X3T9.2/92-240 R0

U.S. Design

U.S. DESIGN MEANS QUALITY & SERVICE

X3 Secretariat
1250 Eye Street, NW
Suite 200
Washington, DC 20005
Attention: Lynn Barra

Wed, Nov 11, 1992

Dear Ms. Barra:

I am writing in response to Mr. Del Shoemaker's letter dated October 16, 1992, regarding US Design's comment on the draft revision to the SCSI-2 standard. I did not receive Mr. Shoemaker's letter until October 28, 1992, so I hope this letter meets its fifteen day deadline.

In the interest of facilitating the process of standards promulgation, US Design accepts the response of X3T9.2 on removal of the SCSI-1 (X3.131-1986) EXTENDED IDENTIFY message from SCSI-2, and the changing of the message code to RESERVED. We agree with the committee that this way of extending the SCSI logical unit address space was limited.

US Design's position is that SCSI should evolve to incorporate a significantly larger logical unit address space than is presently specified. The addressing mechanism should allow the logical unit number to be specified as an atomic part of the I/O process, as did the original SCSI-1 mechanism. This allows the specification of an I/O process and the selection of the target of that process to proceed indivisibly. We recognize that synchronization faults can arise when LUN information is passed in message bytes but feel that these can be handled as instances of incompletely identified nexuses, a condition which a target must handle now.

The Medium Changer command set in SCSI-2 is badly limited as a means of implementing a large logical unit space on a SCSI target. While the Medium Changer command set does support up to 65,536 element addresses, a control process has to map a subset of these addresses to the SCSI logical unit space. A system is constrained to eight concurrent element connections, i.e. to eight active logical unit channels. To initiate an I/O process to a logical unit outside of the current mapping, a separate control process has to manipulate the medium changer address space to align the desired element with a SCSI logical unit number. This suffers at least three problems: one, it is clumsy; two, it forces resource allocation decisions on the control process (which LUN gets replaced?); and three, it is prone to far worse synchronization problems than passing LUN data in a message stream is.

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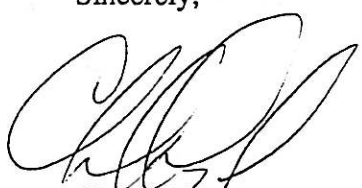
Letter to X3T9.2/Nov. 11, 1992

The work referred to by Mr. Shoemaker on the SCSI-3 family of standards appears to hold the best promise for expanding the SCSI logical unit space. US Design does not feel that the SCSI-3 SPI proposal to enhance IDENTIFY message support from 8 to 32 logical units accomplishes much for its needs; however, the SCSI-3 SAM proposal to permit 15-bit (or larger) logical unit numbers does. A 15- or 16-bit logical unit number would satisfy US Design's product requirements. I am concerned about Mr. Shoemaker's comment that this capability of SAM depends on the capabilities of the physical transport interface used. While it is true that certain physical interfaces naturally support more logical units than others, it is the current standard, 8-bit SCSI interface that US Design wants to support an extended logical unit address space on. The SAM model should not rule out this possibility.

We thank you for your consideration of this issue and appreciate your encouraging our participation. We will continue to pursue this matter through X3T9.2 as the SCSI-3 family of standards evolves.

Sincerely,



Chuck Duquette
US Design

cc: Del Shoemaker, Chair X3T9
John Lohmeyer, Char X3T9.2