Fort Lauderdale, FL
Accredited Standards Committee
X3, Information Technology

To: Membership of X3T10
From: Edward Lappin
Subject: Minutes of SSC/SMC Working Group Meeting
         Fort Lauderdale, FL May 9, 1996

Agenda

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Results of Meeting

1. Opening Remarks

    Ted Lappin, the SSC Technical Editor, called the meeting to order at 9:10 a.m., Thursday, May 9, 1996. He thanked Adaptec for arranging and hosting the meeting.

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

2. 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	S	Organization	Email Address
Mr. Charles Monia	P	Digital	monia@shr.dec.com
Mr. Edward Lappin	P	Exabyte Corp.	tedl@exabyte.com
Mr. Ralph Weber	P	ENDL Associates	roweber@acm.org
Mr. Pete Tobias	A	Tandem	tobias_pete@tandem.com
Mr. Doug Hagerman	A#	Digital	hagerman@starch.enet.dec.com
Mr. Gary Stephens	P	FSI	6363897@mcimail.com
Mr. George Penokie	P	IBM	gop@rchvmp3.vnet.ibm.com
Mr. Ken Hallam	P	Unisys	ken.hallam@mv.unisys.com
Mr. Bill Dallas	A#	Digital	dallas@zk3.dec.com
Mr. John Scheible	A	IBM	scheible@vnet.ibm.com
Mr. Bill Martin	A#	Hewlett Packard	wrm@core.rose.hp.com
Mr. David Cressman	V	Quantum	dcressma@tdh.qntm.com
Mr. Roger Cummings	O	DPT	cummings_roger@dpt.com
Mr. Dan Strevey	V	Intellistor/Fugitsu	dstrevey@intellistor.com

14 People Present

Status Key: P   - Principal
          A,A#   - Alternate
          O   - Observer
          L   - Liaison
          V   - Visitor

4. SSC Topics

4.1 - Write Protect (different levels)

Extensions to write protect to add new scopes and reporting. In particular, write protect based on the following mechanisms:

Write Protect Type	Implementation	ASC/Q
Hardware	Exists	27/01
Software	Exists	27/02 (new)
Associated (until unload)	New	27/03
Persistent (record on medium)	New	27/04
Permanent (not erasable)	New	27/05

Software write protect needs statement on persistence (if not already there).

Associated is kept until unload or poweroff. General feeling that reset should also kill it (original proposal has reset maintaining the write protect).

Persistent write protect is remembered on a media unit basis. Questions about what happens when the cartridge is placed in older drives.

Permanent cannot be written or appended to until externally erased (not writable by any commands on the target supporting the full capabilities of the media).

An ASCQ of 00h is any reason for write protect.

Action to check with Gerry Houlder if disks want this functionality.

4.2   - Read Reverse option

Option to reverse bytes in read reverse. Problem with original command option requiring reverse byte flow. If make support of old form (reverse data) required but new hardware cannot support the old form. How can this be resolved? One way would be to have a mode bit or maybe a new command.

4.3   - Immediate operations and reporting

Current behavior makes it difficult to determine when an immediate operation has completed. This proposal requests particular behavior using sense key specific time-out values in request sense for all immediate operations. Need to add request sense polling information in each immediate command or in the model for immediate commands. May want a new ASC/Q for NOT READY, UNLOAD IN PROGRESS.

4.4   - Test Unit Ready and deferred error reporting

Should deferred errors be reported by Test Unit Ready? Text should be placed somewhere indicating whether or not deferred errors are allowed on TUR commands. No mode page for selecting operation.

4.5   - Capacity selection vs disk

Do we need short tape capacity selection? Could do this using single partition format with a percentage. Bill Dallas thinks that we should consider using the same method as disk drives.

Gary Stephens will generate proposal documents for items 4.1 through 4.5.

4.6   - FCP issues

Doug Hagerman presented FCP issues regarding the profile for fibre channel SCSI devices. A private loop profile has been started, originally for disks.

Basic problem with FCP is that no frame-level error correction code is in fibre channel, only an error detection code. A SCSI command maps onto an exchange. Error checking is on an exchange with is a sequence. This mechanism is part of the profile. Initial justification for this mechanism came from a better error rate using optics but the error rate has been pushed up by speed and copper. The mechanism can create command time-outs. The fibre profile was built on the expectation that commands can be retried.

For performance reasons, the ACK of each frame was removed (using class 3). Instead, the status of the SCSI command implied reception and completion.

Ordering is maintained unless a fabric (using switches) occurs. In the loop profile, delivery is in order for frames. But, a missing frame is a possibility. You will know that you are missing a frame in a sequence but not a missing sequence.

For a data sequence, each sequence is numbered uniquely within the command. Not clear on what the sequence number requirements for the profile.

Question: what about the last sequence with SILI on read?

Next is the question on how streaming and buffers work. Doug talked about cleaning up tape operation when we change to fibre.

If you get an error on a write command data transmission error, the suggestion is that the command be resent. The detection occurs during a data sequence.

However, if all of the data cannot be stored in the drive, there is a problem. Data is written to the media but the command has not completed. This requires that the drive reposition to the start of the command ready for the replacement write.

Getting into discussion about what recovery is required. For data transmission errors, tapes could reposition to allow a retransmission of the same command. This is not exactly efficient. Requires that overwrites at any point are possible.

Still, the major problem is the loss of commands. Does not fix the problems for printers and communication devices.

A poll indicates that typical applications use up to 64 kbyte commands.

You can always ask for the data again. This works if something like the drive wants a retransmission (e.g. expansion of data during compression and wants to process the same data uncompressed) but no error occurs.

Roger would like some tape people to come to the loop meeting to indicate the current error recovery. There is a meeting in Santa Fe, probably Tuesday. Need to get tape vendors to know about this meeting.

4.7 - SSA issues

John Scheible presented conversion between parallel and SSA. Goal is to minimize conversion from parallel SCSI while gaining performance.

SSA does have frame level retry. A disk drive target implementation was able to reuse 85% of the code from parallel SCSI.

Ordered delivery is guaranteed by using a single path. Confirmed status has been added.

SSA is pipelined but not interlocked. There is no end to end ack but there is an ack for each hop.

Contingent Allegiance is supported by locking until the driver is notified. A temporary ACA is generated by the protocol layer.

Commands must use the same path if order is to be maintained.

For hot plug, the path can be rerouted by the protocol, transparent to the command level. This is possible due to the confirmed status.

4.8 - Cleaning Log Page

General agreement that a suggestion on the number of bytes for the cleaning log parameter is required in SSC. Ken Hallam wants to set the size of parameter 100h to 2 bytes (96-155r0).

5. SMC Topics.

No topics were discussed.

6. Other Topics

No other topics were discussed.

7. Meeting Schedule

The next meeting of the SSC/SMC Working Group will be in Colorado Springs, hosted by Symbios. Actual meeting time will be determined by the X3T10 Plenary.

8. Adjournment

The meeting was adjourned at 12:50 PM. on Thursday May 9, 1996.