

To: Membership of X3T10

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Subject: Minutes of the SSC/SMC working group meeting held on March 9, 1995

Attendees:

Edward Lappin	Exabyte	tedl@exabyte.com
Mike Brewer	IBM	mabrewer@vnet.ibm.com
Peter Gossles	NSM Jukebox	CIS:73503,3467
Erich Oetting	Storage Tek	erich_oetting@stortek.com
Bill Dallas	Digital Equipment Corp	dallas@wasted.enet.dec.com

SSC Discussion:

The meeting started just after 9:00 AM on March 9, 1995.

We talked about the general problem of unauthorized assignment of density codes. Density codes for sequential devices are only valid if assigned through X3T10. Bill suggested that we do quarterly TIBs updating the density codes. This may be a reasonable solution assuming it is possible to quickly process the TIBs. Erich gave the density code list, as it exists, to Roger Cummings. Roger was going to bring it to X3B5 to find out what is known about the existing density codes. I suggested we add a statement to the density code table in the sequential command set stating "DO NOT ADD DENSITY CODES WITHOUT APPROVAL" (This statement will require rework to indicate that vendor-unique codes are allowed). The group agreed that this was a reasonable approach.

Bill had a question about identifying densities. In particular, he wanted a mechanism by which the capabilities of the drive (LUN) and the tape are determined. Mike talked about identifying the wrong media for the given density and the possibility of rejecting based on current density. Bill argued that density 0 is not sufficient since the user may want "compatible" density for interchange, not necessarily the highest density. Currently, tape devices can return the density for a pre-written tape but there is no way to determine which densities are supported.

All of this discussion led to the possibility of adding a mechanism to report the following:

1. Densities supported, both read and write by LUN.
2. Densities supported, both read and write by cartridge.
3. Current density.

Also, we looked for wording in SSC indicating where the density can be changed. We did not find it and I may need to add it.

Another problem area relates to density 0. Somewhere in SSC, we need to explicitly state that density 0 will only change the density if legal. If the density change is illegal, density 0 shall be ignored by the LUN.

Yet another problem area relates to partitions. The ability for a LUN to support different densities may not be clearly stated in SSC. I need to look into this. I proposed that a statement in the model of sequential devices may be required, indicating that the LUN is not required to support different densities in each partition. A counter-proposal, which won unanimous support, was to disallow multiple-density tapes. This would simplify the model, the assumptions that the application makes, and the reporting.

Eventually, we came to the conclusion that a mechanism, such as a new CDB, could be used to report the capabilities of the LUN and the media. This degenerated into the kitchen sink scenario, which had all sorts of stuff, such as size of tape, bits per inch of each density, optimal density, support of filemarks and setmarks, and mapping of vendor unique densities to approved codes.

To add to the possibilities, it was suggested that the densities be ordered in ascending order. I suggested that we use a relative tape density instead of track bpi, which is insufficient in many cases.

Going back to the broader issue, Bill was arguing that we don't really have a density code. Instead, it is really a format code. Mike echoed this sentiment. However, since density codes have been used for years, changing the terminology will create confusion. Adding to the confusion, a format can be specified in mode page x10. I will think about how to clarify the situation in SSC.

In the end, the group determined that a new command would provide the most appropriate mechanism for reporting. Using a mode page seemed wrong since the capabilities are unchangeable by the application. Log pages don't work as well for a large list of (mostly) static values and inquiry pages seemed a possibility except that the tape capabilities may change. All of this discussion suggested to us that a new command will be required to support the return of density capabilities. I will consider options and provide a proposal by next meeting.

Moving on, we talked about 95-134r0, the soft write-protect proposal. Everyone agreed with the idea; however the details are problematic. Mike sees a problem with customers getting a write-protect sense-key, taking out the cartridge, and thinking the drive is broken since the cartridge is not write-protected. This would result in a call to service. One fix would require adding a new

ASC/Q (or use an existing one, if appropriate) to indicate that the write-protect is soft. This may work as long as more than the sense-key is looked at when the sense key is write-protect. More thinking is required on this subject.

We talked about 95-132r0, write without read back. The group tentatively agreed that this mode shall provide the following services on an error during write:

1. A check-condition.
2. Writing would be allowed to continue past the error.
3. No physical backup of media (which would slow down SCSI).

I will update 95-132 with these requirements.

We talked about 95-118r0, the Read Position changes (mandatory with two new fields in the return data). Everyone thought that this was a good idea and that it should be brought to the plenary [note: approved as 95-118r1 later in the day at the X3T10 plenary].

We talked about 94-152r2, partitions. Bill noted that the PSUM and format capabilities are not in tabular form. I noted that SCSI-2 lacked tables for these but agreed to change it. I expect changes from Mike and Bill for the new revision. I am hoping that the document will be ready in May for a plenary vote.

We also talked about the necessity of an ASC/Q for "NOT LEGAL NOW". This would apply to actions such as changing the density in the middle of the tape. It is not clear if this is required.

I asked about the order of not ready, tape changed UA, and ready responses when a tape is loaded. I don't think that SCSI-2 specifies the relative order of reporting the tape changed UA and not ready but becoming ready. Apparently, everyone is using the order of not ready but becoming ready, then tape may have changed UA, then ready. I will look at adding wording to the effect that this be the suggested order (I am not sure that shall is appropriate here).

SMC Discussion:

Peter brought up comments on the latest revision of SMC.

Peter was asking if Read Element Status could be changed to incorporate Init Element Status. Then, a single command could do both. This was discussed but no conclusion was reached.

He also asked about the Move Medium and Exchange Medium command functionality when the (first) Destination Address already has medium. Peter requested some way of identifying the Second Destination Address of the Exchange Medium command to be the medium's home location (where it came from). We discussed this but we did not resolve the details.

The meeting adjourned just before noon.