

1. Introductions: Group

Facilitator Dale LaFollette called the meeting to order shortly after 9 AM and, as is customary, had the group introduce themselves and thanked the host.

2. Approval of this Agenda: T11/99-398v0 - Group

Approved

3. Approval of 6/9/99 Minutes: T11/99-358v0 - Stewart Wyatt

Approved. Noted misspelling Ed Gardner's name and omitting Paul Suhler's request for additional 12V pins on the connector proposal.

4. Review Old Action Items: Stewart Wyatt

General action items

- #1. Erich Oetting - Consider specifying the compression algorithm like the supported density algorithm is specified. Closed, Erich decided it is not a good idea.
- #2. Bob Snively - Resolve TaleAlert discussions. Closed, change requested in both HP and SUN SSC letter ballot comments
- #3. Stewart Wyatt - Complete FC-TAPE connector proposal for SFF review next month. Reply as noted to Ed Grivna about including in T11.2 documents. Ongoing. The proposal will be presented to the SFF tomorrow and a report will be provided to FC-TAPE next month.

FC-TAPE action items.

- #1. Dale LaFollette - Ask T11.3 plenary for public review of FC-TAPE. Approved, in process at ANSI.

FCP-2 action items for Bob Snively unless noted:

- #1. Bob Snively will review the ABTS changes in the FCP-2 draft with respect to FC-PH. Completed.
- #2. Bob Snively and Bob Kembel create a list of the specific BLS and ELS which are allowed before Login including explicit Login in an annex for later placement in FC-FS. In progress.
- #3 Bob Snively will incorporate Jim Coomes proposal on changes to mode page 19 into the next draft of the FCP-2. Completed.
- #4 Bob Snively will incorporate Dave Peterson's proposal for discovery protocol into an informative annex in the FCP-2. Done but needs more work.

- #5. Add a comment that in a class 3 non queuing environment, the exchange status can be discarded after RR_TOV if another command is not received. Completed.
- #6. Add the following note to clause 10.5, that if REC_TOV associated error recovery is allowed, RR_TOV must be 3 times REC_TOV and always appropriate to ADISC address discovery time. Completed.
- #7. Check and repair references to ABT-LS for recovery. Place a note near ABTS-LS recovery abort to clarify the changes made to ABT-LS. Completed.
- #8. Add a note to clause 1.10 FCP_RSP field length warning of the existence of non-conforming devices issuing 12 byte length FCP_RSP. Completed.
- #9. In clause 1.8, change the reference to a “technical report” to a “standard”. Completed
- #10. In clause 1.13, install Neil Wanamaker’s proposed fix. Completed
- #11. In reference to clause 3.3, Mode page support for recovery, Bob is to make a proposal about how a device indicates support for tape error recovery support (SRR and REC) and enables this support. This proposal should be posted to the reflector as soon as possible for the group to review and comment on. Completed

SSC Action Items:

- #1. Stewart Wyatt and/or Ian Crighton will make a presentation for inclusion of Media Auxiliary Memory (T10/99-148r1) in the SSC at next month’s meeting. HP will create a letter ballot comment proposing the changes. Completed (Steve Jerman actually made the presentation.)

5. Media Auxiliary Memory: T10/99-148r1 - Steve Jerman HP

Steve presented some overheads. The concept is to include a memory device in the media that can be read using “smart card” technology. The memory could be read either in the drive or by a library picker arm. HP has requested via a letter ballot comment that a footnote be included in the SSC noting that, “Log page ‘0A’ and inquiry page ‘84’ are being proposed for use by Media Auxiliary Memory as noted in T10/99-148”.

The proposal was positively received. There was some discussion about the legality of the request. It was noted that the inquiry page is in the SPC and that issue should be referred to Ralph Weber. Another concern was expressed about overloading the read element status command and that a new command might be considered. Steve promised to contact Ralph and John Lohmeyer on the procedural issues, continue the discussion over the reflector and make a presentation to the SPC.

6. SSC: T10 Working Drafts, LB Comment Resolution T10/99-011r2 - Dave Peterson, STK-NBG

Dave reviewed most of the technical letter ballot comments.

HP Comment #1 Clause 5.2.5 Device Initialization states that the a device shall be in the uninitialized and unloaded state after power up. HP objected noting that most “low end” drives automatically load the tape, if one is inserted at power on. Dave Peterson felt that loading the tape automatically would create problems in a multi-initiator environment. Eric Oetting, StorageTek, felt the clause should be taken out. Hosts needs to check the tape anyway after loading. This

behavior shouldn't be required. There was some discussion about why the clause was included. Ed Gardner noted it was a "religious" argument and that in the main frame environment tapes are unloaded while in the PC environment they are. Dal Allan, ENDL, noted the PC applications outnumbered the main frame. Dale Lafollette put the issue to a straw poll vote. The group voted 12 to 0 to remain silent on the issue and remove clause.

Compaq #0. Rob Elliott, Compaq, had noted differences between the SSC and SPC-2 in regards to MRIE behavior with TEST bit asserted. He had documented the differences in T10/99-208r0 He noted that the SCC exempts inquiry and request sense while SPC-2 does not. He also noted that the SSC requires the "next" command, SPC "any" command. A long discussion ensued about which commands were applicable, test operations, etc. The final conclusion was that the redundancy should be removed from the SSC and only the tape specific (TapeAlert) material should be kept in the SSC. The SPC should be concerned about a definition of the word "any". No action item was created.

Compaq #25. Table 5 - Commands for sequential-access devices under the column for "Flush Write Data" lists "may" for 4 commands while the text states it is required under certain conditions flushing is required. The resolution was for the editor to remove the "may" and add a note or refer directly to the text.

Compaq # 33 SPC-2 Table B.2 and SSC Table 5 have differences in command descriptions: As a result of the discussion, the editor was instructed to change all references in the SSC from SPC to SPC-2 and also SAM to SAM-2, change definitions should be listed as obsolete. Eric Oetting will come up with a list of command code changes for SPC-2 Table C.2.

Compaq #34, 35, 36, 37, 38 similarly note differences between the SSC and the SPC-2. Dave Peterson will update the SSC where appropriate and Eric Oetting will collect the SPC-2 changes and forward them to the SPC-2 group.

IBM comment on Page 80 Annotation 5. Criticism of TapeAlert implementation. The questions (and other IBM comments on this subject) will be referred to of Stephen Gold of HP for comment.

IBM comments from Rob Basham, four technical comments - all were accepted. The IBM comments were unnumbered and difficult to follow. The secretary was unable to follow which comments were Rob's.

HP #17 (Comments #17 and greater were from Ron Arp at HP SSD in Greeley) The editor agreed to accept the text from consistency.

HP #21 Accepted

HP #24, 25, 26 27 All accepted. Answers to all questions are yes. Additional text or references will be added.

HP #20 Rejected - Eric Oetting noted that Unload and Rewind have different behavior. In this case the data cannot be written and is trapped in the buffer. It is discarded to perform the indicated command. The text is correct as is.

The editor reported that he had 11 more technical letter ballot questions to review next month.

7. FCP-2: T10 Working Drafts Bob Snively Changes to FCP-2 T10/99-211r0 - Bob Snively

Bob referred to the change document (T10/99-211r0) for his review. He reviewed the text incorporating previously accepted technical changes.

In response to a comment from Matt Wakeley, a comment has been added specifically disallowing out-of-order delivery. (The tape profile made a decision long ago to follow the FLA and require in-order delivery. An out-of-order profile was to follow.) Bob stated that he was uncertain that there would be a FCP-3 to incorporate out-order because of either his availability to be the editor or because of competitive standards developments. Dal Allan and Carl Zeitler, Compaq, both spoke in favor of including out-of-order in the current revision. Dave Peterson, DTK-NBG, thought most of the work had been completed in the tape profile. Bob said he would leave the statement disallowing out-of-order in for now while waiting for proposals and comments about what needs to be resolved to include out-of-order.

A discussion followed on the use of RX_ID (Clause 2.8). At least some Fibre Channel disk drives have not used RX_ID by assigning it the value of 'FFFF'. This was criticized as causing error recovery problems in Class 2. Matt Wakeley explained that in Class 2, the initiator learns the RX_ID in the ACK for the command, while in Class 3 it has to wait for a reply sequence. It was noted that an RX_ID is needed in Class 2 for error recovery in an out-order environment. Bob had changed the relevant text after a comment from Matt Wakeley. After this discussion, he decided to return to the previous text.

Target discovery documentation: Dave Peterson has completed a proposal for the Discovery process that has been included as an FCP-2 annex. Bob thought it needed to be expanded. Dave asked what precisely was missing? The question was also posed about whether this process was unique to SCSI or common to other ULPs. The answer was that SCSI is unique in maintaining exchanges across loop initialization. It was decided that this was the correct group to define this activity. After some discussion, Dave agreed to the action item.

In reviewing Clause 7.3, it was noted that a Class 3 Target which supports SRR and FCP_CONF must be able to originate an REC when an FCP_CONF is lost. This is a case where a Class 3 Target is required to take the initiative in an error recovery situation. Matt Wakeley argued that this wasn't necessary, the target could wait for another command as implicit proof or for R_A_TOV for recovering resources.

In review it was noted that Table 2 - Discovery of FCP capabilities entry "Initiator performs REC" change Discovery mechanism from "None/Process Login" to "See references".

Process associators. Bob wanted to delete them, Carl Zeitler wanted them retained, Bob noted a number of problems that he documented and would prefer to eliminate than to attempt to solve the problem. Dal Allan referred to them as a powerful tool that we didn't know how to use. Carl agreed to take an action item to make a cast for retaining them Bob said he expected to resolve the issue by a vote next month.

Name server extensions. (Clause 8.6) Bob had taken a proposal to add functionality to the name server. He was given an action item to create an FC-4 specific object name space. A long discussion followed with Dal Allan and Charles Binford about the impact of zoning. The problems are that some operating systems will reformat any disk drive that they are able to find. Zoning can solve this problem by hiding the drive, but the solutions have all been vendor unique. A solution for providing information from a name server while enforcing zoning is needed. Bob thought the discussion was out of the scope of the FCP-2 and wanted to continue it off line.

Dal Allan asked to readdress obsoleting mixed command/data and data/response. Dal noted that this capability offers faster transfers in Class 2 delay by eliminating the requirement to wait for an ACK to get RX-ID. Bob argued that retaining these features would not buy anything because the initiator is still required to wait for sequence initiative before sending subsequent sequences. Bob thought that better performance gains could be realized by queuing which could also eliminate deferred errors.

Bob said he would be putting out a Rev 03 shortly where he would be spell and case checking. He welcomed editorial comments for that draft.

8. T11 New Business - Group

None

9. T10 New Business - Group

9A. FCP-2 Error Detection and Recovery - Dale Lafollette

Dale prefaced his discussion with the comments by saying that he was sharing information and that his comments were not a product announcement or commercial but only a report of the feasibility of the FCP-2 error detection and recovery.

He stated that STK had tested an STK native Fibre Channel tape drive, operating in Class 3 only in both public and private environments, using an STK Access Hub, an unnamed fabric, a QLogic HBA, and a Qlogic ISP protocol chip in drive had successfully implemented the FCP-2 error detection and recovery and it worked! When questioned he reported that CRN and FCP_CONF were included in the test. This test involved Class 3 only as the drive does not support Class 2 yet. A Finnisar Gigabit Traffic Jammer was used for test stimulus. Its turnaround was too slow to turnaround to create multiple errors which was a limitation in the testing.

Dale made some observations. He will need to ask for an explicit confirm on every response when queuing. REC_TOV is specified at a minimum of 3 seconds, second level error recovery takes 6

seconds which requires lengthening ULP timers. He thought it would be better to do a REC immediately and increasingly delay each subsequent request. After a long discussion this comment was rejected because of the variation in delivery time through a fabric. Dale also noted a problem in the documentation. When a FCP_CONF is lost, and the initiator is not sending another command, there is no documented way to recover the missing confirm. It was noted that the solution is in the text while not in the diagrams. The target is required to originate a REC. Note that this subject was also discussed in the FCP-2 review.

Another observation Dale made is that mismatched FCP-DL and CDB TL results in confusion. Cannot tell if target is waiting on a conf or for more data. Charles Binford jumped in with the observation that the REC cannot distinguish between a lost transfer ready and a lost response. Bob Snively thought that the SRR should be specified to report the data transferred for both reads and writes.

Matt Wakeley thought the problem could be solved by fixing REC. Bob replied that would require making REC FC4 specific (like SRR is). It was agreed that the target has to interpret the SRR in context.

9B. MCM additions to FCP-2 T10/99-206r0: George Penokie

George was not in the room so Bob Snively presented this issue. George proposes putting MCM parameters in the Fibre Channel Parameter Mode Page (19). This proposal did not seem attractive to Bob or Jim Coomes, Seagate. This mode page would only apply to SCSI devices. Concern was expressed about addressing the needs of IP. Bob thought an alternatives may be to put it in a ELS. Bob thought that he and Jim should contact George and express their concerns. George would like to discuss this next month.

9C. Tape Alert SMC-2: Eric Oetting

Eric asked the group to endorse adding the relevant TapeAlert material to a future revision of the SMC. This was unanimously accepted

10. Review New Action Items: Stewart Wyatt

- #1. HP (Steve Jerman) to continue MAM discussion and post presentation
- #2. Eric Oetting - to collect issues from the SCC letter ballot comments the for SPC-2
- #3. Dave Peterson - to update the SSC as noted in the group
- #4. Stephen Gold (Stewart Wyatt) HP - resolve IBM letter ballot comments on TapeAlert.
- #5. Stewart Wyatt - Report on FC connector resolution.

FCP-2 Issues

- #6. Bob Snively and Bob Kembel - Create a list of the specific BLS and ELS which are allowed before Login including explicit Login in an annex for later placement in FC-FS.
- #7. Bob Snively - Review the SRR statement - may not be flexible enough to allow the target to properly handle. SRR must be interpreted in context cmd known by target, Nasty case is did the transfer ready or response (to an error) get hit
- #8. Bob Snively - Clause 2.8 Return to previous text.

- #9. Bob Snively - Change Table 2 - Discovery of FCP capabilities entry “Initiator performs REC”
Discovery mechanism from “None/Process Login” to “See references”.
- #10. Dave Peterson - Extend current document to cover LIP discovery process. Participants asked
to communicate concerns to Dave.
- #11. Bob Snively -Table 2 Initiator performs REC change None/Process Login to See references
- #12. Carl Zeitler - Review need for process associators.

11. Adjournment: Group 5:45

Attendance

Dale Lafollette	StorageTek	Dave Peterson	STK-NBG
Rob Elliott	Compaq	Carl Zeitler	Compaq
Arlan Stone	UNISYS	Erich Oetting	StorageTek
Tom Jackson	Exabyte	George Penokie	IBM
Matt Wakeley	HP	Robert Frey	Advansys
Ricardo Dominguez	Dell	Dennis Moore	KnowledgeTek
Mike Fitzpatrick	Fujitsu CPA	Dal Allan	ENDL
Pak Seto	Quantum	Steve Wilson	Crossroads
Jim Coomes	Seagate	Tim Hogleund	LSI
Curt Ridgeway	LSI	Bob Snively	SUN Micro
Neil Wannamaker	Crossroads	Stewart Wyatt	HP
Steve Jerman	HP	Edward Gardner	Ophidian Designs
Joe Breher	Exabyte	Charles Binford	LSI Logic