



# BROCADE

February 15, 2001

T10/01-030 revision 2

To: John Lohmeyer, chairperson, T10  
From: Bob Snively  
Date: February 15, 2001  
Subject: Ballot comment resolution for comments on FCP-2, revision 05

Revision 0 document is the first draft of the resolution of those ballot comments on FCP-2, revision 5. The document requesting the ballot was T10/00-033r0. The document recording the results of the voting was T10/00-034r1.

Revision 1 of this document reflects the complete review of the proposed comment resolutions, concentrating on those that were either technical or potentially controversial. The review was performed at the joint T11.3/T10 working group meeting on January 15, 2001 in Orlando, Florida. The changes from revision 0 are marked with change bars.

Revision 2 of this document reflects the actual installation of the comment resolutions. The resolutions are installed in revision 6 of FCP-2. Those resolutions that have blue headers have been installed exactly as requested. Those resolutions that have red headers should be examined carefully, since the changes may be more complex or technically interesting.

## 1 Cisco Systems

Comments attached to Yes ballot from David Peterson of Cisco Systems, Inc.

### 1.1 F.6.2, Editorial

1. (E) PDF page 134: Change: F.6.2 Sequence level error recover To: F.6.2 Sequence level error recovery This header change should thus be propagated to the table of contents.

Response:

Accepted:

“Recover” is changed to “Recovery”.

Installation:

Installed as requested.

### 1.2 Foreword, Class 4 support not verified. Technical

2. (E) PDF page 11: The foreword states “The Fibre Channel protocol operates with Fibre Channel Classes of Service 1, 2, 3, and 4 and operates across Fibre Channel fabrics and arbitrated loops.” Not having looked at class 4 I'm not sure how the FCP-2 error detection and recovery procedure will function.

Response:

Accepted. Recovery for class 4 (and for that matter class 4 itself) is not completely verified and is deleted from the set of operational capabilities. Approved January 15, 2001.

Installation:

Intalled as requested.

### **1.3 Correct references, Editorial**

3. (E) PDF page 15: FC-TAPE is now a published standard reference, NCITS TR-24. FC-AL-2 is now a published standard, NCITS 332-1999 1-APR-1999. Remove entry in clause 2.3 and place reference in clause 2.2.

Response:

Accepted. References are updated as requested.

Installation:

Installed as requested.

### **1.4 Incorrect reference, Editorial**

4. (E) PDF page 17: Believe the reference to table 28 and 29 is to the FC-FS document (not table 28 and 29 in FCP-2).

Response:

Accepted. The parenthetical expression was copied from FC-FS and is deleted in FCP-2.

Installation:

Installed as requested.

### **1.5 Dashes, Editorial**

5. (E) PDF page 17: Clause 3.1.31 there is no dash between “64 bit” and “60 bit”. A dash is used in this context in other places.

Response:

Accepted. Dashes are provided.

Installation:

Installed as requested.

### **1.6 Capitalization, Editorial**

6. (E) PDF page 18: Capitalize “an” following “Port Identifier:”.

Response:

Accepted. “An” is capitalized.

Installation:

Installed as requested.

### **1.7 Dashes, Editorial**

7. (E) PDF page 19: Clause 3.1.60 there is no dash between “64 bit”. A dash is used in this context in other places.

Response:

Accepted. The dash is inserted.

Installation:

Installed as requested.

### **1.8 References updated, Editorial**

8. (E) PDF page 19: Update reference to FC-TAPE and FC-AL-2 in clause 3.2 (see comment #3).

Response:

Accepted. The references are updated.

Installation:

Installed as requested.

### **1.9 Add periods, Editorial**

9. (E) PDF page 31: Note 14, add a period to the last sentence. Add a period after NA also (applicable to table 4 and 5 notes).

Response:

Accepted. The periods are added in notes 4, 5, and 14.

Installation:

Installed as requested.

### **1.10 Improve awkward wording, Editorial**

10. (E) PDF page 35: The first sentence in clause 5.3 is awkward. Suggest splitting the sentence to: “As specified in FC-FS, each Fibre Channel node and each Fibre Channel port shall have a Worldwide\_Name. The Worldwide\_Name shall be a unique name using one of the formats defined by FC-FS and its extensions.”

Response:

Accepted. The recommended change is made.

Installation:

Installed as requested.

### **1.11 Delete obsolete wording, Editorial**

11. (E) PDF page 40: Clause 6.2, paragraph 4 states “The image pair and any Process\_Associator values do not take part in the identification of initiator or target processes”. Since Process\_Associators shall not be used why is it necessary to include it in the sentence?

Response:

Accepted. The obsolete sentence is deleted.

Installation:

Installed as requested.

### **1.12 Capitalization, Editorial**

12. (E) PDF page 42: Table 11 why is the T in task retry identification requested capitalized and the I and F in initiator function capitalized?

Response:

No valid reason. The letters are changed to lower case small caps.

Installation:

Installed as requested.

### **1.13 Capitalization, Editorial**

13. (E) PDF page 31: Appears the first letter of some words in table 12 are also capitalized. Should be consistent with table 11.

Response:

The letters are changed to lower case small caps.

Installation:

Installed as requested.

### **1.14 Capitalization, Editorial**

14. (E) PDF page 47: Table 13 the I in Initiator and T in Target should not be capitalized.

Response:

The letters are changed to lower case.

Installation:

Installed as requested.

### **1.15 Consideration of class dependence, Editorial**

15. (E) PDF page 51: Clause 8.3, last paragraph, for what it's worth, specifies error recovery behavior that is not class-independent.

Response:

This was agreed upon during the reviews performed by Carl Zeitler and others. The editor will search for “class-independent”. The goal is to be sure that the standard indicates that the recovery is class independent, but that FC-FS capabilities may allow additional recovery mechanisms. This response was approved January 15, 2001.

Installation:

Introduction: Deleted “class independent” from the description of clause 12.

Subclause 4.2: In the context, independence of the classes is appropriate.

Clause 12, Title: The words “class independent” are deleted from the title.

Clause 12.1.2, text changed as:

While the basic error detection and error recovery procedures are class independent, acknowledged classes of services may use the acknowledgement mechanism as an additional error detection feature and may use optional mechanisms defined in FC-FS to assist in the recovery process.

### **1.16 Capitalization, Editorial**

16. (E) PDF page 53: Last sentence, the E in “Protocol Error” should not be capitalized.

Response:

Accepted. The text is changed to “Protocol error”.

Installation:

Installed as requested.

### **1.17 Center column, Editorial**

17. (E) PDF page 55: Table 22 the first column should be centered.

Response:

Accepted. The column entries are centered.

Installation:

Installed as requested.

### **1.18 Bold font, Editorial**

18. (E) PDF page 59: Clause 9.1.2.6 RDDATA does not appear to be in bold font.

Response:

Accepted. The text is made bold.

Installation:

Installed as requested.

### **1.19 Error condition, Explanation**

19. (E) PDF page 61: Clause 9.3, paragraph 6, what would cause a write operation to require a total amount of data less than the amount of data provided by the initiator?

Response:

This is usually associated with a device driver that is calculating the wrong length of data transfer required for the device. This may be associated with a device driver too dumb to obtain such information as the block length for the device. The word “requires” is replaced with “intends to use”. This resolution was approved January 15, 2001.

Installation:

Installed as requested.

### **1.20 Correct word usage, editorial**

20. (E) PDF page 62: Clause 9.4.1, paragraph 4, change: “it waits until Sequence Initiative has been returned and then transmits an FCP\_RSP IU with CHECK CONDITION status and the sense data that describes the error.” to: “it shall wait until Sequence Initiative has been returned and then transmit an FCP\_RSP IU with CHECK CONDITION status and the sense data that describes the error.”

Response:

Accepted. The requested change is made. This resolution was approved January 15, 2001.

Installation:

Installed as requested.

### **1.21 Correct spelling, editorial**

21. (E) whole document: Consistent use of the term: “timeout”, “time-out”, “time out”.

Response:

Accepted. The proper terminology is “time-out”. The text is searched and all occurrences changed to that spelling. This resolution was approved January 15, 2001.

Installation:

Changes are made in 10.4.1, 11.1, 11.2, 12.3.5, and 12.4.1.7.

### **1.22 Remove obsolete text, editorial**

22. (T) PDF page 85: Clause 12.4.1.6, paragraph 3 should be removed. Paragraph 4 is the agreed upon text.

Response:

Accepted. Paragraph 3, containing obsolete text, is removed. This resolution was approved January 15, 2001.

Installation:

Installed as requested.

### **1.23 FCP\_CONF Recovery, technical**

23. (T) PDF page 86: Clause 12.4.1.8, the first paragraph states the procedure shall be used only by FCP devices that have agreed to Sequence level recovery. This procedure can be used regardless of Sequence level recovery provided REC is implemented at the target.

Response:

It is true that no SRR functions are called upon by the FCP\_CONF recovery. However, it had been assumed that any recovery other than simple exchange level recovery and testing for exchange status with REC would require agreement to Sequence Level Recovery. This existed in revision 4 and no comment was made on it. This will require a formal vote to change.

The working group voted 9Y/0N/3A to accept the recommendation by deleting the offending sentence on January 15, 2001.

Installation:

Installation:

After review of the text, it seemed unclear to simply remove the sentence. As a result, the sentence was changed to read:

This procedure ~~shall~~ may be used ~~only by~~ whether or not an FCP devices ~~that have~~ has agreed to Sequence level recovery.

### 1.24 Spacing, editorial

24. (E) PDF page 87: Clause 12.5.2, add a space between 1) and 2) and send.

Response:

Accepted. The additional space is added.

Installation:

Installed as requested.

### 1.25 Update to be consistent with SAM-2 revision 15, technical

25. (T) PDF page 91: Clause A.3 and clause A.4, CRN as defined in SAM-2 rev 15 needs to be added to the Execute Command and Send SCSI Command procedure calls.

Response:

Accepted. The changes are made in A.3 and A.4. The response was accepted by the working group on January 15, 2001. See also 5.24 and 5.25.

Installation:

Installed as requested in A.3 and A.4.

### 1.26 Informative diagrams, technical

26. (T) Annex C: Diagrams C.4, C.6, C.7, C.9, C.10 each contain text stating “The use of REC to determine status for error recovery is optional”. Again, this is not consistent with the theme of class-independent error detection and recovery. And in C.24 no REC sent from the target as indicated in clause 12.4.1.8. Many of the diagrams are misleading when compared to the text.

Response:

In the cases of C.4, C.6, C.7, C.9, and C.10, the FC-FS specified use of E\_D\_TOV to determine that ACKs have not been received is allowed for informative purposes. Class independent behavior may choose to use REC, but E\_D\_TOV will usually time out first, forcing earlier recovery procedures. No change is required.

In the case of C.24, the FC-FS specified use of E\_D\_TOV to determine that ACKS have not been received is allowed for informative purposes. This recovery will usually occur before the REC is sent as indicated in clause 12.4.1.8. No change is required.

The diagrams are informative and include both natural behaviors of FC-FS and recovery behaviors of FCP-2. Further clarification of these diagrams must be specified before any action can be taken. No change is recommended.

The response to this comment was approved in the context of 1.15 by the working group on January 15, 2001.

Installation:

The text of C.1 was modified as follows:

This informative annex diagrams various error detection and recovery procedures for FCP devices conforming to this standard. These examples include cases where recovery mechanisms specified by FC-FS interact with recovery mechanisms specified by this standard.

### 1.27 Remove blank pages, editorial

27. (E) PDF page 137 and 138: Pages are blank, may be deleted.

Accepted. The pages are deleted.

Installation:

Installed as requested.

## 2 Compaq

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

### 2.1 Use of affect/effect, editorial

CPQ-001: PDF 32, Page 16 (Editorial) ----- Section 4.9 Clearing effects of task management, FCP, FC-FS, and FC-AL-2 actions

In three places the verb “effect” (“to cause to be”) should be “affect” (“to effect a change in”):

1. Table 4 - Clearing effects of link related functions - header: “FC link action effecting [fix] FCP target object” 2. Table 5 - Clearing effects of initiator actions - header: “initiator action effecting [fix] target object” 3. Table 5 note 4 “For multiple-LUN targets, CLEAR TASK SET, ABORT TASK SET, and SCSI LOGICAL UNIT RESET effect [fix] only the addressed LUN.”

Response:

Accepted. The recommended changes are made.

Installation:

Installed as requested.

### 2.2 Table footnote references, editorial

CPQ-002: PDF 32, Page 16 (Editorial) ----- Section 4.9 Clearing effects of task management, FCP, FC-FS, and FC-AL-2 actions

In “Table 4 - Clearing effects of link related functions” two column headers are “LOGO(13), PLOGI” and “PRLI(8)(13), PRLO.”

Note 13 refers to LOGO and PRLO. It does not refer to PRLI. Change the second column header to “PRLI(8), PRLO(13).”

Response:

Accepted. The recommended change is made.

Installation:

Installed as requested.

### 2.3 Consideration of mode pages, technical

CPQ-003: PDF 33, Page 19 (Technical) Section 4.9 Clearing effects of task management, FCP, FC-FS, and FC-AL-2 actions and Section 6.3.4 New or repeated PRLI

<excerpts from FCP-2> Section 4.9 Clearing effects of task management, FCP, FC-FS, and FC-AL-2 actions Table 6 (and maybe 4) does not reflect working group agreement.

Table 6 - Management of mode pages during PRLI and PRLO PRLI/shared/other initiators = use saved or default mode pages [00-342r0 requested “unchanged, most current values if no reset”] [discussing 00-342r0, Sep CAP WG agreed on “unspecified” with a note explaining what “unspecified” means]

Table 4 - Clearing effects of link related functions (excerpt) For PRLI(8)(13), PRLO Target mode page parameters restored from saved pages (...) For all initiator ports(12) = N Only for initiator port associated with the action = Y

Section 6.3.4 New or repeated PRLI After the completion of any new or repeated binding PRLI, both members of all image pairs successfully established shall have the same state as

they would have after a hard reset or a power on with respect to each other. All clearing actions specified in 4.9 shall be performed. Tasks, reservations, status, and MODE SELECT parameters for other image pairs are not affected. </excerpts>

According to 00-307r0 Minutes from SCSI CAP 11 Sep 2000: "Jim Coomes reviewed the issues between FCP-2 process login and proposed that mode pages not change as a result of process login (00-342r0) unless a power on reset or target reset also occurred. Bob Snively stated a preference for making the behavior unspecified. Concerns were raised about readers not knowing what unspecified means and it was agreed that a descriptive note is required."

According to 00-300r3 Installation of corrections in FCP-2, item 4.115: IBM comment from George Penokie (Editorial) "Page 14 - table 5 - The two entries labeled 'discard current mode pages' should be changed to 'not specified'. There is no reason to force the device to discard current mode pages or do any other action with mode pages at this point. Response: Accepted. See 6.51. Installation: Installed as requested. Note that T10-00-342r0 (Clearing affects on other initiators, by Jim Coomes) also references this issue. At the time, the thought was to specify the PRLI unshared case as "unspecified", but after further study, I have used "use saved or default mode pages". Approved October 30, 2000."

00-342r0 requested a change in the "PRLI/shared/none logged in" row, not the "unshared" row. I assume that "PRLI unshared case" was meant to be "PRLI shared/none logged in" in the 00-300r3 resolution comment.

The issue is that an initiator probably doesn't know if other initiators happened to be logged in or not, so it always has to check shared mode pages after logging in. Forcing the target to revert to saved/default pages on either last logout or first login doesn't help anything. Many existing FCP targets preserve mode pages, and a change in FCP-2 that adds no value but makes existing devices noncompliant should be avoided.

With non-shared pages, the initiator does know the full state of the target with respect to its page, so full specification is helpful. The value after logout doesn't matter, because the initiator cannot access the target without a new login. Thus specifying that pages are reset after login is adequate.

00-342r0 suggested mentioning reset as a special case. That is covered in table 4, so the issue can be ignored in table 6.

Table 6 should use "not specified" for the "PRLI/shared/none logged in" case.

Table 4 should refer entirely to table 6 for the "only for initiator associated with the action" row, rather than trying to apply a "Y" or "N" to them. "Saved or default" means "Y," "not specified" means "maybe", and "maintain current" means "N."

The first sentence of Section 6.3.4 needs this added: "except for mode page parameters (see table 6)."

Response:

Three changes are requested by this comment:

1) Table 6 change:

Proposed change is: Table 6 should use "not specified" for the "PRLI/shared/none logged in" case.

Action: No change is made. In the October meeting there was a strong consensus that, if there are no active process logins with a device, it is reset. The expected behavior after exiting from such a reset when the PRLI is performed is that the device is in a known and expected state, the default or saved state.

After further study, the working group chose to use the term "not specified" for this case in a vote of 7 in favor, 2 against, and 2 abstaining in the meeting of January 15, 2001.

Installation:



Installed as voted. **For the record, let me state that I think this is a really bad solution that will come back and haunt us. It is likely that profile statements will be required to correct this. I believe that it is a direct and non-negotiable violation of SCSI-2, 8.2.10.2 and SPC-2, 7.11.2. Note that the clearing and management of mode pages is not specified in SAM-2, SPI-3, or SPI-4.**

2) Table 4 change:

Proposed change is: Table 4 should refer entirely to table 6 for the “only for initiator associated with the action” row, rather than trying to apply a “Y” or “N” to them. “Saved or default” means “Y,” “not specified” means “maybe”, and “maintain current” means “N.”

Action: Table 6 only references PRLI and PRLO, not failed discovery. Those two cases have their “Y” and “N” indications replaced with a note referencing table 6, but the failed discovery cases remain unchanged.

After further study, the working group chose to replace the Y and N values in this location of the tables with dashes containing a super-script reference to note 12, which references table 6. This resolution was approved in the meeting of January 15, 2001.

Installation:

The change was made for the two locations associated with the two mode select page rows and the PRLI/PRLO column. The superscript notes were removed from the two mode select page row definitions in both table 4 and 5. **Please review for completeness.**

Section 6.3.4, first sentence change:

Proposed change is: The first sentence of Section 6.3.4 needs this added: “except for mode page parameters (see table 6).”

Action: Accepted. The first sentence is changed accordingly. This action was approved in the January 15, 2001 meeting.

Installation:

Installed as requested. **For the record, let me state that I think this is a really bad solution that will come back and haunt us. It is likely that profile statements will be required to correct this. I believe that it is a direct and non-negotiable violation of SCSI-2, 8.2.10.2 and SPC-2, 7.11.2. Note that the clearing and management of mode pages is not specified in SAM-2, SPI-3, or SPI-4.**

## 2.4 Update Additional FCP\_CDB length, technical

CPQ-004: PDF 55, Page (Technical) ----- Section 9.1.1 FCP\_CMND IU format  
In “Table 22 - FCP\_CMND IU Payload,” expand the Additional FCP\_CDB Length field to use bits 7:2 rather than just bits 6:2. This is a closer match to the length supported by SPI-4.

Response:

This change was made in SPI-4 between revision 0 and revision 2 and I have no idea what its justification was. This is accepted, but a vote is required to make this change.

After further consideration, this change was accepted by a vote of 10 Y, 0 N, 3 A in the meeting of January 15, 2001. The reference is T10/00-267r5 in clause 10.1.

Installation:

Installed as requested.

## 2.5 Buffer Full Ratio, Buffer Empty Ration, Technical

CPQ-005: PDF 69, Page 56 (Technical - adds a shall) ----- Section 10.2.3  
(Disconnect-reconnect mode page/) Buffer Empty Ratio

The Buffer Full Ratio text provides for a special case when the link does not have interconnect tenancy (i.e. it is a fabric rather than a loop connection), but the Buffer Empty Ratio does not have similar text. I suggest adding the same rule to Buffer Empty Ratio.

10.2.2 BUFFER FULL RATIO The BUFFER FULL RATIO field indicates to the device server, during read operations, how full the buffer should be prior to requesting an interconnect tenancy. Device servers that do not implement the requested ratio should round down to the nearest implemented ratio as defined in SPC-2. FCP devices attached to links that do not have the concept of interconnect tenancy shall round the ratio to 0 and transmit data in a vendor specific manner.

The value contained in the BUFFER FULL RATIO field is defined by SPC-2.

10.2.3 BUFFER EMPTY RATIO The BUFFER EMPTY RATIO field indicates to the device server, during write operations, how empty the buffer should be prior to transmitting an FCP\_XFER\_RDY IU that requests the initiator to send data. Device servers that do not implement the requested ratio should round down to the nearest implemented ratio as defined in SPC-2. [Add this:] FCP devices attached to links that do not have the concept of interconnect tenancy shall round the ratio to 0 and transmit data in a vendor specific manner.

The value contained in the BUFFER EMPTY RATIO field is defined by SPC-2.

Response:

In the case of BUFFER EMPTY RATIO, the properties of the buffers and the FCP\_XFER\_RDY requests allow the ratio to be meaningful whether or not tenancies are defined. No change is made. The response was approved in the January 15, 2001 meeting.

Installation:

No change was made, as agreed.

## **2.6 DIMM and DTDC reserved, editorial**

CPQ-006: PDF PDF 69, page 55 (Editorial) ----- Section 10.2.1 Overview and format of Disconnect-Reconnect mode page for FCP

In Table 30, byte 12, bit 3 should be labeled DIMM and bits 2:0 should be labeled DTDC since they are referenced later. They are currently labeled RESERVED in the table. The later reference declares them reserved.

Response:

The preferred mechanism would probably be to delete the paragraphs that define the reserved bits. Clause 10.2.10 is deleted.

After further consideration, the committee chose on January 15, 2001 to define the keyword “restricted”, based on the SPC-2 letter ballot response. Restricted means that a bit is used in other standards, but not this one. These bits are then defined as restricted. The text of the keyword definition is:

**3.3.x restricted:** A keyword referring to bits, bytes, words, and fields that are set aside for use in other SCSI standards. A restricted bit, byte, word, or field shall be treated as a reserved bit, byte, word or field for the purposes of the requirements defined in this standard.

N.B. The definition of restricted specifically does not include code values because SPC-2 already has time tested methods for deferring definition of a code value or a range of code values to another SCSI standard.

Installation:

Installed as requested in 3.3.10. Clause 10.2.10 is deleted. The bits are labeled as restricted in table 30.

**Please review.**

## 2.7 Consistent titles, editorial

CPQ-007: PDF 71, page 57 (Editorial) ----- Section 10.2.7 MAXIMUM BURST SIZE field and Section 10.2.9 Fairness access management bits and Section 10.2.10 DIMM and DTDC bits

Remove “field” and “bits” from these section headers - none of the other sections use that wording.

Response:

Accepted. The word “bits” is removed from the headers of 10.2.9 and 10.2.10.

Installation:

Installed as requested. 10.2.10 is deleted. The title of 10.2.9 is changed to the bit names.

## 2.8 Consistent titles, editorial

CPQ-008: PDF 71, page 57 (Editorial) ----- Section 10.2.9 Fairness access management bits

Add the bit names to the section header: Section 10.2.9 Fairness access management (FAA, FAB, FAC)

Response:

Accepted. The fairness access bit labels are included in the title.

Installation:

Installed as requested. The title of 10.2.9 is changed to “**FAA, FAB, FAC**”.

## 2.9 DIMM field capitalization, editorial

CPQ-009: PDF 71, page 57 (Editorial) ----- Section 10.2.10 DIMM and DTDC bits The DISCONNECT IMMEDIATE (DIMM) and the DATA TRANSFER DISCONNECT CONTROL (DTDC) fields defined in SPC-2 are reserved in FCP devices.

Change the D in DIMM from a capital letter to a small capital (both in the header and the text).

Response:

See 2.6. The text is deleted.

Installation:

Installed as requested. 10.2.10 is deleted.

## 2.10 Title contains field names, editorial

CPQ-010: PDF 71, page 57 (Editorial) ----- Section 10.2.10 DIMM and DTDC bits and Section 10.4.10 RR\_TOV

Use the full name for the fields (like the other fields): Section 10.2.10 DISCONNECT IMMEDIATE (DIMM) and DATA TRANSFER DISCONNECT CONTROL (DTDC) Section 10.4.10 RESOURCE RECOVERY TIME OUT VALUE (RR\_TOV)

Response:

See 2.6. The text is deleted for 10.2.10.

The suggested change for 10.4.10 is installed as suggested.

Installation:

Installed as requested. 10.2.10 is deleted.

## 2.11 AER, Technical

CPQ-011: PDF 25, page 11 (Technical) ----- Section 4.2 Device management: The Fibre Channel protocol implements Asynchronous Event Reporting (see SAM-2) using the Asynchronous Event Notification (AEN) model in SPC-2. The AEN model reports

asynchronous events by requiring that the peripheral FCP device take on the initiator role to deliver the asynchronous event sense data to the host, which is required to act as a target using the processor device model for the duration of the AEN reporting process.

New protocols like SRP and iSCSI are defining native AER information units. FCP should offer the same feature. FCP-2 could add an informative annex describing how it might be done (like bidirectional commands), or it could be identified as a work item for FCP-3.

Response:

This has not previously been suggested as a requirement for FCP-2. The change should be proposed as part of FCP-3. No change is required in FCP-2. This response was approved in the January 15, 2001 meeting.

Installation:

No change was made.

### **3 Congruent Software**

Comments attached to Abstain ballot from Peter Johanson of Congruent Software, Inc.:

I have not actively followed the FCP-2 work and consider myself unqualified to cast a vote on this technical subject.

No action was taken on this comment.

### **4 Crossroads Systems**

Comments attached to Yes with Comments ballot from Neil Wanamaker of Crossroads Systems, Inc.:

#### **4.1 Update technical editor information, editorial**

1. (E) Cover: The contact information for the Technical editor is dated. Update.

Response:

Accepted. The technical editor information is updated.

Installation:

The technical editor's contact information is updated.

#### **4.2 Update T10 vice chair information, editorial**

2. (E) ii: The contact information for the T10 Vice Chair is also dated. Update.

Response:

Accepted. The T10 Vice Chair information is updated.

Installation:

The T10 Vice Chair information is updated.

#### **4.3 Clarify FCP Exchange definition, editorial**

3. (E) p3, 3.1.19 FC-FS does not explain about FCP Exchanges. Strike the reference, or indicate that the reference is to "Exchange".

Response:

Accepted. The definition is updated to read:

**3.1.19 FCP Exchange** - A SCSI I/O Operation for the Fibre Channel FC-2 layer. [The SCSI I/O Operation for Fibre Channel is contained in a Fibre Channel Exchange as defined in FC-FS.](#)

Installation:

Installed as requested.

#### 4.4 Clarify name server definition, editorial

4. (E) p3 3.1.32 CT isn't defined, nor does it show up in the list of acronyms. Spell it out, and put the reference next to it.

Response:

Accepted in principle. The definition is updated to read:

**3.1.32 Name Server:** A service accessed through a well-known address identifier that uses the [Common Transfer](#) (CT) protocol [as defined in FC-GS-3](#) to allow a client to determine the address identifier and properties of devices attached to a Fibre Channel switching fabric. See FC-GS-3.

Installation:

Installed as requested.

#### 4.5 Clarify OX\_ID definition, editorial

5. (T) p4 3.1.37 As the OX\_ID is referenced in several of the recovery procedures, and targets are allowed not to assign RX\_IDs, strike the phrase “meaningful only to the initiator”.

Response:

Accepted. The definition is changed to read:

**3.1.37 Originator Exchange Identifier:** An identifier assigned by an Originator to identify an Exchange ~~and meaningful only to the Originator~~ (see 3.1.47). See FC-FS.

The response was approved in the January 15, 2001 meeting.

Installation:

Installed as requested.

#### 4.6 Correct reference, editorial

6. (E) p4 3.1.47 The correct reference should be to FC-FS.

Response:

Accepted. The text is changed as requested.

Installation:

Installed as requested.

#### 4.7 Clarify Status IU usage, editorial

7. (T) p10 4.2, par 5 In acknowledged classes of service, the command status IU does not actually end the exchange.

Response:

Accepted. The text is changed to read:

If no command linking, error recovery, or confirmed completion is requested, the command status IU ~~also ends~~ [is the final sequence of](#) the Exchange.

The response was approved in the January 15, 2001 meeting.

Installation:

Installed as requested.

#### 4.8 Clarify command queueing description, editorial

8. (E) p11 4.2 par 8 should read “...if command queueing resources are unavailable in the target when a command is received...”.

Response:

Accepted. The word “issued” is changed to “received”.

Installation:

Installed as requested.

#### **4.9 Clarify response to REC, editorial**

9. (E) p12 4.3 d “REC response” should read “response to an REC”.

Response:

Accepted. The phrase “an REC response.” is changed to read “a response to an REC.”.

Installation:

Installed as requested.

#### **4.10 Add references, editorial**

10. (E) p13 4.5 par 2 Add reference to 8.4. Reference in next par should be 8.1.

Response:

Accepted. References will be added.

Installation:

Installed as requested.

#### **4.11 Add task retry identifier to retry identification, technical**

11. (E) p21 5.1 par 3 Add reference to use of task retry identifier here.

Response:

Accepted in principle. The following sentence will be added to the paragraph:

The task retry identifier is used as a supplemental task identifier if task retry identification is supported and enabled.

The response was approved in the January 15, 2001 meeting.

Installation:

Installed as requested.

#### **4.12 Obsolete IUs, editorial**

12. (E-) p22 Table 8. Why are T5, T7 reserved but not in the list of obsolete IUs?

Response:

T5 was reserved in FCP revision 12 and remains unchanged in FCP-2. No change is required.

The comment with respect to T7 is accepted, and T7 is removed from the table and added to the list of obsolete IUs in the notes.

Installation:

After further consideration, there is nothing about T5 that requires it to be included. It is also be changed to obsolete.

#### **4.13 Add class 4 to list of end-to-end acknowledged classes, technical**

13. (E) p23 5.5 Add Class 4 to the list.

Response:

Class 4 is not included or defined in FCP-2. See 1.2. No change is required.

The response was approved in the January 15, 2001 meeting.

Installation:

No change is required.

#### **4.14 Sequence streaming considered, editorial**

14. (E) p25 5.6.2.9 Add hint that in streamed sequence cases, this ordering also crosses sequence boundaries.

Response:

The values that the sequence count may have are not specified here, but in FC-FS, as referenced. No change is required.

The response was approved in the January 15, 2001 meeting.

Installation:

No change is required.

#### **4.15 Clarify OX\_ID and RX\_ID field, editorial**

15. (E) 5.6.2.10 Add note that the OX\_ID is assigned by the exchange originator. Remove the tautological phrase at the beginning of this & the next.

Response:

Accepted in principle. The first sentence of 5.6.2.10 is changed to read:

The value in the OX\_ID field is the Originator Exchange Identifier and is one of the identifiers contained in the FQXID.

The first sentence of 5.6.2.11 is changed to read:

The value in the RX\_ID field is the Responder Exchange Identifier and is one of the identifiers contained in the FQXID.

Installation:

Installed as requested.

#### **4.16 Add reference, editorial**

16. (E) 6.2 par 2, 6 Remove par 6; add reference after “image pair is removed by a PRLO” to 6.4.

Response:

Accepted. A reference to 6.4 is placed after the text “An image pair is removed by a PRLO”.

In addition, remove paragraph 6, which is then redundant with this text. This was approved in the January 15, 2001 meeting.

Installation:

Installed as requested.

#### **4.17 Requirements and capabilities, Technical**

17. (T) 6.2 par 4, 6.3.1 par 2, 6.3.5. There are several references here to requirements & capabilities of the Originator & Responder. I can find several bits in PRLI that specifically refer to capabilities, but none to requirements (unless write FCP\_XFER\_RDY disable is a requirement - the word requires appears in several places). Additionally, the TASK RETRY IDENTIFICATION REQUESTED bit needs to be labeled one or the other. In addition, 6.3.1 indicates that if the Responder does not accept a requirement it shall not form an image pair, but the description of FCP\_XFER\_RDY disable describes a mechanism where if the Responder does not support the feature it merely clears the bit in the ACC. Suggested remedy is to remove the last sentence of 6.2 par 4 and the phrase “and agrees to the requirements” from 6.3.1 par 2.

Response:

Accepted in principle. The last sentence of 6.2 paragraph 4 is removed, since it is redundant with 6.3.1. The text of the first sentence of paragraph 2 of 6.3.1 is changed to read:

The standard PRLI accept (ACC) is returned to the Originator FCP\_Port to indicate that the Responder FCP\_Port ~~accepts or does not accept~~ recognizes the capabilities and agrees to operate within the capabilities ~~the requirements~~ of the Originator.

The following bits define capabilities and are properly labeled in their descriptive text, so that no change is required:

INITIATOR FUNCTION, TARGET FUNCTION, CONFIRMED COMPLETION ALLOWED, DATA OVERLAY ALLOWED

The following bits define requirements and are not properly labeled in their descriptive text. A line indicating: "The XXX bit is a PRLI bit defining a requirement." is inserted for:

TASK RETRY IDENTIFICATION REQUESTED, RETRY, WRITE FCP\_XFER\_RDY DISABLED

The READ FCP\_XFER\_RDY DISABLED bit is nominally a requirement is set to a fixed value.

After consideration by the committee on January 15, 2001, the removal of 6.2 paragraph 4 last sentence is approved. Paragraph 2 of 6.3.1 is modified to read as described above.

In addition, the committee agreed that the distinction between capabilities and requirements is specious, and the concept is deleted, with the appropriate text modifications where necessary. This last change was unanimously approved by the committee on January 15, 2001.

Installation:

The last sentence of 6.2, paragraph 4 is deleted.

Paragraph 2 of 6.3.1 is modified as requested.

In 6.2, the following additional changes are made:

~~The service parameters exchanged between two processes may be either requirements or capabilities.~~

~~Capabilities indicate those FC-4 service parameters that describe the role and state of the node in the FC-4. Capabilities include parameters indicating channel or device (FC-SB), initiator or target (FCP), and similar characteristics.~~

~~Requirements indicate those FC-4 service parameters that must be agreed upon by both nodes for proper operation of an FC-4. Requirements include values such as the parameters controlling the FCP functions that may be used between members of an image pair.~~

In 6.3.1, the following additional changes are made:

The PRLI request is transmitted from an Originator FCP\_Port to a Responder FCP\_Port to identify to the destination the capabilities ~~and requirements~~ that the Originator FCP\_Port expects to use with the Responder FCP\_Port and to determine the capabilities ~~and requirements~~ of the Responder.

In 6.3.2, the following additional changes are made:

The Fibre Channel protocol assumes that the Originator has knowledge of the ~~requirements and~~ capabilities of the Responder. That information may be obtained by performing a PRLI requesting an informative action or by other mechanisms outside the scope of this standard.

The FCP Service Parameter page is marked as an informative action by setting the ESTABLISH IMAGE PAIR bit to 0. In that case, the Responder returns an FCP Service Parameter page describing its capabilities ~~and requirements~~.

In 6.3.3, the following additional changes are made:

~~The requirements shall be those committed to by the Responder.~~

In 6.3.5, the following additional changes are made because they are either redundant or obvious:

~~The confirmed completion allowed bit indicates a PRLI capability that is only defined for the initiator function.~~

~~The data overlay allowed bit indicates a PRLI capability that is only defined for the initiator function.~~

When the INITIATOR FUNCTION bit is set to 1b, the Originator or Responder is indicating that ~~the Originator or Responder operates~~ it has the capability of operating as an initiator. When the INITIATOR FUNCTION



bit is set to 0, the process does not ~~operate~~ have the capability of operating as an initiator. ~~Initiator function is a PRLI capability.~~

(Similar changes are made for the target function bit)

#### **4.18 Add reference, editorial**

18. (E) 6.3.1 par 2. Add reference to the significance of Image Pair Established in the ACC as the indicator of acceptance.

Response:

Accepted. The paragraph is changed to read:

~~The standard PRLI accept (ACC) is returned to the Originator FCP\_Port to indicate that the Responder FCP\_Port accepts or does not accept the capabilities and agrees to the requirements of the Originator. A reason code shall be provided if the PRLI request is not accepted.~~

If the PRLI is requesting an informative action by setting the establish image pair bit to 0, the PRLI accept reports the capabilities and requirements of the Responder to the Originator.

If the PRLI is requesting a binding action by setting the establish image pair bit to 1, the PRLI accept reports the capabilities and indicates agreement with the requirements of the Originator and establishes an image pair.

A reason code shall be provided if the PRLI request is incorrect or if a requested image pair cannot be established.

In addition, the committee agreed that the second paragraph must include an indication that the Image Pair Established bit is the indicator that the image pair was established. Reference to 6.3.6 may be sufficient.

Installation:

Installed as approved.

#### **4.19 Treat informative PRLI**

19. (E) 6.3.4 Add paragraph to indicate that the effect of a new or repeated information PRLI is to leave the state unchanged.

Response:

Accepted. The following new text is added below the first paragraph.

After the completion of any new or repeated informative PRLI, the state of the Originator and Responder remains unchanged.

Installation:

Installed as requested.

#### **4.20 Remove text, editorial**

20. (E) 6.3.5 Word 3 Bit 5: Remove last sentence.

Response:

The referenced section describes the INITIATOR FUNCTION bit as a PRLI capability. This is correct and no change is required. However, the last sentence places “initiator function” in small caps. The committee approved this response in the January 15, 2001 meeting. In addition, small caps must be used in the term “target function”.

Installation:

See 4.17. The sentences were removed as requested.

#### **4.21 Clarify image pair not established, editorial**

21. (E) 6.3.5 Word 3 bit 4: add to penultimate sentence “... and the Image Pair Established bit set to 0”.

Response:

Accepted. The text is modified as requested.

Installation:

Installed as requested.

#### **4.22 Page left blank, editorial**

22. (E) p34, p62 Add “This page intentionally left blank”.

Response:

The fact that the previous page ends early, that all non-trivial clauses begin on right pages, and that the page has appropriate headers and footers is sufficient indication that the blank page is intentional. No change is required.

The response was approved in the January 15, 2001 meeting.

Installation:

No change is made.

#### **4.23 Add line for ACC response, editorial**

23. (E) p35 8.1 Table 14. Add line corresponding to encoded value 02h ACC.

Response:

All these functions are described in individual subclauses. Each subclause defines an accept with a special format, so in general ACC cannot be identified as a particular response. No change is made.

The response was approved in the January 15, 2001 meeting.

Installation:

No change is made.

#### **4.24 Clarify ACC for REC, editorial**

24. (E) p36 REC Accept. Add note that the RX\_ID may now be valid (i.e., it may have been specified as 0xffff in the REC Link Service Request, as the Originator may not have received the RX\_ID, but one may have been assigned by the Responder). In other words, the Responder shouldn't blindly copy it from the request.

Response:

Accepted. The descriptive sentence is changed to read:

The RESPONDER ADDRESS IDENTIFIER field is set to the address identifier of the Responder of the requested Exchange. If the RX ID in the REC request payload was FFFFh, the RX ID in the REC accept payload may be set to the value selected by the Responder when the first frame of the Exchange was received.

Installation:

Installed as requested.

#### **4.25 Response code, technical**

25. (T) p43 9.1.2.4 par 1. Add at end of sentence beginning “No more than one...”; otherwise the Exchange Responder shall send an FCP\_RSP indicating a response code of Command Fields Invalid”.

Response:

Accepted. The sentence is changed to read:

No If more than one task management flag bit shall be is set to 1 in any FCP\_CMND IU, no task management function is executed and the FCP\_RSP IU that indicates completion of the task management function contains a RSP\_CODE field set to "FCP\_CMND fields invalid".

The response was approved in the January 15, 2001 meeting.

Installation:

Installed as approved, with the additional change to use "shall", making the behavior mandatory.

#### **4.26 Remove note, technical**

25. (E) p45 9.1.2.4 Abort Task Set. Remove the note.

Response:

Accepted. The note is deleted.

The response was approved in the January 15, 2001 meeting.

Installation:

Installed as requested.

#### **4.27 Inconsistency between 9.1.2.7 and annex F. Technical**

26. (E) p45 9.1.2.7 last sentence, Annex F. As these are in conflict, remove Annex F, and the reference to it in 9.1.2.7.

Response:

Annex F was agreed to be included by the committee. Sub-clause 9.1.2.7 is modified to read:

The initiator shall not set both the RDDATA and the WRDATA bits to 1. ~~See~~ except as defined by Annex F.

The response was approved in the January 15, 2001 meeting.

Installation:

Installed as approved.

#### **4.28 Correct length, editorial**

27. (E) p47 9.2.3 par 2. Add before last sentence "The sum of the value of FCP\_BURST\_LEN field and the value of FCP\_DATA\_RO shall not exceed the value of FCP\_DL." (as this includes the case of the prior sentence, it could be removed).

Response:

The value in the FCP\_BURST\_LEN field shall not exceed the maximum burst length defined by the disconnect-reconnect page of MODE SELECT and MODE SENSE commands. See 10.2.7. ~~The value in the fcp\_burst\_len field shall not exceed the value of fcp\_dl. The sum of the value of FCP\_BURST\_LEN field and the value of FCP\_DATA\_RO shall not exceed the value of FCP\_DL.~~ The value in the FCP\_BURST\_LEN field shall not be 0.

Installation:

Installed as approved.

#### **4.29 Definition of overrun, technical**

28. (T) p47 9.3 par 5,6. It would appear that in the case of write operations that use FCP\_XFER\_RDY IUs, the sense of data beyond FCP\_DL being requested by the command is actually an underrun, and opposite the sense in which overrun is set in the XFER\_RDY\_DISABLE case. I would suggest that par 5 refer to the setting of FCP\_RESID\_UNDER, and that the calculation of FCP\_RESID for FCP\_RESID\_OVER cases have its sign inverted, and the description of FCP\_RESID\_OVER at the top of p51 be amended to include the XFER\_RDY\_DISABLE case.

Response:

This is the definition that has been used since the beginning of FCP. Either view could be taken, depending on the viewpoint, but this is the view that has been taken. No change is required.

The response was approved in the January 15, 2001 meeting. See also 6.53.

Installation:

No change is made.

#### **4.30 Correct status description, editorial**

29. (E) p48 9.4.1 par 3 In the last sentence replace “the proper” by “INTERMEDIATE”.

Response:

Accepted. The text is changed to read:

The LINKED COMMAND COMPLETE OR LINKED COMMAND COMPLETE (WITH FLAG) Service Response defined by SAM-2 is implicit in the presentation of ~~the~~ INTERMEDIATE or INTERMEDIATE - CONDITION MET ~~proper~~ status in the FCP\_RSP IU.

Installation:

Installed as requested.

#### **4.31 first burst size clarification, editorial**

30. (E) p57 10.2.11 par 1. Replace “the maximum amount of data” by “the amount specified as the first burst size or the amount requested by one or more FCP\_XFER\_RDYs”

Response:

The paragraph considers only the effects of the FIRST BURST SIZE field. No change is necessary. The response was approved in the January 15, 2001 meeting.

Installation:

No change was made.

#### **4.32 Add fabric attach and point-to-point for R\_A\_TOV, technical**

31. (E) p63 Table 34. Add case of fabric attached or point-to-point to R\_A\_TOV default values.

Response:

FC-FS specifies the default R\_A\_TOV for fabric attach to be 10 seconds. It further states that the fabric may change the value. A default value of twice the value of E\_D\_TOV is specified for point-to-point attachment for the sequence time-out functions of R\_A\_TOV. For the default E\_D\_TOV of 2 seconds, R\_A\_TOV would be 4 seconds. These values are specified in FC-FS 23.2.1.2 and 23.2.1.3.

Note 1 allows these values to be specified and does not require the values to be specified in FCP-2. No change is necessary.

After further discussion, the committee on January 15, 2001 requested that the words “for different topologies” be added to the last sentence of note 1. No other change was required.

Installation:

Installed as approved.

#### **4.33 Add additional starting options for REC\_TOV timer, technical**

32. (T) p65 Table 35. Add XR Received or FCP\_DATA received as (optional) points to restart timer.

Response:

XFER\_RDY received corresponds very closely with FCP\_DATA outbound being sent and need not be added as an optional starting point. The receipt of FCP\_DATA is not historically a new

starting point, but it would be mostly harmless to make it one. No change is made, but a vote is required on this issue.

The response was approved in the January 15, 2001 meeting.

Installation:

No change was made.

#### **4.34 Two options not required, Technical**

33. (E) p69 12.3.4 par 2. It isn't clear why there are two options here, as the ones suggested are in fact the same thing. The second option should be removed, and the first made less specific. This action is up to the application client, and he uses a task management request to perform the function (and he may elect to use a different one than ABORT TASK).

Response:

Two options are provided because of the difference in invocation. It is optional for whether the host adapter performs the operation or the higher level driver invokes the operation. No change is made.

The committee requested on January 15, 2001 that the text be reviewed. In particular, other optional mechanisms, including almost any task management function, may be used. At present, the content does not include all options, but should be phrased so that it is a little more open-ended if possible. If the text is made unnecessarily confusing by such changes, the original response of no change would still be adequate.

Installation:

After careful review, no change was made.

## **5 ENDL Texas**

Comments attached to No ballot from Ralph O. Weber of ENDL Texas:

### **5.1 Master standard isn't, editorial**

ENDL 1: PDF Page 14 (Introduction) Last paragraph on page <<master architectural standard>> Since there is not subordinate architectural standard, how about just "architectural standard".

Response:

Accepted. The word "master" is deleted.

Installation:

After review, the offending sentences were rewritten as follows:

The ~~master~~ architectural ~~standard model for~~ of the family of standards is NCITS Project 1157D, *Information Technology - SCSI-3 Architecture Model - 2 (SAM-2)*. ~~The SAM-2 standard contains guides to other standards in the SCSI-3 family.~~

### **5.2 SAM-2 not a standard yet, editorial**

ENDL 2: PDF Page 14 (Introduction) Last paragraph on page <<The SAM-2 standard>> Since SAM-2 is not a standard yet, how about just "SAM-2".

Response:

Accepted. The words "the" and "standard" are deleted. This response was approved in the January 15, 2001 meeting.

Installation:

See 5.1.

### **5.3 Source of data, editorial**

ENDL 3: PDF Page 16, 3.1.2 <<set in>> I believe that “sent to” would be more correct.

Response:

The data is actually a composite of data transmitted to the target and information obtained by the target by other means, including logins and S\_IDs. No change is made.

After further discussion, the committee requested that the changes proposed by the comment be accepted. The text is changed to “sent to”. This response was approved in the January 15, 2001 meeting.

Installation:

Installed as approved.

### **5.4 Allow for bi-directional transfer, editorial**

ENDL 4: PDF Page 16, 3.1.11 <<extent of the data>> Based on the way that bidirectional transfers have reworded 'data buffer size', I think it would be best if this were changed to “extent of the data (data-in or data-out)” as has been done in 3.1.7.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **5.5 Obsolete term, editorial**

ENDL 5: PDF Page 16, 3.1.14 <<data pointer value>> There is no definition for “data pointer value”. Is there a subclause reference that can be added or some other way of making clear what a “data pointer value” is?

Response:

This term should be modified to read “Application client buffer offset”. The word “data pointer value” is replaced with “application client buffer offset”.

The response was approved in the January 15, 2001 meeting.

Installation:

Installed as requested.

### **5.6 Delivery action corrected, technical**

ENDL 6: PDF Page 16, 3.1.14 <<more than one time during a data delivery action>> My understanding of SAM-2 specifies that “more than one time during a data delivery action” is equivalent to a single FCP\_DATA IU suggesting that data overlay requires multiple “data delivery actions” not a “[single] data delivery action.”

Response:

Accepted. The text “more than one time during a data delivery action” is replaced with “more than one time during the set of delivery actions performed by a single command”.

The response was approved in the January 15, 2001 meeting.

Installation:

Installed as approved.

### **5.7 Redundant word, editorial**

ENDL 7: PDF Page 17, 3.1.15 <<targeted destination>> If “targeted” doesn't refer to “target” then it should be removed.

Response:

Accepted. The word “targeted” is deleted.

Installation:

Installed as requested.

### **5.8 Clarify FCP Exchange definition, editorial**

ENDL 8: PDF Page 17, 3.1.19 <<FCP Exchange - A SCSI I/O Operation for the Fibre Channel FC-2 layer. See FC-FS.>> Like all other definitions, the term being defined should be separated from the definition with a colon (not a dash). Also, would it be possible to cross reference an FCP-2 clause describing FCP Exchange in addition to the reference to FC-FS.

Response:

Accepted. The colon is installed as requested. A cross reference to sub-clause 4.1 is provided. In addition, the following change is made in sub-clause 4.1, paragraph 7:

The I/O Operation defined by SAM-2 is mapped into a Fibre Channel Exchange. [A Fibre Channel Exchange carrying information for a SCSI I/O Operation is an FCP Exchange.](#)

Additional study of the use of the word “Exchange” may require other similar editorial modifications.

Installation:

The requested changes were made. No additional changes were identified.

### **5.9 Definition of initiator and target, editorial**

ENDL 9: PDF Page 17, 3.1.25 <<In this standard, the word “initiator” refers to an FCP\_Port using the Fibre Channel protocol to perform the SCSI initiator functions defined by SAM-2.>> Unless this standard never uses “initiator” in its SAM-2 meaning, the verb 'refers' should be changed to 'also refers'. There is a similar problem in definition 3.1.54.

Response:

Accepted. The proposed change is installed in 3.1.25 and 3.1.54.

Installation:

Installed as requested.

### **5.10 Device server vs. LUN, editorial**

ENDL 10: PDF Page 17, 3.1.28 <<executes SCSI commands>> SCSI never electrocutes commands and furthermore a device server (not a logical unit) processes SCSI commands. Therefore, “executes SCSI commands” should be changed to “receives SCSI commands.”

Response:

Accepted. The requested change is made.

After further consideration, the committee chose to use the word “process” instead of “receive”. It is possible that SPI-4 has other synonyms that may be even better.

Installation:

Installed as approved.

### **5.11 Improve definition, editorial**

ENDL 11: PDF Page 17, 3.1.32 <<well-known address identifier>> How about “Fibre Channel well-known address identifier”.

Response:

Accepted in principle. The first sentence is changed to read:

A **Fibre Channel** service accessed through a well-known address identifier that uses the Common Transfer (CT) protocol to allow a client to determine the address identifier and properties of devices attached to a Fibre Channel switching fabric.

Installation:

Installed as requested.

### **5.12 Capitalization, editorial**

ENDL 12: PDF Page 17, 3.1.34 <<Arbitrated Loop>> Why is arbitrated loop capitalized here but not in 3.1.30?

Response:

Accepted. The word “arbitrated loop” is placed in lower case.

Installation:

Installed as requested.

### **5.13 Capitalization, editorial**

ENDL 13: PDF Page 18, 3.1.38 <<an address identifier>> If the format of all the other glossary entries is to be followed, “an” should be capitalized.

Response:

Accepted. The word “an” is capitalized.

Installation:

Installed as requested.

### **5.14 Correct article, editorial**

ENDL 14: PDF Page 18, 3.1.44 <<FC-FS protocol>> This would read better as “An FC-FS protocol”

Response:

Accepted. The word “An” is added as requested.

Installation:

Installed as requested.

### **5.15 Article, editorial**

ENDL 15: PDF Page 18, 3.1.45 <<Number of bytes>> This would read better as “The number of bytes”

Response:

Accepted. The word “The” is added.

Installation:

Installed as requested.

### **5.16 Redundant word, editorial**

ENDL 16: PDF Page 18, 3.1.51 <<an unlinked SCSI command>> To me, “an unlinked SCSI command” suggests a command that was linked but has somehow become unlinked. The more traditional wording for this is simply “a SCSI command”.

Response:

Accepted. The word “unlinked” is deleted. The word “an” is changed to “a”. This response was approved by the January 15, 2001 meeting.

Installation:

Installed as requested.



### 5.17 Simplification of style, editorial

ENDL 17: PDF Page 18, 3.1.52 <<A single byte returned by the device server to the application client in its response>> So does “its” refer to the device server or the application client? I think this phrase works just fine as “A single byte returned by the device server to the application client” (with the phrase “in its response” deleted).

Response:

Accepted. The words “in its response” are deleted.

Installation:

Installed as requested.

### 5.18 Additional definition of word “tag”, editorial

ENDL 19: PDF Page 18, 3.1.53 <<tag: The initiator-specified component of a task identifier that uniquely identifies one task among the several tasks coming from an initiator to a logical unit. See SAM-2.>> This is a great reproduction of the SAM-2 definition of tag. Now what about the FCP-2 special case? Shouldn't there be some mention of that in the glossary?

Response:

Accepted. The following modifications are made in the definition:

The initiator-specified component of a task identifier that uniquely identifies one task among the several tasks coming from an initiator to a logical unit. The fully qualified exchange identifier performs the function of the SCSI tag in this standard. See 5.1 and SAM-2. See SAM-2.

Installation:

Installed as approved.

### 5.19 Remove unused acronym, editorial

ENDL 20: PDF Page 19, APTPL (acronym) The effect of the response to SPC-2 letter ballot comment 2.2 [41] CQP 1B is to remove the APTPL acronym from SPC-2, thus there will be no SPC-2 reference for the acronym. Since the only uses of the APTPL acronym in FCP-2 reference the APTPL field in the PERSISTENT RESERVE OUT parameter data, the best course of action would be to delete this acronym and make the changed described in ENDL 21 and 22.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### 5.20 Correct APTPL usage, editorial

ENDL 21: PDF Page 31, Table 4, Note 11 <<When the most recent APTPL value received by the device server is zero.>> Because the APTPL acronym is not being defined in SPC-2, this should be changed to “When the most recent value received by the device server in a PERSISTENT RESERVE OUT parameter data \*APTPL\* field is zero.” Note: \*APTPL\* is meant to indicate that APTPL should be in small caps.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### 5.21 Correct APTPL usage, editorial

ENDL 22: PDF Page 33, Table 5, Note 11 <<When the most recent APTPL value received by the device server is zero.>> Because the APTPL acronym is not being defined in SPC-2, this

should be changed to “When the most recent value received by the device server in a PERSISTENT RESERVE OUT parameter data \*APTPL\* field is zero.” Note: \*APTPL\* is meant to indicate that APTPL should be in small caps.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **5.22 Definition of nexus, technical**

ENDL 23: PDF Page 89, Table A.1 <<I\_T\_L\_Q Nexus identifier>> SAM-2 does not contain the concept of a “Nexus Identifier”. Suggesting that SAM-2 defines a “Nexus Identifier” as this Table A.1 text does may cause confusion. Possible resolutions are: 1) remove “identifier” from this table entry 2) remove this row from the table 3) make no changes and live with the ambiguity

Response:

Option 1 is accepted. The text is modified to remove the word “identifier” from the phrase “nexus identifier”. All uses of the word “nexus” will be examined for consistency.

Installation:

Installed as requested in table A.1. No other occurrences were found.

### **5.23 Capitalization, editorial**

ENDL 24: PDF Page 91, A.2 <<Input-1, Input-2>> and <<Output-1, Output-2>> Input and Output should not be capitalized so that the notation matches that found in the routine prototype above.

Response:

Accepted. The text is changed as requested.

Installation:

Installed as requested.

### **5.24 Include CRN, editorial**

ENDL 25: PDF Page 91, A.3 - Execute Command prototype To match SAM-2 Rev 15, “[Command Reference Number]” needs to be added to the input parameters list.

Response:

Accepted. The text is changed as requested.

Installation:

Installed as requested.

### **5.25 Complete inclusion of CRN, editorial**

ENDL 26: PDF Page 91, Table A.3 The proposal that added [Command Reference Number] to SAM-2 did not mention the Send SCSI Command request or SCSI Command Received indication, but it appears that “[Command Reference Number]” should be added to the inputs for both routine prototypes (both in FCP-2 and in SAM-2).

Response:

Accepted. The text is changed as requested.

Installation:

Installed as requested.

## 5.26 Capitalization, editorial

ENDL 27: PDF Page 91, Table A.3 first row <<send SCSI command request>> To be consistent with the capitalization elsewhere in this table, this should be “Send SCSI Command request”.

Response:

Accepted. The text is changed as requested.

Installation:

Installed as requested.

## 6 IBM (Tivoli Systems)

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

Date: Dec. 14, 2000 To: T10 Committee (SCSI) From: George Penokie (Tivoli Systems)

Subject: Comments on FCP-2 Letter Ballot

General

In my comments the notation “Page xx” refers to all pages in the standard not roman numeral xx. All comments are editorial unless indicated with a “(T)” at the start of the comment.

### 6.1 No comment, editorial

1: Tivoli comment from George Penokie

Response:

No change is required.

Installation:

No change is required.

### PDF Page 2

#### 6.2 Correct address, editorial

2: Tivoli comment from George Penokie

Page ii - The address information of George Penokie is incorrect. It should be:

Tivoli Systems 3605 Highway 52 N. MS 2C6 Rochester, MN 55901 E-mail:

gpenokie@tivoli.com

Response:

Accepted. The address is changed as requested.

Installation:

Installed as requested.

### PDF Page 14

#### 6.3 Capitalization, editorial

3: Tivoli comment from George Penokie

Page xiv - Annex B - The term 'Fibre Channel Protocol' should be 'Fibre Channel protocol' to match all the other entries in this section.

Response:

Accepted. The requested change is made.

Installation:

After further review, the following approach was used for this terminology to avoid distinguishing between the abstract protocol and the document defining the protocol.

The abstract protocol is called:

“the protocol for transmitting SCSI information over Fibre Channel”

The standard and items relating to actions performed by devices compliant with the standard are called:

“ the Fibre Channel Protocol for SCSI (FCP)”

For later clauses of the document, after all the definitions have been provided, the normal distinction of “Fibre Channel protocol” for the abstract protocol remains unchanged.

**Please review.**

#### **6.4 Correction of SCSI name, editorial**

4: Tivoli comment from George Penokie

Page xiv - You should change the statement 'SCSI-3 family' to 'SCSI family'.

PDF Page 15

Response:

Accepted. The requested change is made.

Installation:

This text was deleted by the response to another comment.

#### **6.5 SAM-2 name correction, editorial**

5: Tivoli comment from George Penokie

Page 1 - section 1 - The name for SAM-2 is SCSI Architecture Model -2.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

#### **PDF Page 16**

#### **6.6 SFF name correction, editorial**

6: Tivoli comment from George Penokie

Page 2 - section 2.4 - The term Small Form Factor is not correct. The name of that organization is SFF. All references to Small Form Factor should be changed to SFF.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

#### **PDF Page 17**

#### **6.7 Complete definition, editorial**

7: Tivoli comment from George Penokie

Page 3 - section 3.2.32 - The abbreviation 'CT' is not defined anywhere.

Response:

Accepted. See text in 5.11.

Installation:

Installed as requested.

## PDF Page 21

### 6.8 ISO convention, editorial

8: Tivoli comment from George Penokie

Page 7 - section 3.4 - The ISO convention for 1,000 is 1 000 not 1000.

Response:

Accepted. Text is changed as requested.

Installation:

Installed as requested.

## PDF Page 24

### 6.9 Correct line ending, editorial

9: Tivoli comment from George Penokie

Page 10 section 4.2 - One of the I/O Operation terms splits across lines at the /. The I/ is on one line and the O Operation is on another. This can be prevented by adjusting a Frame parameter.

Response:

Accepted. Text is changed as requested.

Installation:

Modified as a book-wide parameter.

### 6.10 Shall vs will, editorial

10: Tivoli comment from George Penokie

Page 10 - section 4.2 - last paragraph on page - The 'will' needs to be changed to a 'shall'. Will is not a key word. All 'will's in this standard should be located and changed.

Response:

In the offending sentence, will is an appropriate context. The following alternative is offered:

The device server determines whether additional linked commands ~~will~~ are to be performed in the FCP I/O Operation.

Other sentences where the word will is appropriate are:

10.2.4

If the bus inactivity limit is exceeded or if the bus is inactive and the target holding the bus detects that the limit will be exceeded, the device server shall end the interconnect tenancy.

Other cases where the word will is changed are:

D.1.1

This query ~~will~~ obtains a list of the Port Identifiers of devices that support the FCP protocol.

This response was approved in the January 15, 2001 meeting.

Installation:

Changed as approved.

## PDF Page 25

### 6.11 Remove extra words, editorial

11: Tivoli comment from George Penokie

Page 11 - section 4.2 - 2nd to last paragraph - There is an example in this paragraph but it is not clear where the example ends and the normative starts. I suggest bounding the example by ( )s.

Response:

Accepted in principle. The words “As an example,” are deleted.

Installation:

Installed as approved.

### **6.12 Remove extra word, editorial**

12: Tivoli comment from George Penokie

Page 13 - section 4.4 - the last a) item - The term 'backup copy' should be changed to 'copy' as there is no difference between the two.

Response:

Accepted. The word “backup” is deleted.

Installation:

Installed as requested.

## **PDF Page 28**

### **6.13 Remove extra word, editorial**

13: Tivoli comment from George Penokie

Page 14 - table 2 - The title of this table should not include FCP as FCP-2 is a superset of FCP.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.14 Clarify definition, editorial**

14: Tivoli comment from George Penokie

Page 14 - table 2 - target accepts REC row - The statement 'LS\_RJT if not' is not clear. 'If not' what?

Response:

Accepted. The text is changed as follows:

LS\_RJT if not **accepted**.

Installation:

Installed as requested.

### **6.15 Correct CRN definition, technical**

15: Tivoli comment from George Penokie

Page 14 - table 2 - initiator provides CRN row - What does 'not required' mean?

Response:

The text is changed to “MODE SENSE command”. The initiator should only put out CRNs to devices that do the right thing with the CRN, which is known from the Mode Sense command.

This response was approved in the January 15, 2001 meeting.

Installation:

Installed as approved.

## PDF Page 29

### 6.16 Required, editorial

16: Tivoli comment from George Penokie

Page 15 - table 3 - The term 'required' is not defined as a key word. I believe it should be replaced with 'mandatory' which is a key word. Apply this throughout this standard.

Response:

The term “required” is replaced with the word “mandatory” where appropriate. Examples include:

4.8, table 3: all cases of “required” s/b “mandatory”.

5.2, last sentence: “the required” is deleted.

5.5, third line: “the required” is deleted.

11.1, table 34: all cases of “required” in the table s/b “mandatory”.

11.1, table 34, note 2: “are required to” s/b “shall”.

11.2, 5th paragraph: “are required to” s/b “shall”.

For the many cases where required is used in its normal English language meaning, no change is made. In particular, there are several cases where “required” means “necessary” or “needed”.

This response was approved in the January 15, 2001 meeting.

Installation:

Installed as approved in 4.8, 5.2, 5.5, 11.1, 11.2. Additionally:

4.2, paragraph 7, “required” s/b “specified”

4.2, last paragraph, “is required to act” s/b “acts”

4.3, last paragraph, “required for “ s/b “used for”

12.4.1.7, “required” is deleted.

### 6.17 State, editorial

17: Tivoli comment from George Penokie

Page 15 - section 4.8 - last sentence - The following sentence does not may any sense. 'The ABORT TASK function and any functions required to recover Exchange resources and state are performed using FC-FS basic and extended link services.' How does the word 'state' fit into that sentence?

Response:

Accepted. The following wording is used:

The ABORT TASK function and any functions required to recover Exchange resources and re-establish a known state are performed using FC-FS basic and extended link services.

After further discussion in the January 15, 2001 meeting the above sentence was changed to read:

FC-FS basic link services and extended link services are used to perform the ABORT TASK function, to recover Exchange resources, and to re-establish other initial conditions.

In table 2, the following note is added:

FC-FS basic link services are used to perform the ABORT TASK function.

In text either above or below table 2, the following text is added:

FC-FS basic link services and extended link services may be used for additional control and management activities not listed in table 2.

In addition, the capitalization must be verified.

The above modifications to the response were approved in the January 15, 2001 meeting.

Installation:

Installed as approved. No capitalization problems were found with this area.

### **6.18 Completion of clearing actions, editorial**

18: Tivoli comment from George Penokie

Page 15 - section 4.9 - 1st paragraph - The statement '...the device upon completion of the specified action.' should be changed to '...the device upon successful completion of the specified action.' This makes it clear that failed operations have no effect.

Response:

Be aware that unsuccessful operations may still have had some unknown effect and that the new wording does not preclude that. Aside from that, the comment is accepted. The requested change is made.

The response was approved by the January 15, 2001 working group meeting.

Installation:

Installed as approved.

## **PDF Page 30**

### **6.19 Correct plural, editorial**

19: Tivoli comment from George Penokie

Page 16 - table 4 - 8th row - The statement 'For all initiator port' should be changed to 'For all initiator ports'.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.20 Alignment, editorial**

20: Tivoli comment from George Penokie

Page 16 - table 4 - last row - The Ys and Ns do not line up with the text in the first column.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.21 Removed “cleared”, editorial**

21: Tivoli comment from George Penokie

Page 16 - table 4 - 11th row - The statement 'cleared to 1' should be 'set to 1' or better yet 'set to one'.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.22 Access control data, editorial**

22: Tivoli comment from George Penokie



Page 16 - table 4 - 14th row - Why is the access control data not cleared on a power cycle?

PDF Page 31

Response:

Access control data is persistent through power off. No change is required.

The response was approved by the January 15, 2001 working group meeting.

Installation:

No change is made.

### **6.23 Reference for TPRLO, editorial**

23: Tivoli comment from George Penokie

Page 17 - table 4 - footnote 5 - There is no reference as to where TPRLO is defined. I would expect to see a reference to another standard as it is not defined in this standard.

Response:

The reference is given in note 5. No change is necessary.

Installation:

No change is made.

### **6.24 Footnote numbering on divided tables, editorial**

24: Tivoli comment from George Penokie

Page 17 - Table 4 - footnotes 4, 6, and 9 - What is the point in having a footnote with an entry of NA? All the footnotes with NA should be removed.

Response:

This was an editorial convenience to resolve two problems:

a) None of the footnotes in the original text were defined as cross references, making automated update impossible.

b) All the footnotes in tables 4 and 5 have the same numbers.

No change is needed.

The response was approved by the January 15, 2001 working group meeting, although there was some feeling that it was not the prettiest solution possible.

Installation:

No change is made.

### **6.25 Clarify setting values, editorial**

25: Tivoli comment from George Penokie

Page 17 - table 4 - note 5 - The statements 'GLOBAL bit = '1'. If the GLOBAL bit = '0',...' should be 'GLOBAL is set to 1. IF the GLOBAL bit is set to 0,....'

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.26 OLS reference, editorial**

26: Tivoli comment from George Penokie

Page 17 - table 4 - footnote 15 - There is no definition of 'OLS' on this standard nor is there any reference to where it is defined. What does OLS stand for?

Response:

Accepted. Footnote 15 has installed a new reference to FC-FS.

Installation:

Footnote 15 was rewritten to read:

15) OLS ([the Offline primitive sequence](#)) is not a clearing action if a subsequent FLOGIN is successful and if the F\_Port Name\_Identifier and Fabric\_Name are both unchanged. In point-to-point topologies, OLS is a clearing action. [See FC-FS.](#)

### **6.27 Correct conditional execution, editorial**

27: Tivoli comment from George Penokie

Page 17 - table 4 - note 5 - The statement '...should be performed...' should be '...should only be performed...'.  
Response:

Response:

Accepted in principle. I believe the text should actually be “shall be performed”.

The response was approved by the January 15, 2001 working group meeting.

Installation:

Installed as approved.

## **PDF Page 32**

### **6.28 Line has no actions, editorial**

28: Tivoli comment from George Penokie

Page 18 - table 5 - 3rd row - The entry 'For transmitting L\_Port only' has no N, Y, or - entries.

Response:

When the table was divided, all rows were kept the same to facilitate reference. In this case, the additional row has no function, but it does have a function in table 4. No change is needed.

The response was approved by the January 15, 2001 working group meeting. If the tables are heavily edited (see 6.24), then this could be improved as well.

Installation:

Installed as approved.

### **6.29 Fix alignment, editorial**

29: Tivoli comment from George Penokie

Page 18 - table 5 - 6th row - The Ys and Ns do not line up with the text in the first column.

Response:

Accepted. The rows alignment is corrected.

Installation:

Installed as requested.

### **6.30 plural, editorial**

30: Tivoli comment from George Penokie

Page 18 - table 5 - 8th row - The statement 'For all initiator port' should be changed to 'For all initiator ports'.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **PDF Page 33**

#### **6.31 Footnote numbering on divided tables, editorial**

31: Tivoli comment from George Penokie

Page 19 - Table 5 - footnotes 3, 5, 6, 8, 13, 14, and 15 - What is the point in having a footnote with an entry of NA? All the footnotes with NA should be removed.

Response:

See 6.24.

Installation:

No change is made.

### **PDF Page 36**

#### **6.32 IU abbreviation, editorial**

32: Tivoli comment from George Penokie

Page 22 - section 5.4 - There are at least 3 times the term 'Information Unit' is used and there are at least 3 times the term 'IU' is used. This gives the impression these are two different things when they are the same. Pick one and make it the same throughout the document.

Response:

Where Information Unit is first used, both "Information Unit" and IU are used. After that time, IU alone is used. This affects several locations in the document.

Installation:

Installed as requested.

#### **6.33 IU tables, editorial**

33: Tivoli comment from George Penokie

Page 22 - table 8 - This table should be forced to be on one page to make it easier to read.

Response:

Table 8 is on one page. Table 9 is a different set of IUs. No change is made.

The response was approved by the January 15, 2001 working group meeting.

Installation:

No change is made.

### **PDF Page 39**

#### **6.34 zero or 0, editorial**

34: Tivoli comment from George Penokie

Page 25 - section 5.6.2.12 - 3rd and 4th paragraphs - The statement 'a value of 0...' should be 'a value of zero...'

Response:

Please provide a style guide requirement or reference. No change is made. Similar arguments apply to a number of other related comments.

After discussion, the committee and editors recommended the following resolution of this comment on January 15, 2001.

For multi-bit values, the fully expanded hexadecimal value is used.

For single-bit values, the spelled-out number is used.

Installation:

Many sections are changed to correct this. A complete search on “1” and “0” were made.

## **PDF Page 41**

### **6.35 zero or 0, editorial**

35: Tivoli comment from George Penokie

Page 27 - section 6.3.2 - last paragraph - The statement 'setting the ESTABLISH IMAGE PAIR bit to 0.' should be 'setting the ESTABLISH IMAGE PAIR bit to zero.'

Response:

See 6.34.

Installation:

See 6.34.

### **6.36 Add reference, editorial**

36: Tivoli comment from George Penokie

Page 27 - section 6.3.3 - first paragraph - It would be helpful to add a cross reference to where the FCP Service Parameter page is defined.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

## **PDF Page 43**

### **6.37 zero or 0, editorial**

37: Tivoli comment from George Penokie

Throughout the document - In several places a '0' or a '1' is used where a 'zero' or a 'one' should be used. In any sentence where a '0' or '1' occurs in the text it should be changed to a 'zero' or 'one'. For example: 'bit shall be 0' should be 'bit shall be zero'.

Response:

See 6.34.

Installation:

Installed as requested.

## **PDF Page 44**

### **6.38 zero or 0, editorial**

38: Tivoli comment from George Penokie

Page 30 - section 6.3.5 - word 3 bit 4 - The statement 'set to 1b' should be 'set to one' in all occurrences

Response:

See 6.34. The character “b” is deleted from all occurrences.

Installation:

Installed as requested.

## **PDF Page 50**

### **6.39 Small caps, editorial**

39: Tivoli comment from George Penokie

Page 36 - table 16 - word 5 - The entry should be in small caps not caps. The same is true for the paragraph below the table.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.40 Small caps, editorial**

40: Tivoli comment from George Penokie

Page 36 - section 8.2 - first paragraph after table 16 - The term 'E\_STAT Sequence Initiative' should be in small caps.

Response:

The name and capitalization of those bits is defined in FC-FS and should not be changed. No change is made.

This response was approved in the January 15, 2001 meeting.

Installation:

The bit names were enclosed in quotation marks to distinguish them.

## **PDF Page 52**

### **6.41 small caps, editorial**

41: Tivoli comment from George Penokie

Pages 35 to 38 - tables 15, 16, and 17 - All these tables have field names that are not in small caps.

Response:

Table 15 is changed to small caps. Those cases in table 16 where terms are derived from standards that do not use small caps remain unchanged. Those cases in table 17 that use either terms derived from other standards or names of IUs that conventionally use large caps in this document remain unchanged.

This response was approved in the January 15, 2001 meeting.

Installation:

Installed as requested.

### **6.42 small caps, editorial**

42: Tivoli comment from George Penokie

Page 38 - 1st and 2nd paragraphs after table 17 -The term R\_CTL for IU is not in small caps.

Response:

Accepted. The requested changes are made.

Installation:

Installed as requested.

## PDF Page 57

### 6.43 CA not defined, editorial

43: Tivoli comment from George Penokie

Page 43 - section 9.1.2.4 - Clear ACA - 4th paragraph - The acronym 'CA' is not defined anywhere.

Response:

Accepted. CA is replaced with contingent allegiance in all places where it is used.

Installation:

Installed as requested.

### 6.44 Add missing reference, editorial

44: Tivoli comment from George Penokie

Page 43 - section 9.1.2.4 - Clear ACA - 4th paragraph - In the statement 'Depending on the mode page parameters that have been established,' there should be a cross reference added to where the mode page is defined.

Response:

Accepted. A reference to SPC-2 is provided here.

Installation:

Installed as requested.

### 6.45 Reset means abort, editorial

45: Tivoli comment from George Penokie

Page 43 - section 9.1.2.4 - target reset - 1st paragraph - The statement '...resets all tasks for all initiators.' should be '...aborts all tasks for all initiators.'

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

## PDF Page 58

### 6.46 Number notes, editorial

46: Tivoli comment from George Penokie

Page xx - Throughout the document - In-line notes need to be numbered per ISO format rules. (i.e., NOTE 1, NOTE 2, etc.)

Response:

Accepted. The notes are numbered.

Installation:

Installed as requested.

### 6.47 Resets should be aborts, editorial

47: Tivoli comment from George Penokie

Page 43 - section 9.1.2.4 - logical unit reset - 1st paragraph - The statement '...resets all tasks in the task set...' should be '...aborts all tasks in the task set...'.

Response:

Accepted.

This response was accepted in the January 15, 2001 meeting.

Installation:

Installed as requested.

## PDF Page 59

### 6.48 Reserve additional bytes outside CDB, editorial

48: Tivoli comment from George Penokie

Page 45 - section 9.1.2.8 - 2nd paragraph - The statement 'Bytes beyond the last byte of the CDB are not defined by this standard, shall be ignored by the target, and may have any value.' should be replaced with 'Any bytes between the end of a 6 byte CDB, 10 byte CDB, or 12 byte CDB and the end of the CDB field shall be reserved.'

Response:

Accepted. The text is changed to read:

~~Bytes beyond the last byte of the CDB are not defined by this standard, shall be ignored by the target, and may have any value.~~ Bytes between the end of a CDB and the end of the fcp\_cdb field or, if applicable, the additional fcp\_cdb field shall be reserved.

This response was accepted in the January 15, 2001 meeting.

Installation:

Installed as requested.

### 6.49 Clarify CDB information, editorial

49: Tivoli comment from George Penokie

Page 45 - section 9.1.2.8 - 2nd paragraph - The statement 'The CDB is defined by SAM-2.' should be changed to 'The CDB as defined in the SCSI command standards.'

Response:

Accepted. The text is changed to read:

The CDB format is defined by SAM-2 and the contents of the CDB are defined in the SCSI command standards.

Installation:

Installed as requested.

## PDF Page 60

### 6.50 Remove redundant word, editorial

50: Tivoli comment from George Penokie

Page 46 - section 9.2.1 - 1st paragraph - The term 'precisely' adds nothing and should be deleted.

Response:

Accepted. The sentence is changed to read:

Since the target has established buffering and caching resources based on the requested data, the initiator shall provide precisely the data described data in the requested FCP\_DATA IU.

Installation:

Installed as requested.

### 6.51 Align numbers, editorial

51: Tivoli comment from George Penokie

Page 56 - table 25 - The numbers in the first volume need to be centered.

Response:

Accepted. The numbers are aligned.

Installation:

Installed as requested.

## PDF Page 61

### 6.52 Add i.e., editorial

52: Tivoli comment from George Penokie

Page 47 - section 9.3 - 2nd to last paragraph on page - The are two set of ()s the should have (i.e., ...) in both cases.

Response:

Accepted. The text is changed as requested.

Installation:

Installed as requested.

### 6.53 Clarify overrun, editorial

53: Tivoli comment from George Penokie

Page 47 - section 9.3 - The last 2 paragraphs - There is a description of underflow and overflow that is, if not impossible, at least difficult to understand. This description needs to be rewritten in a manner that makes it clear when there is an underflow and when there is an overflow.

Response:

I believe this is confusing because it is incorrect. The last paragraph on page 47 should probably reference an underrun, because the amount of data being transferred is less than FCP\_DL. The command may treat it as an overrun because more than the required data was transferred. The command itself should indicate that an overrun took place, but the FCP\_RSP should not. The paragraph is changed to read:

During a write operation that is not using FCP\_XFER\_RDY IUs, the initiator indicates that it has transferred all the required data by transferring initiative to the target. The initiator shall not transfer data outside the buffer length defined by FCP\_DL. If the write operation requires a total amount of data less than the amount of data provided by the initiator, the target shall discard the excess bytes ~~and indicate that an overrun has occurred by setting the FCP\_RESID\_OVER bit to 1 in the FC\_RSP IU. Because there were less bytes provided than required by FCP\_DL, the FCP\_RESID\_UNDER bit shall be set to 1 in the FCP\_RSP IU.~~ The command is completed according to the rules specified by the SCSI command set for that command. ~~normally except for presentation of the overrun condition.~~

This response was accepted in the January 15, 2001 meeting. Similar wording must be added to F.4.

Installation:

Installed in 9.3. Note that F.4 includes this text from 9.3 by reference, so no change is required.

## PDF Page 62

### 6.54 Move overrun information, editorial

54: Tivoli comment from George Penokie

Page 48 - section 9.3 - 2nd to last paragraph in this section - The paragraph should be moved to where the other discussion on overflow and underflow is described.



Response:

This information is actually not overrun/underrun information, but protocol detected incorrect length information, and need not be moved. No change is made.

This response was accepted in the January 15, 2001 meeting.

Installation:

No change is made.

## **PDF Page 64**

### **6.55 Order of operations, editorial**

55: Tivoli comment from George Penokie

Page 50 - section 9.4.8 - The equation in this section has two possible solutions depending on the order it is solved. There needs to be ( )s put around the intended first operation.

Response:

Standard order of operations are required in this case. No change is made.

This response was approved by a vote of 9 in favor, 1 opposed, and 3 abstaining in the January 15, 2001 meeting.

Installation:

No change is made.

### **6.56 Remove redundant text, editorial**

56: Tivoli comment from George Penokie

Page 50 section 9.4.6 - The last sentence of the last paragraph - This sentence only leads to confusion as to whether or not the FCP\_RSP\_INFO field should be there or not if the FCP\_RSP\_LEN\_VALID bit is zero. I believe the best solution would be to remove the sentence as the issue is clearly defined in section 9.4.8.

Response:

The clarifying sentence is in 9.4.10, not 9.4.8. Otherwise accepted. The requested change is made.

Installation:

The text "An FCP\_RSP\_LEN of zero specifies that no bytes of response information are being provided." is deleted.

### **6.57 Remove redundant text, editorial**

57: Tivoli comment from George Penokie

Page 50 section 9.4.5 - The last sentence of the last paragraph - This sentence only leads to confusion as to whether or not the FCP\_RSP\_INFO field should be there or not if the FCP\_SNS\_LEN\_VALID bit is zero. I believe the best solution would be to remove the sentence as the issue is clearly defined in section 9.4.8.

Response:

The clarifying sentence is in 9.4.9, not 9.4.8. Otherwise accepted. The requested change is made.

Installation:

Installed as requested. A cross-reference is found.

## PDF Page 65

### 6.58 Correct notes format

58: Tivoli comment from George Penokie

Page xx - Throughout the document - All notes should be in 9 point font.

Response:

Accepted. The requested change is made, though with no great enthusiasm.

This response was accepted in the January 15, 2001 meeting.

Installation:

Notes were corrected throughout the document.

## PDF Page 68

### 6.59 Suggested reference, editorial

59: Tivoli comment from George Penokie

Page 54 - section 10.1 - There should be a something here about seeing table 4 for how to handle mode pages under various conditions.

Response:

The text is already pretty clear about this. No reference is required.

Installation:

No change is made.

### 6.60 Correct document scope restriction, editorial

60: Tivoli comment from George Penokie

Page 54 - section 10.2.1 - The term SCSI-3 should be replaced with SCSI as FCP-2 is not part of SCSI-3.

Response:

Accepted in principle. The text is modified to read:

This communication is internal to the target and FCP device and is outside the scope of [this standard.](#)  
~~SCSI-3.~~

This response was accepted in the January 15, 2001 meeting.

Installation:

Installed as approved.

### 6.61 Improve formatting, editorial

61: Tivoli comment from George Penokie

Page 54 - section 10.2.1 - The last sentence on this page is split between to pages with lots of white space in-between. This occurs because of the table anchor is positioned at the end of the paragraph. Move the anchor to a paragraph of it's own and the line will not be split.

Response:

Accepted. The requested change is made. This change is acceptable because the table and the referencing text are on facing pages.

Installation:

Installed as requested.

## PDF Page 69

### 6.62 Improve boundaries of example, editorial

62: Tivoli comment from George Penokie

Page 55 - section 10.2.1 - 1st paragraph after table 30 - The bounds of the example are not clear. Where does it end and the normative text start again. I suggest the 'For Example...' be replaced with '(e.g., ....).

Response:

The paragraph is rewritten as follows:

An interconnect tenancy is the period of time when an FCP device owns or may access a shared Fibre Channel interconnect. For ~~example, on~~ FC-AL-2 loops ~~or~~ and Fibre Channel Class 1 connections, a tenancy typically begins when an FCP device successfully opens the connection and ends when the FCP device releases the connection for use by other device pairs. Data and other information transfers take place during interconnect tenancies. [carriage return added]

Point-to-point or fabric-attached Class 2 or Class 3 links and many other configurations do not have a concept of interconnect tenancy and may perform transfers at any time.

Installation:

Installed as requested.

## PDF Page 70

### 6.63 Will vs shall, editorial

63: Tivoli comment from George Penokie

Page 56 - section 10.2.4 - There is a 'will' that should be changed to a 'is going to'.

Response:

See 6.10. No change is required.

After discussion in the January 15, 2001 meeting, the comment was accepted and the change is made.

Installation:

Installed as requested and approved.

## PDF Page 71

### 6.64 Improve formatting, editorial

64: Tivoli comment from George Penokie

Page 57 - section 10.3 - The last sentence on this page is split between to pages with lots of white space in-between. This occurs because of the table anchor is positioned at the end of the paragraph. Move the anchor to a paragraph of it's own and the line will not be split.

Response:

The amount of white space is not objectionable and the table reference is not on a facing page. No change is made.

After discussion at the January 15, 2001 meeting, the "orphan lines" value is changed to 3, forcing the entire paragraph before the table onto the page with the table.

Installation:

Installed as approved.

## PDF Page 74

### 6.65 LIFA, editorial

65: Tivoli comment from George Penokie

Page 60 - section 10.4.5 - The term 'LIFA phase' is not defined and there are no references to where it is defined.

Response:

The term and reference is in 3.2. No change is required.

In the meeting of January 15, 2001, there was a motion to require the changes specified by the comment. The motion lost with 1 in favor, 7 opposed, and 1 abstaining. The response to this comment and the related comments below is accepted.

Installation:

No change is made.

### 6.66 LIPA, editorial

66: Tivoli comment from George Penokie

Page 60 - section 10.4.5 - The term 'LIPA phase' is not defined and there are no references to where it is defined.

Response:

The term and reference is in 3.2. No change is required.

Installation:

No change is made.

### 6.67 LIHA, editorial

67: Tivoli comment from George Penokie

Page 60 - section 10.4.5 - The term 'LIHA phase' is not defined and there are no references to where it is defined.

Response:

The term and reference is in 3.2. No change is required.

Installation:

No change is made.

## PDF Page 77

### 6.68 Improve formatting, editorial

68: Tivoli comment from George Penokie

Page 63 - section 11.1 -table 34 - The text in may of the cells is too close to the cell tops.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### 6.69 Mandatory, editorial

69: Tivoli comment from George Penokie

Page 62 - section 11.1 - table 34 - The term required and allowed are not defined key words and should not be used in this fashion in this standard. The things are mandatory, or optional not required or allowed.

Response:

See 6.16. Accepted. "Required" should be "mandatory". "Allowed" should be "optional".

Installation:

Installed as requested.

### **6.70 Reference, Editorial**

70: Tivoli comment from George Penokie

Page 62 - section 11.1 - table 34 - The term 'Ref' should be changed to 'Subclause'.

Response:

Accepted in principle. The proposed word may not fit.

Installation:

The proposed word does not fit. No change was made.

### **6.71 Choice of symbols, editorial**

71: Tivoli comment from George Penokie

Page 62 - section 11.1 - table 34 - Some of the symbols used in the Default Value column are not defined anywhere. (i.e. the greater than and the greater than or equal symbols).

Response:

The greater than and the greater than or equal symbols are universally accepted mathematical symbols and need not be changed.

In the January 15, 2001 meeting, there was a motion made to require the recommendations in this comment. The motion failed for lack of a second. The response was approved.

Installation:

No change was made.

### **6.72 Abbreviation ELS, editorial**

72: Tivoli comment from George Penokie

Page 62 - section 11.1 - table 34 - notes - The term ELS is used and then in the term 'extended link services' is used. Although I know these are the same thing how is someone supposed to know that? ELS seems to be the term used most of the time. The term ELS should be used here.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.73 Required/shall, editorial**

73: Tivoli comment from George Penokie

Page 62 - section 11.1 - table 34 - note 2 - The statement 'service are required to implement this timer.' should be changed to 'service shall implement this timer.'.

Response:

See 6.16. Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.74 must, editorial**

74: Tivoli comment from George Penokie

Page 63 - section 11.1 - table 34 - note 5 - The term 'must' needs to be change to 'shall'. The entire docu-ment needs to de'must'ified.

Response:

Accepted. The requested change is made. Other text that is affected includes:

4.2, pdf page 25, first paragraph. “must be interpreted” is changed to “is interpreted”.

6.2, pdf page 41, first paragraph. “must be” is changed to “are”.

11.6, pdf page 79, last paragraph. “must” is deleted.

This response was accepted in the January 15, 2001 meeting.

Installation:

Installed as approved.

## **PDF Page 78**

### **6.75 Redundant text, editorial**

75: Tivoli comment from George Penokie

Page 64 - section 11.3 - The note in this section looks to be normative therefore should be made normative by removing the term 'note'.

Response:

The note appears to be redundant. The note is deleted.

This response was accepted in the January 15, 2001 meeting.

Installation:

Installed as approved.

### **6.76 Reference to PLDA, editorial**

76: Tivoli comment from George Penokie

Page 64 - section 11.3 - The term exchange authentication is not defined and there is no reference to where it is defined.

Response:

Accepted. A reference to FC-PLDA for definition of exchange authentication will be provided.

Installation:

This is actually installed in 11.4.

### **6.77 Capitalization, editorial**

77: Tivoli comment from George Penokie

Page 64 - section 11.2 - items a and b - Why if the term 'Frame' now capitalized when every other place up to this point it has not been capitalized. It should be made consistent thoughtful the document.

Response:

Accepted. The word frame is not capitalized except as the first word in a sentence. These cases are corrected.

Installation:

Installed as requested.

## PDF Page 80

### 6.78 Use of word “desirable”, editorial

78: Tivoli comment from George Penokie

Page 66 - section 12.1.2 - 1st paragraph - The term 'desirable' should not be used. A better way to say this would be Such 'recovery should be used for SCSI...'

Response:

Accepted in principle. The sentence is changed to read:

Such recovery ~~is desirable~~ may be useful for SCSI logical units that depend critically on command ordering and maintaining records of internal device state.

This response was accepted in the January 15, 2001 meeting.

Installation:

Installed as approved.

### 6.79 Add cross-reference, editorial

79: Tivoli comment from George Penokie

Page 66 - section 12.1.2 - 1st paragraph - There is a cross reference missing.

Response:

Accepted. Cross reference is added.

Installation:

Installed as requested.

### 6.80 Correct list format, editorial

80: Tivoli comment from George Penokie

Page 66 - section 12.2.2 - item a - This item should start with a capital 'A' as it is the start of a sentence.

Response:

All of the items in 12.2.2 are effectively complete sentences. The list format is updated to reflect that. The sentence immediately before the list referencing additional errors is moved to the end of the list.

After discussion in the January 15, 2001 meeting, the second sentence was moved to the end of the list. The choice was to format the paragraph with a colon after the first sentence, followed by a list separated by semicolons.

Installation:

Installed as approved.

## PDF Page 81

### 6.81 Correct list format, editorial

81: Tivoli comment from George Penokie

Page 67 - section 12.2.3 - 2nd item a - This item should start with a capital 'After' as it is the start of a sentence.

Response:

All of the items in 12.2.3 are effectively complete sentences. The list format is updated to reflect that. The sentence immediately before each list referencing additional errors is moved to the end of the respective list.

After discussion in the January 15, 2001 meeting, the second sentence was moved to the end of the list. The choice was to format the paragraph with a colon after the first sentence, followed by a list separated by semicolons.

Installation:

Installed as approved.

## **PDF Page 82**

### **6.82 small caps, editorial**

82: Tivoli comment from George Penokie

Page 68 - section 12.3.2 - 1st paragraph - The term 'Parameter' should be in small caps and a reference made to where it is defined.

Response:

Accepted. This change is made here. Note that in the following sections, small caps, all lower case, must be corrected.

The change is also made in 4.6 on page 28.

In the subclauses of 5.6, the same change is made.

In word 3, bit 9, subclause 6.3.5, the same change is made.

In 8.2, the same change is made.

In 8.3, the same change is made.

In 9.2.2, the same change is made.

In 9.3, the same change is made.

In 12.3.5, the same change is made.

In 12.4.2.2, the same change is made.

In figure C.29, the same change is made.

In figure C.30, the same change is made.

In figure E.1, the same change is made.

Installation:

The word parameter was globally searched and corrected where identified.

### **6.83 Capitalization, editorial**

83: Tivoli comment from George Penokie

Page 66 - section 12.3.2 - 3rd paragraph - The term 'Read command' should be 'READ command'.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.84 N\_Port, editorial**

84: Tivoli comment from George Penokie

Page 68 - section 12.3.3 - The term 'N\_' should be changed to 'N\_Port' in all cases to make it clear to what it is.

Response:



Accepted. The requested change is made.

Installation:

The requested change was made globally, including 6.2 and 12.3.3.

### **6.85 spelling out of numbers, editorial**

85: Tivoli comment from George Penokie

Page 68 - section 12.3.3 - item b - Here is a case where 'one' is used instead of 1. I would like all 1s to be changed to ones.

Response:

“One” should be “1”. The change not requested will be made.

Installation:

Installed as requested.

### **6.86 N\_Port, editorial**

86: Tivoli comment from George Penokie

Page 68 - section 12.3.3 - 2nd item a - The term 'N\_' should be changed to 'N\_Port' to make it clear to what it is.

Response:

Accepted. The requested change is made.

Installation:

The requested change was made globally.

## **PDF Page 83**

### **6.87 small caps, editorial**

87: Tivoli comment from George Penokie

Page 69 - section 12.3.5 - 3rd paragraph - The term 'Parameter' should be in small caps and a reference made to where it is defined.

Response:

Accepted. See 6.82.

Installation:

Installed as requested. The reference is to FC-FS.

### **6.88 FC-FS reference required, editorial**

88: Tivoli comment from George Penokie

Page 69 - section 12.4.1.2 - The statement '...set to Abort Sequence, Perform ABTS before issuing the REC.' does not make sense. Why is Perform capitalized when it occurs after the comma?

Response:

The term “Abort Sequence, Perform ABTS” is an FC-FS definition. It is included in quotation marks and a reference is provided.

Installation:

Installed as approved.

## PDF Page 85

### 6.89 Outbound command, editorial

89: Tivoli comment from George Penokie

Page 71 - section 12.4.1.5 - 1st paragraph of page - The term 'write command' should be 'WRITE command'

Response:

The reference should actually be to a command with an outbound data transfer. The text is changed accordingly.

The response was approved by the January 15, 2001 working group meeting.

Installation:

Installed as approved.

### 6.90 List format, editorial

90: Tivoli comment from George Penokie

Page 71 - section 21.4.1.5 - The last list of items in this section contain '-' instead of 'a,b,c'.

PDF Page 86

Response:

Accepted. The list will be changed to an "or" list prefixed with a,b,c.

Installation:

Installed as requested.

### 6.91 Small caps, editorial

91: Tivoli comment from George Penokie

Page 72 - section 12.4.1.7 - 2nd paragraph - In the term 'relative offset field' relative offset should be small caps.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### 6.92 Redundant text, editorial

92: Tivoli comment from George Penokie

Page 72 - section 12.4.1.7 - The statement 'the appropriate action required' should be changed to 'the action required' the term 'appropriate' adds nothing to the meaning.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

## PDF Page 87

### 6.93 Small caps, editorial

93: Tivoli comment from George Penokie

Page 73 - Section 12.4.2.2 -1st paragraph - In the term 'Parameter field' the term parameter should be in small caps.

Response:

Accepted. See 6.82.

Installation:

Installed as requested.

#### **6.94 Clarify text, editorial**

94: Tivoli comment from George Penokie

Page 73 - section 12.4.2.3 - 1st paragraph - The statement '...values are not used, it is possible for a missing ACK to an FCP\_RSP IU to allow the target to attempt to abort a more recent Exchange using the same OX\_ID.' is unclear. I suggest it be reworded to '...values are not used, and if there is a missing ACK to an FCP\_RSP IU a target may attempt to abort a more recent Exchange that used the same OX\_ID.'

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

#### **6.95 Add spaces, editorial**

95: Tivoli comment from George Penokie

Page 73 - section 12.5.2 - The 1,2 list implies order, is that true? If not it should be an a,b,c list. If so then there should be a space between the ')s and the start of the text.

Response:

The order is correctly defined. The space is added as requested.

Installation:

Installed as requested.

### **PDF Page 88**

#### **6.96 Additional retry mechanisms, editorial**

96: Tivoli comment from George Penokie

Page 74 - section 12.5.2 - 2nd to last paragraph - The sentence 'Other retry mechanisms after the second REC fails shall comply with FC-FS, but are otherwise vendor specific.' does not make sense. How can something be required to comply with FC-FS and vendor specific. I suggest removing the last part of the sentence.

Response:

Accepted in principle. The text is changed to read:

Other retry mechanisms after the second REC fails are optional and, if implemented, shall comply with FC-FS, ~~but are otherwise vendor specific.~~

The modified response was approved by the January 15, 2001 working group meeting.

Installation:

Installed as approved.

#### **6.97 Capitalization, editorial**

97: Tivoli comment from George Penokie

Page 74 - section 12.5.3 - 1st paragraph - As much as I don't like to say this, the term 'exchange' is capitalized everywhere else why is it not capitalized here?

Response:

Accepted. The word "exchange" is capitalized.

Installation:  
Installed as requested.

## **PDF Page 89**

### **6.98 Correct SAM-2, editorial**

98: Tivoli comment from George Penokie

Page 75 - section A.1 - The 1st sentence - The statement '...by the SAM-2.' should be '...by SAM-2.' or '...by the SAM-2 standard.'

Response:

Accepted. The second response is selected.

Installation:  
Installed as requested.

## **PDF Page 95**

### **6.99 Capitalization, editorial**

99: Tivoli comment from George Penokie

Page 81 - section B.1.7 - 1st sentence - The term 'write command' should be WRITE command' if this is referring to the SCSI WRITE command.

Response:

Accepted. The requested change is made.

Installation:  
Installed as requested.

## **PDF Page 96**

### **6.100 Capitalization, editorial**

100: Tivoli comment from George Penokie

Page 81 - section B.1.8 - section title and other places in this section - The term 'Write command' should be WRITE command' if this is referring to the SCSI WRITE command.

Response:

Accepted. The requested change is made.

Installation:  
Installed as requested.

## **PDF Page 102**

### **6.101 Figure location, editorial**

101: Tivoli comment from George Penokie

Page 88- 102 - section c.1 - figure c.x - The titles of these figures is at the top of the figure, it should be moved to the bottom of the figure to be consistent with the rest of this document.

PDF Page 135

Response:

Accepted. The requested change is made.

Installation:

After review, all tables and figures have titles above the figures. For consistency, the four counter-examples (the last 4 figures in Annex B), are changed to move the title above the figures.

#### **6.102 Will vs. Shall, editorial**

102: Tivoli comment from George Penokie

Page 121 - section D.1.1 - item 7 - This 'will' needs to be deleted and changed to a 'This query obtains'.

Response:

See 6.63. The requested change is made.

Installation:

Installed as requested.

### **PDF Page 143**

#### **6.103 Annex vs. clause, editorial**

103: Tivoli comment from George Penokie

Page 129 - section F.1 - The term 'clause' should be replaced with 'annex' in several places in this section.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **PDF Page 144**

#### **6.104 Reference required, editorial**

104: Tivoli comment from George Penokie

Page 130 - section F.3.1 - A reference to table F.1 needs to be added.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

#### **6.105 Remove redundant words, editorial**

105: Tivoli comment from George Penokie

Page 130 - section F.3.1 - 1st paragraph under table F.1 - The term 'subclauses' should be deleted.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **PDF Page 146**

#### **6.106 Reference required, editorial**

106: Tivoli comment from George Penokie

Page 132 - section F.5.1 - There needs to be a reference to table F.2 added.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **6.107 Remove redundant words, editorial**

107: Tivoli comment from George Penokie

Page 132 - section F.5.1 - 1st paragraph under table F.2 - The term 'subclauses' should be deleted.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

## **PDF Page 147**

### **6.108 Order of operations, editorial**

108: Tivoli comment from George Penokie

Page 133 - section F.5.4 - The equation 'FCP\_RESID = FCP\_DL - highest offset of any byte transmitted - 1' results in two values depending on the order it is solved. This needs to be corrected with ()s.

Response:

This nomenclature is consistent with standard algebraic notation and does not need to be changed.

The response was approved by the working group in the January 15, 2001 meeting. See 6.55.

Installation:

No change is made.

### **6.109 Order of operations, editorial**

109: Tivoli comment from George Penokie

Page 133 - section F.5.5 - The equation  $FCP\_BIDIRECTIONAL\_READ\_RESID = FCP\_BIDIRECTIONAL\_READ\_DL - \text{highest offset of any byte written} - 1$  results in two values depending on the order it is solved. This needs to be corrected with ()s.

Response:

This nomenclature is consistent with standard algebraic notation and does not need to be changed.

The response was approved by the working group in the January 15, 2001 meeting. See 6.55.

Installation:

No change is made.

## **PDF Page 148**

### **6.110 Clarification of FCP\_RSP format for bi-di commands, technical**

110: Tivoli comment from George Penokie

(T) Page 134 - section F.5.5 - It appears the FCP\_BIDIRECTIONAL\_RESID field is always required to be in the parameter list even when both the bidi under and over bits are set to 0. This automatically makes all existing implementations invalid because that field is not there. This field should only be here if one of the two bits is set to one and this should be made clear in the text.

Response:

In F.5.1, it clearly states that the format is used only for bidirectional commands. Such commands are clearly identified by F.3.3. No change is required.

After further consideration, the working group decided in the January 15, 2001 meeting that additional text was needed to clarify that RDDATA and WRDATA together with the device properties and command decode are necessary to determine that a command is or is not bidirectional. If RDDATA and WRDATA are both set for a device that does not support bidi, the FCP\_RSP indicates an error using the non-bidi format. If an invalid command is given to a bidi device with both bits set, the FCP\_RSP indicates an error using the bidi format. It was noted that iSCSI and SRP place BI-RESID between RESID and Length fields. A format bit is installed in byte 10, bit 7 of the FCP\_RSP to indicate which format is being presented.

Installation:

The following text is added to Annex F:

#### **F.2.2 Relationship between bidirectional and unidirectional operation**

A new subclause is added after the device management model contained in 4.2 to indicate how bidirectional and unidirectional operation interoperate. The following text is added to document that information.

A device server that supports bidirectional operation implements many commands as unidirectional commands as well as some commands that provide for bidirectional transfer. Two FCP\_RSP IU formats are defined. For commands that specify bidirectional transfer by setting both the RDDATA and WRDATA bits to one, the bidirectional FCP\_RSP IU payload shall be used for presenting all status and error conditions. For commands that specify either no transfer or unidirectional transfer by setting either the RDDATA or WRDATA bit or both to zero, the unidirectional FCP\_RSP IU payload shall be used for presenting all status and error conditions. The format of the FCP\_RSP IU that is returned depends only on the state of the RDDATA and WRDATA bits and is not influenced by whether the command itself requests bidirectional behavior.

A device server that does not support bidirectional operation shall use the unidirectional FCP\_RSP IU payload for presenting all status and error conditions. If a device server that does not support bidirectional operation receives a command that requests bidirectional operation by setting both the RDDATA and WRDATA bits to one, the device server shall return CHECK CONDITION status with the sense key set to ILLEGAL REQUEST and an additional sense code of ILLEGAL FIELD IN PARAMETER LIST.

The following bit definition is provided for byte 10, bit 7.

#### **F.5.2 FCP\_BIDI\_RSP**

An FCP\_BIDI\_RSP bit of one indicates that the FCP\_RSP IU uses the format specified in table F.2. An FCP\_BIDI\_RSP bit of zero indicates that the FCP\_RSP IU uses the format specified in table 26.

Please review this carefully.

## **7 LSI Logic Corp**

Comments attached to Yes with Comments ballot from John Lohmeyer of LSI Logic Corp.

All of my comments are editorial

### **7.1 Correct address, editorial**

1. Cover Page

Correct Technical Editor contact information.

Response:

Accepted. Changed as requested.

Installation:

Installed as requested.

## **7.2 Correct fax number, editorial**

2. Page 2

Correct Lohmeyer fax number is (719) 533-7183.

Response:

Accepted. Changed as requested.

Installation:

Installed as requested.

## **7.3 Correct e-mail address, editorial**

3. Page 2

NCITS email address is ncits@itic.org.

Response:

Accepted. Changed as requested.

Installation:

Installed as requested.

## **7.4 Correct to non-possessive, editorial**

4. Page 2

Patent Statement: “holder's” should be “holders”.

Response:

Accepted. Changed as requested.

Installation:

Installed as requested.

## **7.5 Correct T10 list, editorial**

5. Page 11

The T10 list needs to be updated and put into the correct format. Contact me for the URL of the current T10 membership list.

Response:

Accepted. Changed as requested. The editor will consult with the commentor to determine what the correct format is.

John Lohmeyer will provide the necessary list.

Installation:

Installed as requested.

## **7.6 Correct T11 list, editorial**

6. Page 12

While I support including the T11 list in FCP-2, the T11 list should be formatted correctly.

Response:

Accepted. Changed as requested.



Installation:  
Installed as requested.

### **7.7 Correct NCITS list, editorial**

7. Page 13

I believe that the NCITS list should come first and is in a different format from the TC list. Check [www.ncits.org](http://www.ncits.org) for this list format or contact Deborah Donovan, if the list is not online.

Response:

Documents have placed the list in both locations. The most recent document, SBC-2 uses slightly different text and places the NCITS list first. There is no example of a correct format for the NCITS list among the documents I have studied. The editor will consult with the commentor to determine what the correct format is.

Installation:  
Installed as requested. Please review.

## **8 Seagate Technology**

Comments attached to No ballot from Gerry Houlder of Seagate Technology.

Comment 6 is technical comment is required to be fixed to change Seagate vote to a yes. All other comments are believed to be editorial.

### **8.1 Update references, editorial**

## Seagate 1 (E): 2.3, pdf page 15, doc page 1 FC-AL-2 and FC-Tape are published standards and should be moved to 2.2.

Response:

Accepted. The required updates are made.

Installation:  
Installed as requested.

### **8.2 SFF name, editorial**

## Seagate 2 (E): 2.4, pdf page 16, doc page 2 The Small Form Factor committee changed its name to SFF committee several years ago. All Small Form Factor references should be SFF now.

Response:

Accepted. The required updates are made.

Installation:  
Installed as requested.

### **8.3 Correct reference, editorial**

## Seagate 3 (E): 3.1.31, pdf page 19, doc page 5 The reference to Tables 28 and 29 does not apply to FCP and should be removed.

Response:

Accepted. The reference is on pdf page 17, doc page 3. The requested changes are made.

Installation:  
Installed as requested.

#### 8.4 Correct reference, editorial

## Seagate 4 (E): 3.1.47, pdf page 18, doc page 4 Responder Exchange Identifier - The definition should reference FC-FS and not SAM-2.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

#### 8.5 Define Exchange and Sequence, editorial

## Seagate 5 (E): 3.1.24, pdf page 27, doc page 13 The definition of Information Unit is similar to FC-FS but not exactly the same wording. This is just one of the FC terms used in FCP-2 such as Exchange and Sequence. To be consistent, either the definition for Information Unit should be removed or definitions for exchange and sequence added. It is of value to include these definitions in FCP so the reader does not have to keep referencing a different standard

Response:

Accepted. The requested change is made. Note that 4.1 covers a lot of this material already.

Installation:

The following text has been added to the definitions.

**Exchange:** The basic mechanism which transfers information consisting of one or more related non-concurrent Sequences which may flow in the same or opposite directions. The Exchange is identified by an Originator Exchange\_ID (OX\_ID) and a Responder Exchange\_Identifier (RX\_ID). See FC-FS.

**Sequence:** A set of one or more Data frames with a common Sequence\_ID (SEQ\_ID), transmitted unidirectionally from one N\_Port to another N\_Port with a corresponding response, if applicable, transmitted in response to each Data frame. See FC-FS.

#### 8.6 Shared mode page management, technical

## Seagate 6 (T): 4.9, Table 6, pdf page 33, doc page 19 The table does not include the change proposed by 00-342r0 as modified and accepted in the CAP Sept. 2000 meeting. Per the working group vote, the entry for State of mode pages for PRLI, shared, none logged in should be “not specified”. An initiator has no way to discover the state of other process logins and, therefore, can not assume any values for the mode pages without restoring the saved or default values by command or by an appropriate SCSI defined reset. Requiring a return to the saved or default values in the event all initiators are logged out just generates a meaningless “interoperability” test.

The suggested solution is to change the table entry to “not specified” with a note. The wording of the note should be: “For shared mode pages, the value of the pages are not changed by Process Login. The current values are maintained. The current values shall be the saved or default values if supported after Target Power cycle, Reset LIP, or Target Reset.”

Response:

This comment is also addressed in 2.3. During the time that no devices are logged in, there is no interoperability test that can be created to test the value of these pages, since there is no way to access them. As soon as one device logs in, the expectation is that the devices will come up in the saved or default mode, as indicated in this table. No change is made.

After further discussion, the changes defined in 2.3 are adopted.

Installation:

I have installed the changes, but believe that this approach violates various SCSI standards. See 2.3.

### **8.7 Correct font, editorial**

## Seagate 7 (E): 9.1.2.6, pdf page 59, doc page 45 The font for RDDATA in the header is different from the other headers.

Response:

Accepted. The font is modified as recommended.

Installation:

Installed as requested.

### **8.8 Add reference, editorial**

## Seagate 8 (E): 9.4.1, pdf page 63, doc page 49 In the sentence at the top of the page this is the first use of RR\_TOV. The wording for this abbreviation should be included here, in the abbreviation clause, or reference 11.4. Referencing 11.4 is the recommended solution.

Response:

Accepted. The reference is added.

Installation:

Installed as requested.

### **8.9 Remove redundant text, editorial**

## Seagate 9 (E): 11.2.1, pdf page 69, doc page 55 The first sentence below Table 30 is a rehash of the definition of interconnect tenancy (3.1.27). One or the other should be removed

Response:

It was requested that this definition be provided to provide a central reference for the word. No change is required.

Installation:

No change is made.

### **8.10 Editorial question**

## Seagate 10 (E): 10.2.7, pdf page 70, doc page 56 The first paragraph includes the description from SPC-2. They should be deleted and a reference to SPC-2 added.

Response:

I assume this was meant to apply to 10.2.6. The text of these is allowed to vary depending on the protocol. This is a mechanism to indicate that it does not vary. No change is required.

The response was approved by the working group in the January 15, 2001 meeting.

Installation:

No change is made.

### **8.11 Editorial question**

## Seagate 11 (E): 10.2.11, pdf page 71, doc page 57 The first 2 sentences of the third paragraph are repeating SPC-2. They should be deleted and a reference to SPC-2 added.

Response:

The text of these is allowed to vary depending on the protocol. This is a mechanism to indicate that it does not vary. No change is required.

The response was approved by the working group in the January 15, 2001 meeting.

Installation:

No change is made.

### **8.12 Editorial question**

## Seagate 12 (E): 10.4.2, pdf page 73, doc page 59 In the 3rd sentence “generate the Initializing LIP... “ should be changed to “generate the appropriate LIP as defined in FC-AL-2.... “

Response:

There is only one appropriate type of LIP in this case, and that is an initializing LIP. Reset and error LIPs are not used for this case. No change is required.

After further discussion, the committee agreed on January 15, 2001, that there was only one type of LIP that was appropriate for this function, the LIP(F7,xx). The proper format for referencing the LIP will be verified in FC-AL-2.

Installation:

Installed as approved.

### **8.13 Correct article, editorial**

## Seagate 13 (E) Pg 13/viii, Introduction, second paragraph, start of second sentence: “The Fibre Channel” should be “Fibre Channel.”

Response:

Accepted. The requested change is made.

Installation:

Installed as approved.

### **8.14 Correct article, editorial**

## Seagate 14 (E) Pg 15/1, Sect. 1 Scope, first paragraph, end of second sentence: “the Fibre Channel” should be “Fibre Channel.”

Response:

This was intended to be parsed as “the services”. Either usage would be acceptable. The requested change is made.

The response was approved by the working group in the January 15, 2001 meeting.

Installation:

Installed as approved.

### **8.15 Correct reference, editorial**

## Seagate 15 (E) Pg 15/1, Sect. 2.3 References under development: Move FC-TAPE to Sect. 2.2 Published standard references.

Response:

Accepted. The reference is moved accordingly.

Installation:

Installed as requested.

### **8.16 Correct references, editorial**

## Seagate 16 (E) Pg 16/2, Sect. 2.4 Other references: Do we need a reference to SFF-8072, 80-pin Fibre Channel Tape Connector? It is relevant to, but not cited by FCP-2. SFF-8045 is listed here but not otherwise cited.

Response:

The citation to 8045 is removed. The citation to SFF-8072 is not required. No other changes are made.

The response was approved by the working group in the January 15, 2001 meeting.

Installation:  
Installed as approved.

### **8.17 Add FL\_Port to definitions, editorial**

## Seagate 17 (E) Pg 16/2, Sect. 3.1 Definitions: “FL\_Port” is used once in D.1.1. Should it be included in Definitions?

Response:  
The annex is informative. No change is required.  
The response was approved by the working group in the January 15, 2001 meeting.

Installation:  
No change is required.

### **8.18 Number alignment, editorial**

## Seagate 18 (E) Pg 55/41, Table 22: Numbers in “Byte” column are not centered horizontally.

Response:  
Accepted. The numbers are aligned.

Installation:  
Installed as requested.

### **8.19 Capitalization, editorial**

## Seagate 19 (E) Pg 56/42, Table 23: Is the capitalization of the title and the column headings correct?

Response:  
Accepted. The capitalization and terminology is corrected.

Installation:  
Installed as requested.

### **8.20 Number alignment, editorial**

## Seagate 20 (E) Pg 60/46, Table 25: Numbers in “Byte” column are not centered horizontally.

Response:  
Accepted. The numbers are aligned.

Installation:  
Installed as requested.

### **8.21 Verify upper left table cell, editorial**

## Seagate 21 (E) Various pp, various tables: In the upper-left cell, the horizontal positioning of “Bit” and “Byte” is not consistent. If we use SPC-2 as a guide, “Bit” should be right-justified in the cell and “Byte” left-justified.

Response:  
Accepted. These will be made consistent.

Installation:  
Installed as requested.

### **8.22 Double lines, editorial**

## Seagate 22 (E) Various pp, various tables with rows for bytes and columns for bits: The type of line between the “Bit/Byte” column and the Bit 7 column is usually a single line, but is occasionally a double line (e.g., Table 32, pg 73/59). Please make them consistent.

Response:

Accepted. These will be made double lines as appropriate.

Installation:

Installed as requested.

### **8.23 SCA definition, editorial**

## Seagate 23 (E): 10.4.3, pdf page 73,, doc page 59 SCA should be expanded to Single Connector Attach at the first usage or included in clause 3.2.

Response:

Accepted. SCA will be expanded at the first usage.

Installation:

Installed as requested.

### **8.24 Paragraph update not completed, editorial**

## Seagate 24 (E): 12.3.2, pdf page 82, doc page 68 The last sentence of the first paragraph and the first sentence of the second paragraph are redundant. One sentence should be deleted.

Response:

Accepted. The first sentence of the second paragraph is deleted and the paragraphs are combined into a single paragraph.

Installation:

Installed as requested.

### **8.25 Extra blank pages, editorial**

## Seagate 25 (E) Pp 137-8 / 123-4, The last two pages of Annex D are both blank.

Response:

Accepted. While a blank page may be appropriate to get to the correct page boundary, both of these pages are deleted.

Installation:

Installed as requested.

### **8.26 Data ordering, technical**

## Seagate 26 (E): F.2, pdf page 143, doc page 129 The second to the last sentence in the second paragraph “There are not restrictions on the order which the device server performs data in and date out transfer operations.” Should be changed to “The order in which the device server performs data in and date out transfer operations is determined by the SCSI command.”

Response:

This sentence is intended to indicate that, regardless of the SCSI command, there is no guarantee that the data in will be executed in some particular order with respect to the data out. I believe the sentence is correct as it stands. No change is made.

After consideration in the January 15, 2001 meeting of the working group, the following revised response was agreed upon. The text is changed to read:

~~There are no restrictions~~ This standard places no restrictions on the order in which the device server performs data in and data out transfer operations.

Installation:

Installed as requested.

### **8.27 Correct command format, technical**

## Seagate 27 (E): F.3.2, pdf page 144, doc page 130 “If any bit in the TASK MANAGEMENT FLAG field is set to 1, the FCP\_BIDIRECTIONAL\_READ\_DL field is not valid and is ignored.” Should be “If any bit in the TASK MANAGEMENT FLAG field is set to 1, the FCP\_BIDIRECTIONAL\_READ\_DL field is not included in the FCP\_CMND IU payload.”

Response:

Accepted. This is clearly the better interpretation, since the RDDATA and WRDATA bits must both be zero for task management functions.

The response was approved by the working group in the January 15, 2001 meeting.

Installation:

Installed as requested.

### **8.28 DL definition, editorial**

## Seagate 28 (E): F.4, pdf page 145, doc page 131 The first to paragraphs require the initiator to have a buffer of the length of the DL. This is an implementation issue and should not be in the standard. The initiator may in fact have a small buffer and use flow control to keep it from being overrun. The referenced paragraphs should be deleted.

Response:

The initiator cannot have a small buffer in this context. Flow control cannot prevent its overflow. Only separation into separate commands can protect initiators from overflow. No change is made.

The response was approved by the working group in the January 15, 2001 meeting.

Installation:

No change is required.

### **8.29 Format of bidirectional FCP\_RSP, editorial**

## Seagate 29 (E): F.5.5, pdf page 148, doc page 134 For backwards compatibility, the FCP\_BIDIRECTIONAL\_READ\_RESID field should not be included if both the FCP\_BIDI\_READ\_RESID\_UNDER and the FCP\_BIDI\_READ\_RESID\_OVER bits are both 0. The last sentence of this clause should be change to “If both FCP\_BIDI\_READ\_RESID\_UNDER and the FCP\_BIDI\_READ\_RESID\_OVER bits are 0, the FCP\_BIDIRECTIONAL\_READ\_RESID field is not meaningful and is not included in the FCP\_RSP IU payload.”

Response:

The format of the response is defined by the presence of the RDDATA and WRDATA bits together. No change is required. See 6.110.

Installation:

No change is required.

### **8.30 Arrow characters, editorial**

## Seagate 30 (E) Various pp, various tables in Annexes B and F use “->” and “<-” as arrows. This looks awkward, since the '-' is not vertically centered with the '<' or '>'. Recommend using arrow characters (as is done in SPC-2) or “<=” and “=>”.

Response:

Accepted. The requested change is made.

Installation:

Installed as requested.

### **8.31 Consistent formats, editorial**

## Seagate 31 (E) Various pp., Tables 4, 5, 35, 36: These have single lines on the outer borders. All others seem to have double lines on the outer edges. Please make consistent, unless other stylistic rules apply.

Response:

Accepted. The requested changes are made.

Installation:

Installed as requested.

## **9 Texas Instruments**

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

FCP-2 - Second Letter ballot comments From Texas Instruments November, 2000

### **9.1 Address corrected, editorial**

1. Bob Snively's company and address have changed, no longer at Sun.

Response:

Accepted. The text is changed as requested.

Installation:

Installed as requested.

### **9.2 Address corrected, editorial**

2. John Lohmeyer's E-mail is Lohmeyer@t10.org

Response:

Accepted. The text is changed as requested.

Installation:

Installed as requested.

### **9.3 Change of address, editorial**

3. George Penokie's information has changed to Tivoli Systems

Response:

See 6.2. Accepted.

Installation:

Installed as requested.

### **9.4 No comment associated, editorial**

4.

Response:

No change is required.

## **10 Comments identified during analysis of the ballot comments**

### **10.1 Initiator and target required in image pair**

In clause 6, the text needs to document that process login requires a complementary pair of one initiator capable device and one target capable device. If this is violated, the attempt to perform a process login is rejected, presumably by not creating an image pair.

Response:



The comment and correction was accepted by the working group in the January 15, 2001 meeting.

Installation:

In 6.3.1, the text is modified to say:

If the PRLI is requesting a binding action by setting the ESTABLISH IMAGE PAIR bit to one, the PRLI accept reports the capabilities of the responder to the Originator and establishes an image pair. An image pair shall be established only if the FCP devices have complementary initiator and target capabilities. If both FCP devices have both initiator and target capabilities, a single image pair allows both initiators to access the complementary target capabilities of the other device in the pair. Some capabilities require support by both the Originator and Responder before they can be used (see 6.3.5). The IMAGE PAIR ESTABLISHED bit in the PRLI accept indicates that an image pair was successfully established.

Please review.

### **10.2 Behavior when no image pair is established.**

Attempts to pass a SCSI command to a device with which an image pair is not established cause a process logout when the first SCSI command violates the rule. Text describing this will be placed in the appropriate part of clause 6.

Response:

The comment and correction was accepted by the working group in the January 15, 2001.

Installation:

The text in 6.2 says:

Any FCP IUs received by an initiator or target from an N\_Port or NL\_Port that has not established an image pair with that initiator or target shall be rejected with a P\_RJT containing a reject reason code of TYPE NOT SUPPORTED. (See FC-FS.)

This functionality is not specified by FC-FS, but is consistent with the error codes defined by FC-FS. Considering this text, the proposed change is in conflict and is not installed.

Please review.

### **10.3 Only one image pair required for target/initiator**

What is the state of process logins with either both capabilities at both ends or with asymmetric capabilities? This occurs with AEN inherently. Are separate image pairs required for both directions? The consensus is that this can be done with one image pair.

Response:

After discussion in the January 15, 2001 working group meeting, the committee decided that one image pair is all that is required to connect a port having both target and initiator capabilities to either a port having both capabilities or a port having only one capability. This is clarified in the appropriate part of clause 6.

Installation:

See 10.1.

### **10.4 PRLI performed only by initiators**

PRLI shall never be issued by a target-only device. This was accepted as a comment.

Response:

The comment was created by and accepted by the working group in the January 15, 2001 meeting.

Installation:

The text of 6.2 is modified to read:

PRLI requests shall only be initiated by devices having the initiator capability. Devices having only target capability shall not perform a PRLI request. An initiator ~~and target~~ shall have successfully completed a PRLI with a target that establishes an image pair before any FCP IUs are exchanged. An image pair may also be established by an implicit PRLI established by methods outside the scope of this standard. An image pair is removed by a PRLO (see 6.4). If an image pair is not established by an initiator to a target, the initiator and target shall not exchange any FCP IUs. Any FCP IUs received by ~~an initiator or a~~ target from an N\_Port or NL\_Port that has not established an image pair with that ~~initiator or~~ target shall be rejected with a P\_RJT containing a reject reason code of TYPE NOT SUPPORTED. (See FC-FS.)

Please review

### **10.5 Annex F informative**

Is annex F informative or normative?

Response:

The original intent of the working group, documented in T11/00-653v0, was that this annex was to be informative, becoming normative when the information is folded in to FCP-3. The question was raised by the working group in the January 15, 2001 meeting, but no answer was recorded either by me or in the minutes. The solution is to make no change, leaving the annex informative.

Installation:

No change is made.