Accredited Standards Committee Doc. # X3T10/97-154-r0
X3, Information Technology

To: Members of X3T10

From: Erich Oetting

Subject: Minutes of SSC/SMC Working Group Meeting
San Diego, CA, Mar 13, 1997

Agenda

1. Opening Remarks

2. Approval of Agenda

3. Attendance and Membership

4. SMC Topics

4.1 Read Element Status and Reservation Conflicts. (96-267-r1)

4.2 SMC Device Identification (97-148-r0)

5. SSC Topics

5.1 PLDA Tapes (Doc TBD).

6. Other Topics.

7. Meeting Schedule.

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Results of Meeting

1. Opening Remarks

Erich Oetting, the SMC Technical Editor, called the meeting to order at 9:10 a.m., Thursday, March 13, 1997. He thanked Skip Jones and QLogic for arranging and hosting the meeting.

As is customary, the people attending introduced themselves and a copy of the attendance list was circulated.

The draft agenda was approved.

3. Attendance and Membership

Attendance at working group meetings does not count toward minimum attendance requirements for X3T10 membership. Working group meetings are open to any person or organization directly and materially affected by X3T10's scope of work.

The following people attended the meeting:

Name	Organization	Email Address
Connie Kephart	Exabyte	conniek@exabyte.com
Erich Oetting	Storage Tech.	erich_oetting@stortek.com
Ralph Weber	Symbios Logic	roweber@acm.org
George Penokie	IBM	gop@rchump3.vnet.ibm.org
Gene Milligan	Seagate	gene_milligan@ notes.seagate.com
Bob Snively	Sun	bob.snively@sun.com
Charles Monia	Digital	monia@shr.dec.com
Dal Allan	ENDL	dal_allan@mcimail.com
Doug Hagerman	Digital	hagerman@starch.enet.dec.com
Dan Davis	Overland Data	ddavis@overland.com
David Cressman	Quantum	dcressma@tdh.qntm.com

Dan Total of 11 People Present

4. SMC Topics

4.1 Read Element Status and Reservation Conflicts. (96-267-r2)

Rob will bring a revised proposal to the May working group meeting.

4.2 SMC Device Identification (97-148-r0)

Erich presented his proposal to obsolete the SCSI Bus Address, LUN, ID valid, LUN valid, and Not Bus fields and replace them with Identification Descriptors. Some concern was expressed about obsoleting the SCSI Bus Address etc. fields. Erich will revise the proposal to leave these fields in and add wording that prohibits using them when the SCSI Bus Address or LUN numbers are too large to fit in the field. The revised proposal (97-148-r1), was recommended for adaption by the plenary.

5. SSC Topics

5.1 SSC PLDA Tapes (Doc 97-xxx-r0).

Doug talked about his paper on PLDA tapes and error recovery. His proposal adds a confirmation of receipt of Read data from the Target by the Initiator. Changes to PLDA and a minor addition to FCP would be required.

PLDA error recovery for disks assumes that error recovery is a simple matter of resending the failed command. The decision to send the command is based on some error indication, or simply a timeout due to status not being received in a few seconds. Tape devices can't use the same technique due to the long timeouts required, and the fact that tape position must somehow be reestablished before the command can be reissued.

Doug expressed the wish to use existing tape host software transparently over a Fibre Channel interface, with the error recovery performed below the command level. David said what we really needed was an equivalent to Restore Pointers to allow recovery from data transmission errors.

Discussion then centered on the expected error rate on an arbitrated loop. It was generally agreed that loops may exhibit a higher error rate than current well designed parallel SCSI systems. Arbitrated loop glitches can also be expected when devices are inserted or removed from a loop. It was generally
agreed that the worst case numbers were apocryphal, but that
the error recovery problem still must be solved.

Dal voiced the opinion that all the tools to do error recovery are currently available, but in some cases prohibited by the PLDA profile. If drives use incrementing sequence numbers, a missing sequence can be detected. The exchange status can be polled to detect what part of an exchange failed. It was pointed out by others that exchange status has not implemented in most existing designs.

Block size restriction were discussed as a method of getting around problems that occur when a drive starts writing before the complete record is received. It was pointed out that SSC currently requires SCSI tape devices to restore position if a complete block is not received, even if the drive started writing the block to tape before the failure. This eliminates the need to restrict block size.

There was general agreement on some points during the meeting:

Error recovery should happen below the command layer, or at least invoke command layer recovery that is already present. There was a lot of disagreement about what error recovery is actually present at the SCSI command layer. (Do current SCSI tape drives just give up if a transport layer problem occurs?)

Tape media errors were deemed to be outside the scope of this discussion. Also, the current buffered model, with a queue depth of one used by most existing SCSI tape drives will be retained. This does not preclude using command queuing on future tape devices.

Ideally, errors that occur in the transport of commands, data and status will be recovered without invoking the SCSI command layer. A method of requesting retransmission of data equivalent to the Restore Pointers

message in parallel SCSI is desired. FCP_XFR_RDY can be used to retry a target detected data errors for a write command. However, there is no hook that allows an initiator to request a retransmission of read data from a target. Sending a sequence or logical block (one or more sequences) again was preferred to attempting to recover at the frame level.

Where possible, direct detection of errors is preferred to timeouts. Errors that can't be recovered should be reported using in a fashion that will invoke existing SCSI command level error recovery. There was some discussion of what, if any error recovery is done today on parallel SCSI.

Changes for tape support to PLDA and FCP should be compatible with existing silicon. More input about the capabilities of current FC silicon will be needed by the working group.

Class 2 may have been desired, but is not needed to solve the problem.

Target documents for these changes will be PDLA-2 and FCP-2.

6. Other Topics

No other topics were discussed.

7. Meeting Schedule

The next meeting of the SSC/SMC Working Group will be next May in Natick Massachusetts. Actual meeting time will be determined by the X3T10 Plenary.

8. Adjournment

The meeting was adjourned at 12:15 pm on Thursday, March 13, 1997.