ENDL
T E X A S

Date: 6 April 2004
To: T10 Technical Committee
From: Ralph O. Weber
Subject: Response to T10 Letter Ballot comments on OSD

This document contains the responses to the T10 Letter Ballot comments on forwarding OSD to first public review. The summary of the T10 Letter Ballot results can be found in document T10/04-064.

All references to OSD pages are based on osd-r09.pdf.

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

Revision History

r0 All comments from T10/04-064r0 included as unprocessed comments.
r1 Add 32 late comment from Brocade Communications as unprocessed comments.
r2 All comments were reviewed and those comments needing discussion in the SNIA OSD TWG were marked as Unresolved. During the review, a few comments were processed to the point of having their resolutions defined and those resolutions were noted.

To review the comments identified as needing SNIA OSD TWG discussion:
• Use the Bookmark titled "Unresolved Comments List" to locate the list of identified comments.
• Each entry in the list is a hot link to the comment text needing discussion.
• Follow the hot links to each comment, review, and discuss each one.

Resolution Summary

The lists of comments on the following pages may be used to locate comments with specific types of resolutions and each entry is a PDF hot link to the comment and resolution text. The PDF bookmarks may be used to locate comments based on their source company.

The following table summarizes numbers of comments with specific types of resolutions by source company.

Company	Unre-solved	Technical		Editorial		Rejected	Deferred or No Action Taken	Total
		As Is	Changed	As Is	Changed			
AMCC	10	0	0	0	1	0	0	11
Agilent Technologies	10	0	0	0	0	0	0	10
Brocade Comm.	23	0	0	0	3	6	0	32
EMC Corp.	11	0	0	0	0	1	1	13
ENDL Texas	3	0	0	0	0	0	0	3
Hewlett Packard Co.	117	0	1	0	0	1	0	119
IBM Corp.	151	0	0	0	0	0	0	151
Intel Corp.	21	0	0	0	0	0	0	21
Liguna Data	44	0	0	0	0	0	0	44
LSI Logic Corp.	14	0	0	0	0	0	0	14
Panasas	7	0	0	0	0	0	0	7
Seagate Technology	48	0	0	0	0	0	1	49
Veritas Software	116	0	0	0	0	5	0	121
Total	575	0	1	0	4	13	2	595

Unprocessed Comments List

Unprocessed Comments List (continued)

Unprocessed Comments List (continued)

Unprocessed Comments List (continued)

Unprocessed Comments List (continued)

Unprocessed Comments List (continued)

Unprocessed Comments List (continued)

Unprocessed Comments List (continued)

Unprocessed Comments List (continued)

Unprocessed Comments List (continued)

Unresolved Comments List

Unresolved Comments List (continued)

Rejected Comments List

Comments With Implemenation Deferred to OSD-2

<u>Substantive Comments</u> Accepted As Proposed

Substantive Comments Accepted With Noted Changes

Accepted As Proposed Non-Substantive Comments List

Accepted With Noted Changes Non-Substantive Comments List

No Action Requested, No Action Taken Comments List

1. Agilent Technologies

Pat Thaler from Agilent Technologies submitted the following comments on a Yes vote.

Agilent 1) No title assigned yet (Unprocessed) [1]
       3.7.2

Perhaps I'm being excessively picky, but some of the statements here seem to be contradictory:

"A data field that is described as being null-terminated shall have one byte containing an ASCII null . and all other bytes in the field shall not contain the ASCII null character. " but farther down a data field that is described as being both null-terminated and null-padded can have multiple null characters at the end. A "null- terminated and null-padded field" is a kind of "null-terminated field" so it shouldn't violate the null-terminated field rule. The first sentence could be modified to "being null-terminated but that is not null-padded".

Also Note 1 seems to be wrong - The two sentences above say there is a difference between pad byte contents - in one case they contain space and in the other case null. This sentence says the null-padded and zero-padded fields have the same pad byte contents and there is some difference in the other bytes of the field. Delete or correct the note.

Agilent 2) No title assigned yet (Unprocessed) [2]
       3.7.1

As long as I'm being picky - according to the next section an ASCII data field can also contain the null character. Add "and the null code (00h).

The null code shall only be used where required for null-termination and null-padding.

Agilent 3) No title assigned yet (Unprocessed) [3]
       4.8.4.3 At the bottom of page 34

the paragraph referencing table 13 plus the table appear to duplicate the information in the previous paragraph (the two paragraphs starting "The OBJECT CREATION TIME field").

Agilent 4) No title assigned yet (Unprocessed) [4]
       4.8.4.3

Permissions bit mask, WRITE bit - Presumably the WRITE bit is either ignored for the root, partition and collection object types - or setting the bit to 1 is an error for these types. Which is it?

Agilent 5) No title assigned yet (Unprocessed) [5]
       4.8.4.3 NOTE 3

NOTE 3 looks incorrect. From 4.6.2 there is no partition associated with Partition_ID 0h. Table 2 says that Partitions have Partition_IDs from 10000 h to all. Suggest deleting the NOTE 3.

Agilent 6) No title assigned yet (Unprocessed) [6]
       Comment not listed in 04-064r0
       General

Is there a "root partition"/"partition zero" or is there not"? 4.6.2 defines a "root object" but not a "root partition" and it does not allow 0h as a Partition_ID. A number of other places refer to partition zero, partition 0h or the root partition: e.g. 4.9.4.1, table 18, 6.8, 4.9.5.1, 4.9.5.4, Table 22, 4.9.8.2, Table 46, 6.8. Please make consistent.

Agilent 7) What happens to the Credential Partition_ID when the Object Descriptor identifies a Partition? (Unresolved) [7]
>
> Comment not listed in 04-064r0
>
> 4.9.4.2

It is possible that there could be cases where the Object type is PARTITION and the OBJECT DESCRIPTOR field contains a different value than the Credential Format's PARTITION_ID field. It appears that for the cases in Table 19 where the Object Type Name is PARTITION that only the SINGLE_OBJECT_ID field is checked against the CDB PARTITION_ID. Is the Credential Format PARTITION_ID field to be ignored when Object Type is PARTITION or is a mismatch to be detected as an error?

Agilent 8) Some Permissions definitions overlap (Unresolved) [8]
>
> Comment not listed in 04-064r0
>
> Table 19

There are two conflicting entries that overlap for some commands (near the top of page 40) "A PERFORM TASK MANAGEMNT command with function code of ABORT TASK or QUERY TASK" and " Any PERFORM TASK MANAGEMNT command" both applied to Object Type ROOT an and 1OBJECT with SINGLE OBJECT_ID of zero.

An ABORT TASK or QUERY TASK command for the root object fits in both entries but the first only requires DEV_MGMT and the second requires DEV_MGMT and GLOBAL.

Suggest adding "except those with function code of ABORT TASK or QUERY TASK" to the second entry to eliminate the overlap.

A similar overlap occurs in Table 20 between each item with SET_ATTR and the equivalent items with SET_ATTR and SECURITY in the Permission Bits.

Alternatively, one might add a statement to 4.9.4.4 that a command or attributes operation is allowed if at least one row in the table allows it column even if another row also applies and doesn't allow it.

I think it is clearer to remove the overlap.

Agilent 9) No title assigned yet (Unprocessed) [9]
>
> Comment not listed in 04-064r0
>
> Tables 19 and 20

The format differences between tables 19 and 10 tables are odd. The capability field columns have a joint heading in Table 19 but the same columns in Table 20 don't. Position of those columns is on the right in Table 19 and on the left in Table 20. It would be nice if these were made to match.

Agilent 10) No title assigned yet (Unprocessed) [10]
>
> Comment not listed in 04-064r0
>
> Table 20

For the items where Object Type Name is ROOT table 20 allows Object Descriptor Name to be NONE or 1OBJECT and places no restrictions on the 1OBJECT value. Table 19 requires the Object Descriptor Name to be 1OBJECT and the 1OBJECT value be zero when Object Type Name is ROOT. There doesn't seem to be any reason for the difference and it would cause odd behavior - a credential that works for getting/setting attributes but not for commands despite the permissions bits. Suggest putting the same constraints on Table 20 ROOT items as on Table 19.

2. AMCC

Neil Wanamaker from AMCC submitted the following comments on a Yes vote.

AMCC 1) No title assigned yet (Unprocessed) [11]
>   The author marked this comment as technical.
>   pg 53, 4.10

Does not match 03-388r1. Provide for nonvolatile cache as in 03-388r1.

AMCC 2) No title assigned yet (Unprocessed) [12]
>   The author marked this comment as technical.
>   pg 55, 4.11.2

4.7.2 suggests that data-in segments could include get/set attributes. Make consistent.

AMCC 3) No title assigned yet (Unprocessed) [13]
>   The author marked this comment as technical.
>   pg 57, 4.11.4

Minimum size for get/set segments is 256 bytesAllow for smaller increments.

AMCC 4) Byte references are always releative to the user object (Accepted, Editorial) [14]
>   The author marked this comment as technical.
>   pg 58, 4.13, par 3

It is unspecified whether the byte is within the compass of the user object or the physical device; the former requires massaging before becoming useful for maintainability. Specify frame of reference.

Editor's Note: Change the last sentence in the paragraph as noted:

> If it is possible to identify a specific byte or range of bytes within a user object as being associated with an error, the information sense data descriptor (see SPC-3) shall be included in the sense data with the INFOR-MATION field set to the byte within the user object associated with the error or the first byte in the range of bytes within the user object associated with the error.

AMCC 5) No title assigned yet (Unprocessed) [15]
>   The author marked this comment as technical.
>   pg 58, 4.13, par 7

should -> shall.

AMCC 6) No title assigned yet (Unprocessed) [16]
>   pg 60, Table 30

RR not readily understood. Add note reference or ?? to draw attention to key at bottom of diagram

AMCC 7) No title assigned yet (Unprocessed) [17]
>   The author marked this comment as technical.
>   pg 61, 5.1

"Since the CDB length is fixed, why not assign a group code to these, and treat them as fixed?"

AMCC 8) No title assigned yet (Unprocessed) [18]
        The author marked this comment as technical.
        pg 61, Table 31

"Either last entry sb n-1, or additional length = n-8" make consistent

AMCC 9) No title assigned yet (Unprocessed) [19]
        The author marked this comment as technical.
        pg 90, Table 55, and following paragraph

The status of REPORT LUNS is somewhat ambiguous here - is support required for both LUN 0 and the well-known LUN? Neither? Clarify

AMCC 10) No title assigned yet (Unprocessed) [20]
        pg 92, Table 57

taSk

AMCC 11) No title assigned yet (Unprocessed) [21]
        The author marked this comment as technical.
        pg 92, 6.13

On what basis are tags unique? I_T_L? I_T_L_Object?

3. Brocade Communications

Robert Snively from Brocade Communications submitted the following comments on a Yes vote.

Brocade 1) No title assigned yet (Unprocessed) [22]
          Page 20, 4.7.1, paragraph 3

"retrieved and store" should be "retrieved and stored"

Brocade 2) No title assigned yet (Unprocessed) [23]
          The author marked this comment as technical.
          Page 20, 4.7.2

There is significant work in specifying an order of behavior for each of the types of commands. However, I have not located anything that shows what the state of each of these should be when a failure is encountered during one of the steps. Clause 14.3 addresses that, but ending states are not defined there either.

Proposed Solution:

I believe that there needs to be either a normative annex or a normative statement in the text specifying the expected behavior and final state for failures in each of the steps specified in 4.7.2. Some of that may need to be included in particular commands, especially reads and writes that are also doing get attributes.

Brocade 3) No title assigned yet (Unprocessed) [24]
          Page 23, 4.8.1

There is an incompleted reference in the 5th text line of the clause. The reference should be completed or removed.

Brocade 4) Test all quotas before the media is modified (Unprocessed) [25]
          The author marked this comment as technical.
          Page 24, 4.8.3
          see also: comment Panasas 4)

Quota testing errors may leave the state of the OSD logical unit in an unknown state. The state should be either exactly as before the command processing or exactly as it should be after the command processing. There should be no unannounced case of unknown state.

Proposed Solution:

In 4.8.3, "The processing … has been detected." should be replaced with: "Quota error detection should be performed before media is modified. The device server shall be sure that the state of the OSD logical unit is unchanged if a quota error is detected."

Editor's Note: This comment will be resolved as described in the response to comment Panasas 4).

Brocade 5) No title assigned yet (Unprocessed) [26]
> The author marked this comment as technical.
> Page 24, 4.8.4

The text indicates that changing quotas to values less than the resources already consumed is not an error and shall not result in the truncation or removal of any information. It would seem to me that necessarily results in the unavailability of those resources, and therefore of the data represented in those resources.

Proposed Solution:

In the appropriate section, the text should indicate that setting a quota to a value less than the resources consumed shall be an error. The resources must first be freed before the quota can be modified.

Brocade 6) Security ladder diagrams in informative annex (Unresolved) [27]
> The author marked this comment as technical.
> Page 24, 4.9

The security model is a new concept to SCSI. I believe that the model information, particularly with respect to a tutorial overview, is perhaps less helpful to me than I would have hoped. Additional overview text is desirable. This is particularly true of the different security methods.

Proposed Solution:

As a starting point, example security ladder diagrams should be provided for each of the security methods, perhaps in an informational annex referenced in the text.

Brocade 7) Make Credential format match the one defined in IKE (Unresolved) [28]
> The author marked this comment as technical.
> Page 32, 4.9.4

This credential structure does not appear to be the same as the standard credentials provided by various available credential services. As a result, the system is required to have a new and unique credential service.

Proposed Solution:

Modify the text to use a standard IKE credential, allowing the use of standard security services.

Brocade 8) Add detail on deferred write errors (Unresolved) [29]
> The author marked this comment as technical.
> Page 53, 4.1

The use of a volatile cache and deferred errors does not provide an indication of what state the OSD shall establish for the data that failed to be written. Since the OSD has accepted the data, it has accepted responsibility for the data at a "file system" level. Data that was not successfully transferred to nonvolatile store must be identified as such in subsequent read operations, as well as through a deferred error.

Proposed Solution:

The paragraph "The device server… (see SPC-3)." should be rewritten to:

> The device server may transfer data from the volatile cache to stable storage after status has been returned for the command that placed the data in the volatile cache. Errors that occur during such data transfer operations

shall be reported as deferred errors as specified in SPC-3. Such data shall be flagged such that subsequent read operations will indicate that the data is not valid.

Error conditions should be established in the READ type commands for this.

Note that the loss or unavailability of meta-data under the same circumstances is unacceptable.

Brocade 9) OBSD to protect against multiple concurrent commands (Unresolved) [30]
> The author marked this comment as technical.
> Page 57, 4.12

There is a constraint specified that application clients shall not request two or more commands that may adversely affect the return of future data. I assume such commands include the assignment of object parameters by two commands, or possibly two separate write operations. I believe that the target should provide most required protections for this kind of event. In particular, get/set attributes for a command should be atomic with respect to the influence of other commands. In addition, writes by one command should be atomic with respect to writes by another command.

Proposed Solution:

Specify the rare conditions that may allow disruptive interactions among commands. Require that the target protect the application client against interactions among commands other than those caused by variations in the timing of command entry to the execution phase.

Editor's Note: I believe that the SNIA OSD TWG is opposed to requiring targets to make attributes update atomic with respect to other commands because doing so would place impractical constraints on OBSD implementations. Please confirm.

Brocade 10) No title assigned yet (Unprocessed) [31]
> Page 62, 5.2

This text explains common format values in the CDB. However, the CDB overview has not yet been specified, so the placing of these values within the command requires unreferenced reading forward to particular commands. I used table 40 as the example of this.

Proposed Solution:

I propose expanding Table 31 to include a more complete and generic example of the 174 byte command structure. Things like the placement of the time stamps and other fields are invariant and can be defined in such a generic command space.

Brocade 11) No title assigned yet (Unprocessed) [32]
> Page 75, 6.4

"command shall terminated" should be changed to "command shall terminate".

Brocade 12) No title assigned yet (Unprocessed) [33]
> The author marked this comment as technical.
> Page 73, 6.3 & Global

I first noticed this in page 73, clause 6.3. There is a missing tutorial piece in the model describing clearly how these commands are executed. It is my understanding from reading and re-reading that every command is CMD, then then DATA OUT, then DATA IN, then RSP. That means that any CREATE is required to return a set of parameters

indicating, among other things, the ID of the created object. This is never clearly pointed out in the model, though it is implied in 4.7.2. I believe additional text, together with appropriate examples using ladder diagrams or equivalent explanatory diagrams would be very valuable. The examples may go in a referenced informational annex.

Brocade 13) No title assigned yet (Unprocessed) [34]
        Page 11, 3.6.1

"not themselves to encoded." should be changed to "not themselves encoded."

Brocade 14) No title assigned yet (Unprocessed) [35]
        Page 14, 4.2

"All stored data objects (see 4.6) have attributes (see 4.7) associated with them." should be changed to "All stored data objects (see 4.6) have associated attributes (see 4.7).

Brocade 15) No title assigned yet (Unprocessed) [36]
        Page 104, 7.1.1

"Page format parameter data allows retrieval of them in formatted pages where only the attribute values appear in the parameter data." should be changed to "Page format parameter data allows retrieval of the attributes in formatted pages where only the values of the attributes appear in the parameter data."

Brocade 16) No title assigned yet (Unprocessed) [37]
        The author marked this comment as technical.
        Page 18, 4.6.3

"There is only one root object" should be "There is one root object"

Brocade 17) No title assigned yet (Unprocessed) [38]
        The author marked this comment as technical.
        Page 105, 7.1.2.1

If I understand the attributes page definitions correctly, there are a bunch more reserved values not mentioned here. Table 3 and 4 may be intended to do that. The tables are not referenced from 7.1.2.1, creating the impression of an incomplete set.

Proposed Solution:

Add reference near table 67 to tables 3 and 4 for other usage of attribute page numbers.

Brocade 18) Root and Partition Directory pages should include attribute 0h (the label) (Unresolved) [39]
        The author marked this comment as technical.
        Page 106, 7.1.2.2

Why are the Root and Directory Partition pages exceptions to the rule about labeling the pages? I believe that the exception specified in the first sentence and second sentence of the clause should be removed.

Proposed Solution:

Remove the exceptions in the first paragraph of clause 7.1.2.2, requiring all pages to be labeled.

Brocade 19) Attributes pages are never undefined (Accepted, Editorial) [40]
>   The author marked this comment as technical.
>   Page 106, 7.1.2.3

Incorrect dynamic generation of a page does not make the page undefined. It either makes the page incorrect/invalid, or it makes the page unavailable. The page is still identifiable by the system that is trying to create it. I believe that there should be a value of "unavailable" that is used instead of the "undefined" that is suggested.

Proposed Solution: unimplemented

Change "undefined" to "unavailable" in the first paragraph of 7.1.2.3. Change the text string to "attributes information unavailable" in the second paragraph of 7.1.2.3.

Editor's Note: All three instances of "undefined" in the subclause will be changed to "unidentified", making them match the subclause title. This includes the text string cited by the comment. Also, "undefined" will be changed to "unidentified" in each of the four subclauses that reference 7.1.2.3, specifically 7.1.2.4, 7.1.2.5, 7.1.2.6, and 7.1.2.7.

Brocade 20) Errors for unimplemented attributes pages (Rejected) [41]
>   The author marked this comment as technical.
>   Page 104, 7.1.1

What is the behavior if an attributes page has an established definition but is not implemented?

Proposed Solution:

Provide error codes for unimplemented pages.

Reason for Rejection: The design goal of OSD is that all attributes pages and all attribute values may be set and retrieved by application clients unless otherwise specified. OSD 09 implements that goal. The goal is not stated in OSD r09 because standards are not tutorial. There is no need to define error codes.

Brocade 21) Attribute number 0h example needed (Accepted, Editorial) [42]
>   The author marked this comment as technical.
>   Page 107, 7.1.2.4

An expanded example of the root attributes page in table 69 would be helpful. It is not necessarily very clear that the "Attribute Value" in the title page is a character string inserted in bytes 8-39 of table 68. I believe there may be some naming problems. As an example, the right title of Table 69 s/b "Value placed in Attributes Page Identification field" or something like that.

Proposed Solution:

Clarify Table 69, providing a fully expanded example, at least in informative text in an annex. Correlate the names between the different values more accurately.

Editor's Note: The attribute value shown in table 69 is bytes 0-39 of the bytes shown in table 68. Taking the attribute number R+0h as an example, "INCITS " is bytes 0-7 and the null-padded "T10 Root Directory" is bytes 8-39. As far as the editor can tell, all the names are correlated precisely.

The concepts are not sufficiently complex to require an informative annex. The most that seems necessary is adding the following note to the end of 7.1.2.2:

> Note: Using the User Object Directory attributes page as an example, the VENDOR IDENTIFICATION field contains the ASCII characters "INCITS" and the ATTRIBUTES PAGE IDENTIFICATION field contains the ASCII characters "T10 User Object Information". The attribute number 0h attribute value is "INCITS T10 User Object Directory".

Brocade 22) Root Directory page is read-only (Rejected) [43]
        The author marked this comment as technical.
        Page 107, 7.1.2.4

The last paragraph on the page appears to be a very complicated way of saying that the Root Directory attributes page is "read-only".

Proposed Solution:

Provide a tutorial sentence explaining that, because the page cannot be set, the following error conditions will occur when an attempt is made to set the values.

Reason for Rejection: The interpretation of the cited paragraph is correct. Standards are not tutorial. Therefore, no changes are necessary.

Brocade 23) Make previously specified changes in 7.1.2.5 (Rejected) [44]
        The author marked this comment as technical.
        Page 108, 7.1.2.5

Include the necessary corrections from Brocade 020, 021, and 022.

Reason for Rejection: The changes made in response to comment Brocade 21) affect only subclause 7.1.2.2. Comments Brocade 20) and Brocade 22) were rejected.

Brocade 24) Make previously specified changes in 7.1.2.6 (Rejected) [45]
        The author marked this comment as technical.
        Page 109, 7.1.2.6

Include the necessary corrections from Brocade 020, 021, and 022.

Reason for Rejection: The changes made in response to comment Brocade 21) affect only subclause 7.1.2.2. Comments Brocade 20) and Brocade 22) were rejected.

Brocade 25) Make previously specified changes in 7.1.2.7 (Rejected) [46]
        The author marked this comment as technical.
        Page 110, 7.1.2.7

Include the necessary corrections from Brocade 020, 021, and 022.

Reason for Rejection: The changes made in response to comment Brocade 21) affect only subclause 7.1.2.2. Comments Brocade 20) and Brocade 22) were rejected.

Brocade 26) Clock accuracy (Unresolved) [47]
> The author marked this comment as technical.
> Page 111, 7.1.2.8

How is the clock set?

Proposed Solution:

Clause 4.9.5.2 says this is outside the scope of the standard. While a nice evasion, it leaves a non-functional technology, since the clock values must be known to some accuracy for some of the security and authentication to work. I propose that clause 4.9.5.2 specify a value of accuracy for the clock, to be set by a mechanism outside the standard. Some protocols are hard pressed to get the number under 1 second, and many clocks drift on the order of several seconds per year as clock processing interacts with the hardware counters.

Brocade 27) No title assigned yet (Unprocessed) [48]
> The author marked this comment as technical.
> Page 111, 7.1.2.8

How is the length of each attribute determined? As an example, the Unit Serial Number VPD page has a length count, but the Product Serial Number itself is defined by that length count. I have not located a comparable length field in the attributes explanation to this point.

Proposed Solution:

Either there are some length fields missing that prevent valid parsing of the attributes pages, or the explanation and tutorial information is not adequate to explain these values. It is possible that all of these values are exactly 32 bytes (after padding), but at least two are allowed to be longer.

Brocade 28) No title assigned yet (Unprocessed) [49]
> The author marked this comment as technical.
> Page "All", All

I believe that there is a fundamental problem with interoperability among devices implementing this standard. While "T10" attribute pages are defined, there is an explicit assumption that these are only a small subset of the attribute pages expected to be defined. That assumption is made in 7.1.2.2. That assumption, together with the absence of any referenced profiles or operational descriptions, has the possibility of creating interoperability nightmares.

Proposed Solution:

Specify that all T10 attribute pages and attributes supporting an implemented function are mandatory. Of course the choice of not implementing optional functions may decrease the actual number of attribute pages supported. Further specify that all OSD devices will operate correctly with only the T10 attributes specified. Vendor specific extensions shall not be required for T10 compliant operation of a device. Devices with vendor specific attributes set shall be accessible and operable by devices using only the T10 subset of defined attributes. This may be specified somewhere, but I sure did not see it. The obvious place to document this would be clause 4.7.1.

Brocade 29) Support retrieving/setting attributes on any command is mandatory (Accepted, Editorial) [50]
> The author marked this comment as technical.
> Page 20, 4.7.2

The text says: "OSD commands provide the application client with the optional ability to get and set attributes as part of processing the command (e.g., a WRITE command may also retrieve the user object logical length attribute)." It appears to me that the capability is mandatory for the target to implement, since it must support

functions like CREATE AND WRITE. While the application client can, at first glance, get away with executing only commands that do not require a simultaneous inbound/outbound operation and do not necessarily require treating attributes at the same time operations are going on, that falls into the "invocable" class typically used by profiles to identify mandatory behavior.

Proposed Solution:

There are three choices here:

    a) Confess that the ability to set and get attributes as part of the processing is a mandatory behavior of HBAs supporting OSD devices. Modify the text in 4.7.2 accordingly.
    b) Identify certain commands and operation combinations as optional for both the device server and the application client. Provide appropriate VPD information to specify which combinations are supported by the device server and make it mandatory that the application client not exercise those combinations. Commands invoking those combinations would be considered as errors.
    c) Change the text in 4.7.2 to indicate that the ability is not optional, but rather may be invoked at will by the application client. This would also require a short explanation of how things could be done without invoking those functions. In particular, the CREATE AND WRITE function would have to be singled out as prohibited for such application clients. This may also effect those security actions that require atomic behavior.

Editor's Note: Option a) is the intent of OSD. The word "optional" will be removed from the first sentence in 4.7.2.

Brocade 30) Truncating a user object should be an error (Rejected) [51]
              The author marked this comment as technical.
              Page 115, 7.1.2.11

The text indicates that changing the user object logical length to a value shorter than the logical length known to the OSD device server shall cause truncation. This is a data integrity exposure and large warning bells should go off when such an event occurs.

The text also conflicts with some of the definitions associated with quotas, which are related to object logical length. Particularly see 4.8.4.

Proposed Solution:

In 7.1.2.11, add text to the explanation that indicates that:

    a) the occurrence of a truncation shall be accompanied by an appropriate check condition, or
    b) the attempt to execute a command that creates a truncation shall be prohibited and a check condition provided. Shortening an object would require copying data to a new shorter object and removing the old object.

Note that a) would require corresponding text changes in 4.8.4.

Reason for Rejection: Truncating an object by setting its User Object Logical Length attribute is an intended feature of OSD. It is not an error.

The User Object Logical Length attribute is in the User Object Information attributes page, not the User Object Quotas attributes page, meaning that decreasing the value in the User Object Logical Length attribute cannot produce a quota error, meaning that 4.8.4 does not apply and need not be modified.

Brocade 31) Are we allowing a device to support only the NOSEC security method? (Unresolved) [52]
>
>   The author marked this comment as technical.
>   Page 132, 7.1.2.20

If the supported security methods attribute indicates that NOSEC is the supported security attribute, what is the status of all the other security pages.

Proposed Solution:

I believe that several of the security pages are optional and need only be supported if supported security methods other than NOSEC are supported. Those pages should be identified accordingly in their own sections. It is possible this is buried in the security model somewhere and I missed it. If it is, a reference would be sufficient in this section.

Brocade 32) Root Partition security dominates (Unprocessed) [53]
>
>   The author marked this comment as technical.
>   Page 135, 7.1.2.21

In this section and perhaps others, security methods are defined for the Partition. I would have expected that security methods other than those indicated as supported in the Root Partition would be considered as errors, though I do not find anywhere that is explicitly stated.

Proposed Solution:

I believe that this should be specified each place table 99 or its equivalent is referenced. It is possible this is buried in the security model somewhere and I missed it. If it is, a reference would be sufficient near each table.

4. EMC Corp.

David Black from EMC Corp. submitted the following comments on a No vote.

EMC votes "No" due primarily to the following four comments:

> EMC 3) is a significant functional omission from the standard.
> EMC 5), EMC 9), and EMC 13) appear to be significant weaknesses or omissions in the specified security.

EMC 1) Capability keys must be kept secret (No Action Taken) [54]
> Section 4.9.2 Trust Assumptions

A crucial assumption has been omitted: the capability keys must be kept secret. All of the security properties depend on the attacker not being able to obtain the capability key that goes with a credential. This requires that the unspecified Application Client to Security Manager protocol be protected against eavesdropping (e.g., via encryption). In addition all participants (OBSD, security manager, and application) must protect capability keys from being disclosed to unauthorized parties.

Editor's Note: This comment appears to state two requirements, along with a claim that neither requirement is present in OSD r09. The requirements appear to be:

> 1) That transactions between the application client and security manager be protected against eavesdropping.
> 2) That capability keys not be disclosed to unauthorized parties.

The first of these requirements is covered in OSD r09 subclause 4.4, to whit:

> "When sending credentials to an application client, the security manager shall use a private, authenticated communications mechanism."

In OSD r08, the equivalent sentence read:

> "When sending credentials to an application client, the Security Manager shall use a communications mechanism that is secure from all attacks and shall encrypt the data it transfers for data privacy."

However, it was agreed that the r09 wording conveyed the same meaning.

The second requirement is covered as strongly a T10 standard can place requirements on initiator behavior in the 4.9.1, to whit:

> "An application client that has just the capability (e.g., obtained by monitoring CDBs sent to the OSD device server) but not the capability key is unable to generate commands with valid integrity check value, meaning that application client is denied access to the OSD logical unit. This protocol does allow delegation of a credential if a application client delegates both the credential and the capability key."

EMC 2) Nonce Processing May Depend on Clock Synchronization (Unresolved) [55]
> Section 4.9.2 Trust Assumptions

The nonce processing described in Section 4.9.6.2 may depend on synchronized clocks. This assumption needs to be stated, along with the need to protect clocks from being changed by an attacker. There is some text about this in 4.9.5.2, but it is applied only to credential expiry, which may be less sensitive to clock synchronization than nonce validation.

EMC 3) No title assigned yet (Unprocessed) [56]
>   The author marked this comment as being a principle source of the EMC "No" vote.
>   Section 4.9.2 Trust Assumptions

There is no specification of the security functions of the security manager. This needs to be provided to explain how the server generates credentials and capability keys. This comment is tagged as being against Section 4.9.2, but is actually about an omission in the entire security section.

EMC 4) Protection Against Unauthorized Usage of a Credential (Unresolved) [57]
>   4.9.3.1 Introduction

The table seems to define "forgery of credential" as the ability of an attacker to construct a new valid credential from scratch. Based on the comment on CAPKEY (see comment EMC 5), another line appears to be needed to capture the "unauthorized use of credential" threat. In its current form, CAPKEY does not protect against this threat.

EMC 5) CAPKEY Equivalent In Strength To Password-In-The-Clear (Unresolved) [58]
>   The author marked this comment as being a principle source of the EMC "No" vote.
>   4.9.3.3 CAPKEY

CAPKEY is equivalent in strength to password-in-the-clear in that an attacker who can observe a credential and integrity check value can make use of both via impersonating the initiator, as the integrity check value is calculated over only the initiator and target identities. In essence, the CAPKEY <credential, integrity check> pair functions as a limited use password for the initiator with the target - this is weaker than the CHAP authentication in iSCSI and Fibre Channel. CAPKEY's integrity check should be redefined to prevent reuse of the <credential, integrity check> value pair in a different I_T Nexus. One possibility would be to have the target generate a nonce for each I_T nexus, and include that value in all integrity check calculations on that I_T nexus. The passive observer who does not have the capability key is then thwarted by the fact that this nonce changes when she creates a new I_T nexus to impersonate the initiator.

EMC 6) Define Security Tokens Precisely (Rejected) [59]
>   4.9.3.3 CAPKEY

The specification of the security token is insufficiently precise about format and padding of the initiator and target identifiers. This is sufficiently important that appealing to the SCSI transport specs for the definition of these identifiers is not sufficient - they should be defined here with precise instructions on how to construct the security token.

Reason for Rejection: The requested change is incompatible with SAM layering. The definition of initiator and target identifier formats is to be found in the applicable transport protocol standard, not in a command set standard such as OSD. Having command set standards place requirements on transport protocol standards would restrict the options open to the developers of future transport protocols.

It would be appropriate for SCSI transport protocol standards wish to define their security token formats. Although it is something of a stretch, SAM-4 might be able to define a security token format that fits all protocols. However, OSD already says all it can say on the subject.

The current security token definition generates no additional avenues of attack. Both the initiator and the target must have the same security token format in order for the capability key algorithms to work. Incompatible security token formats only causes failures of credential validation process, most probably leading to both ends deciding to use CMDRSP security method instead.

EMC 7) CMDRSP and ALLDATA Require Nonce Verification (Unresolved) [60]
4.9.3.4 and 4.9.3.5 CMDRSP and ALLDATA

These sections need to state that nonce verification is required as part of these security methods.

EMC 8) Credential Validation Algorithm Not Correct (Unresolved) [61]
4.9.5.3 Reconstructing the Credential

Reconstruction steps 1) A), 1) B) a), and 1) B) b) modify the credential received in the CDB in a fashion that will cause device server integrity verification of a credential to fail if the modification causes any change. These steps appear to implement permission enforcement (e.g., CREATE PARTITION requires a credential for the root partition). At a minimum, this needs to be stated explicitly, but the specification would be improved by

- incorporating the A) check into the credential validation algorithm.
- incorporating the B a) and B) b) checks into Table 19 (e.g., the partition ID in the credential MUST be zero for a CREATE PARTITION command)

EMC 9) Timestamp Checks Should Not Be Optional (Unresolved) [62]
The author marked this comment as being a principle source of the EMC "No" vote.
4.9.6.2 Device server validation of request nonces

The fact that timestamp checks are optional allows record-and-replay attacks on device servers that don't use timestamp checks. The specific attack of concern is:

- Stimulate client to produce commands to be replayed and record them
- Corrupt the commands in flight (e.g. overwrite nonces) so the server doesn't record their nonces being as being used
- Replay the commands at some later point in time

The root of this problem is that a device server cannot detect replay of a nonce that it has never seen - this is not a problem for sequence-based and time-based mechanisms. The timestamp checks should be made mandatory including recommendations for delta values to avoid this exposure.

EMC 10) Far-In-The-Future Nonces Invite Record-And-Replay Attacks (Unresolved) [63]
4.9.6.3 Far-in-the-future nonces

This appears to be an invitation to record-and-replay attacks even in the presence of timestamp checks. It needs to be removed from the standard or heavily justified.

EMC 11) No title assigned yet (Unprocessed) [64]
4.9.8.1 (Secret keys) Introduction

The Capability key row in Table 22 should say that the key is new with each Capability, not Credential.

EMC 12) How Long Lived is a Capability Key? (Unresolved) [65]
4.9.8.1 (Secret keys) Introduction
similar comment: HP 58)

Footnote d refers to a short time interval during which the Capability key is valid. The fact that the time interval must be short (and what "short" means) is not specified. This is probably part of the larger problem specification of security manager functions has been omitted.

EMC 13) Key Algorithms Do Not Provide Forward Secrecy (Unresolved) [66]

The author marked this comment as being a principle source of the EMC "No" vote.

4.9.8.3 Computing updated generation keys and new authentication keys

This functionality cannot provide forward secrecy. If any master key is ever compromised, all keys based on it (including subsequent master keys) are potentially compromised. This can be disastrous.

Versions of SET KEY and SET MASTER KEY are needed that perform some sort of cryptographic key exchange so that forward secrecy can be provided if desired. A particularly disastrous situation is that when the OBSD owner changes, if the old owner (who knows the previous master generation key value) can observe the seed value in the new owner's SET MASTER KEY command, she can determine the new master keys (generation and authentication). This is undesirable for obvious reasons.

5. ENDL Texas

Ralph O. Weber from ENDL Texas submitted the following comments on a No vote.

ENDL 1) Finish Error Reporting Definition (Unprocessed) [67]
        The author marked this comment as technical.
        PDF pg 1, pg i, Global

Incorporate 04-095 to define additional quota enforcement features, new sense data descriptors, and additional error reporting features.

ENDL 2) Separate Credentials From Capabilities & Enable Fencing (Unprocessed) [68]
        The author marked this comment as technical.
        PDF pg 1, pg i, Global
        similar commnet: HP 62)

Incorporate 04-100 to separate capability checking from security, the object version tag from security, and define basic object fencing features.

ENDL 3) Persistent Reservations Should Be Optional (Unprocessed) [69]
        The author marked this comment as technical.
        PDF pg 87, pg 68, 6.1, table 39
        see also: comment Veritas 84)

PERSISTENT RESERVE IN and PERSISTENT RESERVE OUT should be optional implement, despite the statements made in approved document T10/02-260r1 and disregarding the written request from Ed Gardner that T10/02-260r1 be observed in OSD. These two commands make virtually no sense in an OSD device because of the vastly more versatile security capabilities feature. Requiring their implementation places an unreasonable burden on OSD products.

6. Hewlett Packard Co.

Rob Elliott from Hewlett Packard Co. submitted the following comments on a Yes vote.

HP 1) No title assigned yet (Unprocessed) [70]
        Page vii, Abstract

What is "peer-to-peer" about OSD? It follows the usual SCSI model of client/server =initiator/target.

HP 2) No title assigned yet (Unprocessed) [71]
        Page xviii, Page xviii

Change "Storage Industry Network Association" to "Storage Networking Industry Association (see http://www.snia.org)"

HP 3) No title assigned yet (Unprocessed) [72]
        Page xix, Introduction

Add a Gene Milligan dedication page since he edited the original drafts of this standard. See SBC-2 for picture and text.

HP 4) No title assigned yet (Unprocessed) [73]
        Page 1, 1 Scope

Change "device type field" to "PERIPHERAL DEVICE TYPE field" with small caps

HP 5) No title assigned yet (Unprocessed) [74]
        Page 2, 1 Scope

Delete "At the time this standard was generated, examples of the SCSI general structure included:" and the list that follows on pages 2-3. It's always out of date and generally irrelevant to OSD itself.

HP 6) No title assigned yet (Unprocessed) [75]
        Page 5, 2.5 Ref under def

Format "(www.t10.org)" like other web page references

HP 7) No title assigned yet (Unprocessed) [76]
        Page 5, 2.5 Ref under def

Format "(www.incits.org)" like other web page references

HP 8) Greenwich Mean Time (Unprocessed) [77]
        Page 8, 3.1.47 greenwich
        see also: comment Veritas 7)

Capitalize the city name Greenwich (and possible Mean and Time too). According to the reference and other pages, UTC is probably more correct than UT.

HP 9) No title assigned yet (Unprocessed) [78]
        Page 13, 3.7.2 Data field termination and padding requirements

Delete "and all other bytes in the field shall not contain the ASCII null character." and/or phrase the condition as "as being null-terminated but not null-padded" Null padding means other bytes are set to null. There are current no uses of "null-terminated" in the standard except in 3.7.2. Perhaps the attribute value strings (see 7.1.2.4for the first example) should be - or are they null-terminated null-padded? If so, then just "null-padded" should suffice.

HP 10) No title assigned yet (Unprocessed) [79]
        Page 13, 3.7.2 Data field termination and padding requirements null-terminated and null-padded

There is only one use of "null-padded" in the standard, and no uses of null-terminated on its own.

HP 11) No title assigned yet (Unprocessed) [80]
        Page 16, 4.4 Elements of the example configuration

Delete clients (or make application singular)

HP 12) No title assigned yet (Unprocessed) [81]
        Page 18, 4.6.3 Root object

Change "status, the sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID FIELD IN CDB." to "status status with the sense key set to ILLEGAL REQUEST and the additional sense code set to INVALID FIELD IN CDB."

HP 13) No title assigned yet (Unprocessed) [82]
        Page 18, 4.6.2 Identifying OSD objects

Add comma between object and each

HP 14) No title assigned yet (Unprocessed) [83]
        Page 18, 4.6.4 Partitions

Broken cross-reference to CREATE COLLECTIONS; 6.5 should be 6.6

HP 15) No title assigned yet (Unprocessed) [84]
        Page 19, 4.6.4 Partition object

Change "status, the sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID FIELD IN CDB." to "status status with the sense key set to ILLEGAL REQUEST and the additional sense code set to INVALID FIELD IN CDB."

HP 16) No title assigned yet (Unprocessed) [85]
        Page 19, 4.6.6 Collections

Change "status, the sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID FIELD IN CDB." to "status status with the sense key set to ILLEGAL REQUEST and the additional sense code set to INVALID FIELD IN CDB."

HP 17) No title assigned yet (Unprocessed) [86]
        Page 20, 4.7.2

Change Processing to Process

HP 18) No title assigned yet (Unprocessed) [87]
        Page 20, 4.7.1 Overview

Change store to stored (or set)

HP 19) No title assigned yet (Unprocessed) [88]
        Page 20, 4.7.2

Move and to row 4) from row 3)

HP 20) No title assigned yet (Unprocessed) [89]
        Page 21, 4.7.3 Attributes pages (global)

P, C, and R are difficult to search for. How about slightly longer acronyms like P_BASE, C_BASE, and R_BASE?

HP 21) No title assigned yet (Unprocessed) [90]
        Page 21, 4.7.3 Attributes pages, Table 3 - Attributes page numbers

Change use to used

HP 22) No title assigned yet (Unprocessed) [91]
        Page 21, 4.7.3 Attributes pages

Change needed to used

HP 23) No title assigned yet (Unprocessed) [92]
        Page 21, 4.7.2

Change Processing to Process

HP 24) No title assigned yet (Unprocessed) [93]
        Page 21, 4.7.2 Command function ordering

Each command section that has unusual processing orders (GET ATTRIBUTES, SET ATTRIBUTES, REMOVE, REMOVE PARTITION, and REMOVE COLLECTION) should cross-reference back to here. If you get the Root Information page number of partitions value, it reflects the value before not after removing a partition.

HP 25) No title assigned yet (Unprocessed) [94]
        Page 21, 4.7.3 Attributes pages

It is not clear if the attributes page numbers form one numbering space across the entire logical unit. Please state the scope explicitly.

HP 26) No title assigned yet (Unprocessed) [95]
        Page 22, 4.7.4 Attributes

Not sure I follow this, "all attribute values" attribute is represented in what format? And how is this useful beyond a boolean value (i.e. beyond whether or not attributes are present)? Or is just a boolean value meant here?

HP 27) No title assigned yet (Unprocessed) [96]
        Page 23, 4.7.5 Attributes directories

Change may not to shall not

HP 28) No title assigned yet (Unprocessed) [97]
          Page 23, 4.8.1 [Quotas] introduction

This entire line is a messed up cross reference. "c) The COLLECTIONS PER USER OBJECT field contains the value of the collections per user object attribute. (see)." It should just be User Object Quotes attributes page (see 7.1.2.14)."

HP 29) How Is Quota Revocation Handled? (Unresolved) [98]
          Page 24, 4.8.4 Changing quotas

"As long as the quota value remains set to a value that is less than the applicable resources already consumed, all commands that attempt to consume the applicable resource shall be terminated with a quota error."

If:
     1) the quota is set to a high value Z
     2) objects are creating consuming that amount
     3) the quota is reduced to a lower value Y
     4) a command is run which reduces the number of objects but not to a value below Y…

Is the command required to be accepted or might it run into a quota problem?

This wording could be interpreted as letting such commands be terminated, because they end up still above the quota. It should allow any commands which reduce the number of objects even if the current quota is exceeded.

HP 30) No title assigned yet (Unprocessed) [99]
          Page 24, 4.9.1

add; after row a)

HP 31) No title assigned yet (Unprocessed) [100]
          Page 24, 4.9.1 Basic security model

This description oversimplifies the fact. Definitions 3.1.4 and 3.1.11 are better descriptions, suggest adopting text from them here.

HP 32) Explicit Statement About No Authentication (Unresolved) [101]
          Page 26, 4.9.1 Basic security model

I think it helps to state that the OSD device server does not authenticate via an explicit protocol. An indirect authentication takes place via the checking of the integrity checksums.

HP 33) No title assigned yet (Unprocessed) [102]
          Page 27, 4.9.3.3 The CAPKEY security method

These terms are obsolete in SAM-3: "1) Initiator identifier; and 2) Target identifier." (used 3 times each in this section) Use "Initiator port identifier" and "Target port identifier" if that is what is intended.

HP 34) No title assigned yet (Unprocessed) [103]
          Page 27, 4.9.3.3 The CAPKEY security method

Change Nexus to nexus (global except when referring to a Nexus argument in a function call)

HP 35) No title assigned yet (Unprocessed) [104]
            Page 27, 4.9.3.1 Introduction

I think the following is implied in this text. Please make it explicit if it's truly implied.

    The application client shall recompute the security token on receiving the I_T Nexus Loss event notification.

HP 36) No title assigned yet (Unprocessed) [105]
            Page 29, 4.9.3.5.

Change ; to : in "segments (see 4.11.3);"

HP 37) No title assigned yet (Unprocessed) [106]
            Page 30, 4.9.3.5

Change ; to : in "Buffer;"

HP 38) No title assigned yet (Unprocessed) [107]
            Page 31, 4.9.3.5

Change ; to : in "segments (see 4.11.2);"

HP 39) No title assigned yet (Unprocessed) [108]
            Page 31, 4.9.3.5

Change ; to : in "Buffer;"

HP 40) No title assigned yet (Unprocessed) [109]
            Page 32, 4.9.4.1

Add . after "in 4.9.4.3"

HP 41) The Scope of a Credential is One Object (Unresolved) [110]
            Page 32, 4.9.4.1 Credential format

Somewhere around here, it needs to be stated that the scope of a credential is one object on the OSD logical unit.
OBJECT CREATION TIME that shows up later is the first hint to this effect.

HP 42) A Root Credential is Qualitatively Different (Unresolved) [111]
            Page 32, 4.9.4.1 Credential format

It would help if it is clarified whether the credential on root "partition" is qualitatively different from that on any other
object (I think the answer is no). This sentence without any additional clarification would make the reader wonder if
there's something here that's different.

HP 43) No title assigned yet (Unprocessed) [112]
            Page 34, 4.9.4.3 Capability format

This entire paragraph is completely redundant with Table 13. Suggest deleting.

HP 44) No title assigned yet (Unprocessed) [113]
        Page 35, 4.9.4.3 Capability format, Table 14

Drop "objects" for consistency.

HP 45) No title assigned yet (Unprocessed) [114]
        Page 35, 4.9.4.3 Capability format, Table 14

Drop "object" for uniformity.

HP 46) Describe the Future of the Object Descriptor (Rejected) [115]
        Page 36, 4.9.4.3 Capability format, Table 14

This elaborate protocol structure with OBJECT DESCRIPTOR TYPE is simply confusing. Seeing that 1OBJECT is the only allowed type, I can only surmise that this structure is intended to allow future expansions that allow a single set of permission bits (and capability) to be shared across multiple objects. If this true, it is good to state that explicitly. As of now, the Object Descriptor Type is a simple valid/invalid bit.

Reason for Rejection: T10 standards do not speculate about the future. Too many things can happen to make such speculations wrong.

HP 47) No title assigned yet (Unprocessed) [116]
        Page 45, 4.9.5.2 Credential and capability validation

is should be in or delete and change use to used

HP 48) No title assigned yet (Unprocessed) [117]
        Page 45, 4.9.5.2 Credential and capability validation

is should be in or delete and change use to used

HP 49) No title assigned yet (Unprocessed) [118]
        Page 45, 4.9.5.2 Credential and capability validation

should be 4.9.3.3 or not here at all

HP 50) No title assigned yet (Unprocessed) [119]
        Page 47, 4.9.6.1 Request nonce format

Change "January 1, 1970" to "1 January 1920"

HP 51) No title assigned yet (Unprocessed) [120]
        Separate comment that was not numbered by author.
        Global, 4.9.5.4 Computing the credential integrity check value (and global)

What is a "drive"? Change "drive key" to "root key"

HP 52) No title assigned yet (Unprocessed) [121]
        Page 48, 4.9.6.2 Device server validation of request nonces

shall not be accepted a second time with the same nonce value?

HP 53) Report Maximum Number of Far-In-The-Future Nonces (Unresolved) [122]
        Page 48, 4.9.6.2 Device server validation of request nonces

The maximum number of far in the future nonces might be useful to know too.

HP 54) No title assigned yet (Unprocessed) [123]
        Page 49, 4.9.6.3.2

Change "a sense key of ILLEGAL REQUEST, and an additional sense code of SECURITY AUDIT VALUE FROZEN." to "a sense key set to ILLEGAL REQUEST, and an additional sense code set to SECURITY AUDIT VALUE FROZEN."

HP 55) No title assigned yet (Unprocessed) [124]
        Page 49, 4.9.6.3.3

Change "a sense key of ILLEGAL REQUEST, and an additional sense code of SECURITY WORKING KEY FROZEN;" to "a sense key set to ILLEGAL REQUEST, and an additional sense code set to SECURITY WORKING KEY FROZEN;"

HP 56) No title assigned yet (Unprocessed) [125]
        Page 50, 4.9.8.1 Introduction

What is the granularity of ownership implied here? 3.1.26 for OBSD says that it's a SCSI device. I tend to think that a SCSI LU is implied here for SET MASTER KEY.

HP 57) No title assigned yet (Unprocessed) [126]
        Page 50, 4.9.8.1 Introduction

Change As to "As a" or delete entirely

HP 58) How Long Lived is a Capability Key? (Unprocessed) [127]
        Page 50, 4.9.8.1 Introduction
        See comment EMC 12)

Please give a sense of what "very short" is - of the order of minutes or microseconds? If the answer is "it depends", then the same can be attributed to the "is very short" description.

Editor's Note: This comment will be resolved as described in the response to comment EMC 12).

HP 59) No title assigned yet (Unprocessed) [128]
        Page 51, 4.9.8.1 Introduction

In addition to the key in question or instead of?

HP 60) No title assigned yet (Unprocessed) [129]
        Page 51, 4.9.8.1 Introduction

Is this the same as the working key in the case of working keys?

HP 61) No title assigned yet (Unprocessed) [130]
        Page 53, 4.10 Data persistence model

change lost to loss

HP 62) Fencing (Accepted, Substantive) [131]
>   Page 53, 4.10 Data persistence model
>   see comment ENDL 2)

Somewhere around this clause, a discussion and mandatory features of fencing need to be added in. The discussion on the SNIA OSD TWG is at best inconclusive and at least one company believes that lack of fencing support in OSD could lead to undetected data corruptions. The OSD TWG however did not arrive at any conclusions on this opinion as of 3/23/04. Before the Letter Ballot process is closed, OSD TWG (and perhaps T10 at large) needs to drive this issue to closure.

Editor's Note: This comment will be resolved as described in the response to comment ENDL 2).

HP 63) No title assigned yet (Unprocessed) [132]
>   Page 54, 4.11.1 OSD meta data

I presume this is meant to address the set/get attr operations, but this brings up another question. It would be good to clarify on bidirectional commands.

HP 64) No title assigned yet (Unprocessed) [133]
>   Page 56, 4.11.3 OSD Data-Out Buffer format

and SET ATTRIBUTES OFFSET?

HP 65) Sense Data Descriptor Implementation Requirements (Unresolved) [134]
>   Page 58, 4.13 Error reporting

This implies that the caption in Table 10 of SPC-3 r16 needs changing. S/optional for all others/OSD/

HP 66) No title assigned yet (Unprocessed) [135]
>   Page 59, 4.15 Reservations

Only one "I" can be associated with an "I_T" nexus. So, is "every initiator port associated with the released registrations" meant?

HP 67) No title assigned yet (Unprocessed) [136]
>   Page 61, 5.1 OSD CDB format

Change "additional sense code of" to additional sense code set to"

HP 68) No title assigned yet (Unprocessed) [137]
>   Page 61, 5.1 OSD CDB format

Change "additional sense code of" to additional sense code set to"

HP 69) Eliminate Discussion of Encrypted CDBs (Unresolved) [138]
>   Page 61, 5.1 OSD CDB format

Why would you think they would be encrypted? Delete the sentence

HP 70) No title assigned yet (Unprocessed) [139]
        Page 65, 5.2.3 Options byte

The READ command has an options byte, but FUA only means results of a command being written. Is the intent to force the read to be sourced from the stable storage, as it does in SBC-2?

HP 71) No title assigned yet (Unprocessed) [140]
        Page 71, 6.2 APPEND

Fix "in the The COLLECTIONS PER USER OBJECT field contains the value of the collections per user object attribute. (see), then"

HP 72) No title assigned yet (Unprocessed) [141]
        Page 72, 6.3 CREATE

I think this should also be followed with a sentence like the following (the same comment applies to CREATE and WRITE).

    The assigned User_Object_ID shall be placed in the created User_Object_ID attribute of the Current Command attributes page (see 7.1.2.24).

HP 73) No title assigned yet (Unprocessed) [142]
        Page 75, 6.4 CREATE AND WRITE

Fix "in the The COLLECTIONS PER USER OBJECT field contains the value of the collections per user object attribute. (see), then"

HP 74) No title assigned yet (Unprocessed) [143]
        Page 75, 6.4 CREATE AND WRITE

If CREATE AND WRITE encounters a quota error, did the CREATE work or not?

Quota errors can be checked at any time during the command according to 4.8.3.

The same question applies to any CREATE command with a set attributes operation that fails for any reason (quota, invalid attribute number, etc.).

It would be easiest for software if the CREATE operation completed before the WRITE operation or attribute modification begins, so the object is assumed created if a CHECK CONDITION for one of those reasons occurs.

HP 75) No title assigned yet (Unprocessed) [144]
        Page 78, 6.6 CREATE PARTITION

Change "object count quota" to "partition count". This paragraph was probably copied from CREATE, CREATE AND WRITE, and CREATE COLLECTION, but those deal with the "object count quota" field.

HP 76) Should There Be a FLUSH COLLECTION Command? (Unresolved) [145]
        Page 78, 6.7 FLUSH OBJECT
        see also: comment IBM 77)

There should be a FLUSH COLLECTION command to flush a collection object to stable storage, perhaps flushing all the user objects that are part of that collection.

HP 77) Why No FLUSH PARTITION Command? (Unresolved) [146]
Page 78, 6.7 FLUSH OBJECT

Other commands like CREATE and REMOVE have separate versions for user data objects and partitions. Why is this one combined? What does this have OBJECT in its title? I suggest splitting it into FLUSH, FLUSH COLLECTION, and FLUSH PARTITION.

HP 78) No title assigned yet (Unprocessed) [147]
Page 79, 6.7 FLUSH OBJECT, Table 46

Change List to List of

HP 79) No title assigned yet (Unprocessed) [148]
Page 79, 6.7 FLUSH OBJECT, Table 46

Change "listed" to "all of the listed"

HP 80) Define Interaction of FORMAT OSD and CDB Set Attributes Parameters (Unresolved) [149]
Page 81, 6.8 FORMAT OSD

It might be helpful to include a note here mentioning that, because a set attributes can be included with the FORMAT OSD CDB, happen the command can "complete" at the SCSI level with some attributes in the R range set.

HP 81) No title assigned yet (Unprocessed) [150]
Page 81, 6.8 FORMAT OSD

Change "a sense key of NOT READY with the additional sense code set to LOGICAL UNIT NOT READY FORMAT IN PROGRESS," to "GOOD status with parameter data containing a sense key set to NOT READY and an additional sense code set to LOGICAL UNIT NOT READY FORMAT IN PROGRESS"

HP 82) No title assigned yet (Unprocessed) [151]
Page 99, 6.19 SET KEY

add (MSB) and (LSB) to SEED. The text below actually refers to the "least significant bit" of the field.

HP 83) No title assigned yet (Unprocessed) [152]
Page 101, 6.20 SET MASTER KEY

Add (MSB) and (LSB) to SEED field. The text below actual refers to the "least significant bit".

HP 84) No title assigned yet (Unprocessed) [153]
Page 103, 6.21 WRITE

Delete all this text that only belongs in the CREATE AND WRITE section. "If a CREATE AND WRITE command causes the value in the user object logical length attribute in the User Object Information attributes page (see 7.1.2.11) to exceed the value in the maximum user object length attribute in the The COLLECTIONS PER USER OBJECT field contains the value of the collections per user object attribute., then a quota error shall be generated (see 4.8.2). The quota testing principles described in 4.8.3 apply to the testing of the maximum user object length quota. If a CREATE AND WRITE command causes the value in the used capacity attribute in the Partition Information attributes page (see 7.1.2.9) to exceed the value in the capacity quota attribute in the Partition Quotas

attributes page (see 7.1.2.13), then a quota error shall be generated (see 4.8.2). The quota testing principles described in 4.8.3 apply to the testing of the capacity quota."

HP 85) No title assigned yet (Unprocessed) [154]
            Page 105, 7.1.2.1 Attributes pages overview, Table 67

should indicate which pages have defined page formats and which use the list format

HP 86) No title assigned yet (Unprocessed) [155]
            Page 106, 7.1.2.2

Add "null-terminated" before "null-padded" or delete "null-terminated" from the 3.7.2

HP 87) No title assigned yet (Unprocessed) [156]
            Page 106, 7.1.2.2 Attribute number 0h in all attributes pages

Change INCITS to: the ASCII characters "INCITS"

HP 88) No title assigned yet (Unprocessed) [157]
            Page 106, 7.1.2.3

Change unidentified to undefined

HP 89) No title assigned yet (Unprocessed) [158]
            Page 106, 7.1.2.2

"With the exception of the Root Directory and Partition Directory attributes pages, all attribute pages … shall have attribute number 0h." The Collection Directory, User Object Directory, and Null pages should be included in this exclusion list. The Collection Directory attributes are all C+ page numbers; it doesn't mention if attribute 0h is supported too. The User Object Directory attributes are all 0+ page numbers, where attribute 0h contains just a string for the User Object Directory, not the vendor ID and page identification string indicated by table 68. The Null page isn't really a page, and it doesn't have an attribute 0h describing it compliant with table 68.

HP 90) No title assigned yet (Unprocessed) [159]
            Page 108, 7.1.2.5

Nowhere is it defined that these Attribute Values are null-terminated. See 3.1.7.2

HP 91) No title assigned yet (Unprocessed) [160]
            Page 111, 7.1.2.8 Root Information attributes page

use small caps for field names like code set (several times in this page)

HP 92) No title assigned yet (Unprocessed) [161]
            Page 112, 7.1.2.8 and global

Change "states may not" to "states shall not". The table has a row for "may: yes or no". It's providing a choice of "may or may not" vs. "shall not". Apply to all uses of "states may not" in the document.

HP 93) No title assigned yet (Unprocessed) [162]
            Page 112, 7.1.2.8 Root Information attributes page

Change January 1, 1970 to 1 January 1970

HP 94) No title assigned yet (Unprocessed) [163]
         Separate comment that was not numbered by author.
         Page 111?, 7.1.2.8 Root Information attributes page

Change serial number to product serial number to match the SPC-3 name and the 3 preceding attribute names.

HP 95) Is Character Encoding of Username Attribute ASCII? (Unresolved) [164]
         Page 113, 7.1.2.9 Partition Information attributes page

Are there any requirements that the username attribute be an ASCII or UTF-8 string, or is treated as an arbitrary binary field? This question also applies to the Collection Information (7.1.2.10) and User Object Information (7.1.2.11) attributes pages.

HP 96) No title assigned yet (Unprocessed) [165]
         Page 115, 7.1.2.11

What is an "unwritten byte"? It'd be safest for software if bytes of 00h could be assumed to be written, rather than vendor-specific data (probably previous object contents). The tradeoff is slower performance.

HP 97) No title assigned yet (Unprocessed) [166]
         Page 116, 7.1.2.12 Root Quotas attributes page

Given that "All attributes in the Root Quotas attributes page are quotas" why not include "quota" or "maximum" in all their names (or in none of their names)? "Partition capacity quota" and "Default maximum user object length" are clearly named, but the others are not. "Partition object count" and "Partition count" sound like current values not maximums. "Maximum partition object count" and "Maximum partition count" would be better. "Partition collections per user object" could pass as a limit; "Maximum partition collections per user object" would be better.

HP 98) No title assigned yet (Unprocessed) [167]
         Page 116, 7.1.2.12 Root Quotas attributes page

Change 0001 to 1

HP 99) No title assigned yet (Unprocessed) [168]
         Page 116, 7.1.2.12 Root Quotas attributes page

Change 0001 to 1

HP 100) No title assigned yet (Unprocessed) [169]
         Page 116, 7.1.2.12 Root Quotas attributes page

Change 0002 to 2

HP 101) No title assigned yet (Unprocessed) [170]
         Page 116, 7.1.2.12 Root Quotas attributes page

In table 78 on the next page, the partition count field is shown as 4 bytes, not 8 bytes.

HP 102) No title assigned yet (Unprocessed) [171]
         Page 116, 7.1.2.12 Root Quotas attributes page

"All attributes in the Root Quotas attributes page are quotas" is not true for number 0h.

HP 103) No title assigned yet (Unprocessed) [172]
        Page 116, 7.1.2.12 Root Quotas attributes page

There are two attributes called "default maximum user object length attribute", one in the Root Quotas page and the other in the Partition Quotas page. Since the partition values can be changed after created, they should use different names. Following the convention of other fields, call the root level attribute the "Partition default maximum user object length" attribute.

HP 104) No title assigned yet (Unprocessed) [173]
        Page 117, 7.1.2.12 Root Quotas attributes page

In table 77, partition count is an 8 bit value, implying this should be 43 and the page length should be 24h. (or, change table 77 to make the partition count 4 bytes)

HP 105) No title assigned yet (Unprocessed) [174]
        Page 118, 7.1.2.13 Partition Quotas attributes page

Change "in the" to "in the User Object Quotas attribute page."

HP 106) No title assigned yet (Unprocessed) [175]
        Page 118, 7.1.2.13 Partition Quotas attributes page

Delete "The COLLECTIONS PER USER OBJECT field contains the value of the collections per user object attribute. (see) for each user object, when it is created." which seems like a cut-and-paste error.

HP 107) No title assigned yet (Unprocessed) [176]
        Page 118, 7.1.2.13 Partition Quotas attributes page

"All attributes in the Partition Quotas attributes page are quotas" is not true for number 0h.

HP 108) No title assigned yet (Unprocessed) [177]
        Separate comment that was not numbered by author.
        Page 118?, 7.1.2.13 Partition Quotas attributes page

Add "If setting an attribute causes the capacity quota to be exceeded, a quota error shall be generated." See last paragraphs of 5.2.1.2 and 5.2.1.3

HP 109) No title assigned yet (Unprocessed) [178]
        Page 119, 7.1.2.14 User Object Quotas attributes page

"All attributes in the User Object Quotas attributes page are quotas" is not true for number 0h.

HP 110) No title assigned yet (Unprocessed) [179]
        Page 121, 7.1.2.15 Root Timestamps attributes page

This section needs to incorporate the formula hashed out on the SNIA OSD mailing list - that a FFh value would leave the timestamp control to the CDB timestamp bypass value.

HP 111) No title assigned yet (Unprocessed) [180]
        Page 123, 7.1.2.16 Partition Timestamps attributes page

What if you get the data modified attribute with a CREATE or REMOVE CDB? Do you get the future time where that command is estimated to complete, or the time the last CREATE or REMOVE command ran, or the time the create or remove operation part of the command completed? This applies to all the fields that return a timestamp

which can be affected by the command carrying the get attributes itself (either by the core command operation or by a set attributes that was also specified).

HP 112) No title assigned yet (Unprocessed) [181]
Page 124, 7.1.2.16 Partition Timestamps attributes page, Table 87

Fix border

HP 113) No title assigned yet (Unprocessed) [182]
Separate comment that was not numbered by author.
Page 129?, 7.1.2.19 Collections attributes page

Add mention of the collections per user object quota check that is performed when setting this page

HP 114) No title assigned yet (Unprocessed) [183]
Page 130, 7.1.2.19 Collections attributes page

Add:

The PAGE NUMBER field contains the attributes page number of the Collection attributes page. The PAGE LENGTH field contains the number of additional bytes in the page format of the Collection attributes page.

HP 115) No title assigned yet (Unprocessed) [184]
Page 132, 7.1.2.20 Root Security attributes page

Change January 1, 1970 to 1 January 1970

HP 116) No title assigned yet (Unprocessed) [185]
Page 146, 7.1.3.3

Delete extra "in the"

HP 117) No title assigned yet (Unprocessed) [186]
Page 146, 7.1.3.2 List entry format for retrieving attributes for this OSD object

Change that to the

HP 118) No title assigned yet (Unprocessed) [187]
Page 146, 7.1.3.2 List entry format for retrieving attributes for this OSD object

Change all to each (or change having a non-zero attribute length" to "having non-zero attribute lengths")

HP 119) No title assigned yet (Unprocessed) [188]
Page 146, 7.1.3.2 List entry format for retrieving attributes for this OSD object "one attribute"

If attribute number is FFFFFFFFh, more than one attribute is going to be returned. Use of "one" is incorrect

7. IBM Corp.

George O. Penokie from IBM Corp. submitted the following comments on a No vote.

IBM 1) No title assigned yet (Unprocessed) [189]
           PDF pg 3, pg iii, Revision Information

The revision information has to be removed before this goes to public review.

IBM 2) No title assigned yet (Unprocessed) [190]
           PDF pg 17, pg xvii, Foreword, 2nd paragraph

This is no need to the << input/output >> terminology in front of logical units.

IBM 3) No title assigned yet (Unprocessed) [191]
           PDF pg 17, pg xvii, Foreword, 2nd paragraph

The statement << scope of the SCSI command set. >> should be << scope of this SCSI command set. >>

IBM 4) No title assigned yet (Unprocessed) [192]
           PDF pg 17, pg xvii, Foreword, 6th paragraph

The statement << 200X. >> should be << 2004.>> as I assume this will get done this year.

IBM 5) No title assigned yet (Unprocessed) [193]
           PDF pg 17, pg xvii, Foreword, 6th paragraph

The statement << Most of its features have been tested in pilot products implementing these concepts in conjunction with standard transport protocols. >> is marketing hype and should be removed.

IBM 6) No title assigned yet (Unprocessed) [194]
           PDF pg 21, pg 2, 1 Scope

There is no point in listing all the SCSI standards. The entire list should be deleted.

IBM 7) No title assigned yet (Unprocessed) [195]
           PDF pg 23, pg 4, 2.2 Approved ISO references

The standards reference << ISO/IEC 14776-452, SCSI Primary Commands - 2 (SPC-2) [ANSI NCITS.351-2001] >> should be deleted as the only place SPC-2 is used is in the acronym list.

IBM 8) No title assigned yet (Unprocessed) [196]
           PDF pg 25, pg 6, 3.1.3 attributes:

This << Data (sometimes called meta data) that >> should be << Data, sometimes called meta data, that >>.

IBM 9) No title assigned yet (Unprocessed) [197]
           PDF pg 27, pg 8, 3.1.39 security method:

The statement << zero or more >> seems pointless and should be deleted.

IBM 10) No title assigned yet (Unprocessed) [198]
        PDF pg 27, pg 8, 3.1.41 sense data:

The statement <<server delivers to an application client as described in SPC-3. >> should be << server delivers to an application client. See SPC-3. >>

IBM 11) No title assigned yet (Unprocessed) [199]
        PDF pg 27, pg 8, 3.1.42 sense key:

The statement << field in the sense data (see 3.1.41). >> should be << field in the sense data. See 3.1.41. >>.

IBM 12) No title assigned yet (Unprocessed) [200]
        PDF pg 27, pg 8, 3.1.46 task:

The statement << or a group of linked commands >> should be deleted as linked commands are not allowed for this command set.

IBM 13) No title assigned yet (Unprocessed) [201]
        PDF pg 27, pg 8, 3.1.49 User_Object_ID:

The statement << user object (see 4.6.1). >> should be << user object. See 4.6.1. >>

IBM 14) No title assigned yet (Unprocessed) [202]
        PDF pg 28, pg 9, 3.2 Acronyms

The SPC-2 acronym should be deleted as it is not used in this standard.

IBM 15) No title assigned yet (Unprocessed) [203]
        PDF pg 32, pg 13, 3.2 Acronyms, 1st paragraph

The statement << and all other bytes in the field shall not contain the ASCII null character. >> would read better as << and no other bytes in the field shall contain the ASCII null character. >>

IBM 16) No title assigned yet (Unprocessed) [204]
        PDF pg 33, pg 14, 4.1 The request-response model, 2nd paragraph

This should be an ab,c list << CDB, Data-Out Buffer, Data-Out Buffer Size, Data-In Buffer, Data-In Buffer Size, and Sense Data. >>

IBM 17) No title assigned yet (Unprocessed) [205]
        PDF pg 37, pg 18, 4.6.2 Identifying OSD objects, first sentence in 4.6.2.

'identifies the root object, each partition,…' is not clear syntactically. (IBM)

IBM 18) No title assigned yet (Unprocessed) [206]
        PDF pg 37, pg 18, 4.6.4 Partitions, 1st paragraph

The statement << be many partitions, >> should be << be any number of partitions, >>

IBM 19) No title assigned yet (Unprocessed) [207]
        PDF pg 37, pg 18, 4.6.4 Partitions

Device shall terminate these commands applied to a partition object: append, read, remove, write. (IBM)

IBM 20) No title assigned yet (Unprocessed) [208]
        PDF pg 37, pg 18, 4.6.4 Partitions

a.Second paragraph should be 'when the partition is created'.

b.Last sentence, should be (see 6.6)

c.Contrast partition zero with all other partitions (IBM)

IBM 21) No title assigned yet (Unprocessed) [209]
        PDF pg 38, pg 19, 4.6.6 Collections

device shall terminate these commands applied to a collection object: append, read, remove, write. (IBM)

IBM 22) No title assigned yet (Unprocessed) [210]
        PDF pg 39, pg 20, 4.7.1 Overview, a.b.c list

Item d should be << d) A user object; or >>

IBM 23) No title assigned yet (Unprocessed) [211]
        PDF pg 39, pg 20, Global

The use of the format << (see table 3 in x.x.x), >> should not be used as there is no obvious rule as to when the x.x.x is there and when it is not. There is no way you can say that if the table or figure is on the same page then there is no x.x.x because there is no way to know when a table will move to a different page as the document is modified. So either remove the << in x.x.x >> and make it consistent with all the other standards (which is my choice) or make all figures and tables have the << in x.x.x >> format.

IBM 24) No title assigned yet (Unprocessed) [212]
        PDF pg 39, pg 20, 4.7.1 Overview, Last paragraph

I would like to see the statement << and by other written documentation. >> deleted. But if not deleted then at least delete the term << written >>.

IBM 25) No title assigned yet (Unprocessed) [213]
        PDF pg 39, pg 20, 4.7.2 Command function ordering for commands that get and/or set attributes, 2nd paragraph

The statement << shall be performed in the following order: >> should be << shall be processed in the following order: >>

IBM 26) No title assigned yet (Unprocessed) [214]
        PDF pg 39, pg 20, 4.7.2 Command function ordering for commands that get and/or set attributes, 1st 1,2,3 list

The << and >> should be moved from item 2 to item 3.

IBM 27) Change order of processing for REMOVE (Unresolved) [215]
        PDF pg 39, pg 20, 4.7.2 Command function ordering for commands that get and/or set attributes

Remove may implicitly change some attributes (e.g. capacity). Therefore the order of these changes with respect to other operations should be explicitly state like in other commands in this section. (IBM)

IBM 28) No title assigned yet (Unprocessed) [216]
            PDF pg 40, pg 21, 4.7.2 Command function ordering for commands that get and/or set attributes, 3rd
            paragraph

The statement << shall be performed in the following order: >> should be << shall be processed in the following
order: >>

IBM 29) No title assigned yet (Unprocessed) [217]
            PDF pg 40, pg 21, 4.7.2 Command function ordering for commands that get and/or set attributes, 4th
            paragraph

The statement << shall be performed in the following order: >> should be << shall be processed in the following
order: >>

IBM 30) No title assigned yet (Unprocessed) [218]
            PDF pg 40, pg 21, 4.7.2 Command function ordering for commands that get and/or set attributes, 5th
            paragraph

The statement << shall be performed in the following order: >> should be << shall be processed in the following
order: >>:

IBM 31) No title assigned yet (Unprocessed) [219]
            PDF pg 41, pg 22, 4.7.3 Attributes pages, Table 4

The distinction between 'Defined by OBSD manufacturer product specifications' and 'Vendor Specific' is not clear
to us. (IBM)

IBM 32) What Attributes Directory Page Contains the Current Command Page? (Unresolved) [220]
            PDF pg 42, pg 23, 4.7.5 Attributes directories

Does attribute page FFFFFFFE (Current Command Page) appear in the directory-page of specific-object-type ? it
doesn't appear in the examples in section 7. (IBM)

IBM 33) No title assigned yet (Unprocessed) [221]
            PDF pg 42, pg 23, 4.8.1 Introduction

Missing quota attribute page for user-object. (IBM)

IBM 34) No title assigned yet (Unprocessed) [222]
            PDF pg 42, pg 23, 4.8.1 Introduction, Item c

There is a missing reference in item c.

IBM 35) No title assigned yet (Unprocessed) [223]
            PDF pg 43, pg 24, 4.8.2 Quota errors, a,b,c list

You should combine items a), b), and c) into an item a

IBM 36) No title assigned yet (Unprocessed) [224]
          PDF pg 43, pg 24, 4.8.2 Quota errors

What type of sense-data-descriptor should be used to specify violated quota attribute? Can this be explicitly explained in the document? (IBM

IBM 37) No title assigned yet (Unprocessed) [225]
          PDF pg 43, pg 24, 4.8.4 Changing quotas, 1st paragraph

So in the statement << command with an appropriate capability. >> what exactly is the << appropriate capability. >> supposed to be? That kind of wording is not appropriate for a standard. Either be more specific or delete it.

IBM 38) Send Credential To Device (Unresolved) [226]
          PDF pg 44, pg 25, 4.9.1 Basic security model, Figure 4

should be 'Send credential to the device' (IBM)

IBM 39) No title assigned yet (Unprocessed) [227]
          PDF pg 44, pg 25, 4.9.1 Basic security model, 1st paragraph under figure 4

The statement << a integrity check >> should be << an integrity check >>.

IBM 40) No title assigned yet (Unprocessed) [228]
          PDF pg 44, pg 25, 4.9.1 Basic security model, 2nd paragraph under figure 4

The statement << by this standard; however, the >> should be << by this standard. However, the >>

IBM 41) No title assigned yet (Unprocessed) [229]
          PDF pg 44, pg 25, 4.9.1 Basic security model, item B

The statement << are to be performed. >> should be << re to be processed. >>

IBM 42) No title assigned yet (Unprocessed) [230]
          PDF pg 45, pg 26, 4.9.3.1 Introduction, Table 6

NOSEC Description should be 'No security, access control only' (IBM)

IBM 43) No title assigned yet (Unprocessed) [231]
          PDF pg 47, pg 28, 4.9.3.3 The CAPKEY security method, Last sentence in 4.9.3.3

'from forging, modifying a credential or replaying it on a different secure channel' (IBM)

IBM 44) No title assigned yet (Unprocessed) [232]
          The author marked this comment as technical.
          PDF pg 48, pg 29, 4.9.3.4 The CMDRSP security method, 2nd to last paragraph

The statement << One possible action is to request a new credential from the security manager and retry the command. >> should not be here as the previous sentence states the action is not defined by this standard. If you reject this recommendation then at a minimum the statement needs to be stated as a example in an (e.g., …).

IBM 45) No title assigned yet (Unprocessed) [233]
          PDF pg 48, pg 29, 4.9.3.5 The ALLDATA security method, first sentence

Add 'validates the integrity of all data, mete data included, in transit'. (IBM)

IBM 46) No title assigned yet (Unprocessed) [234]
          The author marked this comment as technical.
          PDF pg 50, pg 31, 4.9.3.5 The ALLDATA security method, 2nd to last paragraph

The statement << One possible action is to request a new credential from the security manager and retry the command. >> should not be here as the previous sentence states the action is not defined by this standard. If you reject this recommendation then at a minimum the statement needs to be stated as a example in an (e.g., …).

IBM 47) No title assigned yet (Unprocessed) [235]
          PDF pg 51, pg 32, 4.9.4.1 Credential format

Change 'root partition' to 'partition zero' (IBM)

IBM 48) No title assigned yet (Unprocessed) [236]
          PDF pg 53, pg 34, 4.9.4.3 Capability format, 2 paragraphs above table 13

OBJECT CREATION TIME is explained twice. (IBM)

IBM 49) No title assigned yet (Unprocessed) [237]
          PDF pg 55, pg 36, 4.9.4.3 Capability format, NOTE 3

This looks more like normative text than a note << NOTE 3 A Partition_ID of zero specifies that access is allowed to both the partition numbered zero and the root object. >> and as such should be included as the main line text.

IBM 50) No title assigned yet (Unprocessed) [238]
          PDF pg 61, pg 42, 4.9.4.4 Credentials and commands allowed, Table 20

Applies to all ROOT entries: do attribute pages of partition. (IBM)

IBM 51) No title assigned yet (Unprocessed) [239]
          The author marked this comment as technical.
          PDF pg 64, pg 45, 4.9.5.2 Credential and capability validation, 4th paragraph

The statement << In most cases the order in which the >> is just a tease to the reader as there is no indication as to cases in which the order is important. I recommend deleting << In most cases >>.

IBM 52) What Are Undetectable Alterations? (Unresolved) [240]
          The author marked this comment as technical.
          PDF pg 65, pg 46, 4.9.5.2 Credential and capability validation, last paragraph

The statement << shall not be altered in any detectable way. >> implies there is an undetectable way to alter the information. Why have that in a standard? I suggest deleting << in any detectable way >>.

IBM 53) No title assigned yet (Unprocessed) [241]
          PDF pg 66, pg 47, 4.9.5.5 Invalidating credentials

Should be 'security version tag attribute (and not key)

IBM 54) No title assigned yet (Unprocessed) [242]
        PDF pg 66, pg 47, 4.9.6.1 Request nonce format, 1st paragraph

The statement << to thwart attempts to capture OSD commands (e.g., FORMAT OSD) and replay them. >> is not
needed in the standard and should be deleted.

IBM 55) No title assigned yet (Unprocessed) [243]
        PDF pg 67, pg 48, 4.9.6.2 Device server validation of request nonces, 6th paragraph

In the statement << Commands containing request nonces with timestamps that are greater than the contents of
the clock attribute in the Root Information attributes page plus a delta value may be terminated with… >> the may
implies a may not but there is no description of what happens if the choice is to not error. This needs to be fixed. It
looks like that may be described below. If that is the case then just add a reference to were it is defined.

IBM 56) No title assigned yet (Unprocessed) [244]
        PDF pg 69, pg 50, 4.9.6.2 Device server validation of request nonces, 1st paragraph

The statement << bytes for integrity check values, meaning that the HMAC-SHA1 function output of 160 bits is
truncated into 96 bits. >> should be << bytes for integrity check values, as a result the HMAC-SHA1 function output
of 160 bits is truncated into 96 bits. >>

IBM 57) No title assigned yet (Unprocessed) [245]
        PDF pg 69, pg 50, 4.9.8.1 Introduction, Table 22 footnote d

The statement << meaning that, even though the security manager computes it, the computation is based on
values beyond the security manager's control >> should be << (i.e., even though the security manager computes it,
the computation is based on values beyond the security manager's control) >>

IBM 58) No title assigned yet (Unprocessed) [246]
        PDF pg 70, pg 51, 4.9.8.1 Introduction, 3rd paragraph from end

The statement << provided, but the two values may be identical. >> should be << provided, and the two values
may be identical. >>

IBM 59) No title assigned yet (Unprocessed) [247]
        PDF pg 71, pg 52, 4.9.9 OSD security interactions with SPC-3 commands and

SAM-3 task management functions, 3rd paragraph in 2 places This << performed. >> should be << processed >>

IBM 60) No title assigned yet (Unprocessed) [248]
        PDF pg 72, pg 53, 4.10 Data persistence model

Should the new FUA_NV bit be used in these commands?

IBM 61) No title assigned yet (Unprocessed) [249]
        PDF pg 73, pg 54, 4.11.1 OSD meta data, a,b,c list

This looks like it should be an << and/or >> list rather than an << and >> list.

IBM 62) No title assigned yet (Unprocessed) [250]
        PDF pg 76, pg 57, 4.11.4 Data-In and Data-Out buffer offsets, 4th and 5th paragraphs

The term << offset field >> is used but I see no field titled offset nor is offset is small caps. As a result I have no
idea what the offset field is supposed to be. This needs to be fixed.

IBM 63) No title assigned yet (Unprocessed) [251]
        PDF pg 77, pg 58, 4.13 Error reporting

What type of sense data descriptor should be used for OSD object identification? (IBM)

IBM 64) No title assigned yet (Unprocessed) [252]
        PDF pg 77, pg 58, 4.13 Error reporting, NOTE 5

This note looks like normative text to me. I think it should be placed in main line text.

IBM 65) No title assigned yet (Unprocessed) [253]
        PDF pg 80, pg 61, 5.1 OSD CDB format, table 31

The << (n-7) >> should be << 166 >> as that is the requirement stated below the table.

IBM 66) No title assigned yet (Unprocessed) [254]
        PDF pg 80, pg 61, 5.1 OSD CDB format, Table 31

The byte number labeled << n >> should be << 173 >> as that is the requirement stated below the table.

IBM 67) No title assigned yet (Unprocessed) [255]
        PDF pg 82, pg 63, 5.2.1.2 Get an attributes page and set an attribute, 3rd paragraph under table 33

The statement << allocation length; this shall not be >> should be << allocation length and shall not be >>

IBM 68) No title assigned yet (Unprocessed) [256]
        PDF pg 87, pg 68, 6 Commands for OSD type devices

A general comment for section 6: all write/create commands violating total device capacity should also be aborted. (IBM)

IBM 69) No title assigned yet (Unprocessed) [257]
        PDF pg 87, pg 68, 6.1 Summary of commands for OSD type devices, 1st paragraph

The term << perform. >> should be << process. >>

IBM 70) No title assigned yet (Unprocessed) [258]
        PDF pg 90, pg 71, 6.2 APPEND, 9th paragraph

The statement << in the maximum user object length attribute in the The COLLECTIONS PER USER OBJECT field contains the value of >> makes no sense and needs to be fixed.

IBM 71) No title assigned yet (Unprocessed) [259]
        PDF pg 90, pg 71, 6.2 APPEND, 9th paragraph

There is a missing cross reference << (see), >>.

IBM 72) No title assigned yet (Unprocessed) [260]
        PDF pg 91, pg 72, 6.3 CREATE

Quota violation for partition capacity:

Creating a user object can also cause quota violation of the partition capacity. (IBM)

IBM 73) No title assigned yet (Unprocessed) [261]
        PDF pg 94, pg 75, 6.4 CREATE AND WRITE, 2nd to last paragraph

The statement << to exceed the value in the maximum user object length attribute in the The COLLECTIONS PER USER OBJECT field contains the value of >> makes no sense and needs to be fixed.

IBM 74) No title assigned yet (Unprocessed) [262]
        PDF pg 94, pg 75, 6.4 CREATE AND WRITE, 2nd to last paragraph

There is a missing cross reference << attribute. (see), then >>.

IBM 75) No title assigned yet (Unprocessed) [263]
        PDF pg 95, pg 76, 6.5 CREATE COLLECTION

Quota violation for partition capacity:

Creating a collection object can also cause quota violation of the partition capacity. (IBM)

IBM 76) No title assigned yet (Unprocessed) [264]
        PDF pg 96, pg 77, 6.6 CREATE PARTITION

User object should be replace with partition object in a few instances and creating a partition may cause a violation of the root capacity (IBM)

IBM 77) What Does FLUSH OBJECT do for a Collection? (Unresolved) [265]
        PDF pg 97, pg 78, 6.7 FLUSH OBJECT
        see also: comment HP 76)

What exactly should be performed when flush is done on collection-object, other than flushing attributes associated with it? (IBM)

IBM 78) No title assigned yet (Unprocessed) [266]
        PDF pg 100, pg 81, 6.8 FORMAT OSD, 2nd to last a,b,c list item c

The statement << progress indication (as described in SPC-3). >> should be << progress indication as described in SPC-3. >> or << progress indication (see SPC-3). >>

IBM 79) No title assigned yet (Unprocessed) [267]
        PDF pg 106, pg 87, 6.11 LIST COLLECTION

The allocation length field definition is repeated in several commands. It should only be defined one time then referenced from that point on.

IBM 80) No title assigned yet (Unprocessed) [268]
        PDF pg 106, pg 87, 6.11 LIST COLLECTION

The additional length h field definition is repeated in several commands. It should only be defined one time then referenced from that point on.

IBM 81) No title assigned yet (Unprocessed) [269]
          PDF pg 106, pg 87, 6.11 LIST COLLECTION

In fact the whole parameter data seems to be a duplicate of the list commands. A single reference to that would prevent duplicate definitions.

IBM 82) No title assigned yet (Unprocessed) [270]
          PDF pg 108, pg 89, 6.12 PERFORM SCSI COMMAND

The name of the PERFORM SCSI COMMAND should be changed to PROCESS SCSI command.

IBM 83) No title assigned yet (Unprocessed) [271]
          PDF pg 108, pg 89, 6.12 PERFORM SCSI COMMAND, 1st paragraph in 2 places

The term << performed >> should be << processed >>.

IBM 84) No title assigned yet (Unprocessed) [272]
          PDF pg 109, pg 90, 6.12 PERFORM SCSI COMMAND, 5th paragraph after table 54

The term << performed >> should be << processed >>.

IBM 85) No title assigned yet (Unprocessed) [273]
          PDF pg 110, pg 91, 6.13 PERFORM TASK MANAGEMENT FUNCTION

The PERFORM TASK MANAGEMENT FUNCTION should be renamed to PROCESS TASK MANAGEMENT FUNCTION.

IBM 86) No title assigned yet (Unprocessed) [274]
          PDF pg 110, pg 91, 6.13 PERFORM TASK MANAGEMENT FUNCTION, 1st paragraph in

2 places The term << performed >> should be << processed >>.

IBM 87) No title assigned yet (Unprocessed) [275]
          PDF pg 111, pg 92, 6.13 PERFORM TASK MANAGEMENT FUNCTION, 5th paragraph after table 56

The term << performed >> should be << processed >>.

IBM 88) No title assigned yet (Unprocessed) [276]
          PDF pg 111, pg 92, 6.13 PERFORM TASK MANAGEMENT FUNCTION, Table 57

The term << SAM-3 taSk >> should be << SAM-3 Task >>. (IBM)

IBM 89) No title assigned yet (Unprocessed) [277]
          PDF pg 113, pg 94, 6.14 READ, 1st abc list

Items b,c and d should be combined into an item b) to make the wording more consistent with other error words in the standard.

IBM 90) No title assigned yet (Unprocessed) [278]
          PDF pg 113, pg 94, 6.14 READ, 2nd abc list

Items b,c and d should be combined into an item b) to make the wording more consistent with other error words in the standard.

IBM 91) SET KEY Cannot Get A Quota Error (Unresolved) [279]
> PDF pg 118, pg 99, 6.19 SET KEY

It should be impossible for a SET KEY command to violate quota. (IBM)

Editor's Note: Since SET KEY might change the length of an attribute value from zero to seven, either the device is obliged to reserve space for all SET KEY attributes or a quota error is possible.

IBM 92) No title assigned yet (Unprocessed) [280]
> PDF pg 120, pg 101, 6.20 SET MASTER KEY

The key identifier and seed fields are defined in another command and therefore there should only be a reference to those definition at this point.

IBM 93) No title assigned yet (Unprocessed) [281]
> The author marked this comment as technical.
> PDF pg 122, pg 103, 6.21 WRITE, 2nd to last paragraph and last paragraph

What have the << CREATE AND WRITE command >> description have to do with the WRITE command description??

IBM 94) No title assigned yet (Unprocessed) [282]
> PDF pg 122, pg 103, 6.21 WRITE, 2nd to last paragraph

The statement << exceed the value in the maximum user object length attribute in the The COLLECTIONS PER USER OBJECT field contains the value of the collections per user object attribute., then a quota error shall be generated (see 4.8.2). >> makes no sense and needs to be fixed.

IBM 95) No title assigned yet (Unprocessed) [283]
> PDF pg 123, pg 104, 7.1.1 Attributes parameter formats, 2nd paragraph

The term << them >> is not specific enough. What them is being referred to?

IBM 96) No title assigned yet (Unprocessed) [284]
> PDF pg 125, pg 106, 7.1.2.3 Attribute number 0h for unidentified attributes pages, 1st paragraph

The statement << page as preferred by this standard. >> should be << page as defined by this standard. >>

IBM 97) No title assigned yet (Unprocessed) [285]
> The author marked this comment as technical.
> PDF pg 130, pg 111, 7.1.2.8 Root Information attributes page, Table 73

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 98) No title assigned yet (Unprocessed) [286]
> PDF pg 131, pg 112, 7.1.2.8 Root Information attributes page, Global

What the heck is << (number xh) >> supposed to mean? I see no point in calling a hex value a number what else could it be? Why is it not just << (xh) >>? I recommend all the << (number xh) notations be changed to << (xh) >>.

IBM 99) No title assigned yet (Unprocessed) [287]
        The author marked this comment as technical.
        PDF pg 131, pg 112, 7.1.2.8 Root Information attributes page, last paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 100) No title assigned yet (Unprocessed) [288]
        The author marked this comment as technical.
        PDF pg 132, pg 113, 7.1.2.9 Partition Information attributes page, Table 74

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 101) No title assigned yet (Unprocessed) [289]
        The author marked this comment as technical.
        PDF pg 132, pg 113, 7.1.2.9 Partition Information attributes page, last paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 102) No title assigned yet (Unprocessed) [290]
        The author marked this comment as technical.
        PDF pg 133, pg 114, 7.1.2.10 Collection Information attributes page, Table 75

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 103) No title assigned yet (Unprocessed) [291]
        The author marked this comment as technical.
        PDF pg 133, pg 114, 7.1.2.10 Collection Information attributes page, last paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 104) No title assigned yet (Unprocessed) [292]
        The author marked this comment as technical.
        PDF pg 134, pg 115, 7.1.2.11 User Object Information attributes page, Table 76

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 105) No title assigned yet (Unprocessed) [293]
        The author marked this comment as technical.
        PDF pg 134, pg 115, 7.1.2.11 User Object Information attributes page, last paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 106) No title assigned yet (Unprocessed) [294]
        The author marked this comment as technical.
        PDF pg 135, pg 116, 7.1.2.12 Root Quotas attributes page, Table 77

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 107) No title assigned yet (Unprocessed) [295]
        The author marked this comment as technical.
        PDF pg 136, pg 117, 7.1.2.12 Root Quotas attributes page, 2nd paragraph above table 78 paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 108) No title assigned yet (Unprocessed) [296]
        PDF pg 137, pg 118, 7.1.2.13 Partition Quotas attributes page

Quota violation for partition capacity:

Reference to CREATE and CREATE COLLECTION commands for the capacity quota (IBM)

IBM 109) No title assigned yet (Unprocessed) [297]
        The author marked this comment as technical.
        PDF pg 137, pg 118, 7.1.2.13 Partition Quotas attributes page, Table 79

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 110) No title assigned yet (Unprocessed) [298]
        PDF pg 137, pg 118, 7.1.2.13 Partition Quotas attributes page, 2nd paragraph after table 79

The statement << …user object length attribute in the The COLLECTIONS PER USER OBJECT field contains the value of the collections per user object attribute. >> does not make any sense. This needs to be fixed.

IBM 111) No title assigned yet (Unprocessed) [299]
        PDF pg 137, pg 118, 7.1.2.13 Partition Quotas attributes page, 2nd paragraph after table 79

There is a missing cross reference << (see) >>

IBM 112) No title assigned yet (Unprocessed) [300]
        The author marked this comment as technical.
        PDF pg 137, pg 118, 7.1.2.13 Partition Quotas attributes page, 2nd paragraph above table 80
        paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 113) No title assigned yet (Unprocessed) [301]
        The author marked this comment as technical.
        PDF pg 138, pg 119, 7.1.2.14 User Object Quotas attributes page, Table 81

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 114) No title assigned yet (Unprocessed) [302]
> PDF pg 139, pg 120, 7.1.2.14 User Object Quotas attributes page, 2nd paragraph under table 81

The statement << value the allow in >> should be << value the allowed in >> (IBM)

IBM 115) No title assigned yet (Unprocessed) [303]
> The author marked this comment as technical.
> PDF pg 139, pg 120, 7.1.2.14 User Object Quotas attributes page, 2nd paragraph above table 82
> paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 116) No title assigned yet (Unprocessed) [304]
> The author marked this comment as technical.
> PDF pg 140, pg 121, 7.1.2.15 Root Timestamps attributes page, Table 83

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 117) No title assigned yet (Unprocessed) [305]
> The author marked this comment as technical.
> PDF pg 140, pg 121, 7.1.2.15 Root Timestamps attributes page, 2nd paragraph above table 85
> paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 118) Are Timestamps Updated By Commands That Get a Status Other Than Good? (Unresolved) [306]
> PDF pg 142, pg 123, 7.1.2.16 Partition Timestamps attributes page

Sections 7.1.2.16 - 7.1.2.18, what if the operation on the data (e.g. READ) failed. Should the data accessed time attribute be modified? (IBM)

IBM 119) No title assigned yet (Unprocessed) [307]
> The author marked this comment as technical.
> PDF pg 142, pg 123, 7.1.2.16 Partition Timestamps attributes page, Table 86

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 120) No title assigned yet (Unprocessed) [308]
> PDF pg 142, pg 123, 7.1.2.16 Partition Timestamps attributes page, 5th paragraph under table 86

LIST COOLECTION may also affects the data accessed time attribute. (IBM)

IBM 121) No title assigned yet (Unprocessed) [309]
        The author marked this comment as technical.
        PDF pg 143, pg 124, 7.1.2.16 Partition Timestamps attributes page, 2nd paragraph above table 87
        paragraph

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This
needs to be fixed.

IBM 122) No title assigned yet (Unprocessed) [310]
        The author marked this comment as technical.
        PDF pg 144, pg 125, 7.1.2.17 Collection Timestamps attributes page, Table 88

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read
as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 123) No title assigned yet (Unprocessed) [311]
        The author marked this comment as technical.
        PDF pg 145, pg 126, 7.1.2.17 Collection Timestamps attributes page, 2nd paragraph above table 89

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This
needs to be fixed.

IBM 124) No title assigned yet (Unprocessed) [312]
        The author marked this comment as technical.
        PDF pg 146, pg 127, 7.1.2.18 User Object Timestamps attributes page, Table 90

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read
as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 125) No title assigned yet (Unprocessed) [313]
        The author marked this comment as technical.
        PDF pg 146, pg 127, 7.1.2.18 User Object Timestamps attributes page, 2nd paragraph above table 91

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This
needs to be fixed.

IBM 126) No title assigned yet (Unprocessed) [314]
        The author marked this comment as technical.
        PDF pg 147, pg 128, 7.1.2.19 Collections attributes page, Table 92

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read
as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 127) No title assigned yet (Unprocessed) [315]
        The author marked this comment as technical.
        PDF pg 148, pg 129, 7.1.2.19 Collections attributes page, 2nd paragraph above table 93

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This
needs to be fixed.

IBM 128) (Unprocessed) [316]
        PDF pg 150, pg 131, 7.1.2.20 Root Security attributes page

We suggest to clarify that the supported (non zero valued) algorithms should appear consecutively. (IBM)

IBM 129) No title assigned yet (Unprocessed) [317]
        The author marked this comment as technical.
        PDF pg 150, pg 131, 7.1.2.20 Root Security attributes page, Table 94

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 130) No title assigned yet (Unprocessed) [318]
        The author marked this comment as technical.
        PDF pg 152, pg 133, 7.1.2.20 Root Security attributes page, 2nd paragraph above table 97

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 131) No title assigned yet (Unprocessed) [319]
        PDF pg 154, pg 135, 7.1.2.20 Root Security attributes page, Last paragraph

In the statement <<The 16 SUPPORTED INTEGRITY CHECK VALUE ALGORITHM fields >> the term << 16 >> is used but in other places the term << sixteen >> is used. Pick one and use it consistently.

IBM 132) No title assigned yet (Unprocessed) [320]
        The author marked this comment as technical.
        PDF pg 154, pg 135, 7.1.2.21 Partition Security attributes page, Table 98

What is the point in the << May Be Set No >> column? If give no useful information as it could just as easily be read as << May or may not >> be set. Either change it to a should or a shall or remove it.

IBM 133) No title assigned yet (Unprocessed) [321]
        PDF pg 155, pg 136, 7.1.2.21 Partition Security attributes page, 3rd paragraph above table 100

Text describing newest valid nonce is a copy of the text describing oldest valid nonce. This should be edited. (IBM)

IBM 134) No title assigned yet (Unprocessed) [322]
        The author marked this comment as technical.
        PDF pg 156, pg 137, 7.1.2.21 Partition Security attributes page, 2nd paragraph above table 101

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 135) No title assigned yet (Unprocessed) [323]
        PDF pg 158, pg 139, 7.1.2.21 Partition Security attributes page, Last paragraph

In the statement <<The sixteen WORKING KEY IDENTIFIER fields contain the >> the term << sixteen >> is used but in other places the term << 16 >> is used. Pick one and use it consistently.

IBM 136) No title assigned yet (Unprocessed) [324]
        The author marked this comment as technical.
        PDF pg 159, pg 140, 7.1.2.22 Collection Security attributes page, 2nd paragraph above table 103

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 137) No title assigned yet (Unprocessed) [325]
        The author marked this comment as technical.
        PDF pg 160, pg 141, 7.1.2.23 User Object Security attributes page, 2nd paragraph above table 105

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 138) No title assigned yet (Unprocessed) [326]
        The author marked this comment as technical.
        PDF pg 161, pg 142, 7.1.2.24 Current Command attributes page, 2nd paragraph above table 107

This statement << states may not be set, the >> looks like you are taking a may and making it into a shall. This needs to be fixed.

IBM 139) No title assigned yet (Unprocessed) [327]
        PDF pg 167, pg 148, 7.4 Mode parameters, 3rd paragraph

The statement << OSD type devices shall treat the following mode parameter header fields (see SPC-3) as reserved: >> should be << OSD type devices shall reserve the following mode parameter header fields (see SPC-3): >>.

IBM 140) No title assigned yet (Unprocessed) [328]
        PDF pg 171, pg 152, A.1 Attributes page numbers assigned by other standards, 1st paragraph

The statement << publication is shown in >> should be << publication are shown in >>

IBM 141) No title assigned yet (Unprocessed) [329]
        The author marked this comment as technical.
        No page reference specified

Changing the semantics of the NOSEC security mode.

Currently NOSEC security method supports any command, ignoring the capability.

We would like to change the semantics as follows:

a. Under the NOSEC security method, all commands should carry a capability, like in other security methods. The NOSEC method should enforce the same rules regarding Permission bits, security version tag, expiration time, audit etc. However, no integrity check computations will be done or enforced, and as a result no key maintenance is required.

b. We suggest splitting section 4.9.1 into two sections: one on the 'Basic Access Control model' and the other on the 'Basic security model'. The first section will specify all the relevant items from current 4.9.1 that have to do with access control only and not integrity enforcement. For example, only item c) on page 25. The access control model should also be accompanied with a Figure similar to Figure 4 but without the capability key components.

c. Section 4.9.2. should indicate the trust assumptions under NOSEC - all parties are supposed to 'behave' according to the protocol. Specifically, the client is trusted to copy the capability exactly as obtained from the security manager without any modification into the CDB. Moreover, if the capability was requested for partition p then the client must use it in a CDB with Partition_ID p (as there is no way to verify this). Even under these trust assumptions, other unintentional errors/mistakes that may occur at the client can be detected by NOSEC.

d. Page 8, Definition 3.1.39 - remove 'zero or more'

e. Revise 4.9.3.2

f. Persistent reservations should have the same status in NOSEC as otherwise, that is it should be performed as a PERFORM SCSI COMMAND with a device management permission bit.

g. Table 10 - indicate that the CREDENTIAL INTEGRITY CHECK VALUE is zero for the NOSEC method.

h. Section 4.9.4.3 needs references to the NOSEC model.

i. Suggest to change the name 'Security Version Tag' to 'Access Version Tag', as it is relevant now to the NOSEC as well; clarify that it is used to deny access.

j. SET KET and SET MASTER KEY should not be serviced if the corresponding security model of the partition or the device is NOSEC.

IBM 142) Security Hole in Data-Out Integrity Check (Unresolved) [330]
> The author marked this comment as technical.

The model of the Data-out integrity information format (section 4.9.3.5) seems to open a potential security hole. Since it is the client that indicates the NUMBER OF bytes it includes in the integrity check computation, the client may actually compute the integrity check on less bytes than it actually transfers. To close this hole, we suggest adding in the validation process at the server (p. 30) that only these bytes (on which the integrity check is computed) will affect the command. Or maybe there is another way to verify that the check was done on the entire data, without relying on the application to specify this?

Need to reflect this on page 32 also.

IBM 143) Add Create Attributes Permission (Unresolved) [331]
> The author marked this comment as technical.
> No page reference specified

We suggest adding another bit to the capability permission bits called 'Set_new_attr'. This bit, if set to one, allows creating a new attribute that has not been defined before on the OSD. This will avoid creation of such attributes 'by mistake' - note that the mechanism for creating new attributes is trivial - simply set_att with a page number and attribute name that hasn't been seen before.

IBM 144) Add Object Type to CDB (Unresolved) [332]
> The author marked this comment as technical.
> No page reference specified

We suggest adding an Object Type Value (ROOT, PARTITION, COLLECTION, USER) as specified in Table 14 to the CDB in addition to the capability; alternatively, can use 4 out of the 64 bits of the Object_ID and Partition_ID values for that.

Editor's Note: With the exception of FLUSH OBJECT (see comment HP 77), the command code (i.e., service action value) encodes the requested information. The proposal seems a little redundant.

IBM 145) Provide Reporting for Collections Support (Unresolved) [333]
      The author marked this comment as technical.
      No page reference specified

Support for Collections is optional. The device should have a mean to notify whether it supports this feature, either via INQUIRY or through an attribute in the Root page.

Editor's Note: Use of Inquiry data is not an option. Use of VPD data or a Root attributes page would be acceptable.

IBM 146) Provide Reporting for Volatile Storage Support (Unresolved) [334]
      The author marked this comment as technical.
      No page reference specified

Same notification requirement applies to the model of volatile storage at the device. The device should be able to notify whether it supports it.

IBM 147) Extended The Non-Standard Communications Between the Security Manager and Application Clients (Unresolved) [335]
      The author marked this comment as technical.
      No page reference specified

As an optimization, suggest that when the security manager grants a credential to the client, it also indicates the security method for this partition. Since the security manager is expected to be aware of the security method currently employed by every partition, it can save a new client from going thru the discovery process of this attribute, a process that requires a few commands.

IBM 148) Redefined Buffer Offset Values (Unresolved) [336]
      The author marked this comment as technical.
      No page reference specified

The offset field format in Table 29 section 4.11.4 may waste buffer space for small data segments. One possible solution is to have an exception whereby if the exponent equals 0, then byte offset = mantissa * (2^exponent).

Editor's Note: The current offset definition is appropriate to 99% of the known host memory management algorithms. The memory wasted should be virtual memory that need not be backed by physical memory.

IBM 149) ABORT TASK and QUERY TASK for Non-Root Objects (Unresolved) [337]
      The author marked this comment as technical.
      No page reference specified

Is it meaningful to consider an ABORT TASK and QUERY TASK for a USER, COLLECTION or PARTITION object?

Editor's Note: They are useful if the desire is for a user application to be able to abort its own commands.

IBM 150) Add Capacity Quota for OBSD (Unresolved) [338]
> The author marked this comment as technical.
> No page reference specified

We suggest to maintain the capacity of the entire device as follows:

a. Capacity quota in the Partition Quotas page of partition zero should imply a quota on the capacity used by all partitions (entire device, excluding space used for root attribute pages).

b. Used capacity in the Partition Information page of partition zero should not exceed the Capacity quota in the Partition Quotas page of partition zero.

IBM 151) Key Invalidation Changes (Unresolved) [339]
> The author marked this comment as technical.
> No page reference specified

Invalidation of keys:

a. We suggest that a valid key shall have a key identifier with a non-zero length. Therefore, a SET KEY command shall not use an empty key identifier. An invalid key shall have a zero length key identifier.

b. Upon changing the security method attribute of a partition (including partition zero and root), the working keys for the relevant partition should be invalidated by the OBSD, before changing the security method.

c. On page 132, 2nd paragraph before last, since a device always comes with an (initial) Master Key, the master key identifier attribute length shall never be zero. It is possible to define a standard name for this initial master key.

8. Intel Corp.

Robert Sheffield from Intel Corp. submitted the following comments on a Yes vote.

Intel 1) No title assigned yet (Unprocessed) [340]
> PDF Page 18

Storage Industry Network Association s/b Storage Networking Industry Association (SNIA)

Intel 2) No title assigned yet (Unprocessed) [341]
> PDF Page 20

Figure 1 shows the relationship of this standard to the other standards

"This standard" is not shown in the figure.

Intel 3) No title assigned yet (Unprocessed) [342]
> PDF Page 20, Figure 1, Device-Type Specific Command Sets

OSD sits here?

Intel 4) 'Inherited' Is The Wrong Word (Unresolved) [343]
> PDF Page 36, 4.6.1 Stored data object types / b) Partition:

"(i.e. inherited)"

This is inconsistent with the normal usage of inheritance in OOA. Inheritance says a Partition is a "type of" Root object, and therefore has, at least as a subset, the same structure of attributes, though not necessarily the same values for each attribute. The default values of attributes are specified at object instantiation, and normally does not depend on the values of the object "type" it inherits from. What you're calling 'inheritance' here is more like functional decomposition, not inheritance as used in OOA.

Intel 5) No title assigned yet (Unprocessed) [344]
> PDF Page 36, 4.6.1 Stored data object types / a) Root object

"contain" s/b specify

Intel 6) No title assigned yet (Unprocessed) [345]
> PDF Page 36, 4.5 Description of the OSD Architecture

"Abstracted" s/b "The term, 'abstracted',"

Intel 7) No title assigned yet (Unprocessed) [346]
> PDF Page 37, 4.6.4 Partitions

"between" s/b among

Intel 8) No title assigned yet (Unprocessed) [347]
            PDF Page 37, 4.6.4 Partitions

"There may be many partitions, up to the capacity of the OSD logical unit."

alt wording:

There may be as many partitions as can be accommodated within the capacity of the OSD logical unit.

Intel 9) No title assigned yet (Unprocessed) [348]
            PDF Page 37

root object s/b root object,

Intel 10) No title assigned yet (Unprocessed) [349]
            PDF Page 38, 4.6.6 Collections

"deleted using the REMOVE COLLECTION command"

Does this also delete the user objects in the collection? If so, what happens to the other collections of which the
user object was a member? Does removing all the individual user objects in a collection also delete the collection
containing them?

Intel 11) No title assigned yet (Unprocessed) [350]
            PDF Page 38, 4.6.6 Collections

"collections each of which may contain zero or more user objects."

Is it really a collection if it has less than two elements? Can collections collect collections?

Intel 12) No title assigned yet (Unprocessed) [351]
            PDF Page 39, 4.7.2 Command function ordering for commands that get and/or set attributes

    "3) Process any set attributes command functions specified in the CDB;
    "4) Process any get attributes command functions specified in the CDB."

Why in this order? Generally the application client already knows the value of set attributes, so wouldn't it be more
useful to return the value of the get attributes as they were prior to processing the set attributes? A useful extension
would be to check the get attributes against some criteria before processing either the write command or set
attributes functions.

Intel 13) No title assigned yet (Unprocessed) [352]
            PDF Page 39, 4.7.1 Overview

"store" s/b stored

Intel 14) No title assigned yet (Unprocessed) [353]
            PDF Page 40, 4.7.2 Command function ordering for commands that get and/or set attributes

    "3) Process any set attributes command functions specified in the CDB."

This doesn't sound like an expected function of a GET ATTRIBUTES command. If both GET ATTRIBUTES and
SET ATTRIBUTES are capable of setting and getting attributes, why have two commands? Why not simply have
an ATTRIBUTES command that does both get and set functions?

Intel 15) No title assigned yet (Unprocessed) [354]
           PDF Page 43, 4.9.1 Basic security model

"…set of OSD objects." s/b …collection of OSD objects."?

Intel 16) No title assigned yet (Unprocessed) [355]
           PDF Page 45, 4.9.3.1 Introduction

    "…the preparations for the ALLDATA security method include the preparations that are necessary for the
    CMDRSP security method)."

This sounds like a "shall" requirement, and if so, should not be written as a parenthetical "e.g.".

Intel 17) No title assigned yet (Unprocessed) [356]
           PDF Page 45, 4.9.1 Basic security model

"propriety of the application client's actions." Is the common English definition of "propriety" sufficient for this
context?

Intel 18) No title assigned yet (Unprocessed) [357]
           PDF Page 48, 4.9.3.4 The CMDRSP security method (second to last paragraph)

    "the presence of malicious entities perpetrating a denial of service attack should be considered."

The term, "considered", isn't very precise. Perhaps, "the application client should generate a user alert that a
possible denial of service attack has been detected."

Intel 19) No title assigned yet (Unprocessed) [358]
           PDF Page 68, 4.9.6.3.1 Introduction

"reduce" Perhaps, "limit" is a better word.

Intel 20) No title assigned yet (Unprocessed) [359]
           PDF Page 68, 4.9.6.3.2 Capability restrictions with far in the future nonces

"reduce" Perhaps, "limit" is a better word.

Intel 21) No title assigned yet (Unprocessed) [360]
           PDF Page 69, Table 22 - OSD secret key hierarchy

"Drive" Is this the right term in SCSI context? Does this mean a "disk drive"? Perhaps "Target", or "Device", or
"Device Server" is better suited?

9. Liguna Data

Joe Breher from Liguna Data submitted the following comments as part of the LSI Logic Corp. (see page 85) ballot.

Liguna 1) No title assigned yet (Unprocessed) [361]
          Title page (i), lower right corner

"ISO/IEC 14776-131: 200x" conflicts with ISO/IEC # on pg 3, which lists doc as "ISO/IEC 14776-381"

Which is proper?

Liguna 2) No title assigned yet (Unprocessed) [362]
          pg vii

"Secretariat National Committe for Information Technology Standards" s/b "Secretariat InterNational Committe for Information Technology Standards"?

Liguna 3) No title assigned yet (Unprocessed) [363]
          pg xvii, penultimate paragraph

"Secretariat, National Committe for Information Technology Standards" s/b "Secretariat, InterNational Committe for Information Technology Standards"?

Liguna 4) No title assigned yet (Unprocessed) [364]
          pg xviii, last sentence

"Storage Industry Network Association" s/b "Storage Networking Industry Association"

Liguna 5) No title assigned yet (Unprocessed) [365]
          pg 1, section 1, list item a

"…data over an SCSI…" s/b "…data over a SCSI…"

to match all other appearances of 'a SCSI'

Liguna 6) No title assigned yet (Unprocessed) [366]
          pg 3, 2/3 down page

"Object-based Storage Devices Commands" s/b "Object-Based Storage Device Commands"

to match title

Liguna 7) No title assigned yet (Unprocessed) [367]
          pg 4, sec 2.2

should SAM-2 be listed as an approved reference?

Liguna 8) No title assigned yet (Unprocessed) [368]
          pg 8, sec 3.1.44 stable storage

"…may result in the lost of data…" s/b "…may result in the loss of data…"

Liguna 9) No title assigned yet (Unprocessed) [369]
          pg 8, sec 3.1.48 user object

"…referenced by byte offset…" s/b "…referenced by User_Object_ID (see 3.1.49) identifying the OSD object, and the byte offset…"

Liguna 10) No title assigned yet (Unprocessed) [370]
          pg 8, sec 3.1.51 volatile cache

"Storage is lost…" s/b "Storage that is lost…"

Liguna 11) No title assigned yet (Unprocessed) [371]
          pg 11, sec 3.6.1, 1st paragraph thereof

"When this standard requires one or more bytes to contain specific encoded character, the specific characters are enclosed in double quotation marks. The double quotation marks identify the start and end of the characters that are required to be encoded but are not themselves to encoded. The characters that are to be encoded are shown in exactly the case that is to be encoded."

s/b

"When this standard requires one or more bytes to contain specific encoded characters, the specific characters are enclosed in double quotation marks. The double quotation marks identify the start and end of the characters that are required to be encoded but these quotation marks are not themselves to be encoded. The characters that are to be encoded are shown in exactly the case that is to be encoded."

plural in first sentence, clarify with 'these taction marks', add 'be' to 2nd sentence

Liguna 12) No title assigned yet (Unprocessed) [372]
          pg 15, third para up from bottom

"The storage management component is focused on mapping logical constructs (e.g., files or database entries) to the physical organization of the storage media. In the OSD model, the logical constructs are called user objects. The root object (see 4.6.3), partitions (see 4.6.4), and collections (see 4.6.6) provide additional navigational aids for user objects."

s/b

"The storage management component is focused on mapping logical constructs (e.g., files or database entries) to the physical organization of the storage media. In the OSD model, the logical constructs are called user objects (see 4.6.5). The root object (see 4.6.3), partitions (see 4.6.4), and collections (see 4.6.6) provide additional naviga-tional aids for user objects."

added reference to 4.6.5 for consistency with other references in para.

Liguna 13) No title assigned yet (Unprocessed) [373]
          pg 16 - 3 references on page

Consider eliminating references to 'policy/storage manager'. This page is the only place this term appears. It adds nothing of value to the spec.

Liguna 14) Non-Support for the FORMAT OSD Command (Unresolved) [374]
>   The author marked this comment as technical.
>   pg 18, list item a)

I would like to see the ability to have a mechanical 'lockout' (e.g. by means of a jumper) to prevent FORMAT OSD from being executed. This would necessitate this command to be removed form this list.

Liguna 15) No title assigned yet (Unprocessed) [375]
>   pg 21, table 3

add Current Command attribute page to list

Liguna 16) No title assigned yet (Unprocessed) [376]
>   pg 23, sec 4.8.1, list item c)

"(see)" s/b "(see 7.1.2.13)"

Liguna 17) No title assigned yet (Unprocessed) [377]
>   pg 23, sec 4.8.1, list

add item "d) User Object Quotas attributes page (see 7.1.2.14)"

Liguna 18) No title assigned yet (Unprocessed) [378]
>   pg 26, table 6

Add column for Value

Values corresponding to each of the Security methods currently undefined

Liguna 19) No title assigned yet (Unprocessed) [379]
>   The author marked this comment as technical.
>   pg 27, sec 4.9.3.3, enumerated list item 2)

"Target identifier" s/b "Logical Unit Name"

OK, I see that the target identifier at least *looks* symmetric to the initiator identifier. However, the relationship which has security attributes is really the relationship between the app client and the LU. The fact that we have no app client name seems poor justification for similarly crippling the other side of the connection. I would advocate that the best we can do, given the lack of app client names, is create a security token from the Initiator Identifier and the Logical Unit Name.

Liguna 20) No title assigned yet (Unprocessed) [380]
>   pg 28, 2nd para

"provides the same as the ALLDATA security method." s/b "provides the same protections as the ALLDATA security method."

Liguna 21) No title assigned yet (Unprocessed) [381]
>   for SPC-3

The latest version of SPC-3 on the T10 website is spc3r17. Therein, clause 4.5.2.9, paragraph 1 still refers to security methods "2 or 3". These references should be changed to "CMDRSP or ALLDATA". If I just missed a proposal, I apologize.

Liguna 22) No title assigned yet (Unprocessed) [382]
        pg 29, last para of 4.9.3.4

"The CMDRSP security method protects against corruption of the command and CDB parameters while avoiding the overhead that may be required to protect all transferred data."

s/b

"The CMDRSP security method protects against corruption of the command and CDB parameters, as well as the response STATUS and Sense parameters, while avoiding the overhead that may be required to protect all transferred data."

Liguna 23) No title assigned yet (Unprocessed) [383]
        bottom of pg 34

The last paragraph on this page, along with the associated table 13, are semantically identical to the preceding paragraph. Suggest keeping the version with the table.

Liguna 24) No title assigned yet (Unprocessed) [384]
        bottom of page 34 - same material as previous comment

references to "creation time" s/b "created time"

In order to match terminology from attributes pages.

Liguna 25) No title assigned yet (Unprocessed) [385]
        bottom of page 34 - same material as previous comment

Eliminate references to 'creation time from Root Timestamps attributes page'. This page does not have a creation time attribute.

Liguna 26) No title assigned yet (Unprocessed) [386]
        pg 35, table 14

"OSO object type" s/b "OSD object type"

Liguna 27) No title assigned yet (Unprocessed) [387]
        pg 37, 1st para of 4.9.4.4

"The validity of a specific command and some of the function-related fields in that command is determined by the presence of specific combinations of values in capability fields as shown in table 19. Any command may retrieve or set attributes and combinations of capability fields that allow those functions are shown in table 20."

s/b

"The validity of a specific command and some of the command function-related fields in that command is determined by the presence of specific combinations of values in capability fields as shown in table 19. Any command may retrieve or set attributes, and combinations of capability fields that allow those command functions are shown in table 20."

Changed for clarity: 'command function' is a defined term. More important for comprehension was adding the comma.

Liguna 28) No title assigned yet (Unprocessed) [388]
        Table 19

Table is hard to navigate. I tend to use the command as the primary index. If this navigation method is shared by others, I would suggest creating separate rows for "FORMAT OSD" and "PERFORM SCSI COMMAND".

Liguna 29) Increase Granularity of Permissions for Commands Accessed via PERFORM SCSI COMMAND (Unresolved) [389]
        The author marked this comment as technical.
        pg 40

Should not require Root, DEV_MGMT, and GLOBAL for (e.g.) LOG SENSE under PERFORM SCSI COMMAND.

Liguna 30) No title assigned yet (Unprocessed) [390]
        pg 42, table 20, entry for USER, GET_ATTR, NONE

"As part of a CREATE command or CREATE AND WRITE command, the retrieval of attributes from any attributes page associated with the user object with a Partition_ID matching the value in the credential PARTITION_ID field and the largest valued User_Object_ID created."

s/b

"As part of a CREATE command or CREATE AND WRITE command, the retrieval of attributes from any attributes page associated with the user object with a Partition_ID matching the value in the credential PARTITION_ID field and the largest valued User_Object_ID created by that command."

Liguna 31) No title assigned yet (Unprocessed) [391]
        The author marked this comment as technical.
        pg 42, 43, table 19, *each* entry with SET_ATTR, but without SECURITY (7 items)

Attribute-related functions are misconstruction due to ordering of terms. Terms need order reversal.

Example:

"The setting of attributes in any attributes page other than User Object Security attributes page associated with the user object with a Partition_ID matching the value in the credential PARTITION_ID field and a User_Object_ID matching the value in the object descriptor SINGLE OBJECT_ID field."

s/b

"The setting of attributes in any attributes page associated with the user object with a Partition_ID matching the value in the credential PARTITION_ID field and a User_Object_ID matching the value in the object descriptor SINGLE OBJECT_ID field, with the exception of than the User Object Security attributes page."

Liguna 32) No title assigned yet (Unprocessed) [392]
        pg 45, list item 3) B) a)

"(see 4.9.3.2)" s/b "(see 4.9.3.3)"

Liguna 33) No title assigned yet (Unprocessed) [393]
        pg 46, para 2

"If the capability object type, permissions bit mask, and object descriptor do not allow a command…"

s/b

"If the capability OBJECT TYPE, PERMISSIONS BIT MASK, and OBJECT DESCRIPTOR are set to values that do not allow a command…"

Liguna 34) Add Partition_ID Field in FORMAT OSD Command (Unresolved) [394]
> The author marked this comment as technical.
> pg 46, 4.9.5.3, list item 1) B) a)

Why does the Credential's partition id not match that of the command? Intuitively, it would seem to make sense that it should. Indeed, this mechanism has no possibility of working for commands to LIST all User objects in a partition, as that would require a nonzero PARTITION_ID.

Additionally, FORMAT OSD is the only command listed herein that does not have a PARTITION_ID field.

I am herein advocating that a PARTITION ID field be added to FORMAT OSD (which must be set to 0), and eliminating this entire special case (all of item 1 B a).

Liguna 35) Task Management Functions Are Not Directed To User Objects (Unresolved) [395]
> The author marked this comment as technical.
> pg 46, 4.9.5.3, list item 1) B) b)
> see also: comment Liguna 44)

While my particular view is that Task Management Functions are directed to LUs, (not (e.g) User Objects), the definition in 6.13 of this command allows the direction of certain TMFs to User Objects. If this (ill advised) construct is to survive, then the PARTITION_ID field cannot be herein set to 0. (I have more to say about TMFs being sent to User objects later on…)

Liguna 36) No title assigned yet (Unprocessed) [396]
> pg 46, 4.9.5.3

add list item "3) Concatenating the computed credential integrity check value (see 4.9.5.4)."

Liguna 37) No title assigned yet (Unprocessed) [397]
> pg 49, 1st para of 4.9.7

"An integrity check values…" s/b "Integrity check values…"

Liguna 38) No title assigned yet (Unprocessed) [398]
> pg 53, item a) A)

"…rest event…" s/b "…reset event…"

Liguna 39) No title assigned yet (Unprocessed) [399]
> pg 53, item b)

"…lost of storage…" s/b "…loss of storage…"

Liguna 40) No title assigned yet (Unprocessed) [400]
        pg 53

"Individual OBSD (see 3.1.26) implementations may use whatever technologies they choose to implement stable storage (e.g., an OBSD may implement stable storage as a combination is non-volatile random access memory and disk devices)."

s/b

"Individual OBSD (see 3.1.26) implementations may use whatever technologies they choose to implement stable storage (e.g., an OBSD may implement stable storage as a combination of non-volatile random access memory and disk devices)."

(replace 'is' with 'of')

Liguna 41) No title assigned yet (Unprocessed) [401]
        pg 59, 1st sentence fragment

"OSD logical unit is not zero,…" s/b "OSD logical unit is not NOSEC…"

Liguna 42) Eliminate Page Formats for Attributes (Unresolved) [402]
        The author marked this comment as technical.
        pg 62, 63

Eliminate entire mechanism of page oriented get & set attributes.

There is absolutely no reason to have both these formats. No device can assume that all initiators will only use the page oriented mechanism. Accordingly, they will have to implement the list oriented mechanism, which is a functional superset of the page oriented, as well as the page oriented. This illusory flexibility of mechanisms brings no benefit whatsoever. It does, however carry a requirement to develop and test both mechanisms where only one would do.

Editor's Note: T10 has a very specific concept of 'page' (e.g., log pages, mode pages). Eliminating the attributes page formats would have to be accompanied by renaming 'attributes pages' to something that does not have a connection to the T10 concept of 'pages'. Perhaps 'attributes groups' would work, now that 'group' has no other usage in OSD.

Liguna 43) No title assigned yet (Unprocessed) [403]
        page 92, table 57

"SAM-3 taSk…" in header s/b "SAM-3 task…"

Liguna 44) Require Task Management Functions be Sent To the Root Object (Unresolved) [404]

The author marked this comment as technical.

sec 6.13

see also: comment Liguna 35)

Require that all TMFs be sent to root object.

TMFs are NOT specific to objects -
They operate on Tasks in the Task Set
Operation is performed by the Task Manager
- this all happens in the LU, but OUTSIDE the Device Server
Also, the Task Router isn't even in the LU - it is in the Port
Device Server knows only the Current Task - relies on the Task Manager to feed it in an efficient manner.

10. LSI Logic Corp.

John Lohmeyer from LSI Logic Corp. submitted the following comments on a No vote.

LSI 1) No title assigned yet (Unprocessed) [405]
        Page iii, Revision Information

The Revision History should be deleted before forwarding (but you already knew that).

LSI 2) No title assigned yet (Unprocessed) [406]
        Page xviii, Foreword

Can we get a list of the SNIA OSD TWG members to insert in the foreword?

LSI 3) No title assigned yet (Unprocessed) [407]
        Page 8, 3.1.51 volatile cache

'rest event' should be 'reset event'.

LSI 4) No title assigned yet (Unprocessed) [408]
        Page 16, 4.4 Elements of the example configuration

The "e.g." in the paragraph below Figure 3 should be "i.e." because it includes the phrase "or other storage devices".

LSI 5) Can GOOD Status Be Reported As Required? (Unresolved) [409]
        Page 16, 4.6.1 Stored data object types

The third-from-last paragraph requires an OSD device to report GOOD status even with a head crash for FORMAT OSD and several other OSD commands. I suspect this was not intended. Either remove this paragraph or re-word it to deal with all error conditions.

LSI 6) FORMAT OSD And Error Recovery (Unresolved) [410]
        Page 18, 4.6.1 Stored data object types, Penultimate paragraph

The phrase, shall never, seems inappropriate for a standard. I think this paragraph should be replaced with, "The FORMAT OSD command is not intended to be used for error recovery."

LSI 7) No title assigned yet (Unprocessed) [411]
        Page 18, 4.6.1 Stored data object types, Last paragraph

This paragraph adds no value and should be deleted.

LSI 8) No title assigned yet (Unprocessed) [412]
        Page 20, 4.7.2 Command function ordering for commands that get and/or set attributes, second
        paragraph

The "and" at the end of item 2) seems misplaced. I think it belongs at the end of item 3).

LSI 9) No title assigned yet (Unprocessed) [413]
        Page 20, 4.7.1 Attributes parameters, fifth paragraph

The "All OSD object types" item is confusing. Perhaps an example might help.

LSI 10) No title assigned yet (Unprocessed) [414]
          Page 23, 4.8.1 Introduction

Item c) in the first list references a blank destination.

LSI 11) No title assigned yet (Unprocessed) [415]
          Page 24, 4.8.4 Changing quotas, first paragraph

The phrase "by command" should be "by a command".

LSI 12) No title assigned yet (Unprocessed) [416]
          Page 48, 4.9.6.2 Device server validation of request nonces (global)

The phrase "far in the future" should be "far-in-the-future".

LSI 13) No title assigned yet (Unprocessed) [417]
          Page 53, 4.10 Data persistence model

The phrase "rest event" should be "reset event".

LSI 14) No title assigned yet (Unprocessed) [418]
          Page 152, Annex A

Since there are none at this point in time, a note saying so would make this annex less confusing.

11. Panasas

David Nagel from Panasas submitted the following comments as part of the ENDL Texas (see page 39) ballot.

Panasas 1) No title assigned yet (Unprocessed) [419]
        PDF pg 37, pg 18, 4.6.4, p 2, s 2

user object [s/b] partition [The ID under discussion is a Partition_ID not a User_Object_ID.]

Panasas 2) No title assigned yet (Unprocessed) [420]
        The author marked this comment as technical.
        PDF pg 39, pg 20, 4.7.2

There is no description of the order in which commands are processed. In the Error Handling document I posted in January, there were two ordering that the error group thought essential. They are:

The reporting of errors during initial command processing is important to avoid leaking any information when security may be compromised. Therefore, the REPORTING of errors should proceed in the following order.

1. Any security errors against the integrity of the credential (and cmd/data if requested) should be reported first. The including verifying any INTEGRITY CHECK values, key version, credential format, and checksum algorithm requested.

2. Any errors due to NONCE processing must be reported.

3. Any errors in the capability permissions, expired capability, unknown object, invalid create time or version number

Only the first error in this ordering should be reported. This ordering does not mandate that a device process a command in this order. Only that the device report errors in the specified order.

Panasas 3) No title assigned yet (Unprocessed) [421]
        PDF pg 42, pg 23, 4.7.5, Table 5, r 3, c 3

partition [s/b] collection [This row is describing the Collection Directory, not the Partition Directory.]

Panasas 4) When to Test Quotas (Unresolved) [422]
> The author marked this comment as technical.
> PDF pg 43, pg 24, 4.8.3
> see also: comment Brocade 4)

The spec says that 'tests for quota errors may be made at any time during the processing of a command.' This presents several problems. First, writes may be partially complete when quota errors occur, terminating in a partial write, which might have partially overwritten data. Second, if (quota < already-used-space), any space-consuming command should immediately terminate. However, because quota tests can be performed at any time during the processing of the command, it is possible for the OSD to allow a write-like command to consume more space before terminating with an error.

We recommend that tests for quota should occur before any data or attributes have been modified or newly written. In other words, a command that would result in exceeding quota is terminated before any permanent OSD object-state has been modified.

Editor's Note: Concurrently executing commands could cause quota to be exceeded by more than would be the case if quotas were tested at a time closer to the consumption of resources.

Panasas 5) Per-Partition Security Is Wrong (Unresolved) [423]
> The author marked this comment as technical.
> PDF pg 45, pg 26, 4.9.3.1, 1st s after Table 6

Why is security defined on a per-partition basis? I thought that the partition (and/or root object) encoded the MINIMUM level of security and that every capability encoded the actual level of security used to generate the capability?

This is important because if every object w/in a partition (or root device) must use the same level of security, then providing different clients with different security needs becomes impossible. For example, a client that sits behind a firewall may need a much lower level of security than a client outside the firewall.

Panasas 6) No title assigned yet (Unprocessed) [424]
> PDF pg 90, pg 71, 6.2, 2nd p on pg

This paragraph is a total nonsense. A sentence ends without a period. There is a missing cross reference.

Panasas 7) No title assigned yet (Unprocessed) [425]
> PDF pg 92, pg 73, 6.3, 1st a,b,c list on pg, item a

Actually, the device server shall not allow the same ID to be associated with more than one user-object or collection-object (remember that user and collection objects share the same namespace)

12. Seagate Technology

Gerald Houlder from Seagate Technology submitted the following comments on a No vote.

Seagate 1) No title assigned yet (Unprocessed) [426]
   Seagate (RiedelE) #1
   Page 17

should be "collection"

Seagate 2) No title assigned yet (Unprocessed) [427]
   Seagate (RiedelE) #2
   Page 18

This sentence is confusing in what it is trying to limit. Perhaps it could just read "the above commands shall never…" rather than seeming to apply to any error anywhere in the document.

Seagate 3) No title assigned yet (Unprocessed) [428]
   Seagate (RiedelE) #3
   Page 18

missing ","

Seagate 4) No title assigned yet (Unprocessed) [429]
   Seagate (RiedelE) #4
   Page 19

should also include (i.e. exclude) CREATE, REMOVE, CREATE&WRITE

Seagate 5) No title assigned yet (Unprocessed) [430]
   Seagate (RiedelE) #5
   Page 20

should be "stored" with "d"

Seagate 6) No title assigned yet (Unprocessed) [431]
   Seagate (RiedelE) #6
   Page 23

dangling reference to nowhere

Seagate 7) Add Security Method Field to CDB (Unresolved) [432]
   Seagate (RiedelE) #7
   Page 26
   see also: comment Seagate 9)

the information about which security method a request was prepared for needs to be in the CDB. The device must be able to report an error (via the "may complete" below) if the request was prepared with ALLDATA and CMDRSP is in use. This means that the client is not getting the security level they think they are, and that should be reportable as an error. Irrespective of this, the security level needs to be known in the CDB for reasonable performance at the device (no wasted checksum work).

Seagate 8) No title assigned yet (Unprocessed) [433]
        Seagate (RiedelE) #8
        Page 27

this should be reworded to be specific about which security features are no used. E.g. permission bits are still checked, version numbers are still checked - just no hashes checked or keys used. The current wording of "no OSD security feature" is imprecise and too broad. For example, are SET KEY and SET MASTER KEY "security features"?

Seagate 9) Add Security Method to Capability (Unresolved) [434]
        Seagate (RiedelE) #9
        Page 33
        see also: comment Seagate 7)

capability needs to contain an indication of the security method used to create it - as already noted on page 26 (see comment Seagate 7).

Seagate 10) No title assigned yet (Unprocessed) [435]
        Seagate (RiedelE) #10
        Page 34

this paragraph is redundant with Table 13 and should be removed.

Seagate 11) Add Permission Bit for APPEND (Unresolved) [436]
        Seagate (RiedelE) #11
        Page 35

request addition of a separate permissions bit for APPEND - want to allow clients to append at end of file without being able to scribble in the middle

Seagate 12) No title assigned yet (Unprocessed) [437]
        Seagate (RiedelE) #12
        Page 37

APPEND instead of WRITE

Seagate 13) No title assigned yet (Unprocessed) [438]
        Seagate (RiedelE) #13
        Page 45

should be 4.9.3.3

Seagate 14) No title assigned yet (Unprocessed) [439]
        Seagate (RiedelE) #14
        Page 45

"is" should be "in"

Seagate 15) No title assigned yet (Unprocessed) [440]
        Seagate (RiedelE) #15
        Page 47

order of the phrases makes this confusing - the key is the partition, not the KEY VERSION field - suggest moving "identified by the KV field in the cap" to the end of the sentence

Seagate 16) No title assigned yet (Unprocessed) [441]
        Seagate (RiedelE) #16
        Page 47

this is confusing to the non-cognoscenti. Please include "(e.g. if the version key is changed to a value that has been used before, then capabilities that had been invalid may become valid again)" or similar explanatory words

Seagate 17) No title assigned yet (Unprocessed) [442]
        Seagate (RiedelE) #17
        Page 49

This "Should" should be "Shall", there really is no way to get around not doing this.

Seagate 18) Why Are SHA1 Values Truncated? (Unresolved) [443]
        Seagate (RiedelE) #18
        Page 50

Why is this truncation suggested? Perhaps the concern is over space in the CDB. Using the full 20 byte SHA1 would more closely follow usage of SHA1 in other areas and enable interoperability (as well as higher security). A truncation to 16 bytes is also common usage. 12 bytes is very much non-standard usage.

Seagate 19) No title assigned yet (Unprocessed) [444]
        Seagate (RiedelE) #19
        Page 50

remove "is"

Seagate 20) No title assigned yet (Unprocessed) [445]
        Seagate (RiedelE) #20
        Page 51

is this computation/authentication required regardless of the security level? If so, it should state that.

Seagate 21) Working Key Generation Key Values Are Not Saved (Unresolved) [446]
        Seagate (RiedelE) #21
        Page 51

OSD saves only one key (auth key) for working keys, gen key is not stored (or "saved")

Seagate 22) No title assigned yet (Unprocessed) [447]
        Seagate (RiedelE) #22
        Page 55

this is very confusing - the device is creating these bytes, how can it not "alter" them? does this mean fill with zeros? Suggest that this phrase be stricken.

Seagate 23) No title assigned yet (Unprocessed) [448]
        Seagate (RiedelE) #23
        Page 55

the size of this segment and the wording needs to be consistent with Table 9 on page 31. Likely also should provide a ref to that table/section.

Seagate 24) No title assigned yet (Unprocessed) [449]
        Seagate (RiedelE) #24
        Page 56

needs to be consistent with Table 8 on page 30

Seagate 25) No title assigned yet (Unprocessed) [450]
        Seagate (RiedelE) #25
        Page 67

a section 5.2.9 on Collection_Object_ID is missing here

Seagate 26) No title assigned yet (Unprocessed) [451]
        Seagate (RiedelE) #26
        Page 67

New Timestamp Bypass Mechanism for OSDv1 Rev 10 (as agreed upon)

The 1-byte timestamp bypass attribute remains the same except a new value is defined as follows:

    00h Timestamps are updated
    01h - 7Eh Reserved
    7Fh Timestamps are not updated
    80h - DFh Reserved
    E0h - FEh Vendor specific
    FFh Use CDB timestamps control field

A timestamps control field remains the same except that the 1-bit ATTR-BYP field is eliminated (merged into the other field). The new values of the timestamps control field are defined as:

    0h Timestamps are updated
    01h - 7Eh Reserved
    7Fh Timestamps are not updated
    80h - DFh Reserved
    E0h - FFh Vendor specific

Seagate 27) No title assigned yet (Unprocessed) [452]
        Seagate (RiedelE) #27
        Page 71

some type of cut & paste error starting at "The COLLECTIONS…" - also happens on page 75 and page 103 in a similar paragraph.

Seagate 28) No title assigned yet (Unprocessed) [453]
        Seagate (RiedelE) #28
        Page 79

include "or collection object"

Seagate 29) No title assigned yet (Unprocessed) [454]
        Seagate (RiedelE) #29
        Page 79

reference 5.2.9 about COLLECTION_OBJECT_IDs

Seagate 30) No title assigned yet (Unprocessed) [455]
        Seagate (RiedelE) #30
        Page 80

the security level is an attribute and should not be set to defaults (should be left as-is)

Seagate 31) No title assigned yet (Unprocessed) [456]
        Seagate (RiedelE) #31
        Page 85

could there be some additional explanatory text here? something like "The LIST IDENTIFIER is intended only to allow a device to know if the LSTCHG bit should be set - i.e. for the device to determine if the list of OSD objects has changed since a given LIST IDENTIFIER was returned. The position in the list and the location of restart is completely determined by the CONTINUATION OBJECT_ID and does not use the LIST IDENTIFIER." This makes it more clear what each piece is used for and does not seem to exceed the amount of "for example" text allowed in other parts of the standard.

Seagate 32) No title assigned yet (Unprocessed) [457]
        Seagate (RiedelE) #32
        Page 90

To increase clarity, suggest that there be a footnote in this table that marks INQUIRY, REPORT LUNS, REQUEST SENSE, and TEST UNIT READY and reads "these commands may be issued as normal SCSI commands at all security levels. If further security protection is desired, then PERFORM SCSI COMMAND can be used to issue them as higher security. See Table 39. All other commands in this table may be issued only via PERFORM SCSI COMMAND when operating at higher security levels."

Seagate 33) No title assigned yet (Unprocessed) [458]
        Seagate (RiedelE) #33
        Page 96

Why doesn't this text about non-existent object errors occur on page 95 for plain REMOVE and plain objects?

Seagate 34) No title assigned yet (Unprocessed) [459]
        Seagate (RiedelE) #34
        Page 103

this should be just WRITE not CREATE AND WRITE, ditto next paragraph. Also, the funny cut & paste from The COLLECTIONS… happens here as well - mentioned in a previous comment.

Seagate 35) No title assigned yet (Unprocessed) [460]
    Seagate (RiedelE) #35
    Page 106

should include "and Collection Directory"

Seagate 36) No title assigned yet (Unprocessed) [461]
    Seagate (RiedelE) #36
    Page 107

Perhaps add a note here that this information can only be retrieved with a list format get attributes.

Seagate 37) Comment contains no text, no problem description, no requested changes (No Action Taken)
 [462]
    Seagate (RiedelE) #37
    Page 108

Seagate 38) No title assigned yet (Unprocessed) [463]
    Seagate (RiedelE) #38
    Page 111

"logical unit id" is missing from this list - was present in Rev 8

Seagate 39) No title assigned yet (Unprocessed) [464]
    Seagate (RiedelE) #39
    Page 113

This should be the "username" attribute from partition 0, rather than the OSD name.

Seagate 40) No title assigned yet (Unprocessed) [465]
    Seagate (RiedelE) #40
    Page 116

The term "Default" in these type of attributes is used inconsistently. We believe that all attributes that are "copied into" other attributes on creation/whatnot (e.g. Partition object count in this list) are prefaced with the term "Default"

Seagate 41) No title assigned yet (Unprocessed) [466]
    Seagate (RiedelE) #41
    Page 116

The term "quota" should be used consistently - e.g. in this list "Partition count" should be "Partition count quota" just like "Partition capacity quota"

Seagate 42) No title assigned yet (Unprocessed) [467]
    Seagate (RiedelE) #42
    Page 118

consistent use of "quota" - suggest "Capacity quota" and "Object count quota"

Seagate 43) No title assigned yet (Unprocessed) [468]
    Seagate (RiedelE) #43
    Page 118

the proverbial cut & paste problem starting at "The COLLECTION…"

Seagate 44) Require Zero User Object Length in Partition Zero (Unresolved) [469]
        Seagate (IrenS) #44
        Page 118

Add the following statement: "For partition zero, the default maximum user object length attribute will be zero".

Seagate 45) Require Zero Collections Per User Object in Partition Zero (Unresolved) [470]
        Seagate (IrenS) #45
        Page 118

Add the following statement: "For partition zero, the collections per user object attribute will be set to zero."

Seagate 46) Require Zero Object Count in Partition Zero (Unresolved) [471]
        Seagate (IrenS) #46
        Page 118

Add the following statement: "For partition zero, the object count attribute will be set to zero."

Seagate 47) No title assigned yet (Unprocessed) [472]
        Seagate (IrenS) #47
        Page 120

change "the allow" to "allowed"

Seagate 48) No title assigned yet (Unprocessed) [473]
        Seagate (IrenS) #48
        Page 121

change "shall update" to "shall be updated"

Seagate 49) No title assigned yet (Unprocessed) [474]
        Seagate (IrenS) #49
        Page 147

change "the each" to "each"

13. Veritas Software

Roger Cummings from Veritas Software submitted the following comments on a No vote.

Veritas 1) No title assigned yet (Unprocessed) [475]
          PDF pg 3, pg iii, Abstract

"peer-to-peer" is not used throughout the document, and is only used in a limited sense in SAM-3. It adds no value, and does not align with common usage.

Proposed Resolution:

Delete "peer-to-peer"

Veritas 2) No title assigned yet (Unprocessed) [476]
          PDF pg 17, pg xvii, Foreword

"peer-to-peer" is not used throughout the document, and is only used in a limited sense in SAM-3. It adds no value, and does not align with common usage.

Proposed Resolution:

Delete "peer-to-peer"

Veritas 3) No title assigned yet (Unprocessed) [477]
          PDF pg 25, pg 6, 3.1.3 Attributes

Section 3.1.3 defines attributes as data "not accessible via read or write command functions". Since any command (including READ and WRITE) can potentially access and change attributes, is this true?

Proposed Resolution:

Define attributes as data associated with an object that 1) requires special capabilities to access or change, and 2) is addressed by attribute number instead of offset (like user data).

Veritas 4) No title assigned yet (Unprocessed) [478]
          PDF pg 25, pg 6, 3.1.6 collection

from single

Proposed Resolution:

from a single

Veritas 5) No title assigned yet (Unprocessed) [479]
          PDF pg 26, pg 7, 3.1.26 object-based storage device (OBSD)

"A SCSI device that implements this standard in which data is organized and accessed as objects." has much redundancy.

Proposed Resolution:

"A SCSI device that implements this standard."

Veritas 6) No title assigned yet (Unprocessed) [480]
              PDF pg 27, pg 8, 3.1.44 stable storage

lost

Proposed Resolution:

loss

Veritas 7) Greenwich Mean Time (Unprocessed) [481]
              PDF pg 27, pg 8, 3.1.47 universal time (UT)
              see also: comment HP 8)

greenwich mean time

Proposed Resolution:

"Greenwich Mean Time

Veritas 8) No title assigned yet (Unprocessed) [482]
              PDF pg 27, pg 8, 3.1.51 Volatile Cache

Storage Is lost after a power on or rest event

Proposed Resolution:

Storage whose contents are lost after a power on or reset event

Veritas 9) No title assigned yet (Unprocessed) [483]
              PDF pg 28, pg 9, 3.2 Acronyms

OSD Object-based Storage Devices Commands (this standard, see clause 1)

Proposed Resolution:

OSD Object-based Storage Device Commands (this standard, see clause 1)

Veritas 10) No title assigned yet (Unprocessed) [484]
              PDF pg 30, pg 11, 3.6.1 Notation for byte encoded character strings, 1st para, 3rd line

to encoded

Proposed Resolution:

to be encoded

Veritas 11) No title assigned yet (Unprocessed) [485]
              PDF pg 30, pg 11, 3.6.1 Notation for byte encoded character strings, 3st para, 2nd line

same writing

Proposed Resolution:

same as writing

Veritas 12) No title assigned yet (Unprocessed) [486]
            PDF pg 30, pg 11, 3.6.1 Notation for byte encoded character strings

ASCII is not listed in acronyms or references. Also, is it not current policy to reference UTF-8 instead?

Proposed Resolution:

Correct reference

Veritas 13) Encryption (Privacy) Of Credential Transmission To Application Clients (Rejected) [487]
            PDF pg 35, pg 16, 4.4 Elements of the example configuration
            see comment EMC 1)

Section 4.4 states "When sending credentials to an application client, the security manager shall use a private, authenticated communications mechanism. The security manager may reside in the OBSD, in applications clients, or as a separate entity, but the security requirements on the communications mechanism shall not change based on the location of the security manager."

Communications between the security manager and clients are outside the scope of this standard, so it doesn't make sense to place mandatory requirements on it.

Proposed Resolution:

Change "shall" to "should".

Reason for Rejection: The security of Credential usage requires secret transmission of Credentials between the Security Manager and the Application Client (see comment EMC 1).

Veritas 14) No title assigned yet (Unprocessed) [488]
            PDF pg 35, pg 16, 4.4 Elements of the example configuration

This section should indicate the parts of the example configuration that are outside of the scope of the document.

Proposed Resolution:

Add two sentences in appropriate places. "The detailed operation of the Policy/Storage Manager and its interface to the service delivery subsystem is outside of the scope of this standard." "Definition of the interfaces between the Security manager and an Initiator Device, and between the Security Manager and an OBSD, are outside of the scope of this standard."

Veritas 15) No title assigned yet (Unprocessed) [489]
            PDF pg 35, pg 16, 4.4 Elements of the example configuration, 3rd para under

figure 3

or as

Proposed Resolution:

or exist as

Veritas 16) No title assigned yet (Unprocessed) [490]
             PDF pg 36, pg 17, 4.5 Description of the OSD Architecture

"Abstracted subsets" is unclear and does not reflect the terminology used elsewhere in the document.

Proposed Resolution:

"Data is stored in abstract containers called objects that contain operating system and application constructs."

Veritas 17) No title assigned yet (Unprocessed) [491]
             PDF pg 36, pg 17, 4.5 Description of the OSD Architecture

The sentence "The OSD logical unit allocates space for data and delivers to the application client a unique identifier." is incorrect. The unique identifier may be given to the OSD LU at part of the CREATE command.

Proposed Resolution:

Change to something like: "The data is addressed using a unique identifier which can either be assigned by the OSD logical unit or be given to the OSD logical unit by the client. The OSD logical unit allocates space for the data."

Veritas 18) No title assigned yet (Unprocessed) [492]
             PDF pg 36, pg 17, 4.6.1 Stored data object types

"An OSD contains" should reference an OBSD?

Proposed Resolution:

"An OBSD contains"

Veritas 19) No title assigned yet (Unprocessed) [493]
             PDF pg 36, pg 17, 4.6.1 Stored data object types

Is "OSD Logical Unit" a synonym for OBSD? Can an OBSD have multiple LUs?

OSD Logical Unit is not defined in the glossary but is used throughout the document.

Proposed Resolution:

Either replace OSD Logical Unit with another term or add it to the glossary and explain the relationship to OBSD.

Veritas 20) Root Object Data (Unresolved) [494]
             PDF pg 36, pg 17, 4.6.1 Stored Data Object Types

In discussion of the Root Object, the sentence "Its data contains the list of Partition_IDs." appears. This is misleading since it implies that a client may issue a READ command to the Root Object. In fact, a READ command issued to the Root Object is an error.

Proposed Resolution:

Change to "The Root Object maintains the list of PARTITION_IDs contained on the logical unit. This list is accessed with the LIST command"

Veritas 21) Partition Data (Unresolved) [495]
> PDF pg 36, pg 17, 4.6.1 Stored Data Object Types

In discussion of Partition Objects, the sentence "The data component of a partition is the list of User_Object_IDs." appears. This is misleading since it implies that a client may issue a READ command to a Partition Object. In fact, a READ command issued to a Partition Object is an error.

Proposed Resolution:

Change to "Partition Objects maintain the list of USER_OBJECT_IDs contained in the partition. This list is accessed with the LIST command"

Veritas 22) No title assigned yet (Unprocessed) [496]
> PDF pg 36, pg 17, 4.6.1 Stored data object Types

An OSD logical unit shall always contain a root object and an OSD object for partition zero with at least the attributes (see 4.7) defined by this standard.

Proposed Resolution:

Is the root object a member of partition 0? 3.1.31 suggests yes.

Veritas 23) Collection Data (Unresolved) [497]
> PDF pg 36, pg 17, 4.6.1 Stored Data Object Types

In discussion of Collection Objects, the sentence "The data component of a partition is the list of User_Object_IDs." appears. This is misleading since it implies that a client may issue a READ command to a Collection Object.

In fact, a READ command issued to a Collection Object is an error. It is also wrong since it is supposed to be about Collection Object, not Partition Objects.

Proposed Resolution:

Change to "Collection Object maintains the list of USER_OBJECT_IDs contained in the collection. This list is accessed with the LIST command."

Veritas 24) Collections & Multiple Object Operations (Unresolved) [498]
> PDF pg 36, pg 17, 4.6.1 Stored Data Object Types

In the discussion of Collection Objects, the sentence "It is used for fast indexing of user objects and operations involving multiple user objects." appears. There currently are no operations that involve multiple objects.

Proposed Resolution:

Strike "and operations involving multiple user objects" from the sentence.

Veritas 25) Clients Can Assign Partition/User Object IDs (Rejected) [499]
             PDF pg 37, pg 18 Identifying OSD Objects
             see also: comment Veritas 27), comment Veritas 33), and comment Veritas 34)

The notes for Table 2 suggest that PARTITION_IDs and USER_OBJECT_ID's are always assigned by the OSD logical unit. This is not true. Clients can assign both PARTITION_IDs and USER_OBJECT_IDs.

Proposed Resolution

Change the notes on Table 2 to reflect the fact that PARITION_IDs and USER_OBJECT_IDs may be assigned by the client.

Reason for Rejection: Application Clients cannot assign Partition_IDs or User_Object_IDs. They can only request that the logical unit assign a specified Partition_ID or User_Object_ID.

The table footnote wording in Table 2 clearly indicates this, to whit:

    "a — Partition_ID values assigned by the OSD logical unit **in response to application client requests**.
    "b — User_Object_ID values assigned by the OSD logical unit **in response to application client requests**."

The logical unit is **always** the ID assignment authority.Any other architecture will require the definition of a locking mechanism to coordinate Application Client assignments of Partition_IDs or User_Object_IDs.

Veritas 26) No title assigned yet (Unprocessed) [500]
             PDF pg 37, pg 18, 4.6.2 Identifying OSD objects

object each

Proposed Resolution:

object, each

Veritas 27) Clients Can Assign Partition IDs (Rejected) [501]
             PDF pg 37, pg 18, 4.6.4 Partitions
             see also: comment Veritas 25)

The sentence "Partitions have a User_Object_ID of zero and a Partition_ID (see 4.6.2) that is assigned by the OSD logical unit when the user object is created." is not accurate. Partition_ID can be assigned by the client.

Proposed Resolution

Change sentence to reflect Client assigned Parition_IDs.

Reason for Rejection: See response to comment Veritas 25).

Veritas 28) No title assigned yet (Unprocessed) [502]
             PDF pg 37, pg 18, 4.6.4 Partitions

partition OSD

Proposed Resolution:

OSD partition

Veritas 29) No title assigned yet (Unprocessed) [503]
            PDF pg 37, pg 18, 4.6.4 Partitions, 2nd para

user object

Proposed Resolution:

partition

Veritas 30) No title assigned yet (Unprocessed) [504]
            PDF pg 37, pg 18, 4.6.4 Partitions, 3rd para

partition OSD

Proposed Resolution:

an OSD partition

Veritas 31) No title assigned yet (Unprocessed) [505]
            PDF pg 38, pg 19, 4.6.5 User objects

User objects have the Partition_ID of

Proposed Resolution:

User objects contain the Partition_ID of

Veritas 32) No title assigned yet (Unprocessed) [506]
            PDF pg 38, pg 19, 4.6.5 User objects

A user object is a member of only one partition.

Proposed Resolution:

A user object shall be a member of only one partition.

Veritas 33) Clients Can Assign User Object IDs (Rejected) [507]
            PDF pg 38, pg 19, 4.6.5 User Objects
            see also: comment Veritas 25)

The sentence "User objects have the Partition_ID of the partition to which they belong and a User_Object_ID (see 4.6.2) that is assigned by the OSD logical unit when the user object is created." is not accurate. User_Object_IDs can be assigned by the client.

Proposed Resolution

Change sentence to reflect Client assigned User_Object_IDs.

Reason for Rejection: See response to comment Veritas 25).

Veritas 34) Clients Can Assign Collection_Object_IDs (Rejected) [508]
    PDF pg 38, pg 19, 4.6.6 Collections
    see also: comment Veritas 25)

The sentence "Collections have the Partition_ID of the partition to which they belong and a Collection_Object_ID (see 4.6.2) that is assigned by the OSD logical unit when the collection is created." is inaccurate. Collection_Object_IDs can be assigned by the client.

Proposed Resolution

Change sentence to reflect Client assigned Collection_Object_IDs

Reason for Rejection: See response to comment Veritas 25).

Veritas 35) No title assigned yet (Unprocessed) [509]
    PDF pg 39, pg 20, 4.7.1 Overview

"SBC-based systems" is unclear - does this mean to exclude SBC-2 based

systems?

Proposed Resolution:

"systems that use random access to blocks"

Veritas 36) No title assigned yet (Unprocessed) [510]
    PDF pg 39, pg 20 4.7.1 Overview

The sentence "With the exception of attributes pages in the attributes page number range assigned to all OSD object types (see table 3 in 4.7.3), the same attributes page shall not be associated with more than one OSD object." doesn't seem right. Is this a typo? Should it be "more than one OSD object type"?

Proposed resolution

Fix as needed.

Veritas 37) No title assigned yet (Unprocessed) [511]
    PDF pg 39, pg 20, 4.7.1 Overview, 3rd para

store

Proposed Resolution:

stored

Veritas 38) No title assigned yet (Unprocessed) [512]
    PDF pg 39, pg 20 4.7.1 Overview

The special nature of the current command page (i.e. it can always be retrieved) should be noted here.

Proposed Resolution

Call out the special nature of the current command page.

Veritas 39) No title assigned yet (Unprocessed) [513]
            PDF pg 39, pg 20, 4.7.2 Command function ordering for commands that get and/or set attributes

an command

Proposed Resolution:

a command

Veritas 40) No title assigned yet (Unprocessed) [514]
            PDF pg 39, pg 20, 4.7.2 Command function ordering for commands that get and/or set attributes

the command functions

Proposed Resolution:

command function

Veritas 41) GET ATTRIBUTES Processing Order (Unresolved) [515]
            PDF pg 40, pg 21, 4.7.2 processing of a GET ATTRIBUTES command…

2) Process any get attributes command functions specified in the CDB; and

Proposed Resolution:

(Question) I do not understand why getting attributes happens prior to the set attributes in this case alone. I think it should be consistent with the other two cases (below) and the general case (above).

Editor's Note: The editor expects to reject this comment with the following response: The processing order for GET ATTRIBUTES is defined to give a distinct purpose to having both a GET ATTRIBUTES command and a SET ATTRIBUTES command. The difference may prove valuable to specific Application Client implementations.

Veritas 42) No title assigned yet (Unprocessed) [516]
            PDF pg 41, pg 22, 4.7.3 Attributes pages

The distinction between "Defined by OBSD (see 3.1.26) manufacturer product specifications" and "Vendor specific" in Table 4 is unclear. The former sure sounds vendor specific to me - is the difference that those pages

are read-only. read-only?

Proposed Resolution:

Clarify

Veritas 43) No title assigned yet (Unprocessed) [517]
            PDF pg 42, pg 23, 4.7.5 Attributes directories, 2nd para under table

in attribute number 0h to make

Proposed Resolution:

to attribute number 0h in order to make

Veritas 44) No title assigned yet (Unprocessed) [518]
        PDF pg 42, pg 23,

Reference on item c) is incomplete

Veritas 45) No title assigned yet (Unprocessed) [519]
        PDF pg 44, pg 25, 4.9.1 Basic security model

In Figure 4 "OSD Device" should be OBSD.

Proposed Resolution:

Correct figure

Veritas 46) No title assigned yet (Unprocessed) [520]
        PDF pg 44, pg 25, 4.9.1 Basic security model, next to last paragraph on page

value, meaning that application

Proposed Resolution:

value. Consequently, the application

Veritas 47) No title assigned yet (Unprocessed) [521]
        PDF pg 44, pg 25, 4.9.1 Basic security model, next to last paragraph on page

does allow delegation of a credential if a application client

Proposed Resolution:

allows delegation of a credential in an application client

Veritas 48) No title assigned yet (Unprocessed) [522]
        PDF pg 44, pg 25, 4.9.1 Basic security model, last paragraph on page

perform and sends those capabilities in those credentials

Proposed Resolution:

perform. It sends those capabilities and those credentials

Veritas 49) Application Client Trust Assumption Rewording (Unresolved) [523]
        PDF pg 44, pg 25, 4.9.1 Basic security model, last paragraph on page

While the application client is not trusted to follow this protocol, the protocol is structured in a way that makes it in the application client's self-interest to follow the protocol. An application client that does not follow the protocol is unlikely to receive service from the OSD device server.

Proposed Resolution:

While the application client is not trusted to follow this protocol, an application client that does not follow the protocol is unlikely to receive service from the OSD device server.

Veritas 50) No title assigned yet (Unprocessed) [524]
          PDF pg 45, pg 26, 4.9.1 Basic security model, first paragraph on page

send by

Proposed Resolution:

sent by

Veritas 51) No title assigned yet (Unprocessed) [525]
          PDF pg 45, pg 26, 4.9.2 Trust assumptions, 4th paragraph

and the

Proposed Resolution:

and by the

Veritas 52) No title assigned yet (Unprocessed) [526]
          PDF pg 45, pg 26, 4.9.2 Trust assumptions, 2nd paragraph under table

mode other

Proposed Resolution:

method other

Veritas 53) No title assigned yet (Unprocessed) [527]
          PDF pg 46, pg 27, 4.9.3.2 The NOSEC security method

PERFORM SCSI COMMAND command (see 6.11)

Proposed Resolution:

PERFORM SCSI COMMAND command (see 6.12)

Veritas 54) No title assigned yet (Unprocessed) [528]
          PDF pg 47, pg 28, 4.9.3.3 The CAPKEY security method

The credential should appear to have been tampered with when this is not truly the case. The problems caused by multiple SCSI domains may be solved by using a different security method (e.g., the CMDRSP security method).

Proposed Resolution:

The credential could appear to have been tampered with when this is not actually the case. The problems caused by multiple SCSI domains can be solved by using a different security method (e.g., the CMDRSP security method, see 4.9.3.4).

Veritas 55) No title assigned yet (Unprocessed) [529]
          PDF pg 48, pg 29, 4.9.3.4 The CMDRSP security method, 1st paragraph under list.

presence of malicious entities perpetrating a denial of service attack should be considered.

Proposed Resolution:

(question) why this set of circumstances suggest a denial of service attack?

Veritas 56) No title assigned yet (Unprocessed) [530]
          PDF pg 51, pg 32, 4.9.3.5 The ALLDATA security method, first paragraph at top of page

presence of malicious entities perpetrating a denial of service attack should be considered.

Proposed Resolution:

(question) why this set of circumstances suggest a denial of service attack?

Veritas 57) No title assigned yet (Unprocessed) [531]
          PDF pg 52, pg 33, 4.9.4.2 Capability key, first paragraph at top of page

copied to the CDB.

Proposed Resolution:

copied into the CDB.

Veritas 58) No title assigned yet (Unprocessed) [532]
          PDF pg 52, pg 33, 4.9.4.2 Capability key, first paragraph at top of page

1) Reconstructing the credential containing

Proposed Resolution:

1) Reconstruct the credential containing

Veritas 59) No title assigned yet (Unprocessed) [533]
          PDF pg 52, pg 33, 4.9.4.2 Capability key, first paragraph at top of page

2) Computing the credential integrity check

Proposed Resolution:

2) Compute the credential integrity check

Veritas 60) No title assigned yet (Unprocessed) [534]
          PDF pg 53, pg 34, 4.9.4.3 Capability format, 2nd paragraph under table

supported integrity check value algorithm attributes in the Root Security

Proposed Resolution:

supported integrity check value algorithm attribute in the Root Security

Veritas 61) No title assigned yet (Unprocessed) [535]
        PDF pg 55, pg 36, 4.9.4.3 Capability format, 3rd paragraph from bottom of page

of OSD object

Proposed Resolution:

of the OSD object

Veritas 62) No title assigned yet (Unprocessed) [536]
        PDF pg 56, pg 37, 4.9.4.4 Credentials and commands allowed

attributes and combinations of capability fields

Proposed Resolution:

attributes. Combinations of capability fields

Veritas 63) No title assigned yet (Unprocessed) [537]
        PDF pg 56, pg 37, 4.9.4.4 Credentials and commands allowed

the retrieval and setting of attributes by combining the permission bits values described

Proposed Resolution:

retrieving and setting attributes by combining permission bit values described

Veritas 64) Why Doesn't FORMAT OSD Require Global Permission? (Unresolved) [538]
        PDF pg 58, pg 39, Table 19, 3rd row

both equal to zero or a FORMAT OSD command.

Proposed Resolution:

both equal to zero. Also a FORMAT OSD command. (question) Why doesn't FORMAT OSD require global permission?

Veritas 65) No title assigned yet (Unprocessed) [539]
        PDF pg 64, pg 45, 4.9.5.2 Credential and capability validation

A NOSEC target should do everything listed in this section except for validating the integrity check values.

Proposed resolution

"This subclause describes the process for validating a capability received in a CDB. If the security method is NOSEC, the integrity check defined herein shall not be performed.

Veritas 66) No title assigned yet (Unprocessed) [540]
        PDF pg 64, pg 45, 4.9.5.2 Credential and capability validation, 1st para

method is use

Proposed Resolution:

method in use

Veritas 67) No title assigned yet (Unprocessed) [541]
        PDF pg 64, pg 45, 4.9.5.2 Credential and capability validation, 3rd para

method is use

Proposed Resolution:

method in use

Veritas 68) No title assigned yet (Unprocessed) [542]
        PDF pg 68, pg 49, 4.9.7 Integrity check values

key. An integrity

Proposed Resolution:

key. Integrity

Veritas 69) No title assigned yet (Unprocessed) [543]
        PDF pg 69, pg 50, 4.9.7 Integrity check values

check value is has

Proposed Resolution:

check value has

Veritas 70) No title assigned yet (Unprocessed) [544]
        PDF pg 69, pg 50, 4.9.8.1 Introduction

c) The definition of the defining the SET KEY

Proposed Resolution:

c) The definition of the SET KEY

Veritas 71) No title assigned yet (Unprocessed) [545]
        PDF pg 69, pg 50, Table 22 OSD secret key hierarchy

d As dual purpose number,

Proposed Resolution:

d As a dual purpose number,

Veritas 72) No title assigned yet (Unprocessed) [546]
            PDF pg 70, pg 51, 4.9.8.1 Introduction

may be protected by tamper resistant software shield.

Proposed Resolution:

may be protected by a tamper resistant software shield.

Veritas 73) No title assigned yet (Unprocessed) [547]
            PDF pg 72, pg 53, 4.10 Data persistence model

rest event (see SAM-3)

Proposed Resolution

rest event (see SAM-3)

Veritas 74) No title assigned yet (Unprocessed) [548]
            PDF pg 72, pg 53, 4.10 Data persistence model

the lost of data

Proposed Resolution:

the loss of data

Veritas 75) No title assigned yet (Unprocessed) [549]
            PDF pg 72, pg 53, 4.10 Data persistence model

combination is non-volatile random

Proposed Resolution:

combination of non-volatile random

Veritas 76) No title assigned yet (Unprocessed) [550]
            PDF pg 74, pg 74, 4.11.2 OSD Data-In Buffers Format

The sentence "The device server shall not alter unused bytes in the Data-In Buffer" doesn't make sense. The device server has to send these bytes to the initiator and the bytes therefore will be modified in the initiator buffers.

Proposed Resolution

Replace offending sentence with "The contents of the unused bytes in the Data-In Buffer is undefined".

Veritas 77) No title assigned yet (Unprocessed) [551]
            PDF pg 78, pg 59, 4.15 Reservations

OSD logical unit is not zero, the PERSISTENT RESERVE IN

Proposed Resolution:

OSD logical unit is not NOSEC, the PERSISTENT RESERVE IN

Veritas 78) No title assigned yet (Unprocessed) [552]
            PDF pg 80, pg 61, 5.1 OSD CDB format

a CDB containing service action

Proposed Resolution:

a CDB containing a service action

Veritas 79) No title assigned yet (Unprocessed) [553]
            PDF pg 83, pg 64, 5.2.1.3 Get and set attributes lists

zero specifies that there is no get attributes list is

Proposed Resolution:

zero specifies that no get attributes list is

Veritas 80) When both DPO and FUA are set (Unresolved) [554]
            PDF pg 84, pg 65, 5.2.3 Options byte

Is it necessary to add a paragraph explaining behavior if both DPO and FUA are set?

Proposed Resolution:

If both DPO and FUA each have a value of one, then the device server should place no data in the volatile cache and the device server shall not return status until the data transferred by this command has been written to stable storage.

Veritas 81) No title assigned yet (Unprocessed) [555]
            PDF pg 85, pg 66, 5.2.4 Partition_ID

"If the partition identified by the PARTITION_ID field does not exist, the command shall be terminated …". What about CREATE_PARTITION with PARTITION_ID != 0?

Proposed Resolution

Call out exception for CREATE_PARTITION.

Veritas 82) No title assigned yet (Unprocessed) [556]
            PDF pg 86, pg 67, 5.2.7 Timestamps control

previously updated or not updated timestamp attribute

Proposed Resolution:

previously established timestamp attribute

Veritas 83) No title assigned yet (Unprocessed) [557]
          PDF pg 87, pg 68, 5.2.8 User_Object_ID

"If the user object identified by the USER_OBJECT_ID field does not exist, the command shall be terminated …".
What about CREATE & CREATE_AND_WRITE with User_Object_ID != 0?

Proposed Resolution

Call out exception for CREATE & CREATE_AND_WRITE.

Veritas 84) Persistent Reservations Should Be Optional (Unprocessed) [558]
          PDF pg 87, pg 68, Table 39 Commands for OSD type devices (part 1 of 2)
          see also: comment ENDL 3)

PRESISTENT RESERVE IN and PRESISTENT RESERVE OUT should be optional commands, because
capability checking other than the integrity check computation should happen for NOSEC

Proposed resolution

Modify table to declare PERSISTENT RESERVE IN and PRESISTENT RESERVE OUT are optional.

Editor's Note: This comment will be resolved as described in the response to comment ENDL 3).

Veritas 85) No title assigned yet (Unprocessed) [559]
          PDF pg 87, pg 68, Table 39 Commands for OSD type devices (part 1 of 2)

8800h and 8F7Fh that not listed

Proposed Resolution:

8800h and 8F7Fh that are not listed

Veritas 86) No title assigned yet (Unprocessed) [560]
          PDF pg 88, pg 69, Table 39 Commands for OSD type devices (part 2 of 2)

8800h and 8F7Fh that not listed

Proposed Resolution:

8800h and 8F7Fh that are not listed

Veritas 87) No title assigned yet (Unprocessed) [561]
          PDF pg 90, pg 71, 6.2 APPEND

maximum user object length attribute in the The COLLECTIONS PER USER OBJECT field contains the value of
the collections per user object attribute. (see), then a

Proposed Resolution:

maximum user object length attribute (see 7.1.2.14), then a

Veritas 88) No title assigned yet (Unprocessed) [562]
            PDF pg 93, pg 74, 6.4 CREATE AND WRITE

If the REQUESTED USER_OBJECT_ID field contains zero any User_Object_ID may be assigned.

Proposed Resolution:

If the REQUESTED USER_OBJECT_ID field contains zero, any User_Object_ID may be assigned.

Veritas 89) No title assigned yet (Unprocessed) [563]
            PDF pg 94, pg 75, 6.4 CREATE AND WRITE (3 instances)

in 4.8.3 apply to the testing of the

Proposed Resolution:

in 4.8.3 apply when testing the

Veritas 90) No title assigned yet (Unprocessed) [564]
            PDF pg 94, pg 75, 6.4 CREATE AND WRITE

maximum user object length attribute in the The COLLECTIONS PER USER OBJECT field contains the value of
the collections per user object attribute. (see), then a

Proposed Resolution:

maximum user object length attribute (see 7.1.2.14), then a

Veritas 91) No title assigned yet (Unprocessed) [565]
            PDF pg 95, pg 76, 6.5 CREATE COLLECTION

Partition_ID of partition in which

Proposed Resolution:

Partition_ID of the partition in which

Veritas 92) No title assigned yet (Unprocessed) [566]
            PDF pg 96, pg 77, 6.5 CREATE COLLECTION

in 4.8.3 apply to the testing of the

Proposed Resolution:

in 4.8.3 apply when testing the

Veritas 93) No title assigned yet (Unprocessed) [567]
            PDF pg 96, pg 77, 6.6 CREATE PARTITION

the command shall terminated

Proposed Resolution:

the command shall be terminated

Veritas 94) No title assigned yet (Unprocessed) [568]
        PDF pg 96, pg 77, 6.6 CREATE PARTITION

in 4.8.3 apply to the testing of the

Proposed Resolution:

in 4.8.3 apply when testing then

Veritas 95) No title assigned yet (Unprocessed) [569]
        PDF pg 103, pg 84, 6.10 LIST

has allocated for returned list.

Proposed Resolution:

has allocated for the returned list.

Veritas 96) No title assigned yet (Unprocessed) [570]
        PDF pg 104, pg 85, 6.10 LIST

INITIAL OBJECT_ID field of that command.

Proposed Resolution:

INITIAL OBJECT_ID field of that new command.

Veritas 97) No title assigned yet (Unprocessed) [571]
        PDF pg 107, pg 88, 6.11 LIST COLLECTION

LIST IDENTIFIER field of that command.

Proposed Resolution:

LIST IDENTIFIER field of that new command.

Veritas 98) No title assigned yet (Unprocessed) [572]
        PDF pg 108, pg 89, 6.12 PERFORM SCSI COMMAND

An OBSD should support this command even when the security level is NOSEC.

Proposed resolution

Clarify that NOSEC devices SHALL support PERFORM SCSI COMMAND

Veritas 99) No title assigned yet (Unprocessed) [573]
        PDF pg 110, pg 91, 6.13 PERFORM TASK MANAGEMENT FUNCTION

An OSD should support this command even when the security level is NOSEC.

Proposed resolution

Clarify that NOSEC devices SHALL support PERFORM TASK MANAGEMENT FUNCTION

Veritas 100) No title assigned yet (Unprocessed) [574]
              PDF pg 115, pg 96, 6.16 REMOVE COLLECTION

the collection contains user object,

Proposed Resolution:

the collection contains user objects,

Veritas 101) No title assigned yet (Unprocessed) [575]
              PDF pg 122, pg 103, 6.21 WRITE (2 instances)

in 4.8.3 apply to the testing of the

Proposed Resolution:

described in 4.8.3 apply when testing the

Veritas 102) No title assigned yet (Unprocessed) [576]
              PDF pg 122, pg 103, 6.21 WRITE

References to CREATE_AND_WRITE in last 2 paragraphs don't belong. This section is on WRITE.

Proposed Resolution

Change CREATE_AND_WRITE to WRITE.

Veritas 103) No title assigned yet (Unprocessed) [577]
              PDF pg 123, pg 104, 7.1.1 Attributes parameter formats

The sentence "Those attributes pages that do not have a defined page format are not accessible via page format parameter data (e.g., the Root Directory attributes page defined in 7.1.2.4)." What does this mean? Who defines the page formats? This spec? Can vendors define pages that can be accessed with page format?

What is the Root Directory page an example of?

Proposed resolution

Clarify.

Veritas 104) No title assigned yet (Unprocessed) [578]
              PDF pg 123, pg 104, 7.1.1 Attributes parameter format

The sentence "Attribute access is limited to the". Is this for both page an list format?

Proposed resolution

Clarify if that this applies to both page and list formats.

Veritas 105) Use Length FFFF FFFFh for Undefined Attributes (Unresolved) [579]
        PDF pg 123, pg 104, 7.1.1 Attributes parameter format

Then sentence "If an attribute value that has not been previously established is requested, a list entry format value (see 7.1.3.3) having zero in the ATTRIBUTE LENGTH field shall be returned."

After considering the issue, we think it would be nice to distinguish a zero length attribute from an empty attribute.

Proposed resolution

Reserve the attribute length FFFF FFFF for empty attributes. Change wording here and in 7.1.3.3 to reflect this change.

Veritas 106) No title assigned yet (Unprocessed) [580]
        PDF pg 123, pg 104, 7.1.1 Attributes parameter formats

allows retrieval of them in formatted pages

Proposed Resolution:

allows retrieval of attribute values in formatted pages

Veritas 107) No title assigned yet (Unprocessed) [581]
        PDF pg 124, pg 105, Table 67 - Attributes pages

The following attribute page ranges are not described in this table:

    80 to P - 1 (2FFF FFFFh)
    P + 80 (3000 0080h) to C - 1 (5FFF FFFFh)
    C + 80 (6000 0080h) to 8FFF FFFFh)
    R + 80 (9000 0080h) to EFFF FFFFh)

Proposed resolution

Describe the missing ranges in the table, and who each range is defined by.

Veritas 108) No title assigned yet (Unprocessed) [582]
        PDF pg 124, pg 105, Table 67 - Attributes pages

Not all attribute pages on this table can be accessed in page format (For example, the information pages)

This information should appear in this table.

Proposed resolution

Add a "Page Format Available" column to this table.

Veritas 109) No title assigned yet (Unprocessed) [583]
        PDF pg 131, pg 112, 7.1.2.8 Root Information attributes page

(number C0h) shall contain the number partitions present

Proposed Resolution:

(number C0h) shall contain the number of partitions present

Veritas 110) OSD Initialized Attributes Should be 'Yes' In OSD Provided (Unresolved)
 [584]
        PDF pg 135, pg 116, Table 77, Root Quotas attribute page contents

Fields that are set by the OSD when FORMAT'ed should be marked as 'YES' in the "OSD Logical Unit Provided" column.

Proposed resolution

All "OSD Logical Unit Provided" entries currently marked 'NO' should be changed to 'YES'.

Veritas 111) OSD Initialized Attributes Should be 'Yes' In OSD Provided (Unprocessed) [585]
        PDF pg 137, pg 118, Table 79, Partition Quotas attribute page contents

Fields that are set by the OSD at CREATE_PARTITION time should be marked as 'YES' in the "OSD Logical Unit Provided" column.

Proposed resolution

All "OSD Logical Unit Provided" entries currently marked 'NO' should be changed to 'YES'.

Veritas 112) No title assigned yet (Unprocessed) [586]
        PDF pg 137, pg 118, 7.1.2.13 Partition Quotas attributes page

maximum user object length attribute in the The COLLECTIONS PER USER OBJECT field contains the value of the collections per user object attribute. (see)

Proposed Resolution:

maximum user object length attribute in the User Object Quotas attributes page (see 7.1.2.14)

Veritas 113) OSD Initialized Attributes Should be 'Yes' In OSD Provided (Unprocessed) [587]
        PDF pg 138, pg 119, Table 81, User Object Quotas attribute page contents

Fields that are set by the OSD at CREATE or CREATE_AND_WRITE time should be marked as 'YES' in the "OSD Logical Unit Provided" column.

Proposed resolution

All "OSD Logical Unit Provided" entries currently marked 'NO' should be changed to 'YES'.

Veritas 114) No title assigned yet (Unprocessed) [588]
        PDF pg 139, pg 120, 7.1.2.14 User Object Quotas attributes page

(number 1h) specifies the maximum value the allow in the user

Proposed Resolution:

(number 1h) specifies the maximum value allowed in the user

Veritas 115) No title assigned yet (Unprocessed) [589]
        PDF pg 140, pg 121, 7.1.2.15 Root Timestamps attributes page (2 instances)

whose CDB get and set attributes parameters (see 5.2.1)

Proposed Resolution:

whose CDB get attributes parameters (see 5.2.1)

Veritas 116) Does Changing the User Object Logical Length Update the Data Modified Timestamp? (Unresolved) [590]
        PDF pg 146, pg 127, 7.1.2.18 User Object Timestamp attributes page

Does modifying the logical size of an object by writing to "User Object Logical Length" attribute of the User Object Information page update the Data Modified Time? We think that modifying the logical length should update both the data modified time and the attribute modified time.

Proposed Resolution

Update description to include changing the logical length as something that causes the data modified time to be updated.

Veritas 117) No title assigned yet (Unprocessed) [591]
        PDF pg 151, pg 132, 7.1.2.20 Root Security attributes page

to maintain value in the adjustable clock attribute value outside

Proposed Resolution:

to maintain a value in the adjustable clock attribute is outside

Veritas 118) No title assigned yet (Unprocessed) [592]
        PDF pg 156, pg 137, 7.1.2.21 Partition Security attributes page (two instances)

(see 5.2.1.3) contains an request

Proposed Resolution:

(see 5.2.1.3) contains a request

Veritas 119) No title assigned yet (Unprocessed) [593]
        PDF pg 159, pg 140, 7.1.2.22 Collection Security attributes page

(see 5.2.1.3) contains an request

Proposed Resolution:

(see 5.2.1.3) contains a request

Veritas 120) No title assigned yet (Unprocessed) [594]
        PDF pg 160, pg 141, 7.1.2.23 User Object Security attributes page

(see 5.2.1.3) contains an request

Proposed Resolution:

(see 5.2.1.3) contains a request

Veritas 121) No title assigned yet (Unprocessed) [595]
        PDF pg 165, pg 146, 7.1.3.3 List entry format….

by the ATTRIBUTE NUMBER field in the in the attributes page

Proposed Resolution:

by the ATTRIBUTE NUMBER field in the attributes page