



Date: 19 October 1999
 To: T10 Technical Committee
 From: Ralph Weber, LSI Logic Alternate Member of T10
 Subj: SAM-2 TASK SET FULL Clarifications

During the May General SCSI Working Group meeting I was asked to investigate the SAM-2 definition of the TASK SET FULL status. The results of this investigation and proposed changes were reviewed and enhanced by the July Working Group meeting. Additional revisions were prepared during and after the September General SCSI Working Group meeting. T10 reflector discussions of the revision prepared following the September meeting have questioned the use of "otherwise" in the definition.

The problem is that the definition of the TASK SET FULL status (5.2) does not state whether it can be returned for untagged tasks. In order to develop a perspective on the required wording, the following table is included solely as a preface to the proposed changes (the table is **not** intended to be added to SAM-2).

| New Task Is | Task From The Same Initiator "In" The Task Set Is | | | |
|-------------|---|--------------------|-------------------------|---|
| | Tagged TST=000b or TST =001b | Untagged | None TST=000b | None TST =001b |
| Tagged | TASK SET FULL | TASK SET FULL | TASK SET FULL | In this case, the task set is limited to tasks from one initiator, so the task set is empty not full, and it would seem that BUSY must be returned always |
| Untagged | BUSY or TASK SET FULL | duplicate commands | BUSY (or TASK SET FULL) | |

Note that this discussion ignores the concept that TASK SET FULL or BUSY are to be used as a means of congestion control (as discussed in several T10 reflector messages). It is not clear that original definitions of either TASK SET FULL or BUSY included congestion control concepts. This is further evidenced by the T10 reflector messages, some of which stated that BUSY was intended as the signal for congestion problems while others claimed that meaning for TASK SET FULL.

The columns labeled "None TST=000b" and "None TST=001b" are new to this revision of the proposal. The returned status information in these columns are guesses. The returned status information in the other two columns is based on past discussions of this proposal.

The following choices have been made in the process of reducing the above table to words:

- a) The case involving duplicate untagged commands has been omitted since it is covered elsewhere in the standards and has never been mentioned in the definition of TASK SET FULL; and
- b) The unique cases involving TST=001b have been omitted since they have not been considered by the group previously and have not been mentioned in previous definitions of TASK SET FULL.

With these issues and T10 reflector comments about the use of "otherwise" in mind, the following changes are proposed for the definition of the TASK SET FULL status in SAM-2. Also, the use of "cannot" has been eliminated to conform with preferred wording for standards.

Old text:

TASK SET FULL. This status shall be implemented if the logical unit supports the creation of tagged tasks (see 4.9). This status shall be returned when the logical unit receives a command and does not have enough resources to enter the associated task in the task set.

New text:

TASK SET FULL. This status shall be implemented if the logical unit supports the creation of tagged tasks (see 4.9). This status shall not be implemented if the logical unit does not support the creation of tagged tasks. ~~This status shall be returned when the logical unit receives a command and does not have enough resources to enter the associated task in the task set.~~ When the logical unit has at least one task in the task set and lack of task set resources prevents entering a newly received tagged task in the task, TASK SET FULL shall be returned. When the logical unit has at least one task in the task set and lack of task set resources prevents entering a newly received untagged task in the task, BUSY should be returned.

New text minus strikeouts:

TASK SET FULL. This status shall be implemented if the logical unit supports the creation of tagged tasks (see 4.9). This status shall not be implemented if the logical unit does not support the creation of tagged tasks. When the logical unit has at least one task in the task set and lack of task set resources prevents entering a newly received tagged task in the task, TASK SET FULL shall be returned. When the logical unit has at least one task in the task set and lack of task set resources prevents entering a newly received untagged task in the task, BUSY should be returned.