29 not only does not show error or exception conditions, but also does not show data transfer protocol service usage. If they were shown, both initiator and target would have "waiting" and "working" periods during the life of the task.

HP 79) description not established (Unprocessed) [270]
PDF page 96, page 74, clause 5.8.7, first bullet (a)

Why is "logical unit reset" defined as "an action " in response to the task management request? It should be "the action".

HP 80) description not established (Unprocessed) [271]
PDF page 98, page 76, Table 30, description of task management functions

The table describes "nexus" as the argument to the task management functions. Surely, a nexus (which is a relationship) is not meant here. I suggest "nexus" be replaced with "nexus object identifier" in all this discussion.

8. IBM / Tivoli Systems

IBM / Tivoli Systems principle representative George O. Penokie submitted a No vote with the following comments.

IBM 1) description not established (Unprocessed) [272]
PDF Page 5, page v - xv, Revision Information, Editorial

All the revision information needs to be removed before this goes to public review.

IBM 2) Not just any figure, figure 2 (Accepted, Editorial) [273]
PDF Page 24, page 2, clause 1st paragraph under figure 2, Editorial

The 2nd sentence has the term figure without a reference to a specific figure. This needs to be fixed.

Editor's Note: 'The figure' s/b 'Figure 2'.

IBM 3) Figure 2 says nothing about applicability of standards and transports (Accepted, Editorial) [274]
PDF Page 24, page 2, clause 1st paragraph after figure 2, Editorial

The last sentence in this paragraph. 'It indicates the applicability of a standard to the implementation of a given transport.' makes no sense and should be rewritten or better deleted.

Editor's Note: Delete the cited sentence.

IBM 4) description not established (Unprocessed) [275]
PDF Page 25, page 3, clause 1.3, List of standards, Editorial

Delete the following standards from the list: FC-AL, FC-PH, FC-PH-3, SST, and SCC

IBM 5) description not established (Unprocessed) [276]
PDF Page 28, page 6, clause 3.1.2, Editorial

The see list should have a comma between the 4.9 and the and.

IBM 6) description not established (Unprocessed) [277]
PDF Page 28, page 6, clause 3.1.6, Editorial

There is no : after the blocked task state text.

IBM 7) description not established (Unprocessed) [278]
PDF Page 28, page 6 - 13, clause 3.1.x, Editorial

There are two formats used for references that occur at the end of the definition; one is '(see xxx)'. the other is 'See xxxx.'. The predominate one is '(See xxxx)' but only one should be used. Change the odd ones so they are all the same.

IBM 8) description not established (Unprocessed) [279]
PDF Page 29, page 7, clause 3.1.20, Editorial

This seems out of place. There is no definition of any of the multitude of other mode pages so why is this here. I say this should be deleted.

IBM 9) Protocol specific definitions of 'Current Task' (Accepted, Substantive) [280]

PDF Page 29, page 7, clause 3.1.21, Technical

The statement 'Each SCSI protocol standard shall define the protocol specific conditions under which a task is considered a current task.' is a good idea I do not believe all protocol standards define this nor am I sure it should be required. I would like the shall changed to a may or a should.

Editor's Note: Change the 'shall' in the cited sentence to 'should'.

IBM 10) description not established (Unprocessed) [281]

PDF Page 29, page 7, clause 3.2.23, Editorial

The 'See source device (3.1.115) should be changed to '(see 3.1.115).' to match other cross-references.

IBM 11) description not established (Unprocessed) [282]

PDF Page 30, page 8, clause 3.1.59, Editorial

To be consistent with the target and target port definitions the logical unit definition should state that a logical unit contains a task manager and a device server.

IBM 12) description not established (Unprocessed) [283]

PDF Page 33, page 11, clause 3.1.116, Editorial

There are many commands that contain parameters why is the INQUIRY commands defined here? I believe it should be deleted.

IBM 13) Task manager definition (Accepted, Editorial) [284]

PDF Page 34, page 12, clause 3.1.132, Editorial

The task manager processes more than just task management functions it processes all tasks within the task set. This should be changed to 'manages the placement of tasks into a task set and the movement of tasks within the task set.'

Editor's Note: The task manager definition has been changed as described in the response to comment EMC 2).

IBM 14) description not established (Unprocessed) [285]

PDF Page 37, page 15-16, clause 3.6.1, Editorial

All the capitalized words should be changed to uncapitalized words.

IBM 15) description not established (Unprocessed) [286]

PDF Page 40, page 18, clause 4.1 1st paragraph under a,b,c list 2nd to last paragraph, Editorial

There seems to be a missing comma. The statement 'on a network and the definition' should be 'on a network, and the definition'.

IBM 16) description not established (Unprocessed) [287]

PDF Page 43, page 21, clause 4.4 1st paragraph, Editorial

The term 'elements' should be replaced with 'objects'. Or the term elements needs to be defined.

IBM 17) description not established (Unprocessed) [288]
PDF Page 44, page 22, Paragraph above figure 9, Editorial

The statement ' following clauses' in not precise enough. All clauses follow this one so where does it stop. The actual clauses in question need to be explicitly listed.

IBM 18) description not established (Unprocessed) [289]
PDF Page 46, page 24, clause 4.6.1 last paragraph, Editorial

The statement '...to the server. That is, whenever...' should be replaced with '...to the server (i.e., whenever...'. A closing) should be added at the correct position.

IBM 19) description not established (Unprocessed) [290]
PDF Page 46, page 24, clause 4.6.2 3rd paragraph, Editorial

The statement 'In some cases' is redundant with the 'may' and should be deleted.

IBM 20) description not established (Unprocessed) [291]
PDF Page 46, page 24, clause 4.6.2 4th paragraph, Editorial

The statement 'In addition' contains no useful information and should be deleted.

IBM 21) description not established (Unprocessed) [292]
PDF Page 49, page 27, clause 4.7.4, Editorial

The statement 'might be' should be replaced with 'is'.

IBM 22) description not established (Unprocessed) [293]
PDF Page 51, page 29 and others(?), clause 1st paragraph before table 1, Editorial

The term 'Logical Unit Number' is used. This should be replaced with 'LUN'.

The standard should be searched and LUN used in all cases except the acronym list.

IBM 23) Do not capitalize logical unit (Accepted, Editorial) [294]
PDF Page 51, page 29 and others (?), clause 2nd paragraph after table one, Editorial

The term Logical Unit should not be capitalized. This should be corrected at all occurrences.

Editor's Note: The only other instances needing correction occur in the figure 22 title and the 5.8.3 clause title.

IBM 24) description not established (Unprocessed) [295]
PDF Page 51, page 29, Last paragraph of page, Editorial

The statement 'For convenience' should be removed as it contains no relevant information.

IBM 25) description not established (Unprocessed) [296]
PDF Page 52, page 30, clause 4.9.1 2nd paragraph, Editorial

The statement 'leaving the initiator no control over its relationship to other tasks in the task set.' is not correct. There is as much control over an untagged task as there is a tagged SIMPLE task. In other words the same rules ordering apply to both. I think the statement should be deleted.

IBM 26) description not established (Unprocessed) [297]
PDF Page 52, page 4.9.1, clause 4th paragraph, Editorial

The sentence 'An I_T_L_x nexus is in use over the interval bounded by the events specified in 5.5).' does not compute and has an orphan) at the end. I don't know what it is supposed to be saying so I cannot make a suggestion as to how to fix it.

IBM 27) description not established (Unprocessed) [298]
PDF Page 52, page 4.9.1, Last paragraph, Editorial

The statement 'By implication, therefore,' contains no useful information and therefore should be deleted.

IBM 28) description not established (Unprocessed) [299]
PDF Page 54, page 32, clause 4.11.2 1st paragraph; last sentence, Editorial

The term 'also' should be deleted.

IBM 29) description not established (Unprocessed) [300]
PDF Page 55, page 33 and ??, Near top of page, Editorial

The change bars need to be removed from this standard.

IBM 30) description not established (Unprocessed) [301]
PDF Page 57, page 35, clause 4.11.6 1st paragraph, Editorial

The statement '...is only allowed to only communicate with...' should be changed to '...is only allowed to communicate with...'.

IBM 31) description not established (Unprocessed) [302]
PDF Page 59, page 37 and ??, clause 4.11.7 and others(?), Editorial

The term 'an SCSI' should be replaced with 'a SCSI' in all cases.

IBM 32) description not established (Unprocessed) [303]
PDF Page 59, page 37, clause 4.12.1 1st paragraph, Editorial

The term 'enhanced' should be changed to 'modified'.

IBM 33) description not established (Unprocessed) [304]
PDF Page 60, page 38, clause a,b,c list after figure 23, Editorial

Item c is not correct and should be changed to ' Flat space addressing method (see xxx)'.

IBM 34) description not established (Unprocessed) [305]
PDF Page 60, page 38, clause 4.12.1 2nd to last paragraph, Editorial

The statement 'clauses below' is not only inaccurate but incorrect. The exact subclauses need to be called out.

IBM 35) description not established (Unprocessed) [306]
PDF Page 65, page 43, clause 4.13.2 1st paragraph, Editorial

The reference '(see table 6 in 4.12)' should be change to '(see table 6)' as this is the way references are done in the rest of this standard.

IBM 36) description not established (Unprocessed) [307]
PDF Page 68, page 46, clause Figure 25, Editorial

The layer called 'interconnect layer' seems to be called 'physical interconnect layer' in the text around to table. The label in the table needs to change or all the text around the table needs to be changed.

IBM 37) description not established (Unprocessed) [308]
PDF Page 71, page 49, clause 5.1 task attribute description, Editorial

The statement in ()s should have the ()s removed.

IBM 38) description not established (Unprocessed) [309]
PDF Page 73, page 51, clause 5.2.1 3rd paragraph, Editorial

There should be a description about service actions after the op code statement. Something to the effect of: In addition to CDBs having an op code they may contain a service action. A service action is an extension to an op code that provides for the definition of the command standards of more op codes.

IBM 39) description not established (Unprocessed) [310]
PDF Page 74, page 52 and ??, clause 5.2.3, Editorial

The statement 'bit of one' and 'bit of zero' should be changed to 'set to one' and 'set to zero'. Variations on this occur throughout this subclause and all need to be fixed. This should be changed in all occurrences in this standard.

IBM 40) description not established (Unprocessed) [311]
PDF Page 76, page 54, clause 5.3.1, Editorial

INTERMEDIATE-CONDITON MET description

The list of statuses needs an 'or' between the last two entries.

IBM 41) description not established (Unprocessed) [312]
PDF Page 82, page 60, clause 5.6.1 1st paragraph, Editorial

The statement 'normal successful' seems redundant. It should be changed to just 'successful'.

IBM 42) description not established (Unprocessed) [313]
PDF Page 83, page 61, clause 6.5.3, Editorial

Here are some more 'bit is xxx' statements that need to be changed to 'bit is set to xxxx'.

IBM 43) description not established (Unprocessed) [314]
PDF Page 84, page 62, clause 5.7.1 item 2, Editorial

If you are going to do this bold text stuff then it should be constant. The 'SCSI' in 'SCSI Command Received' is not bold and I assume it should be.

IBM 44) description not established (Unprocessed) [315]
PDF Page 86, page 64, clause 5.8.1.1, table 23 note g, Editorial

There is a implication that tasks from any initiator are allowed when ACA is active. This can be correct by changing the statement '...the logical unit are not allowed to...' to '...the logical unit from the faulted initiator are not allowed to...'

IBM 45) description not established (Unprocessed) [316]

PDF Page 87, page 65, clause 5.8.1.2, 1st paragraph after table 24, Editorial

The statement '...ACA conditions is established:' should be changed to '...ACA condition is established:' or '....ACA conditions are established:'.

IBM 46) description not established (Unprocessed) [317]

PDF Page 87, page 65, clause 5.8.1.2 1st paragraph, Editorial

Here is the ultimate nit. In also ever case when you state ' an ACA or CA' you state it as 'a CA or ACA'. Pick one and change to others.

IBM 47) description not established (Unprocessed) [318]

PDF Page 89, page 67, clause 5.8.1.4, table 27, Editorial

In table 27 the 'any attribute except ACA' row is the last row where in tables 26 and 25 it is in the first row. Table 27 should also have this row as the first row.

IBM 48) description not established (Unprocessed) [319]

PDF Page 90, page 68, clause 5.8.1.5, tables 28 and 29, Editorial

These two tables have a row titled 'New command permitted during CA' column. I don't understand where this comes from or how it is determined. The note does not give me any additional information.

IBM 49) description not established (Unprocessed) [320]

PDF Page 90, page 68, clause 5.8.1.5, tables 28 and 29, Editorial

These two tables have a row titled 'Attribute' where the note reference is not on the same line as the title. This needs to be fixed.

IBM 50) description not established (Unprocessed) [321]

PDF Page 92, page 70, clause 5.8.1 note 8, Technical

This note looks like a requirement not a note. This should be placed into main line text or deleted as it is statement else where.

IBM 51) description not established (Unprocessed) [322]

PDF Page 92, page 70, note 9, Editorial

There is a disguised can in the form of a could. This should be changed to a 'may'.

IBM 52) description not established (Unprocessed) [323]

PDF Page 93, page 71, clause 5.8.3 item d), Editorial

Item d) ends with the statement '...unless an ACA exist.'. So what happens if ACA does exist?

IBM 53) description not established (Unprocessed) [324]

PDF Page 93, page 71, clause 5.8.3 item c), Editorial

Item c) states '...the target shall return sense data.'. What sense data is the target supposed to return?

IBM 54) description not established (Unprocessed) [325]
PDF Page 94, page 72, clause 5.8.4.1 last paragraph, Editorial

The term 'clauses' should be change to a reference to specific subclauses.

IBM 55) description not established (Unprocessed) [326]
PDF Page 94, page 72, clause 5.8.4.2 paragraph above a.b.c list, Editorial

The statement '...one of the four events listed below has occurred:' should be changed to '...one of the following events has occurred:'.

IBM 56) description not established (Unprocessed) [327]
PDF Page 94, page 72, clause 5.8.4.2 5th paragraph after a,b,c list, Editorial

The term 'report' should be changed to 'asynchronous event report'.

IBM 57) description not established (Unprocessed) [328]
PDF Page 95, page 73, clause 5.8.4.2 last paragraph, Editorial

The term 'AER' is used or the first time in this section in the last paragraph but all the others use the full name 'asynchronous event report' you should consistently use one or the other.

IBM 58) description not established (Unprocessed) [329]
PDF Page 95, page 73, clause 5.8.5 2nd paragraph after a,b,c list, Editorial

The statement ' the following paragraphs' should be changed to 'the remaining portion of this subclause.'.

IBM 59) description not established (Unprocessed) [330]
PDF Page 96, page 74, clause 5.8.5 item b and others, Editorial

The statement 'a unit attention' should be 'an unit attention'.

IBM 60) description not established (Unprocessed) [331]
PDF Page 98, page 76, clause 6.1, Editorial

Argument descriptions list under table 30 There is no need for the list of nexuses as they are defined elsewhere. The list should be deleted.

IBM 61) description not established (Unprocessed) [332]
PDF Page 102, page 80, clause 6.8 description paragraph, last sentence, Editorial

The 'which' should be a 'that'.

IBM 62) 'older Head of Queue' not correct (Rejected) [333]
PDF Page 108, page 86, clause 7.5.1, Technical

The statement 'older Head of Queue' is not correct. It should just be 'Head or Queue'. Any head of queue commands will skip ahead of a simple even if it arrives after the simple (i.e., is newer). This is already shown in the state diagram.

Reason for Rejection: The cited wording is required to make the example in figure 35 correct.

IBM 63) description not established (Unprocessed) [334]
PDF Page 109, page 87, clause figure 33, Editorial

Some of the text is overlaying other parts of text this needs to be corrected (e.g., the S0:S2 notation is covering part of the HEAD OF QUEUE or ACA text).

IBM 64) description not established (Unprocessed) [335]
PDF Page 110, page 88, clause 7.6 transition S2:S3 and S3:S2, Technical

There is no statement here about the fact that depending on the setting of the QERR bit these tasks may be deleted. This needs to be corrected.

IBM 65) description not established (Unprocessed) [336]
PDF Page 110, page 88, clause 7.7.1 1st paragraph, Editorial

The i.e does not have a close) in it.

IBM 66) 'older Head of Queue' not correct (Unresolved) [337]
PDF Page 113, page 91, clause table 32, Technical

The statement 'older Head of Queue' is not correct. It should just be 'Head or Queue'. Any head of queue commands will skip ahead of a simple even if it arrives after the simple (i.e., is newer). This is already shown in the state diagram.

IBM 67) description not established (Unprocessed) [338]
PDF Page 117, page 95, clause A.3, table A.4 target port row, Editorial

In the last column the note reference to note e is on a separate line this should be corrected.

IBM 68) description not established (Unprocessed) [339]
PDF Page 117, page 95, clause A.3, table A.4 footnote e, Technical

This footnote references IEEE Std P1212 which is not in the document reference list.

IBM 69) description not established (Unprocessed) [340]
PDF Page 117, page 95, clause A.3, table A.5 last row, Editorial

The reference to note a is on a separate line in several places this should be corrected.

IBM 70) description not established (Unprocessed) [341]
PDF Page 118, page 95, clause A.3, table A.6 last row, Editorial

The reference to note a c is on a separate line this should be corrected.

IBM 71) description not established (Unprocessed) [342]
PDF Page 118, page 96, clause A.4.8, Technical

This references an ISO/IEC 10646 which is not in the document reference list.

9. Intel Corp.

Intel Corp. principle representative Cris Simpson submitted a No vote with the following comments.

Intel 1) description not established (Unprocessed) [343]
PDF page 24, page 2, clause 1.3

"The roadmap in figure 2 is intended to show the general applicability of the documents to one another. The figure is not intended to imply a relationship such as a hierarchy, protocol stack, or system architecture."

The phrase "applicability...to one another" signifies that some relationship exists among the pieces in fig 2, despite the denial. Clarify the relationship or remove denial.

Intel 2) description not established (Unprocessed) [344]
PDF page 24, page 2, clause 1.3

"It [figure 2] indicates the applicability of a standard to the implementation of a given transport."

This is the only place where 'transport' is used as a noun. Even if 'transport' is replaced with 'protocol', I don't know what the statement would mean. Clarify.

Intel 3) description not established (Unprocessed) [345]
PDF page 28, page 6, clause 3.1.16, Global

" events... are protocol specific."

Compound adjectives such as 'protocol-specific', 'vendor-specific', etc. must be hyphenated. (Reference: Clause 6.2.2, Style manual for the preparation of proposed American National Standards, Eighth Edition, 3/1/91, New York:ANSI)

Intel 4) description not established (Unprocessed) [346]
PDF page 41, page 19, clause 4.2

Figure 5 and "a request becomes pending when it is passed to the service delivery subsystem" indicate that the SDS consists of that stuff below the Protocol Service Interface (i.e, Protocol and Interconnect layers). But Figure 10 (pg 45) and text "service delivery subsystem ... is composed of an interconnect subsystem", as well as (pg 68) "In the SCSI model, the physical interconnect layer is known as the service deliver[TYPO] subsystem." indicates that SDS does not include the protocol layer.

Must be clarified.

Intel 5) description not established (Unprocessed) [347]
PDF page 68, page 46, clause 4.14

Remove all occurrences of 'physical' when used with 'interconnect'.

Intel 6) description not established (Unprocessed) [348]
PDF page 69, page 47, clause 4.14

Although they need not be defined, for completeness, figure 26 should indicate that protocol service requests result in interconnect service requests.

10. Maxtor Corp.

Maxtor Corp. principle representative Mark Evans submitted a Yes vote with the following comments.

Maxtor 1) description not established (Unprocessed) [349]
PDF page 23, page 1, 1.2, first paragraph

I recommend that "directly" be deleted.

Maxtor 2) description not established (Unprocessed) [350]
PDF page 24, page 2, 1.3, Common Access Method

I think this should be "SCSI device". I see several other instances where there are inconsistencies between words used in the text and their definitions. I'm sure this is the result of resolving definitions well after the text was written. I recommend that the editor do global searches on the words, "device", "target", and "initiator" to check that they are used as defined and, where they are not used as defined, make the necessary corrections.

Maxtor 3) description not established (Unprocessed) [351]
PDF page 24, page 2, 1.3, Device-Type Specific Command Sets

Though "initiator" is defined as being synonymous with "SCSI initiator port", I believe that this should be "SCSI initiator device". This is the last example I will highlight of this type, as these could be corrected during a global search as recommended above.

Maxtor 4) description not established (Unprocessed) [352]
PDF page 28, page 6, 3.1.6, blocked task state

A colon is missing here.

Maxtor 5) description not established (Unprocessed) [353]
PDF page 28, page 6, 3.1.12, code value

I don't understand this first sentence. Is this supposed to be, "One or more defined numeric values each representing an identified and described instance or condition"?

Maxtor 6) description not established (Unprocessed) [354]
PDF page 29, page 7, 3.1.21, current task

I recommend that there be a hyphen between "protocol" and "specific".

Maxtor 7) description not established (Unprocessed) [355]
PDF page 29, page 7, 3.1.27, device service request

I recommend that the commas be deleted from this sentence.

Maxtor 8) description not established (Unprocessed) [356]
PDF page 29, page 7, 3.1.30, dormant task state

I recommend that this be changed to, "When in this state a task is prevented from being processed due to the presence of certain other tasks in the task set."

Maxtor 9) description not established (Unprocessed) [357]
PDF page 29, page 7, 3.1.31, enabled task state

I recommend that this be changed to, "When in this state a task may complete at any time or is waiting to receive the next command in a series of linked commands."

Maxtor 10) description not established (Unprocessed) [358]
PDF page 29, page 7, 3.1.33, faulted initiator

I recommend that "disappears" be changed to "is cleared".

Maxtor 11) description not established (Unprocessed) [359]
PDF page 29, page 7, 3.1.34, faulted task set

I recommend that "disappears" be changed to "is cleared".

Maxtor 12) description not established (Unprocessed) [360]
PDF page 30, page 8, 3.1.38, function complete

I recommend that the word "actual" be deleted.

Maxtor 13) description not established (Unprocessed) [361]
PDF page 30, page 8, 3.1.55, in transit

I recommend changing "a remote" to "an".

Maxtor 14) description not established (Unprocessed) [362]
PDF page 30, page 8, 3.1.56, layer

I don't think "of the same rank" is clear and needs more definition.

Maxtor 15) description not established (Unprocessed) [363]
PDF page 31, page 9, 3.1.66, media information

As there is no instance of this used in the document, I recommend that this be deleted.

Maxtor 16) description not established (Unprocessed) [364]
PDF page 31, page 9, 3.1.77, protocol option

"An" should be replaced with "A".

Maxtor 17) description not established (Unprocessed) [365]
PDF page 32, page 10, 3.1.92, SCSI initiator device

"target SCSI device" should be changed to "SCSI target device".

Maxtor 18) description not established (Unprocessed) [366]
PDF page 34, page 12, 3.1.117, subsystem

I recommend that "directly" be deleted.

Maxtor 19) description not established (Unprocessed) [367]
PDF page 34, page 12, 3.1.117, subsystem

Isn't "division" meant to be "layer"?

Maxtor 20) description not established (Unprocessed) [368]
PDF page 34, page 12, 3.1.120, target device name

I recommend changing "A SCSI device name" to "The name".

Maxtor 21) description not established (Unprocessed) [369]
PDF page 34, page 12, 3.1.123, target port name

I recommend changing "A SCSI port name" to "The name".

Maxtor 22) description not established (Unprocessed) [370]
PDF page 34, page 12, 3.1.124, target/initiator device name

I recommend changing "A SCSI device name" to "The name".

Maxtor 23) description not established (Unprocessed) [371]
PDF page 34, page 12, 3.1.133, task router

I recommend that the following be added at the beginning, "A server with a SCSI target port that..."

Maxtor 24) description not established (Unprocessed) [372]
PDF page 34, page 12, 3.1.134, task set

Should this be "(i.e., queuing)"?

Maxtor 25) description not established (Unprocessed) [373]
PDF page 35, page 13, 3.1.139, upper level protocol (ULP)

There should be a hyphen between "application" and "specific".

Maxtor 26) description not established (Unprocessed) [374]
PDF page 35, page 13, 3.1.142, well known logical unit

I recommend replacing "does" with "performs".

Maxtor 27) description not established (Unprocessed) [375]
PDF page 35, page 13, 3.3.1, expected

This term could be deleted as its only used once in the document and in that case has its standard English meaning.

Maxtor 28) description not established (Unprocessed) [376]
PDF page 36, page 14, 3.3.9, reserved

I think that there should be commas after the penultimate words in the lists in the first three sentences.

Maxtor 29) description not established (Unprocessed) [377]
PDF page 36, page 14, 3.4, Editorial Conventions, fourth paragraph

Are such quantities ever not associated with events or indications? If they always are, the word "usually" should be deleted.

Maxtor 30) description not established (Unprocessed) [378]
PDF page 37, page 15, 3.5, Numeric Conventions

I recommend that the hyphens in this paragraph be replaced by the word "through".

Maxtor 31) description not established (Unprocessed) [379]
PDF page 41, page 19, 4.2

The SCSI distributed service model, second paragraph, second sentence: I recommend that this sentence be changed to read, "The procedure is processed by the server and returns outputs and a procedure status."

Maxtor 32) description not established (Unprocessed) [380]
PDF page 41, page 19, 4.2

The SCSI distributed service model, second paragraph, third sentence: I think that the commas should be removed from before and after the phrase, "via the client's service delivery subsystem".

Maxtor 33) description not established (Unprocessed) [381]
PDF page 41, page 19, 4.2

The SCSI distributed service model, second paragraph, last sentence: I think that the comma should be removed from between "reset" and "or".

Maxtor 34) description not established (Unprocessed) [382]
PDF page 41, page 19, 4.2

The SCSI distributed service model, third paragraph, last sentence: I recommend that this be changed to "from the application client's point of view".

Maxtor 35) description not established (Unprocessed) [383]
PDF page 42, page 20, 4.3

The SCSI client-server model, second paragraph, third and fourth sentences: I thought that an application client was created for a single command, a group of linked commands, or a task management function. If this is true, then I recommend that these sentences be changed to reflect this.

Maxtor 36) description not established (Unprocessed) [384]
PDF page 43, page 21, 4.4

The SCSI structural model, first paragraph, third sentence: Since a service delivery subsystem transports more than just commands and data, I recommend that the end of this sentence be changed to something like, "...commands, data, etc."

Maxtor 37) description not established (Unprocessed) [385]
PDF page 45, page 23, 4.6, The service delivery subsystem, second paragraph

This is exactly what it says in the "definitions" clause, except there "Devices" is not capitalized (which is correct). Should this be duplicated here?

Maxtor 38) description not established (Unprocessed) [386]
PDF page 48, page 26, 4.7.3

SCSI target/initiator device, first sentence: This should read, "A SCSI target/initiator device (see figure 13) contains:"

Maxtor 39) description not established (Unprocessed) [387]
PDF page 50, page 28, 4.8

Logical units, first list: I recommend that this read, "One or more task sets each of which may contain..."

Maxtor 40) description not established (Unprocessed) [388]
PDF page 52, page 30, 4.9.1

The task object, fourth paragraph, second sentence: There is an extra ")" at the end of the sentence that should be removed.

Maxtor 41) description not established (Unprocessed) [389]
PDF page 52, page 30, 4.9.1

The task object, fifth paragraph, first sentence: The words "By implication" should be removed. There is nothing implied about this. It is stated clearly as a "shall".

Maxtor 42) description not established (Unprocessed) [390]
PDF page 54, page 32, 4.11.1

SCSI port configurations, second paragraph, first sentence: The word "it's" should be changed to "its".

Maxtor 43) description not established (Unprocessed) [391]
PDF page 57, page 35, 4.11.6

SCSI initiator device view of a multiple port SCSI target device, third paragraph, second sentence: This sentence is cumbersome. I recommend that it be reworded to read, "There are three SCSI devices, one of which has two SCSI target ports, and two of which have one SCSI initiator port each."

Maxtor 44) description not established (Unprocessed) [392]
PDF page 59, page 37, 4.11.7, SCSI target device view of a multiple port SCSI initiator device

There are several instances of the phrase, "An SCSI" in this subclause. These should be replaced with, "A SCSI". These are the only instances of this in the document.

Maxtor 45) description not established (Unprocessed) [393]
PDF page 59, page 37, 4.12.1, [Model for dependent logical units] Introduction, first lettered list

There is much that confuses me in this subclause. It all begins with the introduction of this device called a "dual ported SCSI bridge controller". There is no description of what this device is. In figure 23 it appears to me that what I assume to be this device has at least six ports, two of which are input ports. Then, all of the SCSI target devices are represented as LUN 0. Where is the hierarchy? From a brief glance I think that all of the detail for this is in SCC. One way or the other, the concepts of a SCSI bridge controller and how it is addressed needs to be explained here for this subclause to make any sense at all.

Maxtor 46) description not established (Unprocessed) [394]
PDF page 69, page 47, 4.14, SCSI Protocol service response, second sentence

I think this sentence is intended to mean, "A SCSI protocol service response may be invoked to cause a reply from the LLP to be returned to the ULP peer." If this is the meaning, the sentence should be changed.

Maxtor 47) description not established (Unprocessed) [395]
PDF page 71, page 49, 5.1, Task Attribute (parenthetical clause)

I think that it's explicit that untagged tasks shall have the SIMPLE attribute. Therefore, I recommend removing the word "implicitly" from this phrase.

Maxtor 48) description not established (Unprocessed) [396]
PDF page 72, page 50, 5.1

The Execute Command remote procedure, Data-in Buffer, first sentence: I think that the information is returned by the logical unit BEFORE command completion and recommend that the sentence be change to say that.

Maxtor 49) description not established (Unprocessed) [397]
PDF page 73, page 51, 5.2.1

CDB Format, second paragraph, last sentence: I recommend that this sentence be deleted unless someone is building a prescient logical unit that knows what's in future standards.

Maxtor 50) description not established (Unprocessed) [398]
PDF page 74, page 52, Table

20 - Group Code values, note, first sentence; I recommend that this be changed to, "The format of the commands..."

Maxtor 51) description not established (Unprocessed) [399]
PDF page 74, page 52, 5.2.3

CONTROL byte, first paragraph, first sentence: I recommend that the following parenthetical phrase be added, "(except for the CDB for operation code 7F)".

Maxtor 52) description not established (Unprocessed) [400]
PDF page 74, page 52, 5.2.3

CONTROL byte, third paragraph, second and fourth sentences: I recommend that the word "indicates" be change to "specifies" in these two places.

Maxtor 53) description not established (Unprocessed) [401]
PDF page 75, page 53, 5.2.3

CONTROL byte, last sentence: I recommend that this sentence be removed as "obsolete" is a keyword indicating that an item was defined in prior SCSI standards but has been removed from this standard.

Maxtor 54) description not established (Unprocessed) [402]
PDF page 75, page 53, 5.3.1, Status codes, INTERMEDIATE, first sentence

There should be an "or" between "TASK SET FULL" and "BUSY".

Maxtor 55) description not established (Unprocessed) [403]
PDF page 76, page 54, 5.3.1

Status codes, INTERMEDIATE-CONDITION MET, first sentence: There should be an "or" between "TASK SET FULL" and "BUSY".

Maxtor 56) description not established (Unprocessed) [404]
PDF page 79, page 57, 5.4.3.1, Introduction, third paragraph, second sentence

I recommend that, "...data needs to be moved..." to "...data may be moved..."

Maxtor 57) description not established (Unprocessed) [405]
PDF page 81, page 59, 5.5

Task and command lifetimes, first sentence after the first list: I recommend that, "The application client assumes that..." to, "To the application client, ..."

Maxtor 58) description not established (Unprocessed) [406]
PDF page 102, page 80, 6.8, WAKEUP, list

I recommend that the commas be removed from these two items.

Maxtor 59) description not established (Unprocessed) [407]
PDF page 105, page 83, 7.1

Introduction to task set management, last paragraph, last sentence: This sentence is wrong and should be changed to something like, "A CHECK CONDITION status caused by the detection of an overlapped command shall prevent that command from being entered into the task set. Certain protocol specific errors should also keep a task from being entered into the task set."

Maxtor 60) description not established (Unprocessed) [408]
PDF page 116, page 94, A.3, Identifiers and names, first paragraph, first sentence:

The word "name" should be plural.

11. Ophidian Designs

Ophidian Designs principle representative Edward A. Gardner submitted a No vote with the following comments.

Ophidian 1) description not established (Unprocessed) [409]
PDF page 23, page 1, clause 1.2, figure 1

The two styles of arrows are all but indistinguishable when viewed using Acrobat reader on a laptop; gray vs. black is not enough of a distinction. Please add other style distinctions, e.g. dashed vs. solid lines, different arrowhead styles, etc.

Ophidian 2) Remove "Pending Task" (Accepted, Substantive) [410]
PDF page 31, page 9, clause 3.1.72, pending task

The term “pending task” is solely used to define the term “suspended information”; it appears nowhere else in the standard. “Pending” is used in many places to describe commands and task management functions in a manner that conflicts with the definition of “pending task”. This term should be deleted from clause 3.

Comments Ophidian 2) through Ophidian 6) discuss every occurrence of “pending” in SAM-2.

Ophidian 3) Remove "pending" from 'suspended information' def (Accepted, Editorial) [411]
PDF page 34, page 12, clause 3.1.118, suspended information

Delete the word “pending” from this definition. The important characteristic of suspended information is that it is not available, not the state of the task that it is not made available to. The use of “pending” implies that while suspended information is not available to pending tasks, it might be available to tasks in other states (i.e. current tasks), which is totally opposite to the intent of the term.

It would be better to delete this term from the glossary. “Suspended information” never appears in SAM-2. “Suspended” is used by itself in a context referring to “information” only twice in all of SAM-2, once in 7.4.3 and once in 7.4.4. Given the importance of suspended information to the task management model, a discussion of the concept is necessary in clause 7, not just a spare definition. Since the only use would be in immediately adjacent clauses, no glossary entry is needed.

Comments Ophidian 2) through Ophidian 6) discuss every occurrence of “pending” in SAM-2.

Editor’s Note: The definition of 'suspended information' will be moved to a new clause, 7.4.1.2, as follows:

- 1) The current content of 7.4.1 will be placed in a new clause, 7.4.1.1, titled "Task state nomenclature" and restructured in the form of a table with the following column headings: Task State Name, Tasks in This State May Be Called, Reference;
- 2) A new clause, 7.4.1.2, titled "Suspended Information" will contain the following text:

Any information the logical unit has or accepts for a task the blocked or dormant task state is required to be held in a condition where it is not available to the task. Such information is called, suspended information.

Ophidian 4) Pending commands, task management functions, tasks (Rejected) [412]
Numerous locations, see comment text

There are numerous uses of “pending” as a synonym for “outstanding, for example a command that has begun but not yet completed its lifetime. Most of these refer to “pending commands” or “pending task management functions”, a few refer to “pending tasks”. All conflict with 3.1.72 and need to be reconciled. Per clause 5.5, the proper word is

to say that a task “exists” during its lifetime and a command is “tendered” during its lifetime. The following lists all occurrences of “pending” in this context:

Clause 4.2, page 19, pdf page 41, three occurrences.
 Clause 4.3, page 20, pdf page 42: two occurrences.
 Clause 4.6.2, page 24, pdf page 46.
 Clause 4.7.1, page 25, pdf page 47.
 Clause 4.7.3, page 27, pdf page 49.
 Clause 4.8, page 29, pdf page 51.
 Clause 5.3.1, page 54, pdf page 76, two occurrences.
 Clause 5.8.2, page 70, pdf page 92.
 Clause 6.9, page 81, pdf page 103.

Comments Ophidian 2) through Ophidian 6) discuss every occurrence of “pending” in SAM-2.

Reason for Rejection: Since comments Ophidian 2) and Ophidian 3) have been accepted there no longer is a need to make the changes described in this comment.

Ophidian 5) Pending unit attention condition (Accepted, Editorial) [413]

PDF pages 75-76, pages 53-54, clause 5.3.1

This clause refers to a “pending” unit attention condition. That term is incorrect, it is used nowhere else in SAM-2. Per clause 5.8.5, the proper wording is to replace “is already pending” with “already exists”.

Clause 5.3.1, page 53, pdf page 75, BUSY status.
 Clause 5.3.1, page 54, pdf page 76, RESERVATION CONFLICT status.
 Clause 5.3.1, page 54, pdf page 76, TASK SET FULL status.

Comments Ophidian 2) through Ophidian 6) discuss every occurrence of “pending” in SAM-2.

Ophidian 6) Pending status and sense data (No Action) [414]

Several locations, see comment text

There are several occurrences of “pending” referring to sense data or status. These appear to be correct use of the normal English meaning of the word. No change requested.

Clause 5.8.5, page 74, pdf page 96, two occurrences.
 Clause 6.1, page 77, pdf page 99.
 Clause 6.5, page 78, pdf page 100.

Comments Ophidian 2) through Ophidian 6) discuss every occurrence of “pending” in SAM-2.

Ophidian 7) 'Tendered commands' changed to 'pending commends' (Accepted, Editorial) [415]

pdf pages 81-82, pages 59-60, clause 5.5

This clause defines “tendered” command as a command that exists or is outstanding, that is, the state of a command during its lifetime. That use conflicts with the normal English meaning of “tender”, which refers to the act of extending an offer, not the duration of its validity.

If “tendered” is retained, a glossary entry is necessary. Better would be to replace it either with “exists”, which is used for all other objects that have defined lifetimes, or with “outstanding”, which many people use to refer to the concept. See comment Ophidian 4).

Editor’s Note: The following changes will be made:

1) Add the following glossary entry:

pending command: From the point of view of the application client, the description of command between the time that the application client calls the **Send SCSI Command** SCSI protocol service and the time one of the target responses described in 5.5 is received.

2) Replace two instances of "tendered" with "pending" in 5.5.

Ophidian 8) Define the lifetime of a task management function (Accepted, Editorial) [416]
pdf pages 81-82, pages 59-60, clause 5.5

Several places in SAM-2 refer to the lifetime of a task management function, the duration between the time it is issued and the time it completes. See comment Ophidian 4). This clause should formally define the lifetime of a task management function similarly to that of a command.

Editor's Note: Add a new clause following 5.5 titled "Task management function lifetime" containing the following:

The application client assumes that the task management function is in process from the time the **Send Task Management Request** SCSI protocol service request is invoked until it receives one of the following target responses:

- a) A service response of FUNCTION COMPLETE, FUNCTION REJECTED, or SERVICE DELIVERY OR TARGET FAILURE is received for that task management function; or
- b) Notification of a unit attention condition with any additional sense code whose ADDITIONAL SENSE CODE field contains 29h (e.g., POWER ON, RESET, OR BUS DEVICE RESET OCCURRED; POWER ON OCCURRED; SCSI BUS RESET OCCURRED; BUS DEVICE RESET FUNCTION OCCURRED; DEVICE INTERNAL RESET; TRANSCIEVER MODE CHANGED TO SINGLE-ENDED; or TRANSCIEVER MODE CHANGED TO LVD).

Ophidian 9) Remove "Current Task" (Unresolved) [417]
PDF page 106, page 84, clause 7.4.2, enabled task state

The first paragraph of this clause states that a task shall not transfer data (shall not become a current task) except when it is enabled. The second paragraph states that data may be transferred when the task is not enabled. This direct contradiction needs to be eliminated or, if the words aren't intended to mean what they apparently say, additional explanation added.

Comments Ophidian 10) to Ophidian 11) discuss various symptoms of a common underlying problem. The simplest solution is to eliminate the term and concept of a "current task" from SAM-2. An alternate solution is to redefine it in terms of device behavior rather than inter-connect behavior.

Ophidian 10) Status returned while a CA or ACA is active (Unresolved) [418]
Several locations, see comment text

Clause 5.8.1 requires that status be returned in various circumstances while a CA or ACA is active. See table 26, table 27, table 28 and table 29.

Clauses 7.4 and 7.6 prohibit return of status while a CA or ACA is active. While a CA or ACA is active, other tasks in the task set (including tasks that tables 26 through 29 require to return

status) are either dormant or blocked. While a task is dormant or blocked it is prohibited from becoming a current task and returning status.

Comments Ophidian 10) to Ophidian 11) discuss various symptoms of a common underlying problem. The simplest solution is to eliminate the term and concept of a “current task” from SAM-2. An alternate solution is to redefine it in terms of device behavior rather than inter-connect behavior.

Ophidian 11) PERSISTENT RESERVE OUT while a CA or ACA is active (Unresolved) [419]
Several locations, see comment text

Clause 5.8.1 and SPC-2 require execution of certain forms of PERSISTENT RESERVE OUT (e.g. PREEMPT AND ABORT) while a CA or ACA is active, even if the command does not have the ACA attribute.

Clauses 7.4 and 7.6 prohibit execution of commands, including PERSISTENT RESERVE OUT, while a CA or ACA is active. Any newly received non-ACA task is required to remain dormant (see figure 33). While dormant the task is prohibited from becoming a current task and therefore prohibited from fetching the PERSISTENT RESERVE OUT parameter list.

Comments Ophidian 10) to Ophidian 11) discuss various symptoms of a common underlying problem. The simplest solution is to eliminate the term and concept of a “current task” from SAM-2. An alternate solution is to redefine it in terms of device behavior rather than inter-connect behavior.

12. Quantum Corp.

Quantum Corp. principle representative Paul Entzel submitted a No vote with the following comments.

Quantum 1) description not established (Unprocessed) [420]
PDF page 51, page 29, Editorial

The paragraph following table 1 indicates "When the single level subset format is used, the HISUP bit shall be set to one in the standard INQUIRY data (see SPC-2) returned by logical unit 0."

PDF page 59, the paragraph following Figure 22 states "A device server that implements the hierarchical structure for dependent logical units described in this subclause shall set the HISUP bit to one in the standard INQUIRY data returned by logical unit 0 (see SPC-2). No other references to the HISUP field are made in SAM-2.

Question, under what circumstances would HISUP be set to zero? Should requirements also be placed on other LUNs, for instance the REPORT LUNS W-LUN? Maybe these questions should be answered in SPC-3, but I could find no further explanation there.

Quantum 2) description not established (Unprocessed) [421]
PDF page 51, third paragraph from the bottom, page 29, Editorial

The last sentence in the paragraph would be clearer if the ", therefore," were removed.

Quantum 3) description not established (Unprocessed) [422]
PDF page 59, clause 4.11.7, p1 & following note, page 37, Editorial

There are six occurrences of the term "an SCSI" and one occurrence of the term "a SCSI" in these two paragraphs. The rest of the standard appears to have settled on "a SCSI".

Quantum 4) description not established (Unprocessed) [423]
PDF page 64, note 4, page 42, Editorial

The closing parenthesis in the first sentence looks to be in the wrong place.

Quantum 5) description not established (Unprocessed) [424]
PDF page 73, clause 5.2.1 p1, page 51, Editorial

Change reference from "clause 5" to "subclause 5.1".

Quantum 6) description not established (Unprocessed) [425]
PDF page 87, the list following table 24, page 65, Editorial

The sections listed in the list describe the handling of "New" tasks, yet the generic term "Tasks" is used in the list. Change the term "Tasks" to "New tasks" in both list entries to avoid confusion.

Quantum 7) description not established (Unprocessed) [426]
PDF page 101, clause 7.7.1, p1, page 79, Editorial

There is no closing parenthesis for the phrase starting "(i.e., task set management..."

13. Texas Instruments

Texas Instruments principle representative Paul Aloisi submitted a Yes vote with the following comments.

TI 1) SCSI Standards Family (Rejected) [427]

PDF page 25, page 2, clause 1.3

Related documents

Technical reports like SDV are not listed.

Reason for Rejection: SDV is more like an annex to SPI than it is like any of the categories described in the SAM Standards Documents Structure.

TI 2) Extra comma (Accepted, Editorial) [428]

PDF page 40, page 18, clause 4.1, p4, s3

There appears to be at least an extra coma.

That is, although such objects exhibit well-defined, observable behaviors, they do not exist as separate physical elements.

Editor's Note: It appears that the comma after "well-defined" is the issue. However, that comma is consistent with the form "A is the same as, identical to B." The other two commas surround an introductory phrase 'although ...' and are required as written.

The confusion here can be resolved by changing the text to:

That is, although such objects exhibit well-defined **and** observable behaviors, they do not exist as separate physical elements.

TI 3) Eliminate 90% of 'also' (Accepted, Editorial) [429]

Global

4.9.1 has several 'also' that add nothing to the meaning. 90% of the 'also' in the document can be eliminated with no change to the meaning.

Editor's Note: The editor will scan the document for 'also' and eliminate those that the editor deems to be adding no value. The editor expects that no more than 25% of the uses of 'also' will be removed, since the editor is rather fond of 'also'.

TI 4) 'However' is over used (Accepted, Editorial) [430]

Global

'However' is over used in the document, several can be eliminated without changing the meaning.

Editor's Note: The editor will scan the document for 'however' and eliminate those that the editor deems to be have no effect on the meaning. The editor expects that no more than 10% of the uses of 'however' will be removed, since the editor is rather fond of 'however'.

TI 5) 'That' is over used (Accepted, Editorial) [431]

Global

'That' is over used in the document, several can be eliminated without changing the meaning.

Editor's Note: The editor will scan the document for 'that' and eliminate those that the editor deems to be have no effect on the meaning. The editor expects that no more than 10% of the uses of 'that' will be removed, since the editor is rather fond of 'that'.

TI 6) it's s/b its (Accepted, Editorial) [432]

PDF page 54, page 32, clause 4.11.1, p1 on page, s1

PDF page 55, page 33, clause 4.11.4, p1 after f17, s1

it's should be its

TI 7) Type size wrong in Note 5 (Accepted, Editorial) [433]

PDF page 64, page 42, Note 5

The type appears to change font and/or size in the middle of the note.

TI 8) Brackets don't match (Rejected) [434]

PDF page 96, page 74, clause 5.8.5, 1st p after 1st a,b list

The brackets don't match

Reason for Rejection: The text in question is:

(i.e., option b) above).

The 'b)' in that refers to list entry b) above. The notation exactly matches the notation on the list entry and if you check your PDF you will find that the b) is a hot link to the list entry.