



Date: 12 February, 1997
 To: X3T10 Membership
 From: Ralph Weber, X3T10 Alternate member from Symbios Logic
 Subject: Proposed Change in QErr for SPC-2

Problem

In a multi-initiator environment, the current definition of QErr=1 can produce a situation where no work is getting done because the device server is continually reporting CHECK CONDITION status. Consider the following scenario:

<u>Initiator A</u>	<u>Initiator B</u>
Send Tag 1	
Send Tag 2	
CHECK CONDITION for Tag 1	Send Tag 3
>> <u>Tags 2 and 3 are aborted</u> <<	
Send REQUEST SENSE	
Send Tag 4	
>> <u>Tag 4 is aborted</u> <<	Send Tag 5
	CHECK CONDITION for Tag 5
	Send REQUEST SENSE
	(UNIT ATTENTION for aborted tasks)
	Send Tag 6
Send Tag 7	
CHECK CONDITION for Tag 7	
>> <u>Tag 6 is aborted</u> <<	
Send REQUEST SENSE	
(UNIT ATTENTION for aborted tasks)	

I could go on and on, but you get the picture. If the hosts keep the device server busy enough, there is a chance that the only work that will ever get done (after the first error is encountered) is moving UNIT ATTENTION sense data around.

The SCSI Working Group discussed this problem at their January 1997 meeting. The following proposal has been drafted to address the concerns raised by the SCSI Working Group and to include the proposals made there.

Proposal

To resolve this problem, it is proposed that the QErr bit become a two-bit QErr field by extending QErr to include bit position 2 in byte 3 in the Control mode page in SPC-2. The text defining the QErr field will be constructed so that the existing meanings of QErr=0 and QErr=1 will be preserved, with new meanings being assigned to QErr=10 and QErr=11. The following definition of the new QErr field is proposed:

The queue error management (QErr) field specifies how the device server shall handle blocked tasks when another task receives a COMMAND TERMINATED or CHECK CONDITION status (see table n1).

Value	Definition
00b	Blocked tasks in the task set shall resume after an ACA condition is cleared (see SAM).
01b	All the blocked tasks in the task set shall be aborted when the COMMAND TERMINATED or CHECK CONDITION status is sent. A unit attention condition (see SAM) shall be generated for each initiator that had blocked tasks aborted except for the initiator to which the COMMAND TERMINATED or CHECK CONDITION status was sent. The device server shall set the additional sense code to COMMANDS CLEARED BY ANOTHER INITIATOR.
10b	Reserved
11b	Blocked tasks in the task set belonging to the initiator to which a COMMAND TERMINATED or CHECK CONDITION status is sent shall be aborted when the status is sent.

NOTE n2 In a multi-initiator configuration, QErr=01b can produce looping repetitions of CHECK CONDITION status being sent to various of the multiple initiators or service requests being timed out because tasks are aborted and unit attention notification fails due to the absence of new service requests.

It also must be noted that the proposed change in the definition of QErr affects the already approved proposal defining the Basic queuing model (96-198r4). So that the Basic queuing model can be functional in a multi-initiator configuration, I propose that the previous Basic queuing model approval be amended to use QErr=11b and its associated definition above wherever 96-198r4 uses QErr=1.