Voting Results on T10 Letter Ballot 02-122r0 on
Forwarding SAM-2 to First Public Review

Organization	Name	S	Vote	Add'l Info
Adaptec, Inc.	Ron Roberts	P	Yes	
Amphenol Interconnect	Michael Wingard	P	Yes	
Andiamo Systems, Inc.	Claudio DeSanti	P	Yes	
BREA Technologies, Inc.	Bill Galloway	P	Yes	
Brocade Comm. Systems, Inc.	Brian Forbes	P	YesC	Cmnts
Cisco Systems, Inc.	David Peterson	P	No	Cmnts
Compaq Computer Corp.	Robert C. Elliott	P	No	Cmnts
Congruent Software, Inc.	Peter Johansson	P	No	Cmnts
Crossroads Systems, Inc.	Robert Griswold	P	Yes	
Dallas Semiconductor	James A. Lott, Jr.	A	Yes	
Dell Computer Corp.	Kevin Marks	P	Yes	
EMC Corp.	David Black	A	YesC	Cmnts
Emulex	Robert H. Nixon	P	Yes	
ENDL Texas	Ralph O. Weber	P	Yes	
Exabyte Corp.	Joe Breher	P	YesC	Cmnts
FCI	Douglas Wagner	P	Yes	
Fujitsu	Eugene Lew	P	Yes	
General Dynamics	Nathan Hastad	P	Yes	
Hewlett Packard Co.	Randy Haagens	P	No	Cmnts
Hitachi Cable Manchester	Randy Wasylak	A	Yes	
IBM / Tivoli Systems	George O. Penokie	P	No	Cmnts
Intel Corp.	Cris Simpson	P	No	Cmnts
Iomega Corp.			DNV	
KnowledgeTek, Inc.	Dennis Moore	P	Yes	
LSI Logic Corp.	John Lohmeyer	P	Yes	
Maxtor Corp.	Mark Evans	P	YesC	Cmnts
Microsoft Corp.	Emily Hill	P	Yes	
Molex Inc.			DNV	
Nishan Systems Inc.	Charles Monia	P	Yes	
Ophidian Designs	Edward A. Gardner	P	No	Cmnts
Panasonic Technologies, Inc	Terence J. Nelson	P	Yes	
Philips Electronics/CD Edge	William P. McFerrin	P	Yes	
Pirus Networks	Charles Binford	P	Yes	
QLogic Corp.	Skip Jones	P	Yes	
Quantum Corp.	Paul Entzel	P	YesC	Cmnts
Seagate Technology	Gerald Houlder	P	Yes	
Silicon Image	Mark O'Dell	P	Yes	
Storage Technology Corp.	Erich Oetting	P	Yes	
Sun Microsystems, Inc.	Vit Novak	P	Yes	
Texas Instruments	Paul D. Aloisi	P	YesC	Cmnts
Toshiba America Elec. Comp.	Tasuku Kasebayashi	P	Yes	
TycoElectronics	Michael Wamsley	A	Abs	Cmnts
Veritas Software	Roger Cummings	P	Yes	

Ballot totals: (33:7:1:2=43)
 33 Yes
  7 No
  1 Abstain
  2 Organization(s) did not vote
 43 Total voting organizations
 14 Ballot(s) included comments

This 2/3rds majority ballot passed.
33 Yes is at least a majority of the membership [greater than 21] AND
33 Yes is at least 27 (2/3rds of those voting, excluding abstentions [40])

Key:
P   Voter is principal member
A   Voter is alternate member
YesC   Yes with comments vote
Abs   Abstain vote
DNV   Organization did not vote
Cmnts   Comments were included with ballot
NoCmnts No comments were included with a vote that requires comments
DUP   Duplicate ballot (last ballot received from org. is counted)

PSWD The password was not correct (vote not counted)
ORG? Organization is not voting member of T10 (vote not counted)

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Comments attached to YesC ballot from Mr. Brian Forbes of
Brocade Comm. Systems, Inc.:

1. Clause 1.1, page 1, paragraph 1: reference to clause 1.2 should be to 1.3.

2. Clause 1.2, page 1, paragraph 1: comma should be omitted.

3. Clause 1.3, page 2, Shared Command Set: "prescribe" should be "prescribes"

4. Clause 1.3, page 3, FC-AL-2: "Loop -2" should be "Loop - 2" to be consistent with other entries

5. Clause 2.3, page 5, paragraph 1: suggest "status or availability of a document" instead of "status of the document, or regarding availability"

6. Clause 3.1.20, page 7, Control mode page: suggest "The Control mode page identifies" instead of "The Control mode page that identifies"

7. Clause 3.1.26, page 7, Device Server: suggest "within a logical unit" instead of "within the logical unit", also makes it consistent with 3.1.132

8. Clause 3.6.1, page 16, paragraph at top of page: should be "approximate; detailed" instead of "approximate, detailed"

9. Clause 4.7.3, page 27, figure 13: Application Client box should be shaded

10. Clause 4.11.2, page 32, paragraph 2: omit comma after "target ports" in last sentence

11. Clause 4.11.4, page 33, last paragraph on page: "it's" should be "its"

12. Clause 4.11.5, page 34, paragraph following figure 18: "it's" should be "its"

13. Clause 4.11.7, page 37, 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)

14. Clause 4.12.4, page 41, paragraph 1: omit commas after "commands" and "client"

15. Clause 4.12.4, page 41, Note 2: "A SCSI device may filter commands to prevent an application client from issuing" seems to be a sentence fragment

16. Clause 4.12.4, page 41, Note 3: Font size seems to be larger at beginning of note, see also Note 5

17. Clause 4.12.5, page 43, 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

18. Clause 4.12.6, page 43, 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"

19. Clause 4.14, page 46, Physical interconnect layer: "deliver subsystem" should be "delivery subsystem"

20. Clause 5.1, page 49, Autosense Request: "request" should be "requests" in last sentence

21. Clause 5.3.1, page 53, paragraph 1: omit commas after "status"

and "MET"

22. Clause 5.6.3, page 61, paragraph 3: "established," should
be "established;"

23. Clause 5.7.2, page 63, figure 30: should the label between events 6
and 7 on the lower level be "Task A" instead of "Task"?

24. Clause 5.8.1.2, page 65, paragraph 2: "dormant and enabled" should
be "dormant or enabled"

25. Clause 5.8.1.6, page 70, Note 7: font size too large?

26. Clause 6.2, page 77, 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

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Comments attached to No ballot from Mr. David Peterson of
Cisco Systems, Inc.:

1.
pdf 24
clause 1.3
para 2
What is the definition of a transport? I suggest deleting the whole sentence.

2.
pdf 24
clause 1.3
-
Are references to CAM still needed in the architecture? Command sets have
been phasing out CAM, why stop here.

3.
pdf 25
clause 1.3
-
"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.

4.
pdf 28
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).

5.
pdf 28
clause 3.1.11
-
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.

6.
pdf 30
clause 3.1.46
-
Is a definition for implementation really needed? If so, something like: "The
physical realization of an entity."

7.
pdf 35
clause 3.2
-
To be consistent with the other acronyms, provide a reference for AER.

8.
pdf 55
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).

9.
pdf 55
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.

10.
pdf 59
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.

11.
pdf 71
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.

12.
pdf 105
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.

13.
pdf 106
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.

14.
pdf 109
clause 7.6
figure 33
Is it acceptable to use color?

15.
pdf 115
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.

16.
pdf 116/117
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?

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Comments attached to No ballot from Mr. Robert C. Elliott of
Compaq Computer Corp.:

CPQ #1
PDF Page 1
General
Incorporate 02-134 Clearing effects of I_T nexus loss

CPQ #2
PDF Page 1
General
Number PDF pages to match printed pages

CPQ #3
PDF Page 22
Introduction
add periods on each sentence (or ;)

CPQ #4
PDF Page 23
1.2 Requirements precedence
Figure 1 - Requirements precedence
The gray and black arrows are not very distinguishable. Try adding color
and dashes.

CPQ #5
PDF Page 24
1.3 SCSI standards family
Figure 2 - SCSI document roadmap
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.

CPQ #6
PDF Page 29
3.1.20 Control mode page
Delete "Control" from "The Control mode page that..."

CPQ #7
PDF Page 35
3.2 Acronyms
Delete duplicate:
SSC SCSI-3 Stream Commands (see 1.3)

CPQ #8
PDF Page 36
3.4 Editorial Conventions
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.

CPQ #9
PDF Page 39
3.6.3 Notation for state diagrams
Figure 4 - Example state diagram
The state diagrams in 7.6 place conditions under the S0:S1 transition
labels. This usage should be reflected in figure 4.

CPQ #10
PDF Page 39
3.6.3 Notations for state diagrams
Remove "It is particularly important to note that"

CPQ #11
PDF Page 42
4.3 The SCSI client-server model
Figure 6 - SCSI client-server model
Change Initiator to Initiator device and Target to Target device

CPQ #12
PDF Page 42

CPQ #13
PDF Page 47
4.7.1 SCSI initiator device
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."

CPQ #14
PDF Page 49
4.7.5 SCSI task router
This single-paragraph section should be moved into 4.7.2 where the rest of the target device objects are described.

CPQ #15
PDF Page 49
4.7.5 SCSI task router
"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.

CPQ #16
PDF Page 51
4.8 Logical units
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.

CPQ #17
PDF Page 51
4.8 Logical units
Change "Logical Unit" to "logical unit"

CPQ #18
PDF Page 51
4.8 Logical Units
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.

CPQ #19
PDF Page 59
4.12 Model for dependent logical units
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.

CPQ #20
PDF Page 60
4.12.1 Introduction
At any level of the tree, address method 11b may also be used.
Change:
"; and
c) Device type specific."
to:
";
c) Flat space address method (see 4.12.6); or
d) Device type specific."

CPQ #21
PDF Page 60
4.12.1 Introduction (dependent logical units)
Figure 23 - Example of hierarchical system diagram
Change "Initiator" to "Initiator port" twice

CPQ #22
PDF Page 71
5.1 The Execute Command remote procedure
This section should refer to Execute Command as a device service per 4.3

CPQ #23
PDF Page 71
Section 5.1 Execute Command remote procedure
and 5.4.2 Execute Command Protocol Services
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.

CPQ #24
PDF Page 72

5.1 The Execute Command remote procedure call
"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.

CPQ #25
PDF Page 72
5.1 The Execute Command remote procedure call
LINKED COMMAND COMPLETE
The description should also mention that the task has not ended.

CPQ #26
PDF Page 75
5.3.1 Status codes
INTERMEDIATE
INTERMEDIATE-CONDITION MET
add "or" between "FULL, BUSY" in both sections

CPQ #27
PDF Page 75
5.3.1 Status codes
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".

CPQ #28
PDF Page 75
5.3.1 Status codes
BUSY
TASK SET FULL
RESERVATION CONFLICT
"unless such a unit attention condition is already pending."
Does "such a unit attention" mean only unit attentions with PREVIOUS BUSY
STATUS additional sense code, or unit attentions
with any of the PREVIOUS nnn STATUS additional sense codes?
(three times)

CPQ #29
PDF Page 75
5.3.1 Status codes
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.

CPQ #30
PDF Page 75
5.3.1 Status codes
INTERMEDIATE
Add "This status is the equivalent of GOOD status for linked commands."

CPQ #31
PDF Page 75
5.3.1 Status codes
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)

CPQ #32
PDF Page 75
5.3.1 Status codes
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

CPQ #33
PDF Page 76
5.3.2 Status precedence
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.

CPQ #34
PDF Page 76
5.3.1 Status codes
ACA ACTIVE - shouldn't this also generate a unit attention interlock?

CPQ #35
PDF Page 76
5.3.1 Status codes
TASK SET FULL
in should be into in:
"prevents accepting a received tagged task from that initiator in the task set,"
(three times)

CPQ #36
PDF Page 76
5.3.1 Status codes
TASK SET FULL
Change "queued command" to "command in the task set"

CPQ #37
PDF Page 76
5.3.1 Status codes
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.

CPQ #38
PDF Page 76
5.3.1 Status codes
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.

CPQ #39
PDF Page 76
5.3.1 Status codes
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.

CPQ #40
PDF Page 78
5.4.2 Execute Command Request/Confirmation protocol services
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".

CPQ #41
PDF Page 82
5.6 Aborting tasks
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.

CPQ #42
PDF Page 82
5.5 Task and command lifetimes
The long list describes when the application client assumes tasks no longer exist. For logical unit and target resets, it only knows if
it sent the appropriate task management function.
Change item f from:
f) a service response of FUNCTION COMPLETE in response to a LOGICAL UNIT RESET or TARGET RESET
to:
f) a service response of FUNCTION COMPLETE following a LOGICAL UNIT RESET task management function directed to the
logical unit;
g) a service response of FUNCTION COMPLETE following a TARGET RESET task management function directed to a target port
with access to the logical unit

CPQ #43
PDF Page 82
5.6.1 Mechanisms that cause tasks to be aborted
Add to the "following events" list:
d) logical unit reset (see 5.8.7);
e) hard reset (see 5.8.6)

CPQ #44
PDF Page 82
5.6.1 Mechanisms that cause tasks to be aborted
The last list is supposed to list initiator actions, but includes:
d) A logical unit reset (see 5.8.7); or
e) A hard reset (see 5.8.6).
Change to:
d) Completion of a LOGICAL UNIT RESET task management function directed to the logical unit;
e) Completion of a TARGET RESET task management function directed to a target port with access to the logical unit
(The generic logical unit reset/hard reset move into the first list; see previous comment)

CPQ #45
PDF Page 82
5.5 Task and command lifetimes
"linked command complete" after item f should be small caps.

CPQ #46
PDF Page 92
5.8.2 Overlapped commands
Keep the NOTES on one page.

CPQ #47
PDF Page 95
5.8.5 Unit Attention condition
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.

CPQ #48
PDF Page 98
6.1 TMF introduction
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.

CPQ #49
PDF Page 98
6.1 TMF introduction
Why is note 12 here? 5.6 Aborting tasks already provides this information,
as do 6.x describing each of the TMFs.

CPQ #50
PDF Page 98
6.1. TMF Introduction
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.

CPQ #51
PDF Page 99
6.2 ABORT TASK
6.3 ABORT TASK SET
"The task manager shall abort all tasks in the task se 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.

CPQ #52
PDF Page 99
6.3 ABORT TASK SET
Remove "serviced by the logical unit"

CPQ #53
PDF Page 99
6.3 ABORT TASK SET
"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.

CPQ #54
PDF Page 100
6.4 CLEAR ACA
Remove "serviced by the logical unit".

CPQ #55
PDF Page 101
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.

CPQ #56
PDF Page 101
6.6 Logical Unit Reset
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

CPQ #57
PDF Page 101
6.7 Target Reset
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.

CPQ #58
PDF Page 102
6.9 TM protocol services
"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.

CPQ #59
PDF Page 103
6.9 TM protocol services
"Response from task manager to initiator and application client:"
Don't mention initiator

CPQ #60
PDF Page 103
6.9 TM protocol services
"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.

CPQ #61
PDF Page 103
6.9 TM protocol services
Last paragraph: change initiator to application client.

CPQ #62
PDF Page 103
6.9 Task management protocol services
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.

CPQ #63

PDF Page 115
A.1 Identifiers and names overview
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."

CPQ #64
PDF Page 115
A.2 SCSI object and nexus relationship
Table 2 in 4.10 The nexus object defines this better than A.2. Remove A.2.

CPQ #65
PDF Page 115
A.1 Identifiers and names overview
Sort the a)-e) list in a more logical order - the logical unit as a), then the ports, then the devices, for example.

CPQ #66
PDF Page 116
A.3 Identifiers and names
Table A.2 Object size and support requirements
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.

CPQ #67
PDF Page 116
A.3 Object identifier size for each protocol
"packetized transfers" is not used in SPI-4; use "information unit transfers"

CPQ #68
PDF Page 116
A.3 Identifiers and names
Table A.3 Object identifier size for each protocol
"4 bits" doesn't match note a or the description in the next table, which implies "16 bits" should be used.

CPQ #69
PDF Page 116
A.3 Identifiers and names
Table A.2 and elsewhere
Change max to maximum

CPQ #70
PDF Page 117
A.3 Identifiers and names
Table A.4 Object identifier format for each protocol and elsewhere
Add dash in "EUI 64"

CPQ #71
PDF Page 117
A.3 Identifiers and names
Table A.5 Object name size for each protocol
Table A.7 Object name format for each protocol
Change "initiator name" to "initiator device" and "target name" to "target device". The table header already refers to "name".

CPQ #72
PDF Page 118
Table A.6 Object name format for each protocol
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.

****

Comments attached to No ballot from Mr. Peter Johansson of
Congruent Software, Inc.:

In clause 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.

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.

****

Comments attached to YesC ballot from Mr. David Black of
EMC Corp.:

SAM-2r23 Comments
David L. Black
EMC Corporation
April 2002
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(1)
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.

(2)
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).

(3)
4.5 SCSI Domain

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.

(4)
4.6 The service delivery subsystem

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?

(5)
4.11.3 Multiple port target SCSI device structure

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.

(6)
4.11.6 SCSI initiator device view of a multiple port SCSI target device

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.

(7)
4.13.2 Extended logical unit addressing formats

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

(8)
4.14 The SCSI model for distributed communications

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".

(9)
5.2.1 CDB Format

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.

(10)
5.2.3 CONTROL byte

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?

(11)
5.4.3 Data Transfer Protocol Services
5.4.3.1 Introduction

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?

(12)
5.4.3 Data Transfer Protocol Services
5.4.3.1 Introduction

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.

(13)

5.8.1.2 Establishing a CA or ACA

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 that0). 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.

(14)

5.8.1.5 Handling new tasks from initiators other than the faulted initiator when CA or ACA is in effect

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

(15)

5.8.4.2 Asynchronous Event Reporting

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".

(16)

A.4.4 iSCSI: As of this writing, the most recently published iSCSI internet draft is: http://www.ietf.org/internet-drafts/draft-ietf-ips-iscsi-10.txt. Newer drafts may be identified at http://http://www.ietf.org/html.charters/ips-charter.html.

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.

****

Comments attached to YesC ballot from Mr. Joe Breher of Exabyte Corp.:

Comment 1
E
pdf page 3

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

Comment 2
E
doc page xxiii, pdf page 21
"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:

Comment 3
E
doc page 1, pdf page 23 - sec 1.1, 1st sentence
"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.

Comment 4
E
doc page 1, pdf page 23, section 1.2, figure 1
Hard to discern arrow styles
Suggested change
Use dashed or dotted arrows for wither Generic Requirements or Implementation Requirements.

Comment 5
E
doc page 7, pdf page 29, section 3.1.20
"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...

Comment 6
T
doc 7, pdf 29, 3.1.26
"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 problemmatic 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."

Comment 7
E
doc 8, pdf 30, 3.1.59
"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.

Comment 8
E
doc 9, pdf 31, 3.1.67
"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...

Comment 9
E
doc 10, pdf 32, 3.1.93
"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...

Comment 10
E
doc 10, pdf 32, 3.1.94
"...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).

Comment 11
E
doc 11, pdf 33, 3.1.115
suggest eliminating this definition - used only in definition of 'destination device'. Also, the term 'destination device' is used only once - consider whether to use 'receiver' instead.

Comment 12
T
doc 12, pdf 34, 3.1.126
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?

Comment 13
E
doc 13, pdf 35, 3.2
Eliminate redundant entry for SSC

Comment 14
T
doc 15, pdf 37, 3.6.1 and figure 3
"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.

Comment 15
E
doc 20, pdf 42, 4.3, 1st sentence
"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.

Comment 16
E
doc 24, pdf 46, 4.6.2, 3rd paragraph
"The manner in which ordering constraints are established is vendor specific."
s/b
The manner in which ordering constraints are established is implementation specific.

Comment 17
T
doc 27, pdf 49, figure 13
Application client should be shaded
rationale:
Its multiplicity is 0..*, not 1..*

Comment 18
T
doc 28, pdf 50, 4.7.6, 1st sentence
"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.

Comment 19
E
doc 28, pdf 50, 4.8, item d
"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...

Comment 20
T
doc 29, pdf 51, 1st paragraph below table 1
"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?

Comment 21
E
doc 30, pdf 52, 4.9.1, 1st paragraph
"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 whther nexii are persistent ot ephemeral. The definition in 4.10 claim that a nexus *object* is a *relationship*. Expeience 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 origninal text allows only for a nexus being an object.

Comment 22
E
doc 30, pdf 52, 4.9.1, 4th paragraph
there is an orphaned parenthesis

Comment 32
E
doc 30, pdf 52, 4.10, 1st sentence
"The nexus object is a relationship..."

s/b
The nexus object represents a relationship...
See comment 21

Comment 33
E
doc 31, pdf 53, table 2
"Identifiers that form nexus"
s/b
Identifiers that specify nexus

Comment 34
T
doc 33, pdf 55, 1st paragraph
also doc 43, pdf 56, 2nd paragraph
"Two-way communications shall be possible between all logical units and all SCSI target ports,"
s/b
Two-way communications may be possible...
rationale:
Market demand for devices that present different LU inventory from each attached port. Also conflicts with sentence in same paragraph:
"The REPORT LUNS commands (see SPC-2) shall be accepted by logical unit 0 from any SCSI target port and shall return the logical unit inventory available via that SCSI target port." (emphasis on '...THAT SCSI target port.')

Comment 35
T
doc 33, pdf 55, 1st paragraph
also doc 43, pdf 56, 2nd paragraph
"The availability of the same logical unit through multiple SCSI target ports is discovered by matching SCSI port identifier values in the INQUIRY command Device Identification VPD page (see SPC-2)."
s/b
The availability of the same logical unit through multiple SCSI target ports is discovered by matching SCSI port name values in the INQUIRY command Device Identification VPD page (see SPC-2). If port name is not supported by a given protocol, the port identifier may be a usable substitute.

Comment 36
E
doc 35, pdf 57, 4.11.6
"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.

Comment 37
E
doc 37-38, pdf 59-60
What does the term 'expandable' mean in this context?

Comment 38
E
doc 37, pdf 59, 4.12.1, items a & b
"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?

Comment 39
E
doc 41, pdf 63, 4.12.4, 1st paragraph
and doc 42, pdf 64, 4.12.5, 1st paragraph
"All SCSI commands are allowed when the logical unit address method is selected, however logical units are only
required to support mandatory SCSI commands."
question:
Does this sentence add any value? Would the doc be unchanged technically if it was removed?

Comment 40
E
doc 41, pdf 63, 4.12.4, 1st paragraph
and doc 42, pdf 64, 4.12.5, 1st paragraph
"Devices are not required to relay commands, from the application client, to a dependent logical unit."
s/b
Devices are not required to relay commands from the application client to a dependent logical unit.

Comment 41
E
doc 41, pdf 63, 4.12.4, NOTE 2
and doc 42, pdf 64, 4.12.5, Note 4
"A SCSI device may filter commands to prevent an application client from issuing (e.g., a write command
to a specific logical unit)."
suggested text:
A SCSI device may filter commands to prevent any particular command (e.g. a write command) issued by an application client from reaching a specific logical unit.

Comment 42
E
doc 42, pdf 64, 4.12.5
"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.

Comment 43
T
doc 43, pdf 65, 1st sentence
"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?

Comment 44
E
doc 43, pdf 65, 4.12.6, last sentence
"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.

Comment 45
E
doc 46, pdf 68, figure 25
Bottom layer is labled "Interconnect Layer", text below describes "Physical interconnect layer".
suggested:
use same term both places

Comment 46
E
doc 46, pdf 68, 2nd paragraph below figure 25
should end with semicolon

Comment 47
E

doc 46, pdf 68, 4th paragraph below figure 25
"...is known as the service deliver subsystem."
s/b
...is known as the service delivery subsystem.

Comment 48
E
doc 47, pdf 69,
"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.

Comment 49
T
doc 50, pdf 72, last sentence
"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.

Comment 50
T
doc 53, pdf 75
"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.

Comment 51
E
doc 53, pdf 75
"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."

Comment 52
E
doc 54, pdf 76
"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."

Comment 53
E
doc 56, pdf 78, under Send Command Complete
"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.

Comment 54
E
doc 59, pdf 81, under Data-Out Delivery Service
"Device Server Buffer: Buffer from which data is to be transferred."
s/b
Device Server Buffer: Buffer to which data is to be transferred.

Comment 55
T
doc 59-60, pdf 81-82, 5.5
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.

Comment 56
T
doc 61, pdf 83, last paragraph
"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)

Comment 57
E
doc 62, pdf 84, item 2)
replace 'device server' with 'logical unit'

Comment 58
T
doc 63, pdf 85, item 2)
"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.

Comment 59
T
doc 63, pdf 85, item 2)
"The device server creates a task (Task A) and enters it into the task set."
s/b
The task mangager 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.

Comment 60
E
doc 66-69, pdf 88-91, tables 25, 26, 27, 28, 29
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.

Comment 61
T
doc 67, pdf 89, table 26, note c
"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

Comment 62
E
doc 68-69, pdf 90-91, tables 28 and 29, notes c
"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.

Comment 63
E
doc 71, pdf 93, 5.8.3, items a) and 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. 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;

Comment 64
T
doc 81, pdf 103
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.

Comment 65
E
doc 83, pdf 105, last paragraph of 7.1
"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.

Comment 66
?
doc 85, pdf 107, 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.

Comment 67
E
doc 89-92, pdf 111-114
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

Comment 68
E
doc 95, pdf 117, text outside table
"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.

****

Comments attached to No ballot from Mr. Randy Haagens of
Hewlett Packard Co.:

HP.1 Page 23
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 Page 23
Clause 1.1
Since this document positions itself as the first document that a SCSI practitioner should read first, it
is desirable to define at least what "SCSI" stands for in this clause.

HP.3 Page 24

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 Page 24
Figure 2 does not represent a "roadmap" - that implies a timeline. This looks like a relationship
representation?

HP.5 Page 24
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.

HP.6 Page 28
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".

HP.7 Page 29
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.

HP.8 Page 29
c 3.1.29
What's an I/O system? "domain" is a poorly defined concept here.

HP.9 Page 29
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.

HP.10 Page 30
c 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".

HP.11 Page 31
c 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.

HP.12 Page 32
c 3.1.88 - This can't be true, since a device can contain multiple ports!

HP.13 Page 32
c 3.1.93 - The first sentence is incorrect (or unclear). Define as "SCSI port thru which application client requests are issued."

HP.14 Page 33
c 3.1.112 - "service delivery subsystem" should be defined using layering terms - this is the transport fabric??

HP.15 Page 33
c 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.

HP.16 Page 37
c 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.

HP.17 Page 40
c 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.

HP.18 Page 41
c 4.2, p 2, s 2 - This sentence is missing an "which"- it should read "The procedure is processed by the server which returns outputs and a procedure status."

HP.19 Page 42
Figure 6 (and other figures)
Layering diagrams are many, they have apparently conflicting terminology, and they don't identify where the protocol lives. We are also very much concerned about the multiplicity of terms used to denote one object/layer in several figures. HP's T10 proposal 02-153r0 illustrates the current contradictions, and proposes consistent terminology and layering diagrams everywhere.

HP.20 Page 45
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 19.

HP.21 Page 46
clause 4.6.2 second para and the fourth para
Second para here describes the hazards of out-of-order reponses 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.

HP.22 Page 46
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.

HP.23 Page 47
Figure 11
The Initiator Port Name optional object shown in the hierarchy is an attribute, but not an object.

HP.24 Page 47
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.

HP.25 Page 47
c 4.7.1, p 2-3 - Why are terms being defined here? They are already defined in section 3, and these
definitions are worse than those in section 3. Delete these definitions (initiator port identifier, initiator
port name, initiator device name)

HP.26 Page 47
c 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, ie 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".

HP.27 Page 47
c4.7,p2
This paragraph is unnecessarily complicated. The last two sentences can be expressed by saying
"To be functional, a SCSI domain needs to contain at least one SCSI target port and at least one
SCSI initiator port."

HP.28 Page 48
Figure 12
This differs from the depiction of SCSI target port in Figure 8. While Figure 8 correctly does not show
Target Port Name, Target Port Identifier in the object hierarchy, this one does. I consider both these
as attributes than objects themselves. Similar comment for Target Device Name.

HP.29 Page 48
c4.7.3
See comment to c4.7, p1

HP.30 Page 49
Clause 4.7.5 "default logical unit"
It is not defined anywhere - can this be task type-sensitive?

HP.31 Page 49
clause 4.7.3, 3rd para on this page "may or may not be identical"
Having both target and initiator port names identical would violate the world-wide unique property for
the protocol of the domain - which is stated as a requirement in the first sentence of clause 4.7.7.

HP.32 Page 49
Clause 4.7.4
It would be useful to add recommendations about designing port identifiers (for ex., embedding
protocol-specific address is okay?), similar to the guidelines on port names in later clauses.

HP.33 Page 49
c 4.7.4
The first sentence defines identifier by saying .."is the object name". So which is it, a name or an
identifier? And who defines it? SCSI or the transport?

HP.34 Page 50
Clause 4.7.6, second para, first sentence.
Suggest s/b "inlcude" w/ "associate".

HP.35 Page 50
Figure 14
Logical Unit Number is more apporpriate to be an attribute, not an object.

HP.36 Page 50
c 4.7.6, p1, s3
device name "may be used to persistently identify a SCSI device.." Why isn't this 'may' a 'must'?

HP.37 Page 50
c 4.7 - General comment on this section
SAM2 defines device name and port name as optional, but is silent as to whether or not device
identifier is mandatory. One of these constructs must be mandatory or how would commands be
addressed to a device? SAM needs to be more explicit about it's requirements here - and the
relationship of port name to identifier (one to one? one to many?)
Table 2 in c4.10 seems to imply that identifiers are mandatory and must be unique, but this is never
spelled out anywhere.

HP.38 Page 51
Clause 4.8, first sentence on this page.
This sentence implies that LUN is an absolute identifier of an LU within the scope of a target device
for all initiators on all ports. Suggest appending the phrase - "for a given initiator accessing via a
given SCSI target port".

HP.39 Page 51
Clause 4.8, last phrase in the last sentence in the para after Table 1.
The phrase "logical unit 0" is used in several places in the document. It would be useful to define it
as a "logical unit whose LUN is zero" in the definitions section.

HP.40 Page 51
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 Page 52
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 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 Page 53
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 Page 53
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 Page 54
clause 4.11.1, first sentence on the page
S/b "it's" W/ "its"

HP.45 Page 54
Clause 4.11.2, first para, second sentence
S/b "single SCSI target port ...." W/ "single physical SCSI target port" - since that's what's implied. It

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

HP.46 Page 54
Clause 4.11.2, second para, "How a multiple port SCSI device..."
Suggest s/b "multiple port" W/ "multi-port" (as in the previous sentence).
Similar comments for the title of subclause 4.11.3 (basically where the phrase is used in the adjective
sense).

HP.47 Page 54
c 4.11.2, p 1 - The first sentence in this paragraph is redundant - it says a device with multiple ports is
a device with multiple ports. The last two sentences incorrectly uses word "model" (the first sentence
defines the model)
Suggest rewording as "A SCSI device may contain multiple SCSI ports. A SCSI port may be
addressed by one or more SCSI identifiers."
Finally, is this really meant? Can one SCSI port have multiple identifiers - what's the point in having
"port identifier" in the first place?

HP.48 Page 55
Clause 4.11.3, last setence in the first para on this page
This suggests using VPD page for port identifier comparision.
Clause 8.4.4, first sentence in SPC-2 doesn't lead one to believe that the VPD page holds the
identifiers of a port - it states that the identifiers of the logical unit are held in this page.
S/b "port identifier" W/ "device identifier".
Similar comments are applicable to similar wording in 4.11.5.

HP.49 Page 55
Clause 4.11.4, last sentence on the page
This suggests that target methods of discovering multi-ported nature of the communicating initiator is
beyond any SCSI standards in the family. I think this is an overstatement, since SCSI protocols could
always specify ways to construct a port identifier/name off the device identifier/name (as iSCSI does),
thus making this target discovery process guranteed by the protocol. In fact, iSCSI only exchanges
device names and other protocol constructs that aid in constructing a port name by the target.
So, suggest
S/b "...beyond the scope of any standards in the SCSI family of standards"
W/ "....left to be specified
by individual SCSI protocols of the domains that the SCSI device operates in".
Similar comments are applicable to a similar statement in clause 4.11.5.

HP.50 Page 56
c 4.11.5, p 3 - ?? a target port can't communicate with a target port, so why does this sentence
mention "SCSI target/initiator device"? It should just say "SCSI initiator device".

HP.51 Page 57

c 4.11.6, p 1 - What is this paragraph trying to say? A target device with multiple ports to the same
SCSI domain may also restrict an initiator port to only one of those ports. So what's the point here?

HP.52 Page 57
c 4.11.6, p 3 - There's an unstated assumption here that each initiator port has a nexus with both
target ports - the text of the paragraph should clearly state that. And figure 19 doesn' t represent that
- it could be interpreted that one initiator port is connected to one target port, and the other initiator
port is connected to the other target port, I don't think that's what's intended.

HP.53 Page 58
Clause 4.11.6, first para, last sentence
I am not sure that this assertion about the initiator's ability to to distinguish the scenario in Figure 19
to that of Figure 20 is correct. It appears to me that failure to establish the I_T nexus with the Target
Port in the other domain would lead one Initiator Port to confirm that indeed there are two domains.

HP.54 Page 58
Clause 4.11.6, last sentence on this page
I am not sure about this assertion either - that initiator ports can't distinguish a multi-ported target
device from multiple target devices. It appears to me that if the same Logical Unit can be gotten to,
initiator ports would be able to discern the multi-ported nature by using the VPD page.

HP.55 Page 58
c 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 Page 59
Clause 4.11.7, first sentence
Editorial: "An SCSI...." and "A SCSI...." are both used in this document - with the latter appearing
most of the time (and which is my preference as well).

HP.57 Page 59
Clause 4.11.7, first sentence
Again, this sentence makes a statement that isn't applicable to iSCSI - so perhaps "does not" should
be substitued by "may not". Also, the NOTE1 below this para should state "may be" instead of "will
be" in the last sentence.

HP.58 Page 59
Clause 4.12.1, first para after Figure 22
The sentence that starts with "A device server that ..." differs from SPC-2's phrasing of HISUP. While
the wording in SAM-2 implies that only the LUs that support the dependent logical units need to set
the HISUP bit to 1 (which could be only 1 in a target device), SPC-2 suggests that the HISUP bit shall
be set to 1 for all LUs which support the hierarchical LUN structure (which would be all LUs in the

same example target device).
This sentence should ideally be removed, or the sentence in SPC-2 be repeated here.

HP.59 Page 59
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 Relayr".
This may need additional changes in the original model of Logical Unit captured in 4.8 as well.

HP.60 Page 60
Clause 4.12, last para on this page.
This refers to "physical interconnects". I am not certain this holds in the hypothetical example of
iSCSI being used in the back-end. I would recommend "physical/logical interconnects" instead.

HP.61 Page 60
Figure 23
It is unclear why each of the SCSI devices shown in this picture have "(LUN 0)" in them. It can
incorrectly lead a reader to conclude that only a single-LUN device is being referred to in this picture,
which is not the case since each may have multiple LUNs as described in the subsequent addressing
methods (for ex., Table 7).
Recommend dropping "(LUN 0)" in all the boxes shown in this Figure.

HP.62 Page 60
Clause 4.12.1, first para after Figure 23
This para introduces the three addressing methods for dependent Logical Units. But it is unclear if all
the methods shall be supported by a target, I assume it's not the case and it's incumbent upon the
initiator to use the method that the target supports as evidenced in the REPORT LUNS response.

HP.63 Page 63
Clause 4.12.4, first two paras
The wording doesn't seem consistent to me as far as the requirement on a "device" to relay a
command to dependent LUs is concerned. The second para states that the device "shall" relay the
command "if not filtered" - but in the first para, it allows that the devices pretty much can choose what
is to be "filtered" - since the language doesn't seem to limit the filtering only to the "unsupported
commands". As an extreme case, is an implementation allowed to discard commands based on
load?
I think it should clearly state that except for unsupported commands and those disallowed due to
access controls, all other commands shall be relayed. That also matches the intent of the specified
ASC.

HP.64 Page 63
Clause 4.12.4, Note 2

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

HP.65 Page 64
Clause 4.12.5, first three paras
Similar comments as on 4.12.4. The text should clearly define when to discard vs relay a command.

HP.66 Page 64
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 Page 65
Clause 4.12.6, second para
Two periods in the sentence.

HP.68 Page 66
Clause 4.13.2, Table 15, Editorial
This table starts from byte "0" whereas the three previous tables start from byte "n".

HP.69 Page 68
Clause 4.14, Figure 25
The picture shows SAM to pertain to the SCSI application layer only. I think SAM should shown vertically along the whole height of the picture.

HP.70 Page 68
Clause 4.14, second para from the bottom of the page
While Figure 25 defines an "Interconnect Layer", this para incorrectly defines a "Physical interconnect Layer".
This also incorrectly states that Physical interconnect layer is the service delivery subsystem. SDS consists of the SCSI protocol layer + interconnect layer, not just the interconnect layer.
Finally, I am troubled that no distinction is being made between interconnect services that are defined by the SCSI standards (as in the case of pSCSI), vs those that are not defined by the SCSI standards (as in the case of TCP/IP for iSCSI). At a minimum, this distinction should be called out in a sentence here.

HP.71 Page 69
Clause 4.14
The entire reference to ULP and LLP should be dropped, to avoid using multiple names for the same layer - which the current discussion does. I would have understood if ULP is used to simply indicate a higher layer wrt the one below (generically to represent either application-to-protocol, or protocol-to-interface), but defining ULP=application seems inviting redundancy for no reason.

HP.72 Page 71
Clause 5.1, Autosense Request
If I understand the first sentence correctly, it says that the presence of this argument itself is a request
for autosense of sense data. But the last sentence is implying something different - that Autosense is
a flag that can be set to yes/no.
Only one (preferably the former, as this is an optional argument) idea should be consistently
described.

HP.73 Page 71
Clause 5.1, first sentence
This sentence states that the application client "invokes" the RPC. It is incorrect, in fact the SCSI
protocol services described in clause 5.4 are the real "invoked" procedures. The RPC call is a mere
abstraction of a bunch of protocol services to build a conceptual model.
Suggest rewording to:
"An application client executes a SCSI command by invoking the SCSI protocol services described in
clause 5.4, the collective functionality of which is conceptually modeled in the following remote
procedure call:"

HP.74 Page 73
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.

HP.75 Page 73
Clause 5.2.1
This CDB clause describes check conditions on illegal opcodes, and stipulates not altering the
medium on an invalid parameter in the CDB. But this is also specified in SPC-2/3. I also notice that
the illegal LUN case is not described here (I realize that it's not strictly in CDB, but that's what the
CDB is being sent to).
In short, it is unclear as to the logic applied in choosing the content presented here.

HP.76 Page 75
Clause 5.2.3, first sentence in the page
This historical statement about an obsoleted bit should be removed.

HP.77 Page 81
Clause 5.5, third para
The para lists two conditions titled "The task shall exist until:".
Currently, it is unclear from whose perspective (target/initiator).
The sentence should be reworded to state that "The task shall exist for the device server until:".

HP.78 Page 84
Clause 5.7.1, second sentence.

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

HP.79 Page 96
Clause 5.8.7, first bullet (a)
Why is "logical unit reset" defined as "an action " in response to the task management request? It
should be "the action".

HP.80 Page 98
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.

****

Comments attached to No ballot from Mr. George O. Penokie of
IBM / Tivoli Systems:

Comments from IBM

IBM #1
PDF Page 5
E
v - xv
Revision Information
All the revision informtion needs to be removed before this goes to public review.

IBM #2
PDF Page 24
E2
1st paragraph under figure 2
The 2nd sentence has the term figure without a refernce to a specific figure. This needs to be fixed.

IBM #3
PDF Page 24
E2
1st paragraph after figure 2
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.

IBM #4
PDF Page 25
E3
1.3
List of standards
Delete the following standards from the list:
FC-AL, FC-PH, FC-PH-3, SST, and SCC

IBM #5
PDF Page 28
E6
3.1.2
The see list should have a comma between the 4.9 and the and.

IBM #6
PDF Page 28
E
6

3.1.6
There is no : after the blocked task state text.

IBM #7
PDF Page 28
E
6 - 13
3.1.x
There are two formats used for references that occur at the end of the defination; one is '(see xxx)'. the other is 'See xxxx.'. The predominate one is '(See xxxx)' but only one should be used. Change the odd ones so they are all the same.

IBM #8
PDF Page 29
E7
3.1.20
This seems out of place. There is no defination of any of the multiude of other mode pages so why is this here. I say this should be deleted.

IBM #9
PDF Page 29
T7
3.1.21
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.

IBM #10
PDF Page 29
E7
3.2.23
The 'See source device (3.1.115) should be changed to '(see 3.1.115).' to match other cross-references.

IBM #11
PDF Page 30
E8
3.1.59
To be consistent with the target and target port defination the logical unit defination should state that a logical unit contains a task manager and a device server.

IBM #12
PDF Page 33
E
11
3.1.116
There are many commands that contain parameters why is the INQUIRY commands defined here? I believe it should be deleted.

IBM #13
PDF Page 34
E
12
3.1.132
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.'

IBM #14
PDF Page 37
E
15-16
3.6.1
All the capitalized words should be changed to uncapitalized words.

IBM #15
PDF Page 40
E
18
4.1 1st paragraph under a,b,c list 2nd to last paragraph
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
PDF Page 43
E
21
4.4 1st paragraph
The term 'elements' should be replaced with 'objects'. Or the term elements
needs to be defined.

IBM #17
PDF Page 44
E
22
Paragraph above figure 9
The statement ' following clauses' in not percise enough. All clauses
follow this one so where does it stop. The actual clauses in
question need to be explicitly listed.

IBM #18
PDF Page 46
E
24
4.6.1 last paragraph
The statement '...to the server. That is, whenever...' should be replaced
with '...to the server (i.e., whenever...'. A closing) should
be added at the correct position.

IBM #19
PDF Page 46
E
24
4.6.2 3rd paragarph
The statement 'In some cases' is redundent with the 'may' and should be
deleted.

IBM #20
PDF Page 46
E
24
4.6.2 4th paragraph
The statement 'In addition' contains no useful information and should be
deleted.

IBM #21
PDF Page 49
E
27
4.7.4
The statement 'might be' should be replaced with 'is'.

IBM #22
PDF Page 51
E
29 and others(?)
1st paragraph before table 1
The term 'Logical Unit Number' is used. This should be replaced with 'LUN'.
The standard should be serched and LUN used in all
cases except the acromyn list.

IBM #23
PDF Page 51
E

29 and others (?)
2nd paragraph after table one
The term Logical Unit should not be capatilized. This should be corrected at all occurances.

IBM #24
PDF Page 51
E
29
Last paragraph of page
The statement 'For convenience' should be removed as it contains no relivent information.

IBM #25
PDF Page 52
E
30
4.9.1 2nd paragraph
The statement 'leaving the initiator no control over its relationship to other tasks in the task set.' is not correct. There is as much control over an untagged task as there is a tagged SIMPLE task. In other words the same rules ordering apply to both. I think the statement should be deleted.

IBM #26
PDF Page 52
E
4.9.1
4th paragraph
The sentence 'An I_T_L_x nexus is in use over the interval bounded by the events specified in 5.5).' does not complute and has an orphan) at the end. I don't know what it is supposed to be saying so I cannot make a suggestion as to how to fix it.

IBM #27
PDF Page 52
E
4.9.1
Last paragraph
The statement 'By implication, therefore,' contains no usful information and therefore should be deleted.

IBM #28
PDF Page 54
E
32
4.11.2 1st paragraph; last sentence
The term 'also' should be deleted.

IBM #29
PDF Page 55
E
33 and ??
Near top of page
The change bars need to be removed from this standard.

IBM #30
PDF Page 57
E
35
4.11.6 1st paragraph
The statement '...is only allowed to only communicate with...' should be changed to '...is only allowed to communicate with...'.

IBM #31
PDF Page 59
E
37 and ???
4.11.7 and others(?)
The term 'an SCSI' should be replaced with 'a SCSI' in all cases.

IBM #32
PDF Page 59
E
37
4.12.1 1st paragraph
The term 'enhanced' should be changed to 'modified'.

IBM #33
PDF Page 60
E
38
a,b,c list after figure 23
Item c is not correct and should be changed to ' Flat space addressing method (see xxx).'.

IBM #34
PDF Page 60
E
38
4.12.1 2nd to last paragraph
The statement 'clauses below' is not only inaccurate but incorrect. The exact subcluases need to be called out.

IBM #35
PDF Page 65
E
43
4.13.2 1st paragraph
The reference '(see table 6 in 4.12)' should be change to '(see table 6)' as this is the way references are done in the rest of this standard.

IBM #36
PDF Page 68
E
46
Figure 25
The layer called 'interconnect layer' seems to be called 'physical interconnect layer' in the text around to table. The label in the table needs to change or all the text around the table needs to be changed.

IBM #37
PDF Page 71
E
49
5.1 task attribute description
The statement in ()s should have the ()s removed.

IBM #38
PDF Page 73
E
51
5.2.1 3rd paragraph
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 extention to an op code that provides for the defination of the command standards of more op codes.

IBM #39
PDF Page 74
E
52 and ?
5.2.3
The statement 'bit of one' and bit of zero' should be changed to 'set to one' and 'set to zero'. Veriation on this occur throughout this subclause and all need to be fixed. This should be changed in all occurances in this standard.

IBM #40
PDF Page 76
E
54
INTERMEDIATE-CONDITON MET description
The list of statuses needs an 'or' between the last two entries.

IBM #41
PDF Page 82
E
60
5.6.1 1st paragraph
The statement 'normal successful' seems redundent. It should be changed to just 'successful'.

IBM #42
PDF Page 83
E
61
6.5.3
Here are some more 'bit is xxx' statements that need to be changed to 'bit is set to xxxx'.

IBM #43
PDF Page 84
E
62
5.7.1 item 2
If you are goinf to do this bold text stuff then it should be consitant. The 'SCSI' in 'SCSI Command Received' is not bold and I assume it should be.

IBM #44
PDF Page 86
E
64
table 23 note g
There is a implication that tasks from any initiator are allowed when ACA is active. This can be correct by changing the statement '...the logical unit are not allowed to...' to '...the logical unit from the faulted initiator are not allowed to...'

IBM #45
PDF Page 87
E
65
1st paragraph after table 24
The statement '...ACA conditions is established:' should be changed to '...ACA condition is established:' or '....ACA conditions are established:'.

IBM #46
PDF Page 87
E
5.8.1.2 1st paragraph
Here is the ultimate nit. In also ever case when you state ' an ACA or CA' you state it as 'a CA or ACA'. Pick one and change to others.

IBM #47
PDF Page 89
E
67
table 27
In table 27 the 'any attribute except ACA' row is the last row where in tables 26 and 25 it is in the first row. Table 27 should also have this row as the first row.

IBM #48
PDF Page 90

E
68
tables 28 and 29
These two tables have a row titled 'New command permitted during CA'
column. I don't understand where this comes from or how
it is determined. The note does not give me any additional information.

IBM #49
PDF Page 90
E
68
tables 28 and 29
These two tables have a row titled 'Attribute' where the note reference is
not on the same line as the title. This needs to be fixed.

IBM #50
PDF Page 92
T
70
5.8.1 note 8
This note looks like a requirement not a note. This should be placed into
main line text or deleted as it is statement else where.

IBM #51
PDF Page 92
E
70
note 9
There is a disguised can in the form of a could. This should be changed to
a 'may'.

IBM #52
PDF Page 93
E
71
5.8.3 item d)
Item d) ends with the statement '...unless an ACA exist.'. So what happens
if ACA does exist?

IBM #53
PDF Page 93
E
71
5.8.3 item c)
Item c) states '...the target shall return sense data.'. What sense data is
the target supposed to return?

IBM #54
PDF Page 94
E
72
5.8.4.1 last paragraph
The term 'clauses' should be change to a reference to specific subclauses.

IBM #55
PDF Page 94
E
72
5.8.4.2 paragraph above a.b.c list
The statement '...one of the four events listed below has occurred:' should
be changed to '....one of the following events has
occurred:'.

IBM #56
PDF Page 94
E
72
5.8.4.2 5th paragraph after a,b,c list
The term 'report' should be changed to 'asynchronous event report'.

IBM #57
PDF Page 95
E
73
5.8.4.2 last paragraph
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 consistanly use one or the other.

IBM #58
PDF Page 95
E
73
5.8.5 2nd paragarph after a,b,c list
The statement ' the following paragraphs' should be changed to 'the remaining protain of this subclause.'.

IBM #59
PDF Page 96
E
5.8.5 item b and others
The statement 'a unit attention' should be 'an unit attention'.

IBM #60
PDF Page 98
E
76
Argument descriptions list under table 30
There is no need for the list of nexuses as they are defined elsewhere. The list should be deleted.

IBM #61
PDF Page 102
E
80
6.8 description paragraph, last sentence
The 'which' should be a 'that'.

IBM #62
PDF Page 108
T
86
7.5.1
The statement 'older Head of Queue' is not correct. It should just be 'Head or Queue'. Any head of queue commands will skip ahead of a simple even if it arrives after the simple (i.e., is newer). This is already shown in the state diagram.

IBM #63
PDF Page 109
E
87
figure 33
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
PDF Page 110
T
88
7.6 transtion S2:S3 and S3:S2
There is no statement here about the fact that depending on the setting of the QERR bit these tasks may be deleted. This needs to be corrected.

IBM #65
PDF Page 110
E
88

7.7.1 1st paragarph
The i.e does not have a close) in it.

IBM #66
PDF Page 113
T
91
table 32
The statement 'older Head of Queue' is not correct. It should just be 'Head or Queue'. Any head of queue commands will skip
ahead of a simple even if it arrives after the simple (i.e., is newer).
This is already shown in the state diagram.

IBM #67
PDF Page 117
E
95
table A.4 target port row
In the last column the note reference to note e is on a separate line this should be corrected.

IBM #68
PDF Page 117
T
95
table A.4 footnote e
This footnote references IEEE Std P1212 which is not in the document reference list.

IBM #69
PDF Page 117
E
95
table A.5 last row
The reference to note a is on a separate line in several places this should be corrected.

IBM #70
PDF Page 118
E
95
table A.6 last row
The reference to note a c is on a separate line this should be corrected.

IBM #71
PDF Page 118
T
96
A.4.8
This references an ISO/IEC 10646 which is not in the document reference list.

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Comments attached to No ballot from Mr. Cris Simpson of
Intel Corp.:

(All Page #s reference the PDF)

intel001 Pg 24
"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.
<eoc>

intel002 Pg 24
"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.
<eoc>

intel003 Pg 28 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)
<eoc>

intel004 Pg 41
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.
<eoc>

intel005 Pg 68
Remove all occurences of 'physical' when used with 'interconnect'.
<eoc>

intel006 Pg 69
Although they need not be defined, for completeness, figure 26
should indicate that protocol service requests result in
interconnect service requests.
<eoc>

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Comments attached to YesC ballot from Mr. Mark Evans of
Maxtor Corp.:

Maxtor 1
PDF Page 23
[Comment 1] 1.2, first paragraph: I recommend that "directly" be deleted.

Maxtor 2
PDF Page 24
[Comment 2] 1.3, Common Access Method: I think this should be "SCSI device". I
see several other instances where there are inconsistencies between words used
in the text and their definitions. I'm sure this is the result of resolving
definitions well after the text was written. I recommend that the editor do
global searches on the words, "device", "target", and "initiator" to check that
they are used as defined and, where they are not used as defined, make the
necessary corrections.

Maxtor 3
PDF Page 24
[Comment 3] 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
PDF Page 28
[Comment 4] 3.1.6 blocked task state: A colon is missing here.

Maxtor 5
PDF Page 28
[Comment 5] 3.1.12 code value: I don't understand this first sentence. Is this supposed to be, "One or more defined numeric values each representing an identified and described instance or condition"?

Maxtor 6
PDF Page 29
[Comment 6] 3.1.21 current task: I recommend that there be a hyphen between "protocol" and "specific".

Maxtor 7
PDF Page 29
[Comment 7] 3.1.27 device service request: I recommend that the commas be deleted from this sentence.

Maxtor 8
PDF Page 29
[Comment 8] 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
PDF Page 29
[Comment 9] 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
PDF Page 29
[Comment 10] 3.1.33 faulted initiator: I recommend that "disappears" be changed to "is cleared".

Maxtor 11
PDF Page 29
[Comment 11] 3.1.34 faulted task set: I recommend that "disappears" be changed to "is cleared".

Maxtor 12
PDF Page 30
[Comment 12] 3.1.38 function complete: I recommend that the word "actual" be deleted.

Maxtor 13
PDF Page 30
[Comment 13] 3.1.55 in transit: I recommend changing "a remote" to "an".

Maxtor 14
PDF Page 30
[Comment 14] 3.1.56 layer: I don't think "of the same rank" is clear and needs more definition.

Maxtor 15
PDF Page 31
[Comment 15] 3.1.66 media information: As there is no instance of this used in the document, I recommend that this be deleted.

Maxtor 16
PDF Page 31
[Comment 16] 3.1.77 protocol option: "An" should be replaced with "A".

Maxtor 17
PDF Page 32
[Comment 17] 3.1.92 SCSI initiator device: "target SCSI device" should be changed to "SCSI target device".

Maxtor 18
PDF Page 34
[Comment 18] 3.1.117 subsystem: I recommend that "directly" be deleted.

Maxtor 19
PDF Page 34
[Comment 19] 3.1.117 subsystem: Isn't "division" meant to be "layer"?

Maxtor 20
PDF Page 34
[Comment 20] 3.1.120 target device name: I recommend changing "A SCSI device name" to "The name".

Maxtor 21
PDF Page 34
[Comment 21] 3.1.123 target port name: I recommend changing "A SCSI port name" to "The name".

Maxtor 22
PDF Page 34
[Comment 22] 3.1.124 target/initiator device name: I recommend changing "A SCSI device name" to "The name".

Maxtor 23
PDF Page 34
[Comment 23] 3.1.133 task router: I recommend that the following be added at the beginning, "A server with a SCSI target port that..."

Maxtor 24
PDF Page 34
[Comment 24] 3.1.134 task set: Should this be "(i.e., queuing)"?

Maxtor 25
PDF Page 35
[Comment 25] 3.1.139 upper level protocol (ULP): There should be a hyphen between "application" and "specific".

Maxtor 26
PDF Page 35
[Comment 26] 3.1.142 well known logical unit: I recommend replacing "does" with "performs".

Maxtor 27
PDF Page 35
[Comment 27] 3.3.1 expected: This term could be deleted as its only used once in the document and in that case has its standard English meaning.

Maxtor 28
PDF Page 36
[Comment 28] 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
PDF Page 36
[Comment 29] 3.4 Editorial Conventions, fourth paragraph: Are such quantities ever not associated with events or indications? If they always are, the word "usually" should be deleted.

Maxtor 30
PDF Page 37
[Comment 30] 3.5 Numeric Conventions: I recommend that the hyphens in this paragraph be replaced by the word "through".

Maxtor 31
PDF Page 41

[Comment 31] 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
PDF Page 41
[Comment 32] 4.2 The SCSI distributed service model, second paragraph, third sentence: I think that the commas should be removed from before and after the phrase, "via the client's service delivery subsystem".

Maxtor 33
PDF Page 41
[Comment 33] 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
PDF Page 41
[Comment 34] 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
PDF Page 42
[Comment 35] 4.3 The SCSI client-server model, second paragraph, third and fourth sentences: I thought that an application client was created for a single command, a group of linked commands, or a task management function. If this is true, then I recommend that these sentences be changed to reflect this.

Maxtor 36
PDF Page 43
[Comment 36] 4.4 The SCSI structural model, first paragraph, third sentence: Since a service delivery subsystem transports more than just commands and data, I recommend that the end of this sentence be changed to something like, "...commands, data, etc."

Maxtor 37
PDF Page 45
[Comment 37] 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
PDF Page 48
[Comment 38] 4.7.3 SCSI target/initiator device, first sentence: This should read, "A SCSI target/initiator device (see figure 13) contains:"

Maxtor 39
PDF Page 50
[Comment 39] 4.8 Logical units, first list: I recommend that this read, "One or more task sets each of which may contain..."

Maxtor 40
PDF Page 52
[Comment 40] 4.9.1 The task object, fourth paragraph, second sentence: There is an extra ")" at the end of the sentence that should be removed.

Maxtor 41
PDF Page 52
[Comment 41] 4.9.1 The task object, fifth paragraph, first sentence: The words "By implication" should be removed. There is nothing implied about this. It is stated clearly as a "shall".

Maxtor 42
PDF Page 54
[Comment 42] 4.11.1 SCSI port configurations, second paragraph, first sentence: The word "it's" should be changed to "its".

Maxtor 43
PDF Page 57

[Comment 43] 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
PDF Page 59
[Comment 44] 4.11.7 SCSI target device view of a multiple port SCSI initiator device: There are several instances of the phrase, "An SCSI" in this subclause. These should be replaced with, "A SCSI". These are the only instances of this in the document.

Maxtor 45
PDF Page 59
[Comment 45] 4.12.1 [Model for dependent logical units] Introduction, first lettered list: There is much that confuses me in this subclause. It all begins with the introduction of this device called a "dual ported SCSI bridge controller". There is no description of what this device is. In figure 23 it appears to me that what I assume to be this device has at least six ports, two of which are input ports. Then, all of the SCSI target devices are represented as LUN 0. Where is the hierarchy? From a brief glance I think that all of the detail for this is in SCC. One way or the other, the concepts of a SCSI bridge controller and how it is addressed needs to be explained here for this subclause to make any sense at all.

Maxtor 46
PDF Page 69
[Comment 46] 4.14 The SCSI model for distributed communications, SCSI Protocol service response, second sentence: I think this sentence is intended to mean, "A SCSI protocol service response may be invoked to cause a reply from the LLP to be returned to the ULP peer." If this is the meaning, the sentence should be changed.

Maxtor 47
PDF Page 71
[Comment 47] 5.1 The Execute Command remote procedure. Task Attribute (parenthetical clause): I think that it's explicit that untagged tasks shall have the SIMPLE attribute. Therefore, I recommend removing the word "implicitly" from this phrase.

Maxtor 48
PDF Page 72
[Comment 48] 5.1 The Execute Command remote procedure, Data-in Buffer, first sentence: I think that the information is returned by the logical unit BEFORE command completion and recommend that the sentence be change to say that.

Maxtor 49
PDF Page 73
[Comment 49] 5.2.1 CDB Format, second paragraph, last sentence: I recommend that this sentence be deleted unless someone is building a prescient logical unit that knows what's in future standards.

Maxtor 50
PDF Page 74
[Comment 50] Table 20 - Group Code values, note, first sentence; I recommend that this be changed to, "The format of the commands..."

Maxtor 51
PDF Page 74
[Comment 51] 5.2.3 CONTROL byte, first paragraph, first sentence: I recommend that the following parenthetical phrase be added, "(except for the CDB for operation code 7F)".

Maxtor 52
PDF Page 74
[Comment 52] 5.2.3 CONTROL byte, third paragraph, second and fourth sentences: I recommend that the word "indicates" be change to "specifies" in these two places.

Maxtor 53
PDF Page 75
[Comment 53] 5.2.3 CONTROL byte, last sentence: I recommend that this sentence be removed as "obsolete" is a keyword indicating that an item was defined in prior SCSI standards but has been removed from this standard.

Maxtor 54
PDF Page 75
[Comment 54] 5.3.1 Status codes, INTERMEDIATE, first sentence: There should be an "or" between "TASK SET FULL" and "BUSY".

Maxtor 55
PDF Page 76
[Comment 55] 5.3.1 Status codes, INTERMEDIATE-CONDITION MET, first sentence: There should be an "or" between "TASK SET FULL" and "BUSY".

Maxtor 56
PDF Page 79
[Comment 56] 5.4.3.1 Introduction, third paragraph, second sentence: I recommend that, "...data needs to be moved..." to "...data may be moved..."

Maxtor 57
PDF Page 81
[Comment 57] 5.5 Task and command lifetimes, first sentence after the first list: I recommend that, "The application client assumes that..." to, "To the application client, ..."

Maxtor 58
PDF Page 102
[Comment 58] 6.8 WAKEUP, list: I recommend that the commas be removed from these two items.

Maxtor 59
PDF Page 105
[Comment 59] 7.1 Introduction to task set management, last paragraph, last sentence: This sentence is wrong and should be changed to something like, "A CHECK CONDITION status caused by the detection of an overlapped command shall prevent that command from being entered into the task set. Certain protocol specific errors should also keep a task from being entered into the task set."

Maxtor 60
PDF Page 116
[Comment 60] A.3 Identifiers and names, first paragraph, first sentence: The word "name" should be plural.

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Comments attached to No ballot from Mr. Edward A. Gardner of Ophidian Designs:

See T10/02-152.

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Comments attached to YesC ballot from Mr. Paul Entzel of Quantum Corp.:

1. Editorial PDF Page 51, 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.
2.	Editorial	PDF page 51, third paragraph from the bottom. The last sentence in the paragraph would be clearer if the ", therefore," were removed.
3.	Editorial	PDF page 59, first paragraph in subclause 4.11.7 and the note that follows it. 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".
4.	Editorial	PDF page 64, note 4. The closing parenthesis in the first sentence looks to be in the wrong place.
5.	Editorial	PDF page 73, first paragraph of subclause 5.2.1. Change reference from "clause 5" to "subclause 5.1".
6.	Editorial	PDF page 87, the list following table 24. 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.
7.	Editorial	PDF page 101, first paragraph in subclause 7.7.1. There is no closing parenthesis for the phrase starting "(i.e., task set management..."

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Comments attached to YesC ballot from Mr. Paul D. Aloisi of
Texas Instruments:

Related documents
Technical reports like SDV are not listed

4. Introduction; 4 paragraph, 3rd sentence ? appears to have at least an extra coma.

That is, although such objects exhibit well-defined, observable behaviors, they do not exist as separate physical elements.

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.

?However? is over used in the document, several can be eliminated without changing the meaning.

?That? is over used in the document, several can be eliminated without changing the meaning.

4.11.1 second paragraph ? first sentence, it?s should be its

4.11.4 second paragraph ? first sentence, it?s should be its

Note 5 appears to change size of the font in the middle of the note.

5.8.5 Seventh paragraph - brackets don?t match

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Comments attached to Abs ballot from Mr. Michael Wamsley of
TycoElectronics:

Document not pertinent to connector design

********** End of Ballot Report **********