ENDL
TEXAS

Date: 25 June 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.
r2 Resolve all editorial comments and provide titles for all comments.

Comments to discuss in Colorado Springs

Should HISUP be 0 or 1 for single level LUNs (1 is currently specified)?

Quantum 1) Exabyte 20) HP 40) HP 58)

Sort out the service delivery subsystem:

EMC 4)	Is the service delivery subsystem anything more than the inter-connect subsystem?
HP 14)	Use layering in service delivery subsystem definition
HP 20)	Service delivery subsystem figure is incomplete
HP 42)	Figure 15 shows ports in the application layer
HP 43)	I_T nexus is in the application layer
HP 70)	Service delivery subsystem includes protocol layer

What happens to CRN?

Compaq 23) remove it Cisco 11) enhance it

Overlapped linked commands rewording to use 'shall'

Exabyte 49)

18484 Preston Road, Suite 102 PMB 178, Dallas, TX 75252 214-912-1373 972-596-2775 Fx ENDL_TX@computer.org

Comments to discuss in Colorado Springs (continued)

Should CAM be removed from SAM-2?

Cisco 2) Compaq 5)

Eliminate prescient logical units

Maxtor 49)

Nexus issues:

Exabyte 21) Task is an attribute of a nexus
HP 41) When is a nexus instantiated?

Can target ports be unable to communicate with some logical units?

Exabyte 34)

Should SAM-2 recommend Device Identification VPD page formats?

Cisco 9)

Should logical units with dependent logical units include a router object?

HP 59)

BUS IDENTIFIER 0 is a dependent logical unit dead end
HP 66)

Rewrite of example for dependent logical units to remove SCC-isms (T10/02-227):

Cisco 10) Compaq 21) Exabyte 37) Exabyte 38)
HP 60) HP 61) Maxtor 45) Exabyte 42)

Clarification of dependent logical unit command relaying/filtering specification:
HP 63)

N.B. this rewrite includes a technical change that removes the current limitation that only commands coming from the application client can be filtered. It appears to the editor that command filtering should be allowed between layers in the dependent logical unit tree as well as between the initiator and target.

New CA/ACA clauses issues:

Exabyte 60) Should the column describing what happens in the new task terminates with a CA or ACA be removed from the CA and ACA task handling tables?
Exabyte 61) Is CA cleared on receipt or completion of a command?

Define an Implicit Control Mode Page

Congruent 2)

Comments to discuss in Colorado Springs (continued)

Task management issues:

Compaq 41)	Task management & "background" tasks?
Compaq 48)	FUNCTION REJECTED should not be optional for task management
Compaq 50)	Diatribe about nexus in task management functions
Compaq 53)	Does ABORT TASK honor target port?

Annex A issues:

Cisco 16)	Should object identifier sizes be specified?
Compaq 64)	Remove A.2
Compaq 72)	Annex A logical unit names format in Table A.6 is wrong

Major new text (working group review & approval needed):

Compaq 19)	Separate logical unit numbers from dependent logical units
Ophidian 8)	Define the lifetime of a task management function
Maxtor 59)	Overlapped commands should not allow a command into the task set

Application client methods for configuration discovery are no longer outside the scope of T10 standards. (Working group review & approval of changes needed)

EMC 6)

Target methods for configuration discovery continue to be outside the scope of T10 standards. (Working group review & confirmation of comment rejections needed)

HP 49) HP 57)

Glossary goodies (working group review & approval needed):

Cisco 6)	remove 'implemented'
Exabyte 11)	remove 'source/destination device'
Exabyte 12)	'task abort event' is a has been
IBM 11)	redefine 'logical unit'
Maxtor 8)	change 'dormant task state'
Maxtor 9)	change 'enabled task state'
Maxtor 27)	remove 'expected' keyword
Other 2)	remove 'subsystem'

Other rewrites prepared by the editor:

Cisco 4)	'Application Client' s/b synonymous to a 'Class Driver' (T10/02-241)
HP 12)	SCSI device identifier cannot be synonymous with SCSI port identifier (T10/02-244)

Comments to discuss in Colorado Springs (concluded)

Remove 'current task':

Ophidian 9)	Ophidian 10)	Ophidian 11)

Requests to incorporate numbered proposals:

Compaq 1)	Incorporate 02-134
HP 19)	Incorporate 02-153

Unresolved Comments List

Rejected Comments List

Rejected Comments List (continued)

Comments With Implemenation Deferred to SAM-3

Substantive Comments Accepted As Proposed

Substantive Comments Accepted With Noted Changes

Accepted As Proposed Non-Substantive Comments List

Accepted As Proposed Non-Substantive Comments List (continued)

Accepted As Proposed Non-Substantive Comments List (continued)

Accepted With Noted Changes Non-Substantive Comments List

Accepted With Noted Changes Non-Substantive Comments List (continued)

Accepted With Noted Changes Non-Substantive Comments List (continued)

No Action Requested, No Action Taken Comments List

1. Brocade Communications Systems, Inc.

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

Brocade 1) Reference to 1.2 s/b to 1.3 (Accepted, Editorial) [1]
PDF page 23, page 1, clause 1.1, paragraph 1

The reference to clause 1.2 should be to 1.3.

Brocade 2) Delete comma (Accepted, Editorial) [2]
PDF page 23, page 1, clause 1.2, paragraph 1

The comma should be omitted.

Brocade 3) "prescribe" should be "prescribes" (Accepted, Editorial) [3]
PDF page 24, page 2, clause 1.3, Shared Command Set

"prescribe" should be "prescribes"

Brocade 4) Make -x standards versions nomenclature consistent (Accepted, Editorial) [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) Use 'status or availability' (Rejected) [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"

Reason for Rejection: The current phrasing emphasizes a key aspect of this clause, the status of the standards (which as of the time of publication of this standard was "in development"). Making the proposed change diminishes that emphasis.

Brocade 6) Delete 'that' (Rejected) [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"

Reason for Rejection: Comment Compaq 6) describes the accepted resolution for this comment.

Brocade 7) 'a' instead of 'the' (Accepted, Editorial) [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) Comma s/b semi-colon (Accepted, Editorial) [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) Application client box s/b shaded in figure 13 (Accepted, Editorial) [9]
PDF page 49, page 27, clause 4.7.3, figure 13

Application Client box should be shaded.

Brocade 10) Remove comma (Accepted, Editorial) [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) 'an SCSI' s/b 'a SCSI' (Accepted, Editorial) [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)

Editor's Note: Resolved as described in comment Quantum 3).

Brocade 14) Remove commas (Accepted, Editorial) [14]
PDF page 63, page 41, clause 4.12.4, paragraph 1

omit commas after "commands" and "client"

Editor's Note: The response to comment HP 63) removes the sentence containing the commas cited by this comment.

Brocade 15) Sentence fragment needs fixing (Accepted, Editorial) [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

Editor's Note: The response to comment HP 63) corrects the sentence fragment problem cited by this comment.

Brocade 16) Wrong font size in note 3 (Accepted, Editorial) [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

Editor's Note: You found this problem in note 3. Paul Aloisi (comment TI 7) found it in note 5.

Brocade 17) Wrong font size following note 5 (Accepted, Editorial) [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) Dangling 'to' (Accepted, Editorial) [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) 'request' s/b 'requests' (Rejected) [20]
PDF page 71, page 49, clause 5.1, Autosense Request

"request" should be "requests" in last sentence

Reason for Rejection: The sentence in question is:

> Protocols may require that the Autosense Request argument always request automatic return of the sense data.

So, is the number of the subject for the verb 'to request' singular or plural?

A word-by-word dissection of the sentence would say that the subject number if singular 'argument'. However, the introduction of the word 'always' leads to some confusion. Writing the sentence in the exact wording for the effect that the sentence intends produces, "Protocols may require that the Autosense Request arguments in all Execute Command remote procedure invocations request automatic return of the sense data." Here, the number of the subject is unequivocally plural. It is from this reading of the intention of 'always' that the usage of 'request' arises.

Since the sentence appears to be clear to all readers except one, changing to the more cumbersome wording seems nugatory. Since the Autosense Request argument will very probably be removed in SAM-3, there is little merit in further belaboring the point.

Brocade 21) Remove commas (Rejected) [21]
PDF page 75, page 53, clause 5.3.1, paragraph 1

omit commas after "status" and "MET"

Reason for Rejection: The commas set the phrase "except INTERMEDIATE or INTERMEDIATE-CONDITION MET" apart from the rest of the sentence and this is the desired effect because the phrase describes an exceptional condition that in outside the normal scope of the remainder of the sentence.

Brocade 22) Comma s/b a semi-colon (Rejected) [22]
PDF page 83, page 61, clause 5.6.3, paragraph 3

"established," should be "established;"

Reason for Rejection: Either comma or semi-colon is acceptable in instances such as the one cited.

Brocade 23) Delete 'Task' label in figure 30 leaving only 'Task A' (Accepted, Editorial) [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"?

Editor's Note: No. The "Task" label should be removed. There is no "Task", just "Task A" and the existing "Task A" label covers it.

Brocade 24) 'and' s/b 'or' (Accepted, Editorial) [24]
PDF page 87, page 65, clause 5.8.1.2, paragraph 2

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

Brocade 25) Note 7 font is too large (Accepted, Editorial) [25]
PDF page 92, page 70, clause 5.8.1.6, Note 7

font size too large?

Editor's Note: Based on the response to comment IBM 50), the text size will remain the same, but the text will no longer be a note.

Brocade 26) Closing parentheses are not bold (Accepted, Editorial) [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) Figure 2 says nothing about applicability of standards and transports (Accepted, Editorial) [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) Remove CAM from SAM-2 (Unresolved) [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. The specific changes needed to accomplish this are detailed in 02-241.

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 (No Action) [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) Punctuate a,b,c lists consistently (Accepted, Editorial) [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.

Editor's Note: See document T10/02-227 for the complete rewrite of the text cited by this comment.

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) Replace semi-colons with commas in list (Accepted, Editorial) [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) Replace semi-colons with commas in list (Accepted, Editorial) [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.

Editor's Note: If it were not for the changes being made in response to comment Ophidian 3), the changes requested here would be made. However, one of the Ophidian 3) changes is to restructure this list to form a table, with the result that there will be no list in which the changes need to be made.

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) Add semi-colons and "and" to list (Accepted, Editorial) [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) Make PDF and printed page numbers match (Accepted, Editorial) [44]

PDF page 1, page i, General

Number PDF pages to match printed pages

Compaq 3) Add periods at sentence ends (Accepted, Editorial) [45]

PDF page 22, page xxii, Introduction

Add periods on each sentence in the introduction. So sentences have periods, so do not.

Compaq 4) Make Generic Requirements arrows dashed blue lines (Accepted, Editorial) [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) Remove CAM from SAM-2 (Unresolved) [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.

Editor's Note: See comment Compaq 73) for discussion of the "Add color" comment. (Please refrain from making two comments under one comment number.)

Compaq 6) 'Control mode page' s/b 'mode page' (Accepted, Editorial) [48]

PDF page 29, page 7, clause 3.1.20

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

Compaq 7) Delete duplicate SSC acronym (Accepted, Editorial) [49]

PDF page 35, page 13, clause 3.2

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

Compaq 8) Rationalize clause header capitalization (Accepted, Editorial) [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.

Editor's Note: Capitalization will be made consistent with 4.2.

Compaq 9) Make state diagrams conventions match actual usage (Accepted, Editorial) [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) Clarify S0:S0 transition (Accepted, Editorial) [52]
PDF page 39, page 17, clause 3.6.3

Remove "It is particularly important to note that"

Editor's Note: Removing the text diminishes the clarity of the S0:S0 transition. Change the sentence containing the cited text from:

> It is particularly important to note that the actions taken whenever state S0 is entered are repeated every time this transition occurs.

to:

> The reason for a transition from S0 to itself is to specify that the actions taken whenever state S0 is entered are repeated every time the transition occurs.

Compaq 11) Change 'Initiator/Target' to 'Initiator/Target Device' in figure 6 (Accepted, Editorial) [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) Use number consistently in whole sentence (Accepted, Editorial) [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."

Editor's Note: Change using the proposed plural form.

Compaq 14) Move 'task router' description to target device clause (Rejected) [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.

Reason for Rejection: 4.7.5 is referenced by both 4.7.2 and 4.7.3.

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 that 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) Separate logical unit numbers from dependent logical units (Accepted, Editorial) [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.

Editor's Note: Restructure the existing text as follows (with no changes in content):

4.8 Logical units
4.x Logical unit numbers
4.x.1 LUN 0 address
{containing} 4.12.2
4.x.2 Single level logical unit number structure
{containing} table 1 and the text that describes it
{adjustments} fix text in 4.8 to cross reference 4.x.2
4.x.3 Eight byte logical unit number structure
{containing} 4.12.3
{adjustments} remove 4.12.1 heading
{adjustments} fix 'this subclause' wording in 4.12.1 to cross reference 4.x.3
{adjustments} add cross reference to 4.x.1 in 4.12.1
4.x.4 Logical unit addressing method
{containing} 4.12.4
4.x.5 Peripheral device addressing method
{containing} 4.12.5
4.x.6 Flat space addressing method
{containing} 4.12.6
4.x.7 Extended logical unit addressing method
{containing} 4.13.1 and 4.13.2
4.x.8 Well known logical unit addressing method
{containing} 4.13.3
4.9 Tasks

Compaq 20) Hierarchical logical unit addressing options not correct (Accepted, Editorial) [62]
PDF page 60, page 38, clause 4.12.1

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

Change:	to:
"; and c) Device type specific."	"; c) Flat space address method (see 4.12.6); or d) Device type specific."

Editor's Note: Flat space address method is the new name for device type specific. See comment IBM 33) for details of changes to be made in response to this comment.

Compaq 21) 'initiator' s/b 'SCSI initiator device' (Accepted, Editorial) [63]
PDF page 60, page 38, clause 4.12.1, Figure 23

Change "Initiator" to "Initiator port" twice

Editor's Note: Since every other box in figure 23 is a SCSI device, 'SCSI initiator device' is more appropriate than 'initiator port'. Similar changes are required in the a,b,c list that introduces figure 23. See document T10/02-227 for the complete rewrite of the text cited by this comment.

Compaq 22) Execute Command RPC is a device service per 4.3 (Rejected) [64]
PDF page 71, page 49, clause 5.1

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

Reason for Rejection: The Execute Command remote procedure cannot be referred to as a device service. Processing the results of the Execute Command remote procedure might be thought of as a device service, but even that is overly simplistic as can quickly be seen in figure 6. At best, the Execute Command remote procedure is a representation of a device service.

Comment HP 73) proposes some far superior changes for the first sentence of 5.1 and a variation of those changes will be made. It is possible that the changes made in response to comment HP 73) address the concerns that motivated this comment.

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) Buffer contents are valid on CONDITION MET status (Accepted, Substantive) [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) The task has not ended when LINKED COMMAND COMLETE is returned (Accepted, Editorial) [67]
PDF page 72, page 50, clause 5.1, LINKED COMMAND COMPLETE

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

Editor's Note: Change the first sentence in the description from:

> Logical unit responses indicating that a linked command has completed successfully.

to:

> Logical unit responses indicating that the task has not ended and that a linked command has completed successfully.

Compaq 26) Insert 'or' (Accepted, Editorial) [68]
PDF page 75, page 53, clause 5.3.1, INTERMEDIATE
PDF page 76, page 54, clause 5.3.1, INTERMEDIATE-CONDITION MET

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

Compaq 27) Reword BUSY status description (Accepted, Substantive) [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) PREVIOUS nnn STATUS unit attention clarification (Accepted, Editorial) [70]
PDF page 75, page 53, clause 5.3.1, BUSY
PDF page 76, page 54, clause 5.3.1, TASK SET FULL
PDF page 76, page 54, clause 5.3.1, 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)

Editor's Note: In normal English usage "such" means exactly the condition named previously in the sentence, thus only the named unit attention applies. This is the intended meaning of the sentence. Since this is somehow unclear, the sentences will be reworded as follows:

from: '…code of PREVIOUS BUSY STATUS unless such a unit attention…'
to: '…code of PREVIOUS BUSY STATUS unless a PREVIOUS BUSY STATUS unit attention…'

from: '…code of PREVIOUS TASK SET FULL STATUS unless such a unit attention…'
to: '…code of PREVIOUS TASK SET FULL STATUS unless a PREVIOUS TASK SET FULL STATUS unit attention…'

from: '…code of PREVIOUS RESERVATION CONFLICT STATUS unless such a unit attention…'
to: '…code of PREVIOUS RESERVATION CONFLICT STATUS unless a PREVIOUS RESERVATION CONFLICT STATUS unit attention…'

Compaq 29) Remove discussion of autosense data from CHECK CONDITION status (Rejected) [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.

Reason for Rejection: There is a substantial difference between sense data and autosense data that fully justifies mentioning autosense data in the context of the CHECK CONDITION status. Sense data is held by the device server awaiting receipt of a REQUEST SENSE command. Autosense data arrives coincident with the CHECK CONDITION status. That autosense data arrives coincident with the CHECK CONDITION status has direct bearing on the definition of the CHECK CONDITION status code, making the cited sentence more than 'helpful' here, the statement is critical.

Furthermore, the claim, 'That the status code may be accompanied in some protocols by sense data (not "autosense data")…' is flat out wrong. If the CHECK CONDITION status code is accompanied by sense data that sense data is, by definition, autosense data.

Compaq 30) State that INTERMEDIATE status is like GOOD (Accepted, Editorial) [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) Enhance table 22 (Accepted, Substantive) [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)

Editor's Note: The following changes will be made to resolve this comment and comment Compaq 32).

In 5.3.1, change from:

Status shall be sent from the logical unit to the application client whenever a command ends with a service response of TASK COMPLETE or LINKED COMMAND COMPLETE. The receipt of any status, except INTERMEDIATE or INTERMEDIATE-CONDITION MET, shall indicate that the associated task has ended.

to:

Status shall be sent from the device server to the application client whenever a command ends with a service response of TASK COMPLETE or LINKED COMMAND COMPLETE.

Add two columns to table 22, with the resulting table appearing as follows:

Table 22 — Status codes

Status Code	Status	Task Ended	Service Response
00h	GOOD	Yes	TASK COMPLETE
02h	CHECK CONDITION	Yes	TASK COMPLETE
04h	CONDITION MET	Yes	TASK COMPLETE
08h	BUSY	Yes	TASK COMPLETE
10h	INTERMEDIATE	No	LINKED COMMAND COMPLETE
14h	INTERMEDIATE-CONDITION MET	No	LINKED COMMAND COMPLETE
18h	RESERVATION CONFLICT	Yes	TASK COMPLETE
22h	Obsolete		
28h	TASK SET FULL	Yes	TASK COMPLETE
30h	ACA ACTIVE	Yes	TASK COMPLETE
40h	TASK ABORTED	Yes	TASK COMPLETE
All other codes	Reserved		

Compaq 32) Enhance table 22 (Accepted, Substantive) [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

Editor's Note: See response to comment Compaq 31).

Compaq 33) Status precedence wrong for ASC 29h (Accepted, Substantive) [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: Change from:

If more than one condition applies to a completed task, the report of a BUSY, RESERVATION CONFLICT, ACA ACTIVE or TASK SET FULL status shall take precedence over the return of any other status for that task.

to:

> If more than one condition applies to a completed task, the precedence for deciding the condition to be reported shall be:
>
> 1) Reporting a CHECK CONDITION status for any of the following unit attention conditions;
>   a) POWER ON, RESET, OR BUS DEVICE RESET OCCURRED;
>   b) POWER ON OCCURRED;
>   c) SCSI BUS RESET OCCURRED;
>   d) BUS DEVICE RESET FUNCTION OCCURRED;
>   e) DEVICE INTERNAL RESET;
>   f) TRANSCEIVER MODE CHANGED TO SINGLE-ENDED;
>   g) TRANSCEIVER MODE CHANGED TO LVD; or
>   h) I_T NEXUS LOSS OCCURRED;
> 2) Reporting a RESERVATION CONFLICT status;
> 3) Reporting a BUSY, RESERVATION CONFLICT, ACA ACTIVE or TASK SET FULL status; and
> 4) Reporting any other status.

Compaq 34) ACA ACTIVE should generate unit attention interlock (Rejected) [76]
PDF page 76, page 54, clause 5.3.1, ACA ACTIVE

Shouldn't this also generate a unit attention interlock?

Reason for Rejection: The intention of unit attention interlock is to gain the effect of ACA ACTIVE without producing an ACA condition. If an ACA condition is already present (i.e., ACA ACTIVE), then an interlocked unit attention condition is irrelevant.

Compaq 35) 'in' s/b 'into' (Accepted, Editorial) [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) 'queued command' to 'command in the task set' (Accepted, Editorial) [78]
PDF page 76, page 54, clause 5.3.1, TASK SET FULL

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

Compaq 37) Cause of RESERVATION CONFLICT is incorrectly specific (Accepted, Editorial) [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.

Editor's Note: The problem with the proposed change is that it removes the concept of the requested operation **conflicting** with an existing reservation. Change the cited sentence from:

> This status shall be returned whenever an initiator attempts to access a logical unit or an element of a logical unit that is reserved with a conflicting reservation type for another SCSI initiator.

to:

> This status shall be returned whenever an initiator attempts to access a logical unit or an element of a logical unit in a way that conflicts with an existing reservation.

Compaq 38) Remove recommended recovery for RESERVATION CONFLICT (Accepted, Substantive) [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) Make INTERMEDIATE-CONDITION MET match CONDITION MET (Accepted, Editorial) [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) There is no such thing as autosense data (Rejected) [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".

Reason for Rejection: This change is not appropriate for SAM-2. It may be appropriate to SAM-3. Regardless, making this one change comes no where near to the degree of changes needed to eliminate 'autosense data'. For example, the Autosense Request argument on the Execute Command remote procedure generated no comments of this kind.

Compaq 41) Task management & "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) Clarify list of target responses that indicate that the task has ended (Accepted, Editorial) [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; or
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) Logical unit & hard reset abort tasks (Accepted, Substantive) [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)

Editor's Note: The requested entries will be added to the list, but not with the suggested list entry letters.

Compaq 44) Clarify initiator actions that abort tasks (Accepted, Editorial) [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; or
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) LINKED COMMAND COMPLETE s/b in small caps (Accepted, Editorial) [87]
PDF page 82, page 60, clause 5.5

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

Compaq 46) Keep notes on one page (Rejected) [88]
PDF page 92, page 70, clause 5.8.2

Keep the NOTES on one page.

Reason for Rejection: There is no good reason to keep notes all on one page, especially in this instance. These notes have a full two lines of widow/orphan text on each page. The numbering and structure of the notes makes it easy to see that there must be more text on the next page. If the notes were moved to the top of the next page, it would be possible for to believe that clause 5.8.2 contains only body text, no notes.

Compaq 47) Add references to SPC-2 (Accepted, Editorial) [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.

Editor's Note: The specified changes will be made. The gratuitous comment lacking in specific suggestions for changes is covered by item i in the cited list.

Compaq 48) FUNCTION REJECTED should not be optional for task management (Unresolved) [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) Remove note 12 (Accepted, Editorial) [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.

Editor's Note: This note probably is a remnant of the times when a summary list of the task management functions appeared at about this point in the draft. Note 12 will be removed.

Compaq 50) Diatribe about nexus in task management functions (Unresolved) [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) Add cross reference to 5.6 in ABORT TASK (Accepted, Editorial) [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.

Editor's Note: The 'as described in 5.6' phrase will be added in ABORT TASK.

Compaq 52) Remove 'serviced by the logical unit' (Accepted, Editorial) [94]
PDF page 99, page 77, clause 6.3

Remove "serviced by the logical unit"

Compaq 53) Does ABORT TASK honor target port? (Unresolved) [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) Remove 'serviced by the logical unit' (Accepted, Editorial) [96]
PDF page 100, page 78, clause 6.4

Remove "serviced by the logical unit".

Compaq 55) Handling for target-wide task management functions (Accepted, Editorial) [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.

Editor's Note: Recalling the discussions during the multi-port model definitions, possibility b) was the intent. The following statement in 4.7.5 embodies that intent.

> Any task management function that is not sent to a specific logical unit shall be broadcast to all logical units known to the task router.

The following wording in 6.8 (WAKEUP) appears to produce the intended effect for that task management function.

> The wakeup function is a reset event and shall cause a hard reset in the recipient target port(s).

The only place where any confusion might occur is in 6.7 (TARGET RESET). To eliminate any confusion there, the first sentence of the TARGET RESET description will be changed from:

> Before returning a FUNCTION COMPLETE response, the target port shall perform logical unit reset functions specified in 5.8.7 for every logical unit.

to:

> Before returning a FUNCTION COMPLETE response, the target port shall cause logical unit reset functions to be performed as specified in 5.8.7 for every logical unit.

Compaq 56) Let referenced clause cover unit attention conditions for LOGICAL UNIT RESET (Accepted, Editorial) [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) Let referenced clause cover unit attention conditions for TARGET RESET (Accepted, Editorial) [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) Task manager is no longer a part of the target (Accepted, Editorial) [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) Let the application client receive the task manager response (Accepted, Editorial) [101]
PDF page 103, page 81, clause 6.9

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

Compaq 60) Why does nexus not uniquely identify a task management transaction (Accepted, Editorial) [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.

Editor's Note: Change the cited text to:

> Since the nexus used by all task management functions except ABORT TASK does not contain a task tag to uniquely identify the transaction,

Compaq 61) 'initiator' s/b 'application client' (Accepted, Editorial) [103]
PDF page 103, page 81, clause 6.9

Last paragraph: change initiator to application client.

Compaq 62) 'Received Function-Executed' s/b 'Received Task Management Function Executed' (Accepted, Editorial) [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.

Editor's Note: The three instances of 'Received Function-Executed' will be changed to 'Received Task Management Function Executed'

Compaq 63) Remove pedantic text (Accepted, Editorial) [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) Remove A.2 (Unresolved) [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) Sort list more "logically" (Rejected) [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.

Reason for Rejection: Logical order clearly is in the eye of the beholder. The current order is based on the following logic. Names and identifiers are most important for ports, where they are used first in a system's lifetime for configuration. Logical unit names and identifiers are used next, as the configuration process moves from mapping out the paths to targets to mapping out the device services available in those targets. Because of their relative newness, the names for SCSI devices are least important.

Certainly, a better justification is needed for why the logical unit should be at the top of this food chain.

Compaq 66) Clarify identifier size information in table A.2 (Accepted, Editorial) [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.

Editor's Note: The following changes will be made.

In the paragraph preceding table A.2, change from:

> The size requirements placed on identifiers and names by this standard are as shown in table A.2.

to:

> The size requirements placed on identifiers by this standard are as shown in table A.2. This standard places no requirements on the sizes of names.

In table A.2 delete table footnotes a and b and the references to them.

SPC-2 also defines the logical unit name, so the change to reference SPC-3 is unnecessary.

Compaq 67) 'packetized transfers' s/b 'information unit transfers' (Accepted, Editorial) [109]
PDF page 116, page 94, clause A.3

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

Compaq 68) SPI IDs, 4 bits or 16 bits? (Accepted, Editorial) [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.

Editor's Note: Change the table A.3 table footnote a from:

> SPI-4 uses a bit significant representation of the SCSI port identifier, therefore, the maximum number of SCSI ports is 16.

to:

> SPI-4 uses a bit significant representation of the SCSI port identifier, therefore, the maximum number of SCSI ports is 16, a value that can be represented in 4 bits.

Compaq 69) 'max' s/b 'maximum' (Accepted, Editorial) [111]
PDF page 116, page 94, clause A.3, clause Table, clause and

Change max to maximum

Compaq 70) 'EUI 64' s/b 'EUI-64' (Accepted, Editorial) [112]
PDF page 117, page 95, clause A.3, Table A.4, clause and

Add dash in "EUI 64"

Editor's Note: A total of nine occurrences of 'EUI 64' will be changed to 'EUI-64' in tables A.4 and A.6.

Compaq 71) 'name' s/b 'device' in table rows (Accepted, Editorial) [113]
PDF page 117, page 95, clause A.3, Table A.5, Table A.7

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

Compaq 72) Annex A logical unit names format in Table A.6 is wrong (Unresolved) [114]
PDF page 118, page 96, clause Table A.6

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.

Compaq 73) Add color in Figure 2 (Rejected) [115]
PDF page 24, page 2, clause 1.3, Figure 2

Add color to the picture like SBC-2.

Reason for Rejection: Figure 2 contains no complexity that requires the use of color to simplify. Therefore, the addition of color to figure 2 is a gratuitous embellishment that is inappropriate in an American National Standard.

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 (Accepted, Substantive) [116]
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.

Editor's Note: Change the cited table row from:

QERR	TST	Action
01b	n/a	All enabled and dormant tasks from all initiators shall be aborted (see 5.6).

to:

QERR	TST	Action
01b	000b	All enabled and dormant tasks from all initiators shall be aborted (see 5.6).
	001b	All enabled and dormant tasks from the faulted initiator shall be aborted (see 5.6). All tasks from initiators other than the faulted initiator shall not be affected by the establishment of this CA or ACA condition.

Congruent 2) Define an Implicit Control Mode Page (Unresolved) [117]
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) [118]
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) [119]
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) SCSI domain definition is wrong (Rejected) [120]
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.

Reason for Rejection: The purpose of the cited sentence is not to quote the contents of figure 9.

The cited sentence describes the practical/possible contents of a SCSI domain: at least one SCSI device, at least one SCSI target port and at least one SCSI initiator port. A SCSI domain that has zero SCSI devices is non functional. A SCSI domain that lacks both a SCSI initiator device and a SCSI target device is not practical because the two ends of the client/server model are not present.

However, it is possible for both the SCSI initiator device and SCSI target device to exist in a single SCSI device.

Figure 9 shows, correctly, that a single SCSI device can be solely a SCSI initiator device (having zero SCSI target ports) or solely a SCSI target device (having zero SCSI initiator ports). These concepts are dealt with in 4.7.

EMC 4) Is the service delivery subsystem anything more than the interconnect subsystem? (Unresolved) [121]
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) Logical unit 0 not the same on all target ports (Accepted, Editorial) [122]
PDF page 55, page 33, clause 4.11.3
PDF page 56, page 34, clause 4.11.5

> 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.

Editor's Note: The changes made in response to comment HP 39) will result in the cited sentence reading:

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

This seems to add clarity without getting the text bogged down in what is only a corner case.

EMC 6) Application client methods for configuration discovery are no longer outside the scope of T10 standards (Accepted, Substantive) [123]
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.

Editor's Note: When combined with the initiator's knowledge of its own ports, the target port information provided by the Device Identification gives an application client enough information to distinguish between the two cited configurations. The catch is that implementation of port Device Identification information is optional, meaning that the cited sentence cannot be removed but needs to be reworded to read:

> However, application clients may not be able to distinguish between the configuration shown in figure 20 and the configuration shown in figure 19.

EMC 7) Table 15 is different from tables 12-14 (Rejected) [124]
PDF page 66, page 44, clause 4.13.2

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

Reason for Rejection: Table 12 shows a two-byte extended logical unit address format, table 13 shows a four-byte extended logical unit address format, table 14 shows a six-byte extended logical unit address format. Each of these three extended logical unit address formats can appear anywhere in the eight-byte logical unit number field, so the tables show the byte positions as variables. Table 15 shows an eight-byte extended logical unit address format. There is only one location in the eight-byte logical unit number field that can accommodate the eight-byte extended logical unit address format, so table 15 shows the exact valued byte positions that match the one and only allowed positioning.

EMC 8) 'deliver' s/b 'delivery' (Accepted, Editorial) [125]
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) 'medium' s/b 'media information' (Accepted, Editorial) [126]
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.

Editor's Note: As proposed, 'medium' will be changed to 'media information'. No other changes will be made since the definition of 'media information' is broad enough changing removable media as a form of 'altering the media information'.

EMC 10) Typo? 'ACA' s/b 'CA' (Accepted, Editorial) [127]
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) Data transfers outside the Application Client Buffer (Rejected) [128]
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?

Reason for Rejection: In all cases, the target device specifies the parameters described in the cited sentence. If the target gets the parameters wrong, it transfers the wrong data, an error that cannot be detected by means universally available to the SCSI family of standards. In some cases, the initiator device may be able to detect the error, but that is not reliable and depending on it represents a departure from the SCSI practice of limiting the requirements placed on initiators to the bare minimum.

Since the ability to detect misbehavior is tenuous and since getting even this much of a statement of facts proved to be quite a challenge in the development of SAM-2, changing the "is" to a "shall" seems unwise and unlikely.

EMC 12) Can multiple Send Data Ins be active concurrently? (Accepted, Editorial) [129]
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 (Accepted, Editorial) [130]
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 establishment 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: Insert the following at the end of the cited paragraph:

> The TST (task set type) Control mode page field specifies the type of task set in the logical unit (see SPC-2). The QERR (queue error management) Control mode page field specifies how the device server handles blocked and dormant tasks when another task receives a CHECK CONDITION status (see SPC-2).

EMC 14) Clarify commands permitted during CA or ACA (Accepted, Editorial) [131]
PDF page 90, page 68, clause 5.8.1.5

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.

Editor's Note: Several changes will be made to address this comment as well as the issues raised by comments IBM 48) and Exabyte 62).

First, changes will be made to restructure 5.8.1.5 as follows:

5.8.1.5 Handling new tasks from initiators other than the faulted initiator when CA or ACA is in effect
5.8.1.5.1 Commands permitted from initiators other than the faulted initiator during CA or ACA
5.8.1.5.2 Handling new tasks from initiators other than the faulted initiator when CA or ACA is in effect

All the current text and tables in 5.8.1.5 will be placed in 5.8.1.5.2.

The footnote c in tables 28 and 29 will be changed to 'See 5.8.1.5.1.'

The following text will be placed in the new 5.8.1.5.1:

The device server shall process a PERSISTENT RESERVE OUT command with a PREEMPT AND ABORT service action (see SPC-2) while a CA or ACA condition is established when the command is received from an initiator other than the faulted initiator.

Note xx The processing of specific commands (e.g., PERSISTENT RESERVE OUT command with a PREEMPT AND ABORT service action) the from initiators other than the faulted initiator while a CA or ACA condition is in effect provides initiators other than the faulted initiator the opportunity to recover from error conditions that the faulted initiator cannot recover from itself.

The objective is to maintain the long standing exceptional allowance for the PERSISTENT RESERVE OUT command with a PREEMPT AND ABORT service action during CA and ACA conditions while:

a) Avoiding the need to fit 'PERSISTENT RESERVE OUT command with a PREEMPT AND ABORT service action' in a table title; and
b) Simplifying the effort required to create CA/ACA exceptions for other commands in the future, should the need arise.

EMC 15) Eliminate defeatism (Accepted, Editorial) [132]
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) [133]
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) [134]
PDF page 3, page iii, Editorial
"National Committee for Information Technology Standards"
s/b
InterNational Committee for Information Technology Standards

Exabyte 2) Change INCITS membership boilerplate (Rejected) [135]
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:

Reason for Rejection: The current wording is the wording used in all T10 standards.

Exabyte 3) Reference to 1.2 s/b to 1.3 (Accepted, Editorial) [136]
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) Change Generic Requirements arrow lines (Accepted, Editorial) [137]
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.

Editor's Note: Resolved as per comment Compaq 4).

Exabyte 5) 'Control mode page' s/b 'mode page' (Accepted, Editorial) [138]
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) Device servers process commands (Rejected) [139]
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 manger 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."

Reason for Rejection: To first order, the proposed change ignores linked commands. Linked commands are more than just one command, but the device server processes them as a single task.

Here is a refutation of each of the "supporting items" individually. The definition of command is correct, a command describes a unit of work to be performed by the device server, and that unit of work is performed in the context of a task. Application clients do indeed required processing of SCSI command through requests directed to the device server and the device server performs that work in the context of a task. A device serve does truly process operations requested by received commands and it does that processing in the context of a task, whose lifetime is carefully delineated in subclause 5.5. The CDB certainly defines an operation to be performed by the device server and the device server performs that operation in a task.

While the device server may or may not have knowledge of all tasks in a task set, the device server most certainly has knowledge of **all** tasks that have ever entered the enabled task state. If the device server were not aware of the tasks, it would have no knowledge of the commands contained in those tasks and thus would be unable to process the commands.

Exabyte 7) Logical units process tasks (Accepted, Editorial) [140]
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.

Editor's Note: It is correct that logical units process tasks and that needs to be incorporated in this definition. However, application clients send commands, not tasks. Also, there are no obvious benefits derived from removing the discussion of device model.

See comment IBM 11) for detailed wording changes resulting from this comment.

Exabyte 8) WWID is an identifier, not an identification (Accepted, Editorial) [141]
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) Reword 'SCSI initiator port' glossary entry (Rejected) [142]
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…

Reason for Rejection: Comment HP 13) identifies a missing 'that' in the cited sentence and that error will be corrected. The other proposed changes would make the 'SCSI initiator port' definition structurally different from the 'SCSI target port' definition. Since these comments identify no problems with the 'SCSI target port' definition, it is difficult to justify further changes to the 'SCSI initiator port' definition.

Exabyte 10) Clarify separate statements in 'SCSI port' definition (Accepted, Editorial) [143]
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) Remove 'Source/Destination device' from glossary (Unresolved) [144]
PDF page 33, page 11, clause 3.1.115, Editorial

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

Editor's Note: The one phrase in which 'destination device' occurs in 4.6 (the last sentence in the clause).

> The request or response package is sent when it is passed to the SCSI port for transmission; it is in transit until delivered and received when it has been forwarded to the receiver via the destination device's SCSI port.

It is the editor's opinion that the glossary entries for both 'destination device' and 'source device' can be removed, with no other action required. The usage of 'destination' in 4.6 falls within the rules regarding normal English usage.

Exabyte 12) 'task abort event' is a has been (Unresolved) [145]
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?

Editor's Note: No. Change from:

> **task abort event:** An event or condition indicating that the task has been aborted by means of a task management function …

to:

> **task abort event:** An event or condition indicating that a task management function has requested that a task be aborted …

Exabyte 13) Delete duplicate SSC acronym (Accepted, Editorial) [146]
PDF page 35, page 13, clause 3.2, Editorial

Eliminate redundant entry for SSC

Exabyte 14) Hierarchy conventions clause contains old rules (Accepted, Editorial) [147]
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.

Editor's Note: The figure was updated to remove an I-beam symbol that meant 'or' but the descriptive sentence was not updated. The cited sentence will be replaced with:

> A Preface contains zero or more Figure objects, one Outline object, and Introductory Text object.

Exabyte 15) Targets (now target ports) do not control logical units (Accepted, Substantive) [148]
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.

Editor's Note: This sentence, both original or rewritten, is inside out. Logical units are not "under the control" of device servers. Replace the cited sentence with:

> "As shown in figure 6, each SCSI target device contains one or more logical units and provides device services performed by ~~the logical units under the control of the target~~ device servers and task management functions performed by ~~the~~ task managers."

Exabyte 16) 'vendor specific' s/b 'implementation specific' (Rejected) [149]
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.

Reason for Rejection: The long standing practice for SAM-2, SPC-2, SBC-2, and other T10 standards is to have only one term that says the decision on how to do something is made by the vendor (i.e., by the implementer of a product). In SAM-2 that one term (defined in the glossary) is vendor specific.

Exabyte 17) Application client box s/b shaded in figure 13 (Accepted, Editorial) [150]
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) 'a' s/b 'each' (Accepted, Editorial) [151]
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.

Editor's Note: The comment is not technical because the new wording maintains the original intent. 'protocol' is just as good as 'protocol(s)', so the only change that will be made is 'a' to 'each'.

Exabyte 19) 'each may' s/b 'each of which may' (Accepted, Editorial) [152]
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…

Editor's Note: Resolved as described in the comment Maxtor 39), with the difference being that no comma is inserted.

Exabyte 20) Should HISUP be 0 or 1 for single level LUNs? (Unresolved) [153]
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) Task is an attribute of a nexus (Unresolved) [154]
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 OOA/D 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) Remove right parenthesis (Accepted, Editorial) [155]
PDF page 52, page 30, clause 4.9.1, 4th paragraph, Editorial

there is an orphaned parenthesis

Editor's Note: Resolution of this comment is included in the resolution of comment IBM 26), which is a rewrite of the first two sentences in the cited paragraph.

Exabyte 32) Nexus object *is* relationship s/b *represents* (Accepted, Editorial) [156]
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) Identifiers *specify* a nexus (Accepted, Editorial) [157]
PDF page 53, page 31, clause 4.10, table 2, Editorial

Identifiers that form nexus

s/b

Identifiers that specify nexus

Editor's Note: The nexuses in the first column of table 2 are objects. The identifiers in the second column of table 2 are also objects. Object can contain other objects, but objects do not specify other objects. This position is justified by the following statement in 4.1 (the introduction to the SCSI architecture model):

As used in this standard, objects are abstractions, encapsulating a set of related functions, data types, and other objects.

In this modelling structure, the nexus objects in the first column of table 2 contain the identifier objects in the second column of table 2.

While the use of 'form' in the column heading is consistent with the Merriam-Webster definition (v.t. "to serve to make up or constitute") this may not be as clear as possible. Therefore, the table 2 column heading:

'Identifiers that form nexus'

will be replaced with:

'Identifiers contained in nexus'

Exabyte 34) Communications between ports and logical units (Unresolved) [158]
PDF page 55, page 33, clause 4.11.3, p1 on page, Technical
PDF page 56, page 34, clause 4.11.5, p1 after figure 18, Technical

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) Include port name in matchable VPD data (Accepted, Substantive) [159]
PDF page 55, page 33, clause 4.11.3, p1 on page, Technical
PDF page 56, page 34, clause 4.11.5, p1 after figure 18, Technical

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.

Editor's Note: The proposed changes are unnecessarily wordy. Change the cited sentence to:

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

Exabyte 36) 'allowed to' s/b 'able to' (Accepted, Editorial) [160]
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.

Editor's Note: 'a' is viewed as the same as 'any given' and 'a' is preferred. Clearly, the second change needs to be made, yielding the following revision of the cited sentence:

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

Exabyte 37) Usage of 'expandable' not clear (Accepted, Editorial) [161]
PDF page 59-60, page 37-38, clause 4.12.1, Editorial

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

Editor's Note: If something is 'expandable', an ellipsis appears in figure 23. If something is 'not expandable' the figure contains no ellipsis. In the cited a,b,c list, make approximately the following changes:

1) '…not expandable' s/b '…is unable to add more SCSI target devices'
2) '…expandable' s/b '…is able to add more SCSI target devices'

Exabyte 38) Use 'is' or 'contains' consistently (Accepted, Editorial) [162]
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?

Editor's Note: There can be no difference between the two items cited, because they both describe the same box in figure 23 (i.e., the SCSI bridge controller box immediately below the two initiators). Accordingly, 'contains' will be changed to 'is'.

Exabyte 39) Remove command mandates from dependent logical unit addressing (Accepted, Substantive) [163]
PDF page 63, page 41, clause 4.12.4, 1st paragraph, Editorial
PDF page 64, page 42, clause 4.12.5, 1st paragraph
PDF page 65, page 43, clause 4.12.6, 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?

Editor's Note: Answer: No.

Remove the first sentences in 4.12.4 and 4.12.5. In 4.12.6, remove the first paragraph. Note: in 4.12.4 and 4.12.5 that part of the first paragraph not being removed contains discussion of the possibility that commands might not be relayed to the next level in the dependent logical unit hierarchy. In 4.12.6, the requirements on relaying commands is not discussed.

In 4.12.4 (Logical unit addressing method) remove:

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

In 4.12.5 (Peripheral device addressing method) remove:

~~All SCSI commands are allowed when the peripheral device address method is selected, however peripheral devices are only required to support mandatory SCSI commands.~~

4.12.6 (Flat space addressing method) remove:

~~All SCSI commands are allowed when the flat space addressing method is used, however, the addressed logical unit is not required to support all SCSI commands. Any command that is not supported shall be terminated with a CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID COMMAND OPERATION CODE.~~

Exabyte 40) Remove extraneous commas (Accepted, Editorial) [164]
PDF page 63, page 41, clause 4.12.4, 1st paragraph, Editorial
PDF page 64, page 42, clause 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.

Editor's Note: The response to comment HP 63) removes the sentence cited by this comment.

Exabyte 41) Clarify notes on dependent logical unit command filtering (Accepted, Editorial) [165]
PDF page 63, page 41, clause 4.12.4, NOTE 2, Editorial
PDF page 64, page 42, clause 4.12.5, NOTE 4, Editorial

"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.

Editor's Note: The response to comment HP 63) rewrites the cited sentence addressing the issues raised by this comment and more.

Exabyte 42) Non zero BUS UNIDENTIFIED rewrite (Accepted, Editorial) [166]
PDF page 64, page 42, clause 4.12.5, Editorial
PDF page 63, page 41, clause 4.12.4

"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.

Editor's Note: You are correct in noting that the cited sentence is poorly worded. However, the entire paragraph containing the cited sentence has problems not the least of which is failure to address the issues raised in comment HP 60). Including the changes made in response to comment HP 39), change the first four sentences in the cited paragraph from:

> A bus identifier field greater than zero represents physical SCSI interconnect that connects a group of SCSI devices to the current level SCSI device. Each physical interconnect shall be assigned a unique number from 1 to 63. These bus identifiers shall be used in the BUS IDENTIFIER field when assigning addresses to peripheral devices attached to the physical interconnects. 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).

to:

> A BUS IDENTIFIER field greater than zero represents a SCSI domain that connects a group of SCSI devices to the current level SCSI device. Each SCSI domain shall be assigned a

> unique bus identifier number from 1 to 63. These bus identifiers shall be used in the BUS IDENTIFIER field when assigning addresses to peripheral devices attached to the SCSI domains. When the BUS IDENTIFIER field is greater than zero, the command shall be relayed to the logical unit with the logical unit number zero within target specified in the TARGET/LUN field located in the SCSI domain specified by the BUS IDENTIFIER field.

Note that the problems raised by this comment also appear in the last sentence of the preceding paragraph. To address these concerns, that sentence will be changed from:

> When the BUS IDENTIFIER field contains zero, the command shall be relayed to the current level logical unit (TARGET/LUN field value) within or joined to the current level SCSI device.

to:

> When the BUS IDENTIFIER field contains zero, the command shall be relayed to the current level logical unit specified by the TARGET/LUN field within or joined to the current level SCSI device.

Note that the problems raised by this comment also appear in the second sentence of the paragraph immediately following table 7. To address these concerns, that sentence will be changed from:

> The command shall be relayed to the logical unit (LUN field value) within target (TARGET field value) located on bus (BUS NUMBER field value).

to:

> The command shall be relayed to the logical unit specified by the LUN field within target specified by the TARGET field located on bus specified by the BUS NUMBER field.

Exabyte 43) Rewrite definition of LUN 0 addressing (Rejected) [167]
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?

Reason for Rejection: This statement does not say that the number of logical units within a device is limited to one. The statement says that the device itself (i.e., the RAID controller, not the logical units presented by the RAID controller at the current level) shall be addressed via the logical unit with the logical unit number of zero using the peripheral device addressing method. Note that the sentence begins with 'The SCSI device…', not with 'Logical units within the SCSI device…'.

Exabyte 44) Dangling 'to' (Accepted, Editorial) [168]
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) 'interconnect layer' or 'physical interconnect layer', not both (Accepted, Editorial) [169]
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

Editor's Note: As per comment Intel 5), the second proposed solution will be applied.

Exabyte 46) Change colon to period (Accepted, Editorial) [170]
PDF page 68, page 46, clause 4.14, 2nd paragraph below figure 25, Editorial

should end with semicolon

Editor's Note: The editor prefers changing the cited colon to a period.

Exabyte 47) 'deliver' s/b 'delivery' (Accepted, Editorial) [171]
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) SCSI protocol service confirmation does not always indicate success (Accepted, Editorial) [172]
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.

Editor's Note: It is highly desirable to avoid defining the terms 'positive confirmation' and 'negative confirmation'. Therefore, instead of making the proposed change, the first sentence of the cited paragraph will be changed from:

> A signal from the LLP layer notifying the ULP layer that a SCSI protocol service request has completed.

to:

> A signal from the LLP layer notifying the ULP layer that a SCSI protocol service request has completed, has been terminated, or has failed to transit the interconnect layer.

Exabyte 49) Overlapped linked commands rewording to use 'shall' (Unresolved) [173]
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.

Editor's Note: You cannot reword only half the sentence to describe the logical unit's view of the condition. If this change is going to be made, the new wording must be something like:

If the logical unit receives the next command in a series of linked commands before completing the current command in that linked command series, the overlapped command condition described in 5.8.2 shall result.

Exabyte 50) GOOD status comes from the logical unit (Rejected) [174]
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.

Reason for Rejection: The notion that device servers do not know about tasks is not acceptable. See the response to comment Exabyte 6).

Exabyte 51) Insert 'or' (Accepted, Editorial) [175]
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) Insert 'or' (Accepted, Editorial) [176]
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) There no longer is a "target's service delivery port" (Accepted, Editorial) [177]
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.

Editor's Note: Unfortunately, target port is not in the glossary either and the usage of 'initiator' needs to be updated too. Change the cited sentence to:

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

Exabyte 54) Data goes 'to' the Data-In buffer, not 'from' it (Accepted, Editorial) [178]
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.

Editor's Note: Right idea, wrong data delivery service. In SCSI, data-in and data-out are always from the initiator's perspective. So, this change needs to be made in 5.4.3.2, Data-In Delivery Service, not where it is proposed.

Exabyte 55) 'device server' s/b 'logical unit' (Rejected) [179]
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.

Reason for Rejection: The notion that device servers do not know about tasks is not acceptable. See the response to comment Exabyte 6).

Exabyte 56) Who returns TASK ABORTED status, device server or task manager (Accepted, Editorial) [180]

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)

Editor's Note: The device server returns the TASK ABORTED status. In fact, the device server returns all status codes. However, it is the task manager that enters tasks into the task set, that described in the part of the sentence covered by the ellipses in the citation above. Since only the logical unit covers both the device server and the task manager, change the cited text to:

When a logical unit is aborting one or more tasks from an initiator with the TASK ABORTED status…

Regarding the reference to 3.1.132, to whit:

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

The fact that the task manager processes task management functions indicates that the task manager is responsible for decoding and validating task management functions as well as for returning the service response for task management functions. The mechanics of how the task manager processes task management functions are not specified and may include requesting that the device server take specified actions.

Exabyte 57) 'device server' s/b 'logical unit' (Rejected) [181]

PDF page 84, page 62, clause 5.7.1, item 2), Editorial

replace 'device server' with 'logical unit'

Reason for Rejection: Since the CDB and command parameters must go to the device server, the current wording is correct.

Exabyte 58) There no longer is a "target's service delivery port" (Accepted, Editorial) [182]
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.

Editor's Note: Rationale a) is correct, but b) is wrong. The the model includes a direct connection between the target port and the logical unit. The arrangement inside the logical unit is implementation specific.

Following the example set by the unlinked command clause, replace the cited sentence with:

The device server is notified through a **SCSI Command Received** indication containing the CDB and command parameters.

Exabyte 59) Make linked and unlinked descriptions match (Accepted, Editorial) [183]
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.

Editor's Note: Following the example set by the unlinked command clause, replace the cited sentence with:

A task (Task A) is created and entered into the task set.

Exabyte 60) Simplify tables 25 — 29 (Unresolved) [184]

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) Is CA cleared on receipt or completion of a command? (Unresolved) [185]
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.

Editor's Note: On the other hand, if the new command is a REQUEST SENSE, this change would clear the sense data before it is returned.

Exabyte 62) Rewrite of commands permitted during CA or ACA (Accepted, Editorial) [186]
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.

Editor's Note: This issue will be resolved as described in the response to EMC 14).

Exabyte 63) Clarify sense key and additional sense code for incorrect logical unit handling (Accepted, Editorial) [187]
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) Allow SERVICE DELIVERY OR TARGET FAILURE service response (Accepted, Substantive) [188]
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) Why should anything be outside the scope of task management? (No Action) [189]
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.

Editor's Note: The concerns raised about the sentence beginning with "A CHECK CONDITION status…" will be resolved as described in the response to comment Maxtor 59).

The "aim" of defining certain types of error handling as being outside the scope of task management is simple. There is virtually no point in blocking one or more tasks in response to the ORDERED task attribute only to eventually find that they must be terminated with a RESERVATION CONFLICT status. Likewise, targets should not be obliged to maintain resources for putting tasks in the task set when they are so busy as to be forced to return BUSY status.

Exabyte 66) Figure 32 does not consider the effects of an ABORT TASK task management function (Rejected) [190]
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.

Reason for Rejection: The cited statement would not apply at all because the statement includes the assumption that the task completes with a GOOD status. Tasks aborted with the ABORT TASK task management function **do not** complete with GOOD status.

Exabyte 67) Annotate the notation conventions in each of figures 34, 35, 36, & 37 (Rejected) [191]
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

Reason for Rejection: The conventions for state diagrams are not annotated in each and every state diagram. There seems to be no justification for doing differently with the task set examples.

Exabyte 68) Description of table A.6 is wrong (Accepted, Editorial) [192]
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.

Editor's Note: Table A.6 describes only the sizes of names, not the "format" or the "formation". Change the cited text to:

See table A.6 for a list of the sizes of the names specified by 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) [193]
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) SCSI is Small Computer System Interface (Accepted, Editorial) [194]
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.

Editor's Note: Change the first occurrence of 'SCSI' to 'SCSI' (Small Computer System Interface)'.

HP 3) 'SCSI Protocol' s/b 'SCSI Transport Protocol' (Accepted, Editorial) [195]
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) [196]
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) [197]
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) [198]
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) [199]
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) [200]
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) [201]
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) [202]
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) [203]
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 (Accepted, Editorial) [204]
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. 02-244 is a detailed proposal for the changes needed to create the new annex.

HP 13) Missing 'that' (Accepted, Editorial) [205]
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) [206]
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) [207]
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) [208]
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) [209]
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) Missing 'which' (Accepted, Editorial) [210]
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."

Editor's Note: Resolved by adding 'and' instead of 'which', see comment Maxtor 31).

HP 19) Incorporate 02-153 (Unresolved) [211]
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 every-where.

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) Service delivery subsystem figure is incomplete (Unresolved) [212]
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 delivery should be made mandatory (Deferred to SAM-3) [213]
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. The absence of an ordered delivery requirement has been part of SAM since Fibre Channel was invented. Both 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 both features unchanged in SAM-2. Changes may be considered for SAM-3.

HP 22) Synchronizing client and server states (Accepted, Editorial) [214]
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: Add the following after the second sentence in the first paragraph: "For example, the SCSI target device changes state when upon processing the Send Command Complete procedure call (see 5.4.2), but the SCSI initiator device is not informed of the state change until the Command Complete Received protocol service confirmation arrives. Also, start a new paragraph following the inserted sentence.

HP 23) Initiator port name is a UML attribute (Deferred to SAM-3) [215]
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) [216]
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 (Rejected) [217]
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)

Reason for Rejection: The descriptions following figure 11 (and similar figures) describe the objects shown in the figure. This is considered to be appropriate and necessary discussion of the figure. Since no improvements in word were proposed, the existing text will remain unchanged.

HP 26) No need to define target/initiator device (Deferred to SAM-3) [218]
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 of SCSI devices is too complicated (Deferred to SAM-3) [219]
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."

Reason for Rejection: The paragraph is complete and detailed. If that is complicated, so be it. So long as the target/initiator device is defined (see the response to comment HP 26), the last two sentences need to be worded as written to completely define requirements for a SCSI domain.

HP 28) Figure 12 disagrees with Figure 8 (Deferred to SAM-3) [220]
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.

Editor's Note: Figure 8 is not complete and this is indicated by the sentence describing figure 8, to whit:

> Figure 8 shows the **main** functional components of the SCSI domain.

The nature of the modelling methodology employed by SAM-2 does not allow **all** objects to appear in figure 8. Figure 12 correctly specifies detail beyond that found in figure 8. This may change when UML is used to model the SAM-3 objects, see comment HP 16).

HP 29) No need to define target/initiator device (Deferred to SAM-3) [221]
PDF page 48, page 26, 4.7.3

See comment HP 26).

HP 30) What is the default logical unit (Accepted, Editorial) [222]
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) Target/initiator port must have unique names for target and initiator functions (Rejected) [223]
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.

Reason for Rejection: A target/initiator port is a single port and is allow to have on name for both target and initiator functions. This is not seen as a violation of the world-wide unique property described in 4.7.7. To do otherwise, places an unreasonable burden on Extended Copy devices.

HP 32) Recommend how to design port identifiers (Rejected) [224]
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.

Reason for Rejection: The requirements on port identifiers are stated. Recommendations beyond the requirements unnecessarily constrain protocols but answer no needs in the architecture. Such recommendations are not appropriate in SAM-2.

HP 33) What is an 'object name'? (Accepted, Editorial) [225]
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?

Editor's Note: Change from:

> The SCSI port identifier is equivalent to SCSI identifier and is the object name used to represent either an initiator port identifier for an initiator, or a target port identifier for a target.

to:

> The SCSI port identifier is equivalent to SCSI identifier. The SCSI port identifier object represents either an initiator port identifier for an initiator, or a target port identifier for a target.

HP 34) 'include' s/b 'associate' (Rejected) [226]
PDF page 50, page 28, clause 4.7.6, second para, first sentence.

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

Reason for Rejection: According to the Merriam-Webster Collegiate Dictionary electronic edition 2.5, 'include' means among other things "to comprise as a part of a whole". That usage seems appropriate for the description of a SCSI device 'including' a SCSI device name.

HP 35) LUN s/b an attribute (Deferred to SAM-3) [227]
PDF page 50, page 28, Figure 14

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

HP 36) SCSI device name requirement (Rejected) [228]
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'?

Reason for Rejection: The cited statement is not a requirement because the use of SCSI device names is optional.

HP 37) Where is SCSI port identifier required (No Action) [229]
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.

Editor's Note: It is believed that the following statements suitable demonstrate that SCSI port identifiers are mandatory.

4.7.1 SCSI initiator device

A SCSI initiator device (see figure 11) contains:
a) **Zero** or more initiator device names;
b) **One** or more SCSI initiator ports **each containing an initiator port identifier** and …

4.7.2 SCSI target device

A SCSI target device (see figure 12) contains:
a) **Zero** or more target device names;
b) **One** or more SCSI target ports **each containing** a task router, **SCSI target port identifier**, and …

4.7.3 SCSI target/initiator device

A SCSI target device (see figure 13) contains:
a) **Zero** or more target/initiator device names;
b) **One** or more SCSI target/initiator ports **each containing** a task router, **target port identifier, an initiator port identifier**, …

HP 38) Logical unit numbers and Access Controls (Accepted, Substantive) [230]
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".

Editor's Note: Resolved as described in the response to comment Compaq 16).

HP 39) The logical unit with the logical unit number zero (Accepted, Editorial) [231]
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.

Editor's Note: Change 'logical unit 0' and 'logical unit zero' to 'the logical unit with the logical unit number zero'. The cites to be changed are:

PDF pg 51, pg 29, p1, last-s after table 1
PDF pg 55, pg 33, 1st p on page
PDF pg 56, pg 34, 1st p after figure 18
PDF pg 59, pg 37, 1st p after figure 22
PDF pg 64, pg 42, 4th p after table 8

HP 40) Should HISUP be 0 or 1 for single level LUNs? (Unresolved) [232]
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) When is a nexus instantiated? (Unresolved) [233]
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) Figure 15 shows ports in the application layer (Unresolved) [234]
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) I_T nexus is in the application layer (Unresolved) [235]
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) it's s/b its (Accepted, Editorial) [236]
PDF page 54, page 32, clause 4.11.1, first sentence on the page

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

HP 45) Unclear description of SCSI ports with multiple SCSI identifiers (Accepted, Editorial) [237]
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?

Editor's Note: The cited sentences are:

> Similarly, a single SCSI target port or SCSI initiator port may respond to multiple SCSI identifiers. The model for such a SCSI device also is one of multiple SCSI target ports or SCSI initiator ports, one for each SCSI identifier.

Both sentences are part of the same idea, but because that idea is different from the one expressed in the first sentence in the paragraph, the connection is unclear. Including changes made in response to comment IBM 28), the cited sentences will be reworded to read:

> Similarly, a single SCSI target port or SCSI initiator port may respond to multiple SCSI identifiers, with the model for such a SCSI port being one of multiple SCSI target ports or SCSI initiator ports (i.e., one for each SCSI identifier).

See comment HP 81) for a discussion of the 'physical SCSI target port' comment. (Please refrain from making two comments under one comment number.)

HP 46) 'Multi-port' to be removed (Accepted, Editorial) [238]
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).

Editor's Note: There are exactly two instances of 'multi-port' in SAM-2. The simpler change is to make them use some form of 'multiple ports'.

[PDF page 54, page 32, clause 4.11.2, p2, s2] Change 'while maintaining the multi-port model' to 'while maintaining the model for SCSI devices with multiple ports'.

[PDF page 53, page 31, Figure 15] Change 'Multi-port Target Model' to 'Target Model with Multiple Ports'.

HP 47) Definition of multi-port SCSI device is redundant (Rejected) [239]
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?

Reason for Rejection: For reference, the cited sentence is:

> The model for a SCSI device with multiple ports is a single SCSI target device (see 4.7.2), SCSI initiator device (see 4.7.1), or SCSI target/initiator device (see 4.7.3) with multiple ports.

While it is true that this sentence includes redundancy in its definition, this definition of a SCSI device makes its first appearance in SAM-2. Furthermore, the SAM-2 definition contradicts the equivalent SAM and SCSI-2. For this reason the use of redundant wording for emphasis seems justified.

The entire SAM-2 dpANS defines models, that taken as a whole constitute the SCSI architecture model. To say that this sentence or that cannot use the word model because a previous sentence does makes no sense.

Parallel SCSI allows a single SCSI port to respond to multiple bus IDs, i.e., to have multiple SCSI identifiers. A main purpose of SAM-2 is to support parallel SCSI. Therefore, the discussion of SCSI ports having to multiple SCSI identifiers is appropriate.

HP 48) VPD 'port identifier' s/b 'device identifier' (Rejected) [240]
PDF page 55, page 33, clause 4.11.3, p1 on page
PDF page 56, page 34, clause 4.11.5, p1 after figure 18

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.

Reason for Rejection: All discussion in SPC-2 is based on the application client's view of a device server and the logical unit that it services. For this reason, the wording cited in SPC-2 is correct. A more careful inspection of the information in the Device Identifier VPD page will show that port identifiers are among its contents, see ASSOCIATION field code value 1h in table 173.

HP 49) Target methods for discovery are outside the scope of the SCSI family of standards (Rejected) [241]

PDF page 55, page 33, clause 4.11.3, p1 after figure 17
PDF page 56, page 34, clause 4.11.5, p2 after figure 18

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.

Reason for Rejection: The phrase '… is outside the scope of the SCSI family of standards' is the way T10 standards state the committee's intention that the standards developed by T10 will not deal with the subject being discussed.

In this case, it is the intention of T10 that the no commonly applicable mechanism be defined that allow SCSI target devices to discover that a single SCSI initiator port is being accessed via multiple ports. Defining such a mechanism would inevitably lead to requirements that SCSI target devices use such information to become aware of and sensitive to the configurations in which they find themselves, with the result that SCSI target devices would be more complex.

The design focus of SCSI places configuration sensing complexity in the SCSI initiator device. SCSI initiator devices have access to a much richer collection of resources with which to perform configuration sensing and handling. T10 has repeatedly stated its commitment to this principle.

The fact that a SCSI transport protocol has elected to go beyond the design principles agreed by T10 is taken to reflect the specific needs of that SCSI transport protocol. It does not represent a reason to modify the SCSI architecture model.

HP 50) 'ports' s/b 'SCSI initiator ports' (Accepted, Editorial) [242]

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".

Editor's Note: Change from:

> Mechanisms by which a SCSI target device would have the ability to discover that it is communicating with multiple ports on a SCSI target/initiator device are beyond the scope of any standards in the SCSI family of standards.

to:

Mechanisms by which a SCSI target device would have the ability to discover that it is communicating with multiple SCSI initiator ports on a SCSI target/initiator device are beyond the scope of any standards in the SCSI family of standards.

HP 51) Initiators can detect targets with multiple ports (Accepted, Substantive) [243]
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?

Editor's Note: Until the Device Identifier VPD data was changed to include relative port number information, there was no way for an initiator to discover that a target has multiple ports unless all those ports were in a SCSI domain containing the initiator port or ports. The paragraph that is confusing you dates from those olden times.

To match SAM-2 to the latest SPC-2 target port VPD features, the last sentence in the cited paragraph will be deleted and paragraph 1 will be agglomerated with paragraph 2. The sentence to be deleted reads:

~~This would restrict application clients from determining if a SCSI target device has multiple SCSI ports.~~

HP 52) Nexus required (Rejected) [244]
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.

Reason for Rejection: The assumption is that a nexus can be formed. That assumption is present in every discussion of how initiators and targets relate and is so basic that there should be no need to state it.

HP 53) Application client configuration discovery is possible, but initiator port configuration discovery is not (Rejected) [245]
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.

Reason for Rejection: The cited sentence says 'application client, not 'initiator' (aka 'initiator port'). Had the question been raised about application clients, the answer would have been closer to 'yes', as is the case in the response to comment EMC 6).

It is the position of T10 that only application clients are able to do configuration discovery (see the response to comment HP 54). Therefore, the capability postulated in the comment is not valid as far as T10 is concerned.

HP 54) Application clients can discover multiple paths but ports cannot (Rejected) [246]
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.

Reason for Rejection: Read the text will some editor added emphasis.

> This model for application client **determination of** multiple SCSI target port **configurations relies on information that is available only to the application clients** via SCSI commands. The **SCSI initiator ports** in the SCSI initiator devices (figure 19) or SCSI initiator device (figure 20 and figure 21) **are unable to distinguish** the multiple SCSI target ports from individual SCSI target ports in two separate SCSI target devices.

The paragraph says precisely what T10 wants it to say, 'application clients can do this kind of configuration determination but initiator ports cannot'.

HP 55) Cross reference to figure 19 s/b to figure 21 (Accepted, Editorial) [247]
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) 'an SCSI' s/b 'a SCSI' (Accepted, Editorial) [248]
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).

Editor's Note: Resolved as described in comment Quantum 3).

HP 57) Target methods for discovery are outside the scope of the SCSI family of standards (Rejected) [249]
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.

Reason for Rejection: Again (see response to comment HP 49), it is the opinion that SCSI standards (including iSCSI) should not specify the method for a target to discover that an initiator has multiple ports.

If iSCSI specifies a method that allows an exclusive access reservation made by one port to apply to other initiator ports, then iSCSI is arguably in violation of the intent of T10 regarding reservations and possibly in violation of SAM-2 and/or SPC-2.

HP 58) What does HISUP equal to one mean? (Unresolved) [250]
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.

Editor's Note: The response to this comment depends on the resolution of comment HP 40) and other comments like it. If the requirement to set HISUP to one stated in 4.8 remains unchanged, then there is no conflict between SAM-2 (where two explicit reasons for setting HISUP to one are stated) and SPC-2 (where the more general case is stated).

HP 59) Should logical units with dependent logical units include a router object? (Unresolved) [251]
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 Relayer". This may need additional changes in the original model of Logical Unit captured in 4.8 as well.

HP 60) 'physical interconnects' may not be physical (Accepted, Editorial) [252]
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.

Editor's Note: Point taken. Change the cited sentences from:

> Within the hierarchical system there may be SCSI target devices that have multiple logical units connected to them through separate physical interconnects. These physical interconnects are referred to as buses.

to:

> Within the hierarchical system there may be SCSI target devices that have multiple logical units connected to them through separate SCSI initiator ports. The SCSI domains accessed by these SCSI initiator ports are referred to as buses. A SCSI target

HP 61) What does '(LUN 0)' mean in figure 23? (Accepted, Editorial) [253]
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.

Editor's Note: Comment Maxtor 45) raises the same complaint. '(LUN 0)' is supposed to indicate that the device contains a logical unit with logical unit number zero, as described in 4.12.2. Since the requirement is clearly stated in 4.12.2 and since attempting to show that requirement in figure 23 (which is not located in 4.12.2) is causing confusion, the '(LUN 0)' will be removed everywhere it occurs in figure 23. See document T10/02-227 for the complete rewrite of the figure and text cited by this comment.

HP 62) LUN Addressing method requirements unclear (No Action) [254]
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.

Editor's Note: In T10 standards, if the none of words 'shall', 'mandatory', or 'required' are present, then the statement does not contain a requirement.

HP 63) Clarify relaying/filtering of commands to dependent logical units (Accepted, Substantive) [255]
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.

Editor's Note: See the response to comment HP 65) for a discussion of why it is not appropriate to require that all commands be forwarded to dependent logical units.

However, the complaint about inconsistent wording between the paragraphs needs to be addressed.

Change from:

> … Devices are not required to relay commands, from the application client, to a dependent logical unit. Any command that is not supported or relayed to a lower addressing layer shall be terminated with a CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID COMMAND OPERATION CODE.
>
> If the logical unit addressing method is selected the device shall relay the received command, if not filtered, to the addressed logical unit.
>
> NOTE 2 - A SCSI device may filter commands to prevent an application client from issuing (e.g., a write command to a specific logical unit). A reason for doing this would be to prevent an application client from bypassing configuration requirements at an intermediate level of the hierarchy.

to:

> … If the logical unit addressing method is selected the SCSI device ~~shall~~ should relay the received command~~, if not filtered,~~ to the addressed dependent logical unit. ~~Devices are not required to relay commands, from the application client, to a dependent logical unit.~~ Any command that is not ~~supported or~~ relayed to a ~~lower addressing layer~~ dependent logical unit shall be terminated with a CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID COMMAND OPERATION CODE.
>
> NOTE 2 - A SCSI device may filter (i.e., not relay) commands to prevent deleterious commands from reaching a dependent logical unit ~~an application client from issuing~~ (e.g., a WRITE command directed to a logical unit that is participating in a RAID volume). ~~A reason for doing this would be to prevent an application client from bypassing configuration requirements at an intermediate level of the hierarchy.~~

Similar changes will be made in clause 4.12.5. Also an acronym entry will be added for RAID.

HP 64) What are "configuration requirements" (Rejected) [256]
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".

Reason for Rejection: The specific change requested is rejected because the intent of the wording is that commands not reach the dependent logical units, not that the logical units should refuse to process them. For future reference, 'to execute' is a shunned verb in T10, with the normal replacement being 'to process'. The response to comment HP 63) rewrites the cited text, eliminating the 'configuration requirements' phrase and clarifying the meaning along the lines described in the response to comment HP 65).

HP 65) Clearly define when commands shall be forwarded to dependent logical units (Rejected) [257]
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.

Reason for Rejection: The dependent logical unit model intends to accommodate RAID controllers. In such cases, commands handled by the RAID controller do not address dependent logical units. The dependent logical units (i.e., the logical units at the next lower level) are the disks used to form RAID volumes. The RAID controller may chose to allow access to the lower level disks, but to restrict the kinds of commands allowed. One would not like a RAID controller to forward FORMAT UNIT commands to the disks in a RAID volume. Note 2 is trying to describe this usage albeit with badly formed wording. There is no way for the architecture to specify when commands shall be relayed and when they shall be filtered without unnecessarily constraining product designs.

HP 66) BUS IDENTIFIER 0 is a dependent logical unit dead end (Unresolved) [258]
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) Delete extraneous period (Accepted, Editorial) [259]
PDF page 65, page 43, clause 4.12.6, second para

Two periods in the sentence.

Editor's Note: It appears that the sentence needs a comma added in addition to removal of the period. The sentence will be changed from:

> In the response to an INQUIRY command the addressed logical unit shall return a valid SCSI peripheral device type.(e.g., direct access device, streaming device).

to:

> In the response to an INQUIRY command, the addressed logical unit shall return a valid SCSI peripheral device type (e.g., direct access device, streaming device).

HP 68) Table 15 is different from tables 12-14 (Rejected) [260]
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".

Reason for Rejection: Table 12 shows a two-byte extended logical unit address format, table 13 shows a four-byte extended logical unit address format, table 14 shows a six-byte extended logical unit address format. Each of these three extended logical unit address formats can appear anywhere in the eight-byte logical unit number field, so the tables show the byte positions as variables. Table 15 shows an eight-byte extended logical unit address format. There is only one location in the eight-byte logical unit number field that can accommodate the eight-byte extended logical unit address format, so table 15 shows the exact valued byte positions that match the one and only allowed positioning.

HP 69) In figure 25 SAM should apply to everything (Accepted, Editorial) [261]
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.

Editor's Note: What is going on here is that Clause 5 has a bundle of command rules in it. At the time the figure was drawn, that was considered important to note. With the issue having mellowed with age and with more SCSI protocol oriented requirements having been added to SAM, the issue raised by this comment needs to be addressed.

However, it is better to remove 'SAM and' from the application client layer than to add it everywhere. The reasons for this are as follows:

1) the document in which the picture appears is SAM-2;
2) the issues that caused SAM to be added to this figure; and
3) the editor (at least) has a desire to someday move most of the command-specific discussion to SPC-n, meaning that the deleted text would have to be removed eventually.

HP 70) Service delivery subsystem includes protocol layer (Unresolved) [262]
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.

Editor's Note: As per comment Intel 5), all occurrences of 'physical interconnect' in this clause will be changed to just 'interconnect'. The remainder of this comment needs to be discussed by T10.

HP 71) Eliminate usage of ULP and LLP (Deferred to SAM-3) [263]
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.

Editor's Note: You are the only person other than the SAM-2 editor who has expressed the concern that SAM-2 has (for all practical purposes) only two layers that should be explicitly named, instead of adding the confusion of LLP and ULP. While I would love to use this comment as an excuse to cleanup the mess, there are other issues demanding attention and a desire not to delay publication excessively while the corrected text is written and reviewed. Maybe this can be addressed in SAM-3.

HP 72) Autosense Request description is unclear (Rejected) [264]
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.

Reason for Rejection: You are reading far too much into:

> Protocols may require that the Autosense Request argument always request automatic return of the sense data.

This statement could easily be taken to mean that protocols may require that the Autosense Request argument always be present (i.e., requesting autosense data).

It is intended that the description of the Autosense Request argument be vague, allowing for either a yes/no valued parameter or the presence/absence of the parameter to indicate an autosense request. Since the Autosense Request argument is purely a modeling device that has no instantiation any actual SCSI implementations, there is no need for any additional clarity.

Finally, it must be noted that the only SCSI protocol where the Autosense Request argument has any usage is Parallel SCSI. This issue will disappear in SAM-3, where autosense support and universal usage will be required from every SCSI protocol.

HP 73) Reword description of the Execute Command RPC (Accepted, Editorial) [265]
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:"

Editor's Note: The justification for this change is rock solid. However, there are some problems with the proposed replacement wording. First, there are never any state sanction murders (i.e., executions) in SCSI. Besides, the application client never processes SCSI commands, the device server does that. Also, the word 'clause' precedes a clause number only if that number does not contain a period.

With all that in mind, replace the cited sentence:

> An application client invokes the following remote procedure to process a SCSI command:

with:

> An application client requests the processing of a SCSI command by invoking the SCSI protocol services described in 5.4, the collective operation of which is conceptually modeled in the following remote procedure:

HP 74) Reserved field checking is bad (Rejected) [266]
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 complaint.

Reason for Rejection: Read the text will some editor added emphasis.

> If a logical unit validates reserved CDB fields and receives a reserved field within the CDB that is not zero or receives a reserved CDB code value, the logical unit shall terminate the command with CHECK CONDITION status; the sense key shall be set to ILLEGAL REQUEST with an additional sense code of INVALID FIELD IN CDB (see SPC-2).

This sentence **does not** mandate (i.e., require) reserved field checking. Reserved field checking is allowed but not required in SCSI so that implementations can provide reserved field checking as a means to verify correct host operation. Most SCSI implementations eschew reserved field checking because it degrades performance. When reserved field checking is offered, it typically is under the control of a bit in a mode page.

The requested new sentence "stating the upward compatibility challenge" will not be added because it is not appropriate in an American National Standard. The desired requirement statement applies to the T10 committee not to any products complying with T10 generated standards.

HP 75) Illegal CDB requirements statements questioned (No Action) [267]
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.

Editor's Note: The comment appears to answer its own questions. Incorrect logical unit selection is covered in 5.8.3 and should not be covered here because the logical unit number does not appear in the CDB. The importance of checking for illegal operation codes and not altering the medium when invalid parameters are detected are unlikely to change and sufficiently important as to warrant specification in both SAM and SPC.

HP 76) Do not describe obsolete bit in the CONTROL byte (Rejected) [268]
PDF page 75, page 53, clause 5.2.3, first sentence in the page

This historical statement about an obsoleted bit should be removed.

Reason for Rejection: The standing practices of T10 is that standards contain a brief description of obsolete fields. This practice should not be changed, particularly since in this case the bit being described has been made obsolete between SAM and SAM-2.

HP 77) Change to 'The task shall exist for the device server…' (Rejected) [269]
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:".

Reason for Rejection: Tasks exist **only** in the device server. As the architecture model currently is structured, the initiator side equivalent of a task is the application client (which will become the application client thread if Cisco 4) is accepted).

As described in the paragraph following the cited paragraph, application clients make **assumptions** about the existence of tasks, but the only reality is on the device server side of the interface.

The model is constructed so that the task's lifetime is what needs to be (and is being) discussed in the cited sentence. The device server's view of the task's lifetime is not relevant.

HP 78) Command processing events figure is incomplete (No Action) [270]
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.

Editor's Note: It is not at all clear how the absence "waiting" and "working" periods during the life of the task adversely affects the architecture model. Lacking this information, it is not possible to devise a remedy for this concern.

HP 79) Are there more actions than logical unit reset taken in response to a logical unit reset task management function? (Accepted, Editorial) [271]
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".

Editor's Note: The following changes will be made.

1) In list entry a), change "An action" to "The action", as proposed.
2) In list entry b), change "Part of an action" to "One of the actions".

HP 80) 'nexus' s/b 'nexus object identifier' (Rejected) [272]
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.

Reason for Rejection: A nexus is an object. Its usage in this context is every bit as valid as the usage of I_T_L_x nexus in the Execute Command remote procedure. Furthermore, 'nexus object identifier' is undefined.

HP 81) 'SCSI target port' s/b 'physical SCSI target port' (Rejected) [273]
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.

Reason for Rejection: The glossary term is 'SCSI target port'. There is no term 'physical SCSI target port' in SAM-2. This change will not be made.

8. IBM / Tivoli Systems

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

IBM 1) Remove Revision History (Accepted, Editorial) [274]
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) [275]
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) [276]
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) Newer standards for FC-AL, FC-PH, FC-PH-3, SST, and SSC (Accepted, Editorial) [277]
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) Add a comma (Accepted, Editorial) [278]
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) Add a colon (Accepted, Editorial) [279]
PDF Page 28, page 6, clause 3.1.6, Editorial

There is no : after the blocked task state text.

IBM 7) 'See x.y.z.' is okay (Accepted, Editorial) [280]
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.

Editor's Note: There are two meaning behind the two formats. The format 'foo (see x.y.z)' means that the term 'foo' is further defined in x.y.z. The format where a definition ends with a separate sentence 'See x.y.x.' means that x.y.z provides further information on the glossary entry being defined.

Because the two formats convey different information, both will be kept. The changes described below need to be made so that the usage in consistent.

The following glossary entries need to be revised to use the 'See x.y.z.' format: 3.1.51, 3.1.52, 3.1.68, 3.1.120, 3.1.122, 3.1.123, 3.1.124, 3.1.126, 3.1.127, 3.1.128, 3.1.134 and 3.1.142. The following glossary entry needs to be revised to use the '(see x.y.z)' format: 3.1.108.

IBM 8) Why define 'Control mode page'? (Rejected) [281]
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.

Reason for Rejection: Mode pages are defined in SPC, but exactly one mode page is referenced repeatedly in SAM-2. That mode page is the Control mode page, explaining why only the Control mode page is mentioned in the SAM-2 glossary. In the editor's opinion, one key function performed by the glossary is tying on document to the others. The Control mode page glossary entry serves that function by providing a basic definition and giving a pointer to SPC-2 for anyone reading SAM-2 and needing a quick reference for what the heck the darn thing is.

IBM 9) Protocol specific definitions of 'Current Task' (Accepted, Substantive) [282]
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) Foolish consistency in references (Rejected) [283]
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.

Reason for Rejection: The cited definition is for 'destination device' the antonym of 'destination device' is 'source device'. The sentence cited for change recommends reading the definition for the 'destination device' antonym as a way to understand the defined term. The proposed change diminishes the current meaning by eliminating the notion that an antonym term exists and further adds to the confusion by removing 'source device', leaving the impression that 3.1.115 further defines 'destination device' instead of its antonym.

IBM 11) Redefine 'logical unit' (Unresolved) [284]
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.

Editor's Note: Including changes requested by comment Exabyte 7), change the definition of logical unit from:

> A target-resident object that implements a device model and processes SCSI commands sent by an application client.

to:

> A SCSI target device object, containing a device server and task router, that implements a device model and manages tasks to process SCSI commands sent by an application client.

IBM 12) Why define 'standard INQUIRY data' (Rejected) [285]
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.

Reason for Rejection: One key function performed by the glossary is tying on document to the others. The standard INQUIRY data is referenced repeatedly by SAM-2 for the HiSup, NormACA, and other feature support bits. The standard INQUIRY data glossary entry serves that function by providing a basic definition and giving a pointer to SPC-2 for anyone reading SAM-2 and needing a quick reference for what the heck the darn thing is.

IBM 13) Task manager definition (Accepted, Editorial) [286]
PDF Page 34, page 12, clause 3.1.132, Editorial

The task manager processes more that 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) Make hierarchy conventions capitalization consistent with elsewhere (Accepted, Editorial) [287]
PDF Page 37, page 15-16, clause 3.6.1, Editorial

All the capitalized words should be changed to uncapitalized words.

Editor's Note: Capitalization of object names will be removed and 'object' will be added after every object name.

IBM 15) Missing comma (Accepted, Editorial) [288]
PDF Page 40, page 18, clause 4.1 1st paragraph under a,b,c list 2nd to last sentence, 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) 'elements' s/b 'objects' (Rejected) [289]
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.

Reason for Rejection: The use of 'object' in place of 'element' in this sentence would violate the glossary definition of 'object', to whit:

> An architectural abstraction or container that encapsulates data types, services, or other objects that are related in some way.

Comments such as Cisco 5) take 'object' be equivalent exactly an object defined by the SCSI architecture model and the editor has agreed to ensure that usage in SAM-2.

IBM 17) Removing 'the following clauses' (Accepted, Editorial) [290]
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.

Editor's Note: Explicitly listing by number the clauses described by figure 8 is totally impractical. The list changes frequently as the objects in the model change. Furthermore, the list would contain at least six entries and would read like gibberish.

Change the cited sentence from:

> The following clauses define these components in greater detail.

to:

> This standard defines these components in detail.

IBM 18) Remove 'That is' (Accepted, Editorial) [291]
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.

Editor's Note: 'That is' will be changed to 'For example'.

IBM 19) Remove 'In some cases' (Accepted, Editorial) [292]
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) Remove 'In addition' (Accepted, Editorial) [293]
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) 'might be' s/b 'is' (Accepted, Editorial) [294]
PDF Page 49, page 27, clause 4.7.4, Editorial

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

IBM 22) Consistent usage of 'LUN' and logical unit number (Accepted, Editorial) [295]
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.

Editor's Note: It is the editor's opinion that SAM-2 uses 'logical unit number' more frequently than 'LUN', with three exceptions: W-LUN (a defined acronym), LUN 0 (a very special case logical unit number), and field names (e.g., TARGET/LUN). There for the following inconsistent uses of 'LUN' will be changed to 'logical unit number':

PDF pg 51, pg 29, Table 1 title
PDF pg 51, pg 29, p1, s1 after Table 1
PDF pg 61, pg 39, 4.12.2, title & x5 in p1&p2
PDF pg 61, pg 39, Figure 24 title

PDF pg 62, pg 40, Table 3 title
PDF pg 62, pg 40, p1 after Table 3

PDF pg 62, pg 40, Table 4 title

IBM 23) Do not capitalize logical unit (Accepted, Editorial) [296]
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) Remove 'For convenience' (Accepted, Editorial) [297]
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) Do not describe what a SIMPLE task attribute does (Accepted, Editorial) [298]
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.

Editor's Note: The cited text will be removed and a cross reference to the description of the SIMPLE task attribute will be added.

IBM 26) Description of 'in use' not clear (Accepted, Editorial) [299]
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.

Editor's Note: The cited sentence intends to define the term 'in use' as that term is used in the preceding sentence. Change the two sentences from:

> An I_T_L_x nexus that is in use shall be unique as seen by the initiator originating the command and the logical unit to which the command was addressed, otherwise an overlapped command condition exists (see 5.8.2). An I_T_L_x nexus is in use over the interval bounded by the events specified in 5.5).

to:

> An I_T_L_x nexus that is in use (i.e., during the interval bounded by the events specified in 5.5) shall be unique as seen by the initiator originating the command and the logical unit to which the command was addressed, otherwise an overlapped command condition exists (see 5.8.2).

IBM 27) Remove superfluous 'By implication, therefore,' (Accepted, Editorial) [300]
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) Remove 'also' (Accepted, Editorial) [301]
PDF Page 54, page 32, clause 4.11.2 1st paragraph; last sentence, Editorial

The term 'also' should be deleted.

Editor's Note: This change has been included in the resolution to comment HP 45).

IBM 29) Remove change bars (Accepted, Editorial) [302]
PDF Page 55, page 33 and ??, Near top of page, Editorial

The change bars need to be removed from this standard.

IBM 30) Fix 'only allowed to only' (Accepted, Editorial) [303]
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…'.

Editor's Note: Resolved as described in comment Exabyte 36).

IBM 31) 'an SCSI' s/b 'a SCSI' (Accepted, Editorial) [304]
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.

Editor's Note: Resolved as described in comment Quantum 3).

IBM 32) 'enhanced' s/b 'modified' (Accepted, Editorial) [305]
PDF Page 59, page 37, clause 4.12.1 1st paragraph, Editorial

The term 'enhanced' should be changed to 'modified'.

IBM 33) Hierarchical logical unit addressing options not correct (Accepted, Editorial) [306]
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).'.

Editor's Note: The proposed change is not sufficient because it ignores extended logical unit addressing. Including the changes needed to resolve comment Compaq 19) change the list:

From	To
a) Logical unit address method (see 4.12.4); b) Peripheral device address method (see 4.12.5); and c) Device type specific.	a) Logical unit address method (see 4.x.4); b) Peripheral device address method (see 4.x.5); c) Flat space addressing method (see 4.x.6); or d) Extended logical unit addressing method (see 4.x.7).

IBM 34) 'clauses below' is inaccurate (Accepted, Editorial) [307]
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.

Editor's Note: When the changes described in the response to comment Compaq 19) are made, the 'clauses below' will move to an entirely different clause. Clearly the request change will be needed then.

IBM 35) Change table cross reference (Rejected) [308]
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.

Reason for Rejection: Most table references in SAM-2 are to tables in the same clause as the reference. For such references, the cross reference format is '(see table x)' but this can be interpreted as a simplification of '(see table x in this subclause)'. Table 6 is not in the same clause as this reference to it. For this reason, the reference format is that cited. For those lacking a PDF copy of SAM-2 with its hot links, the additional information naming the clause in which the referenced table can be found it deemed to be helpful in finding the table.

IBM 36) 'interconnect layer' or 'physical interconnect layer', not both (Accepted, Editorial) [309]
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.

Editor's Note: As per comment Intel 5), the second proposed solution will be applied.

IBM 37) Remove parentheses (Accepted, Editorial) [310]
PDF Page 71, page 49, clause 5.1 task attribute description, Editorial

The statement in ()s should have the ()s removed.

IBM 38) Discuss service actions (Accepted, Substantive) [311]
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.

Editor's Note: Insert the following as a new fifth paragraph (following the paragraph describing the OPERATION CODE byte.

> Some operation codes provide for modification of their operation based on a service action. In such cases, the combination of operation code value and service action code value may be modeled as a single, unique command determinate. The location of the SERVICE ACTION field in the CDB varies depending on the operation code value.

IBM 39) 'bit of' s/b 'bit set to' (Accepted, Editorial) [312]
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.

Editor's Note: The two cited instances of 'bit of' are the only two in the standard.

IBM 40) Insert 'or' (Accepted, Editorial) [313]
PDF Page 76, page 54, clause 5.3.1, INTERMEDIATE-CONDITON MET description, Editorial

The list of statuses needs an 'or' between the last two entries.

IBM 41) 'normal successful' s/b 'successful' (Accepted, Editorial) [314]
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) 'bit is' s/b 'bit is set to' (Accepted, Editorial) [315]
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'.

Editor's Note: The cites where 'bit is xxx' will be changed to 'bit is set to xxxx' are as follows:

- PDF pg 74, p4 after table 21
- PDF pg 72, TASK ABORTED status
- PDF pg 83, instances cited in comment
- PDF pg 85, list entry 5

IBM 43) Bold 'SCSI' in 'SCSI Command Received' (Accepted, Editorial) [316]
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.

Editor's Note: The locations where procedure named need to be made bold are as follows:

- PDF pg 81, 5.5, p2
- PDF pg 84, this citation

IBM 44) Only ACA tasks from the faulted initiator are allowed during and ACA (Accepted, Editorial) [317]
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…'

Editor's Note: For reference, the cited sentence is:

> During ACA new tasks received by the logical unit are not allowed to enter the task set unless they have the ACA task attribute (see 7.5.4).

The proposed change would cause the sentence to read:

> During ACA new tasks received by the logical unit from the faulted initiator are not allowed to enter the task set unless they have the ACA task attribute (see 7.5.4).

This appears to eliminate discussion of the handling of tasks from other initiators, which seems undesirable. Moving the proposed new text to another location in the sentence seemed to have better results and the following change will be made:

> During ACA new tasks received by the logical unit are not allowed to enter the task set unless they have the ACA task attribute (see 7.5.4) and are from the faulted initiator.

IBM 45) 'conditions is' s/b 'condition is' (Accepted, Editorial) [318]
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:'.

Editor's Note: The text will be changed to match the first choice.

IBM 46) 'ACA or CA' or 'CA or ACA', not both (Accepted, Editorial) [319]
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.

Editor's Note: Surely, the ultimate nit deserves the ultimate response. In the old days when CA was described in SCSI-2, I preferred ACA or CA because ACA was the one being described in SAM. Now that CA is described in SAM-2, I prefer CA or ACA because CA is the more sensible capability of the two.

'ACA or CA' will be change to 'CA or ACA' and 'ACA and CA' will be change to 'CA and ACA' in the following locations:

- PDF pg 29, 3.1.33 & 3.1.34
- PDF pg 51, last p on page
- PDF pg 74, p2 after table 21
- PDF pg 75, CHECK CONDITION
- PDF pg 82, list entry c) then list entry b)
- PDF pg 87, the cited text
- PDF pg 96, p1 after 1st list
- PDF pg 99, 6.2, p2
- PDF pg 105, 7.2 list entry c)
- PDF pg 107, 7.4.3 s1
- PDF pg 109, figure 33, two state transitions
- PDF pg 109, figure 33, figure footnote
- PDF pg 111, p1 after table 31 two cases

IBM 47) Reorder the rows in table 27 (Rejected) [320]
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.

Reason for Rejection: In all three of the cited tables, the device server action of 'process the task' appears in the first row. Maintaining that consistency is the goal.

IBM 48) Do not understand commands permitted during CA or ACA (Accepted, Editorial) [321]
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.

Editor's Note: This issue will be resolved as described in the response to EMC 14).

IBM 49) Presence of table footnote superscript is unclear (Accepted, Editorial) [322]
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.

Editor's Note: The table is already at full page width. The only way to fix this described problem is to gratuitously hyphenate 'Attribute'. That will be done.

IBM 50) Notes 7 & 8 are not a notes (Accepted, Substantive) [323]
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.

Editor's Note: The note will be changed to body text. Note 7 will also be changed to body text because it says the same thing.

IBM 51) 'could' s/b 'may' (Accepted, Editorial) [324]
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) Remove discussion of ACA in incorrect logical unit selection (Accepted, Substantive) [325]
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?

Editor's Note: The phrase '…unless an ACA exists' will be removed. Surely, the existence of an ACA applies equally to several of the other actions described in this clause. There is no reason to make a special case out of this action.

IBM 53) What sense data is returned? (Accepted, Editorial) [326]
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?

Editor's Note: Change the cited phrase to '…the target shall return sense data appropriate to the condition that is making the logical unit not operational.'

IBM 54) Name the clauses by number (Accepted, Editorial) [327]
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.

Editor's Note: No way am I going to list the clause numbers when they appear in the bulleted list immediately preceding this sentence. The whole sentence will be deleted.

IBM 55) 'below' s/b 'following' (Accepted, Editorial) [328]
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) 'report' s/b 'asynchronous event report' (Accepted, Editorial) [329]
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) 'AER' s/b 'asynchronous event report' (Accepted, Editorial) [330]
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) 'following paragraphs' s/b 'remainder of this subclause' (Accepted, Editorial) [331]
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.'.

Editor's Note: The cited phrase will be changed to 'the remainder of this subclause.'.

IBM 59) 'a' s/b 'an' (Accepted, Editorial) [332]
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) Delete list of argument descriptions (Rejected) [333]
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.

Reason for Rejection: Based on the fact that the editor has repeatedly been asked to include procedure argument descriptions in various SAM-2 locations despite the presence of the argument descriptions elsewhere, the opposite action will not be taken in this case.

IBM 61) 'which' s/b 'that' (Accepted, Editorial) [334]
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) [335]
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) Ensure that figure text does not obscure other figure text (Accepted, Editorial) [336]
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) Establishment of a CA or ACA condition need not result in an S2:S3 transition (Rejected) [337]
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.

Editor's Note: The QERR field has no effect on the S2:S3 transition because the QERR field affects only those tasks in the blocked or dormant state. S2 is the enabled state, not the blocked state and not the dormant state. The description of the S1:S4 and S3:S4 transitions covers the results when a CA or ACA condition is established by reference to 5.6, where the details are fully covered. It is highly preferable that all the detailed discussion of what causes tasks to be aborted be kept in one place (i.e., 5.6) so that inconsistencies do not develop when the mechanics of aborting tasks are modified.

IBM 65) Missing closing parenthesis (Accepted, Editorial) [338]
PDF Page 110, page 88, clause 7.7.1 1st paragraph, Editorial

The i.e does not have a close) in it.

Editor's Note: In the cited text, change from '…another initiator's task set.' to '…another initiator's task set).'

IBM 66) 'older Head of Queue' not correct (Rejected) [339]
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.

Reason for Rejection: The cited statement does not concern when Head of Queue tasks can enter the enabled state (i.e., the S0:S2 transition in the state diagram). Head of Queue tasks always enter the enabled state directly, without ever entering the dormant state.

The cited statement concerns when Simple and Ordered tasks can transition from the dormant state to the enabled state relative to any Head of Queue tasks in the task set. This is the S1:S2 transition in the state diagram, for which the figure footnote says, in part, that the transition can proceed only when "all older head of queue … tasks have ended". The cited statement exactly reflects the wording in the state diagram. Furthermore, the cited statement is required to produce the behavior shown in figure 35, that all agree is the correct behavior.

IBM 67) Presence of table footnote superscript is unclear (Accepted, Editorial) [340]
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) Referenced document is not listed in clause 2 (Rejected) [341]
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.

Reason for Rejection: See response to comment IBM 71).

IBM 69) Presence of table footnote superscript is unclear (Accepted, Editorial) [342]
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) Presence of table footnote superscript is unclear (Accepted, Editorial) [343]
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) Referenced document is not listed in clause 2 (Rejected) [344]
PDF Page 118, page 96, clause A.4.8, Technical

This references an ISO/IEC 10646 which is not in the document reference list.

Reason for Rejection: All the references to documents that appear in Annex A appear in this bibliography subclause. This is appropriate because Annex A is not normative, therefore any references it makes cannot be normative references and the documents thus referenced should not appear in Clause 2, only normative references should appear in Clause 2.

9. Intel Corp.

Intel Corp. principle representative Cris Simpson submitted a No vote with the following comments.

Intel 1) Figure 2 is a relationship, but not a hierarchy (Rejected) [345]
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.

Reason for Rejection: The two sentences as written describe the content of Figure 2 exactly as T10 intends. As the comment notes, the first sentence says that a relationship exists among the SCSI family of standards. Contrary to the comment, the second sentence places bounds on how that relationship can be interpreted. The second sentence does not deny the content of the first, rather the second sentence qualifies the extent to which the first can be interpreted. This description of the Figure 2 content, no more, and no less is all that T10 has approved.

Intel 2) Figure 2 says nothing about applicability of standards and transports (Accepted, Editorial) [346]
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.

Editor's Note: Resolved as per comment IBM 3), i.e., the cited sentence will be deleted.

Intel 3) Hyphenate Protocol-Specific (Rejected) [347]
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)

Reason for Rejection: During the SPC-2 letter ballot the editor was instructed to pick either 'protocol specific' or 'protocol-specific' and use it consistently throughout the dpANS. The editor chose not to hyphenate. Since neither of the choices offered the editor are grammatically correct, the grammarians in the group will have to grin and bear it.

Intel 4) SAM-2 takes the SCSI port out of the service delivery subsystem (Accepted, Substantive) [348]
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.

Editor's Note: The problem is that 00-268r8 "Defining Targets/Initiators as Ports" removed the SCSI port from the service delivery subsystem but failed to identify all the text needing changes.

Based on this comment, the following additional changes will be made:

1. In Figure 5, a SCSI Initiator Port and SCSI Target Port will be added between the Protocol Service Interface and the Service Delivery Subsystem, and
2. The cited text will be changed to, "a request becomes pending when it is passed to the SCSI initiator port".

Intel 5) 'physical interconnect' s/b just 'interconnect' (Accepted, Editorial) [349]
PDF page 68, page 46, clause 4.14

Remove all occurrences of 'physical' when used with 'interconnect'.

Intel 6) Protocol service requests result in interconnect service requests (Deferred to SAM-3) [350]
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.

Editor's Note: Actually, the arrows in the middle represent the handling of interconnect service requests. The problem here is the use of ULP and LLP. In SAM there are actually only two layers and the use of ULP and LLP confuses this. The correct solution is to replace ULP and LLP with explicit layer names throughout SAM-n. While I would love to use this comment as an excuse to cleanup the mess, there are other issues demanding attention and a desire not to delay publication excessively while the corrected text is written and reviewed. Maybe this can be addressed in SAM-3.

10. Maxtor Corp.

Maxtor Corp. principle representative Mark Evans submitted a Yes vote with the following comments.

Maxtor 1) Delete 'directly' (Accepted, Editorial) [351]
PDF page 23, page 1, 1.2, first paragraph

I recommend that "directly" be deleted.

Maxtor 2) Global search & cleanup for 'device', 'target', & 'initiator' (Accepted, Editorial) [352]
PDF page 24, page 2, 1.3, Common Access Method (Global)

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) 'initiator' s/b 'SCSI initiator device' (Accepted, Editorial) [353]
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) Add a colon (Accepted, Editorial) [354]
PDF page 28, page 6, 3.1.6, blocked task state

A colon is missing here.

Maxtor 5) Fix the definition of 'code value' (Accepted, Editorial) [355]
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"?

Editor's Note: Now that you mention it, how can a 'code value' (singular) be a series of anything? Replace the cited sentence with, "A defined numeric value, possibly a member of a series of defined numeric values, representing an identified and described instance or condition."

Maxtor 6) Hyphenate Protocol-Specific (Rejected) [356]
PDF page 29, page 7, 3.1.21, current task

I recommend that there be a hyphen between "protocol" and "specific".

Reason for Rejection: See the response to comment Intel 3).

Maxtor 7) Remove commas (Accepted, Editorial) [357]
PDF page 29, page 7, 3.1.27, device service request

I recommend that the commas be deleted from this sentence.

Maxtor 8) Change 'dormant task state' definition (Unresolved) [358]
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) Change 'enabled task state' definition (Unresolved) [359]
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) Disappear 'disappears' (Accepted, Editorial) [360]
PDF page 29, page 7, 3.1.33, faulted initiator

I recommend that "disappears" be changed to "is cleared".

Maxtor 11) Disappear 'disappears' (Accepted, Editorial) [361]
PDF page 29, page 7, 3.1.34, faulted task set

I recommend that "disappears" be changed to "is cleared".

Maxtor 12) Delete 'actual' (Accepted, Editorial) [362]
PDF page 30, page 8, 3.1.38, function complete

I recommend that the word "actual" be deleted.

Maxtor 13) Remove 'remote' (Rejected) [363]
PDF page 30, page 8, 3.1.55, in transit

I recommend changing "a remote" to "an".

Reason for Rejection: Removing 'remote' could lead to the impression that information could be in transit to a local object.

Maxtor 14) 'rank' is not clear in 'layer' definition (Accepted, Editorial) [364]
PDF page 30, page 8, 3.1.56, layer

I don't think "of the same rank" is clear and needs more definition.

Editor's Note: Change 'layer' definition from:

> A subdivision of the architecture constituted by subsystems of the same rank.

to:

> A subdivision of the architecture constituted by initiator and target elements at the same level relative to the interconnect.

Maxtor 15) Remove 'media information' from glossary (Rejected) [365]
PDF page 31, page 9, 3.1.66, media information

As there is no instance of this [media information] used in the document, I recommend that this be deleted.

Reason for Rejection: Comment EMC 9) has proposed a use of 'media information' in 5.2.1 and that use has been accepted.

Maxtor 16) Change 'An' to 'A' (Accepted, Editorial) [366]
PDF page 31, page 9, 3.1.77, protocol option

"An" should be replaced with "A".

Maxtor 17) 'target SCSI device' s/b 'SCSI target device' (Accepted, Editorial) [367]
PDF page 32, page 10, 3.1.92, SCSI initiator device

"target SCSI device" should be changed to "SCSI target device".

Maxtor 18) Delete 'directly' (Accepted, Editorial) [368]
PDF page 34, page 12, 3.1.117, subsystem

I recommend that "directly" be deleted.

Editor's Note: See comment Other 2) for discussion of all the changes in the 'subsystem' definition.

Maxtor 19) Is 'division' another word for 'layer'? (Accepted, Editorial) [369]
PDF page 34, page 12, 3.1.117, subsystem

Isn't "division" meant to be "layer"?

Editor's Note: Strictly speaking, the answer to this question is No, the 'divisions' in the initiator and target combine to form a layer.

See comment Other 2) for discussion of all the changes in the 'subsystem' definition.

Maxtor 20) It's just a name (Rejected) [370]
PDF page 34, page 12, 3.1.120, target device name

I recommend changing "A SCSI device name" to "The name".

Reason for Rejection: 3.1.89 provides a definition for SCSI device name so the usage here is not ambiguous. Similar wording in the definition for 'initiator device name' produced no comments. So, it seems reasonable to keep such usage here.

Maxtor 21) It's just a name (Rejected) [371]
PDF page 34, page 12, 3.1.123, target port name

I recommend changing "A SCSI port name" to "The name".

Reason for Rejection: 3.1.96 provides a definition for SCSI port name so the usage here is not ambiguous. Similar wording in the definition for 'initiator port name' produced no comments. So, it seems reasonable to keep such usage here.

Maxtor 22) It's just a name (Rejected) [372]
PDF page 34, page 12, 3.1.124, target/initiator device name

I recommend changing "A SCSI device name" to "The name".

Reason for Rejection: 3.1.89 provides a definition for SCSI device name so the usage here is not ambiguous. Similar wording in the definition for 'initiator device name' produced no comments. So, it seems reasonable to keep such usage here.

Maxtor 23) A 'task router' is a SAM-2 object (Accepted, Editorial) [373]
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…"

Editor's Note: Change to: "An object in a SCSI target port that…"

Maxtor 24) i.e., queuing (Accepted, Editorial) [374]
PDF page 34, page 12, 3.1.134, task set

Should this be "(i.e., queuing)"?

Editor's Note: Using 'e.g.' makes the statement more general without diminishing what would be said by 'i.e.'. More general wording allows for future changes without having to find and fix this small fry. Therefore, the change will be made but with 'e.g.' instead of 'i.e.'.

Maxtor 25) Hyphenate 'application-specific' (Accepted, Editorial) [375]
PDF page 35, page 13, 3.1.139, upper level protocol (ULP)

There should be a hyphen between "application" and "specific".

Maxtor 26) Change 'does' to 'performs' (Accepted, Editorial) [376]
PDF page 35, page 13, 3.1.142, well known logical unit

I recommend replacing "does" with "performs".

Maxtor 27) Remove 'expected' keyword (Unresolved) [377]
PDF page 35, page 13, 3.3.1, expected

This term [keyword 'expected'] could be deleted as its only used once in the document and in that case has its standard English meaning.

Maxtor 28) Penultimate commas (Accepted, Editorial) [378]
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) Delete 'usually' (Accepted, Editorial) [379]
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.

Editor's Note: 'usually' will be deleted.

Maxtor 30) '0-9' s/b '0 through 9' (Accepted, Editorial) [380]
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) Missing 'and' (Accepted, Editorial) [381]
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) Remove commas (Rejected) [382]
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".

Reason for Rejection: The cited phrase appears in the following sentence:

> "A client directs requests to a remote server, via the client's service delivery subsystem, and receives a completion response or a failure notification."

The sentence with the cited phrase removed is:

> "A client directs requests to a remote server and receives a completion response or a failure notification."

It seems clear that the cited phrase represents a thought that is in addition to the basic thought and purpose of the sentence.

Setting such a phrase apart from the rest of the sentence with commas is appropriate.

Maxtor 33) Remove comma (Accepted, Editorial) [383]
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) 'in' s/b 'from' (Accepted, Editorial) [384]
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) Application client lifetime wrong (Rejected) [385]
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.

Reason for Rejection: The cited sentence are:

> An application client represents a thread of processing whose functionality is independent of the interconnect and SCSI protocol. In an implementation, that thread could correspond to the device driver and any other code within the operating system that is capable of managing I/O requests without requiring knowledge of the interconnect or SCSI protocol. In the architecture model, an application client is created to issue a single SCSI command or task management function.

The last sentence says exactly what the comment requests it to say (green text). The meaning of the other two sentences depends on how one defines 'thread'. In some operating system terminology, 'thread' is a sequence of instructions executing code that is a subset of a device driver or such like. The intent of the other two sentences is valid in the context of such a definition of 'thread'.

Last but by no means least, the definition of 'application client' is open to revision based on the resolution to comment Cisco 4).

Maxtor 36) The service delivery subsystem transports more than commands and data (Accepted, Editorial) [386]
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."

Editor's Note: Change the cited phrase to '…commands, data, and related information.'

Maxtor 37) Do not capitalize devices (Accepted, Editorial) [387]
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) 'target' s/b 'target/initiator' (Accepted, Editorial) [388]
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) 'each may' s/b 'each of which may' (Accepted, Editorial) [389]
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) Remove right parenthesis (Accepted, Editorial) [390]
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.

Editor's Note: Resolution of this comment is included in the resolution of comment IBM 26), which is a rewrite of the first two sentences in the cited paragraph.

Maxtor 41) Remove 'By implication' (Accepted, Editorial) [391]
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".

Editor's Note: As requested in comment IBM 27), 'By implication, therefore,' will be removed.

Maxtor 42) it's s/b its (Accepted, Editorial) [392]
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) Clumsy description of figure 19 (Accepted, Editorial) [393]
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) 'an SCSI' s/b 'a SCSI' (Accepted, Editorial) [394]
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.

Editor's Note: Resolved as described in comment Quantum 3).

Maxtor 45) Dependent logical units example confusing (Accepted, Editorial) [395]
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.

Editor's Note: The purpose of all the cited text is to provide an example of dependent logical units in a logical unit hierarchy as the basis for the eight byte logical unit number structure. Rather than drag more SCC in to SAM-2, the example needs to be made more generic as follows:

1) change the first occurrence of 'SCSI bridge controller' to 'SCSI device with dependent logical units (SDDLU)' use SDDLU throughout the rest of the introductory text and in figure 23.
2) remove '(LUN 0)' wherever it appears in figure 23.
3) change 'dual ported SCSI bridge controller' to 'SDDLU with multiple SCSI target ports, one in each of the SCSI domains containing a SCSI initiator device'.
4) Change 'SCSI bus' to 'SCSI domain' but note that the domains are called buses to coordinate with the nomenclature used in dependent logical unit addressing.
5) Describe the SCSI device with dependent logical units as being the SCSI initiator device for the SCSI devices below it in the hierarchy.
6) Remove 'As shown in figure 23,' in the first sentence introducing the figure because the figure contains three hierarchical levels, not four as the remainder of the sentence describes.

See document T10/02-227 for the complete rewrite of the text cited by this comment.

Maxtor 46) From whom does the SCSI protocol service response reply come? (Accepted, Editorial) [396]
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.

Editor's Note: The source of the reply to the ULP peer is the local ULP, not the local LLP. This can best be clarified by changing the cited sentence from:

A SCSI protocol service response may be invoked to return a reply to the ULP peer.

to:

A SCSI protocol service response may be invoked to return a reply from the invoking ULP to the ULP peer.

Maxtor 47) Untagged tasks SIMPLE attribute is explicit (Rejected) [397]
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.

Reason for Rejection: Removing the 'implicitly' would result in the requirement that untagged tasks be transmitted with a task attribute of SIMPLE. Introducing such a requirement would burden targets with verifying that the requirement has been met.

Maxtor 48) Data-in buffer is valid at the time of command completion (Accepted, Editorial) [398]
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.

Editor's Note: The first inclination is to change 'on' to 'before' in the cited sentence, but that has the potential for being viewed as a substantive change. Therefore, the a more wordy change will be made from:

> A buffer to contain command specific information returned by the logical unit on command completion.

to:

> A buffer to contain command specific information returned by the logical unit by the time of command completion.

Maxtor 49) Eliminate prescient logical units (Unresolved) [399]

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.

Editor's Note: The sentence proposed for removal is:

> Also, a logical unit may interpret a field or code value in accordance with a future revision to a SCSI standard.

Maxtor 50) Insert 'the' (Accepted, Editorial) [400]
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) CONTROL byte is not in the last byte of the variable length CDB (Accepted, Editorial) [401]
PDF page 74, page 52, 5.2.3, CONTROL byte, first paragraph, first sentence:
PDF page 73, page 51, 5.2.1, CDB Format, forth paragraph, second sentence:

I recommend that the following parenthetical phrase be added, "(except for the CDB for operation code 7F)".

Editor's Note: The proposal is a fine and laudable suggestion, except that parenthetical expressions that do not begin with "(i.e.," or "(e.g.," sooner or later catch the letter ballot eye of our illustrious, and industrious vice-chair. Therefore, the sentence will be changed from:

> The CONTROL byte is the last byte of every CDB.

to:

> The CONTROL byte is the last byte of every CDB, except for the CDB for operation code 7Fh.

Perhaps you feel that this change is somewhat arbitrary based on the following sentence in 5.2.1:

> All CDBs (except the CDB for operation code 7Fh) shall have a CONTROL byte as the last byte.

To maintain consistency and to avoid future letter ballot comments, that sentence will be change to:

All CDBs, except the CDB for operation code 7Fh, shall have a CONTROL byte as the last byte.

Maxtor 52) 'indicate' s/b 'specify' (Accepted, Editorial) [402]
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.

Editor's Note: SAM-2 contains a small enough number of uses of 'indicates' and 'specifies' that a global cleanup is possible. The following changes will be made:

From 'indicate' to 'specify' (or plurals there of)
- PDF pg 51, p1 after table 1
- PDF pg 61, 4.12.3, p2
- PDF pg 62, 1st - 4th p after table 4 (one each)
- PDF pg 64, 1st - 3rd p after table 8 (one each)
- PDF pf 65, p1 after table 9

From 'specify' to 'indicate' (or plurals there of)
- none

Maxtor 53) Do not describe obsolete bit in the CONTROL byte (Rejected) [403]
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.

Reason for Rejection: The standing practices of T10, initiated by Gene Milligan, is that standards contain a brief description of obsolete fields. This practice should not be changed, particularly since in this case the bit being described has been made obsolete between SAM and SAM-2.

Maxtor 54) Insert 'or' (Accepted, Editorial) [404]
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) Insert 'or' (Accepted, Editorial) [405]
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) 'needs to be' s/b 'may be' (Rejected) [406]
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…"

Reason for Rejection: The cited sentence is describing a method of operation, not a requirement or suggested usage. For these reasons, the use of 'may' was considered inappropriate by the CAP working group when this paragraph was rewritten for SAM-2.

Maxtor 57) Eliminate use of 'assumes' (Rejected) [407]
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, …"

Reason for Rejection: The fact of the matter is that the application client literally 'assumes' that a task exists until notified differently. The task may not exist at all. The command may have fallen off the end of the interconnect layer wire. For this reason, the statement of an modeled assumption on the part of the application client is important to properly describing the model.

Maxtor 58) Remove commas (Rejected) [408]
PDF page 102, page 80, 6.8, WAKEUP, list

I recommend that the commas be removed from these two items.

Reason for Rejection: The commas serve to separate where the wakeup is sent from the description of the protocol rules that select the particular list entry from the choice of two. They add clarity.

Maxtor 59) Overlapped commands should not allow a command into the task set (Accepted, Substantive) [409]
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."

Editor's Note: Change from:

> 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.

to:

> A task shall be entered into a task set unless:
>
> a) A condition exists that causes that task to be completed with a status of BUSY, RESERVATION CONFLICT, TASK SET FULL, or ACA ACTIVE;
> b) Detection of an overlapped command (see 5.8.2) causes that task to be completed with a CHECK CONDITION status; or
> c) SCSI transport protocol specific errors cause that task to be completed with a status other than GOOD.

Maxtor 60) 'name' s/b 'names' (Accepted, Editorial) [410]
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) Change Generic Requirements arrow lines (Accepted, Editorial) [411]
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.

Editor's Note: Resolved as per comment Compaq 4).

Ophidian 2) Remove "Pending Task" (Accepted, Substantive) [412]
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) [413]
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) [414]
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) [415]
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) [416]
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) [417]
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) [418]
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; TRANSCEIVER MODE CHANGED TO SINGLE-ENDED; or TRANSCEIVER MODE CHANGED TO LVD).

Ophidian 9) Remove "Current Task" (Unresolved) [419]

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 interconnect behavior.

Ophidian 10) Status returned while a CA or ACA is active (Unresolved) [420]
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) [421]
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) Should HISUP be 0 or 1 for single level LUNs? (Unresolved) [422]
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) Remove 'therefore' (Accepted, Editorial) [423]
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) 'an SCSI' s/b 'a SCSI' (Accepted, Editorial) [424]
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) Wrong parenthesis (Accepted, Editorial) [425]
PDF page 64, note 4, page 42, Editorial

The closing parenthesis in the first sentence looks to be in the wrong place.

Editor's Note: The response to comment HP 63) addresses the parenthesis misplacement cited by this comment. Note that comment HP 63) shows the changes as they apply to note 2, however, note 4 is identical to note 2 and comment HP 63) provides for changing both notes.

Quantum 5) Cross reference to clause 5 s/b to 5.1 (Accepted, Editorial) [426]
PDF page 73, clause 5.2.1 p1, page 51, Editorial

Change reference from "clause 5" to "subclause 5.1".

Editor's Note: SAM-2 does not use 'subclause 5.1'. The cross reference will be changed to SAM-2 format of '5.1'.

Quantum 6) 'Tasks' s/b 'New tasks' (Accepted, Editorial) [427]
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) Missing closing parenthesis (Accepted, Editorial) [428]
PDF page 110, clause 7.7.1, p1, page 79, Editorial

There is no closing parenthesis for the phrase starting "(i.e., task set management…"

Editor's Note: This issue will be resolved as described in the response to comment IBM 65).

13. Texas Instruments

Texas Instruments principle representative Paul Aloisi submitted a Yes vote with the following comments.

TI 1) SCSI Standards Family (Rejected) [429]
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) [430]
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) [431]
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) [432]
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) [433]
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) [434]
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) [435]
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) [436]
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.

14. Comments Received Since the Letter Ballot Closed

The following comments have been received since the letter ballot closed or developed to better resolve already received letter ballot comments.

Other 1) [ROW] Clause 4.6 is a hanging paragraph (Accepted, Editorial) [437]
PDF page 45, page 23, clause 4.6

Clause 4.6 is a hanging paragraph.

Other 2) [ROW] Delete the definition of 'subsystem' (Unresolved) [438]

PDF page 34, page 12, 3.1.117, 'subsystem'
PDF page 45, page 32, 4.5, SCSI Domain
PDF page 68, page 46, 4.14, The SCSI model for distributed communications

As shown by the confusion in comment Maxtor 19), the definition of subsystem is confusing.

In most cases, the term 'subsystem' appears in one of two other defined terms: 'service delivery subsystem' or 'interconnect subsystem'. In these two cases, the usage of 'subsystem' conflicts with the existing glossary definition of 'subsystem'. In the complex terms, the object being defined encompasses layers in both an initiator and a target. The current glossary definition of 'subsystem' intends to cover only an initiator or a target but not both.

There are only two sites where 'subsystem' appears not as part of 'service delivery subsystem' or 'interconnect subsystem'. The easiest way to eliminate the confusion is to delete the 'subsystem' glossary entry and change the two sites where subsystem is used as follows.

In the 4.5 description of the service delivery subsystem, change a usage of 'subsystem' that conflicts with the current glossary entry from:

> The service delivery subsystem connects all the SCSI ports in the SCSI domain, providing a subsystem through which application clients and device servers communicate (see 4.6).

to:

> The service delivery subsystem connects all the SCSI ports in the SCSI domain, providing a mechanism through which application clients and device servers communicate (see 4.6).

In the 4.14 distributed layered communications model, eliminate the usage of 'subsystem' completely and let the picture do the talking by changing from:

> The SCSI model for communications between distributed objects is based on the technique of layering. In the layering technique, the initiator and target I/O systems are viewed as being logically composed of the ordered set of subsystems represented for convenience by the vertical sequence shown in figure 25.

to:

> The SCSI model for communications between distributed objects is based on the technique of layering as shown in figure 25.

Other 3) [ROW] Insert paragraph break (Accepted, Editorial) [439]
PDF page 49, page 27, clause 4.7.3, p4

When the SCSI target/initiator device is operating as a SCSI target device a task router routes the commands and task management functions between the service delivery subsystem and the appropriate logical unit (see 4.7.5). A logical unit is the object to which SCSI commands are sent. One of the logical units within the SCSI target/initiator device shall be accessed using the logical unit number zero. See 4.8 for a description of the logical unit.

s/b

When the SCSI target/initiator device is operating as a SCSI target device a task router routes the commands and task management functions between the service delivery subsystem and the appropriate logical unit (see 4.7.5).

A logical unit is the object to which SCSI commands are sent. One of the logical units within the SCSI target/initiator device shall be accessed using the logical unit number zero. See 4.8 for a description of the logical unit.

Other 4) [ROW] Remove unnecessary capitalization (Accepted, Editorial) [440]
PDF page 85, page 63, clause 5.7.2, list entry 3

Change from:

Upon completion of the first command, the device server invokes the **Send Command Complete** SCSI protocol service with the Status argument set to INTERMEDIATE or INTERMEDIATE-CONDITION MET and a Service Response of LINKED COMMAND COMPLETE.

to:

Upon completion of the first command, the device server invokes the **Send Command Complete** SCSI protocol service with the status set to INTERMEDIATE or INTERMEDIATE-CONDITION MET and a service response of LINKED COMMAND COMPLETE.