

Minutes of SSC Working Group Meeting on 11/10/94

X3T10/94-241r0

To: Membership of X3T10

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Subject: SSC Minutes of SSC/SMC Working Group Meeting of 11/10/94

A meeting was scheduled for Thursday 11/10/94 at 9:00 AM for discussion on both the SSC (Stream) and SMC (Changer) command sets. This meeting covered issues on tape and medium changer commands.

Attendees:

Edward Lappin	Exabyte
Erich Oetting	Storage Technology
Neil Wanamaker	Amdahl
Lansing Sloan	Lawrence Livermore Labs
Bob Snively	Sun Micro
Gary Stephens	FSI
Bill Dallas	Digital
Jan Dedek	Ancot
Ralph Weber	Digital

We started by bringing up a list of topics to discuss for tape. We came up with a variety of issues:

- Response of TUR during immediate commands
- Residue on space
- Read position
- Density Codes
- Partitions
- More specific text on ASC/Q
- Load Display
- Other tape commands
- Format
- Determining the density and blocking factors EOM setting
- R/W dammit
- Space past EOD

Bill argued for known blocking factors. He wanted to know if the tape is written with fixed or variable blocks and the block size. Gary argued against this since this would change the model. The group generally agreed that this is not a function of the tape device. Instead, the application must determine the correct blocking and how to determine the tape format.

Erich brought up the question of how Test Unit Ready should respond while an immediate command is in progress. Possible responses include Busy, Good, Check Condition (not ready but becoming ready), and disconnecting. Erich pointed out that disconnecting for a "long time" is not in the spirit of TUR. Bill asked about unload immediate. We diverged into talking about read position and what it should report.

Other possible responses included a new ASC/Q for immediate command in progress. But, responding with a CHECK CONDITION may

break current implementations. Also, it is reasonable for Read Position to disconnect for the duration of the immediate command. The possibility of progress indication was raised. This would use the sense-key specific part of the Request Sense data to indicate the state of the immediate command. Commands we thought about for this discussion were Rewind, Verify, Erase, Locate, Format, Load, and Unload.

Bill also pointed out that Read Position should be required to allow multi-initiators to determine where the tape is located when a new initiator accesses the drive. He wants Read Position to be mandatory. Gary pointed out that if the BIS bit in page 10h of the mode data is set, then Read Position should be supported. I agreed and noted that a device can report BPU if the block position is unknown.

We agreed that Read Position should be mandatory.

Erich asked that two bits be added to the short Read Position data, to indicate that the number of blocks in the buffer and the number of bytes in the buffer are respectively invalid. I agreed to write up a proposal adding these bits.

Getting back to TUR, Gary asked that it be stated in the model (explicitly) that the logical unit is ready if the tape is mounted. After more discussion, the rules seem to boil down to the following:

1. If the volume is being mounted or unmounted, the device shall return CHECK CONDITION to a TUR command, with an appropriate status (depends if unloading or loading).
2. If the volume is mounted, the device shall return GOOD STATUS in response to a TUR.
3. If the volume is not mounted, the device shall return NOT READY in response to a TUR.

[The ASC/Q are set to appropriate values when CHECK CONDITION is returned].

For Read Position, the BPU (and MPU) bits are set when the immediate command is in process.

Additionally, a request sensed during an immediate command shall return a Sense Key of 0 (No Sense) with an ASC/Q of 00, 16 indicating IMMEDIATE COMMAND IN PROGRESS when no other sense is available. The Sense Key specific data, if present, indicates the progress of the immediate command (as a fraction of 65536, as specified in the Request Sense Command description).

I will write up a proposal on the required ASC/Q.

We discussed space and the residual on a backwards space and it was unanimously agreed that the residual shall be greater than or equal to 0.

I will clarify in SSC that a failed locate command does not guarantee the position (this is also true of a failed partition change).

We talked about density codes. I noted that we are using up the

density codes (there were 21 in SCSI-2 and there are about 45 now). We have space for 126. The thought was we should use the format and compression algorithm to differentiate formats. However, this has a drawback in that many initiators use the density code to select but not the format. I stated that we should consider using Vendor Unique (ugh) density codes as required to allow initiators to select different formats.

Also, we were thinking that page 10h of the mode data should be mandatory. However, we need to think about this since we couldn't quite agree on this issue.

Erich asked about Load Display. Currently, tape devices with displays use a vendor-unique command to load the display. Gary and I pointed out that this may not be practical since the display has characteristics which really require a model. This degenerated into the idea that we need a new command set. The result was we will leave it vendor unique.

I will add the format medium command (94-146R3) to SSC.

For partitions, Gary wants more of them. He is going to write a proposal for adding more partitions. This may require a new command and modifying the Locate command. Meanwhile, I will work on the wording of 94-152R0 (partitions). Gary pointed out I need to change some text in the density code section. We agreed and I will also be enhancing the text.

Bill still wants block information (blocking factor for the device). He is concerned about the lack of labels for tape data. However, the rest of us think that this is a defect in the tape data definition for the applications, not SCSI. Erich and I argue that fixed and variable blocks are not differentiated by the device and the tape does not contain the blocking factor information at the start of the tape (the block size can change at any time for most tape drives). Bill pointed out that QIC drives may not support a range of block sizes. Gary pointed out that only supporting some block sizes and reporting the range in Read Block Limits is in violation of the model. The rest of us agreed with Gary.

We agreed that EOM should only occur if we are past Early Warning or if an action causes the end of the tape to be hit (ie, positioning to block 0 by spacing back only causes EOM if the space residual is greater than 0). A successful space back to 0 should never generate EOM.

Bill brought up Read and Write Dammit. This is a mode where the drive does not report errors on read or write and gives the initiator whatever data it has. We also diverged into reading past EOD (the case when the user accidentally writes at the front of the tape and wants to recover gigabytes past the new data).

[Note: we need a better name for R/W Dammit]

All of this resulted in the idea we should have bits in Read and Write to set this special data mode (but not in verify). I will write a proposal.

Additionally, a new space mode, namely space from EOD to the next data, will be added. I will also write up a proposal. Note that we will not space from EOD to data if we are not at EOD and this

will result in an ILLEGAL REQUEST. This will be an optional mode.

Gary asked if a 10 byte read is required? The rest of us think not.

Finally, we got to SMC. See the SMC working group report for a summary of the SMC issues and decisions.

We adjourned at 12:40. We will meet for both SSC and SMC again in January.