To: X3T9.2 Committee (SCSI)

From: Scott Smyers (Apple Computer)

Subject: Proposal to add a "disconnect unconditionally after command phase" mode bit in the SCSI-3 standard

Date: August 26, 1992

This proposal is for a new bit in mode page 2. This bit controls whether the target is required to disconnect unconditionally or not following the receipt of a command with the disconnect privilege bit set. After disconnecting, the target may attempt to reconnect according to the setting of the "disconnect time limit" field in mode page 2.

Below is a representation of the proposed change as it would appear if it were to be incorporated into the SCSI-2 standard. Change bars to the right indicate changes from the SCSI-2 rev 10h document. (Note that this proposal is for SCSI-3 and that the text below is only for illustration).

Table 98: Disconnect-Reconnect Page

Bit Byte	7	6	5	4	3	2	1	0
0	PS	Reserved	Page Code (02h)					
1	Page Length (0Eh)							
2	Buffer Full Ratio							
3	Buffer Empty Ratio							
4	(MSB)							
5	Bus Inactivity Limit							(LSB)
6	(MSB)							
7	Disconnect Time Limit							(LSB)
8	(MSB)							
9	Connect Time Limit							(LSB)
10	(MSB)							
11	Maximum Burst Size							(LSB)
12	Reserved				DImm	DTDC		
13	Reserved							
14	Reserved							
15	Reserved							

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Changes to the text would include adding the following immediately before section 7.3.3.3:

Table 99: Data Transfer Disconnect Control

```
+===========-==============================================================+
| DTDC      | Description                                                  |
|-----------+--------------------------------------------------------------|
|    000b   | Data transfer disconnect control is not used.  Disconnect is |
|           | controlled by the other fields in this page.                 |
|    001b   | A target shall not attempt to disconnect once the data transfer of |
|           | a command has started until all data the command is to transfer has|
|           | been transferred.  The connect time limit and bus inactivity limit |
|           | are ignored during the data transfer.                        |
|    010b   | Reserved                                                     |
|    011b   | A target shall not attempt to disconnect once the data transfer of |
|           | a command has started until the command is complete.  The connect  |
|           | time limit and bus inactivity limit are ignored once data transfer |
|           | has started.                                                 |
|100b - 111b| Reserved                                                     |
+==========================================================================+
```

If DTDC is nonzero and the maximum burst size is nonzero the target shall return CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense code set to ILLEGAL FIELD IN PARAMETER LIST.

The Disconnect Immediate (DImm) bit allows the Initiator to control the disconnect behaviour of a Target following the Command Phase of data transfer commands (Read, Write and Write and Verify).

If the Disconnect Immediate (DImm) bit is set to one, the target should disconnect after the command phase (if the previous Identify message does not grant the target the privilege of disconnection, then the target does not disconnect.)

   NOTE: After disconnecting, the target may reconnect for this command if the target's internal control algorithms and other disconnect/reconnect control parameters indicate that this is appropriate and permissible.

If the DImm bit is set to zero, then the target has no requirements to disconnect or not disconnect other than those imposed upon it by the other parameters in this mode page.

   IMPLEMENTORS NOTE: When the DImm bit is set to one, it is very likely that the target is operating in an environment where there are several targets operating at the same time to satisfy a single request (e.g., in a disk array). Therefore, when the DImm bit is set to one, it is highly desirable for the target to attempt to reconnect only when the buffer full or empty ratios are met. It is also highly desirable in this situation for the target to disconnect immediately when the buffer is completely empty, in the case of a read, or completely full in the case of a write.

7.3.3.3 Peripheral Device Page

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