



Date: March 17, 1994
 To: X3T10
 From: Jim McGrath (408-894-4504)
 Subject: SCSI-3 Download Microcode

Background

I have been receiving feedback on download microcode in SCSI-2 and would like to offer a proposal for improvement in SCSI-3.

First, some customers have system limitations that have prevented them from downloading more than a certain amount of code (typically 64K bytes) during a single command. While it would appear that the WRITE BUFFER command has a readily available solution at hand in the BUFFER OFFSET field, that is not the case. For the download microcode modes, the BUFFER ID and BUFFER OFFSET fields are designated as don't cares - any valid is legal, and should be ignored.

Proposal

I would suggest revising the standard language to allow the use of these fields. If the target receives a WRITE BUFFER command using the DOWNLOAD microcode mode, then it shall consider the BUFFER ID and BUFFER OFFSET fields valid. They should be interpreted in the following manner:

ID	Offset	Length	Action
0	0	m	Device receives m bytes of data and interprets it as bytes 0 through m-1 of downloaded microcode 0. This is the complete set of downloaded microcode.
k	n	m	Device receives m bytes of data and interprets it as bytes n through n+m-1 of downloaded microcode k. This may or may not be the complete set of downloaded microcode.

If a Buffer ID other than 0 is used, then each WRITE BUFFER command may transfer a portion of a downloaded microcode. The target determines whether the complete data is transferred by receiving a WRITE BUFFER command with a transfer length of 0. Note for this signaling mechanism to work the following sequence should be performed by the initiator:

- RESERVE the device
- send down one or more WRITE BUFFER commands with no intervening commands
- RELEASE the device

If any command other than a WRITE BUFFER command is received between the RESERVE and the last WRITE BUFFER command, then the download sequence should be considered to be aborted. The initiator should RELEASE the device, the device should not have been affected by the previous WRITE BUFFER commands, and the entire sequence should be started again.

When partial data is downloaded the initiator shall download the data in a contiguous address space in increasing order.

Note that by using the BUFFER ID, multiple versions of microcode may be downloaded and (optionally) saved. If a single BUFFER ID is used, then the operating microcode shall be that associated with that ID. If multiple BUFFER IDs are used, then the operating code is selected by using the CHANGE DEFINITION command.