# T10/01-316R1

Date: November 7, 2001

To: T10 Committee

From: Paul Entzel, Quantum

Subject: Proposed change to SSC-2 Progress Indication

## Overview

This proposed change affects SSC-2, section 4.2.10, which describes Progress Indication reporting. Requested changes are of two types:

- Removal of the requirement that the command in progress have its Immed bit set.
- Clarification that Progress Indication support is optional by the device server for all of the commands listed.

## Original proposal

The original proposal that added this section to SSC is numbered X3T10/99-181r0. It was written by Gary Stevens and dated May 10, 1996. It is titled "SSC progress indication using REQUEST SENSE polling" and consists of 2 paragraphs of justification followed by the text that appears in the SSC-2 Standard today. For reference, the justification paragraphs are included here:

*The concept of REQUEST SENSE polling for immediate operations has been extended from its initial use for the SBC FORMAT UNIT command to a general function available to all device classes. This proposal requests the addition of text to selected commands to recommend progress indication reporting be used. Historical use will not disappear, which returns BUSY or other status, but newer devices can provide better information on the state of immediate operations through this procedure.*

*Two types of progress indication are possible using two sense keys: NOT READY and NO SENSE. NOT READY indicates a state where manual intervention is usually required. NO SENSE indicates that the logical unit is ready, but busy performing a long immediate operation (e.g., a rewind operation).*

## Proposed Changes in SSC-2

The original proposal that added the "progress indication" feature did not take into account multiple initiators or command queuing. This proposal requests that we remove the Immed=1 requirement for reporting Progress Indication from SSC-2.

While it appears that the original proposal intended support for Progress Indication to be optional, the wording in the standard does not clearly state this fact. A simple wording change is proposed to clarify this feature is optional.

The following section includes the current text from SSC-2 with proposed changes marked.

## 4.2.10 Progress indication

For the following immediate operations where the device server remains ready, an application client may follow the progress of the operation (see table 3).

**Table 3 — Commands providing progress indication without changing ready state**

| Operation | Options | Subclause | ASC |
|---|---|---|---|
| ERASE | ~~IMMED = 1,~~ LONG = 1 | 5.1,6.1 | ERASE OPERATION IN PROGRESS |
| LOCATE | ~~IMMED = 1~~ | 5.1,6.2 | LOCATE OPERATION IN PROGRESS |
| REWIND | ~~IMMED = 1~~ | 7.7 | REWIND OPERATION IN PROGRESS |
| SET CAPACITY | ~~IMMED = 1~~ | 7.8 | SET CAPACITY OPERATION IN PROGRESS |
| VERIFY | ~~IMMED = 1~~ | 5.5,6.7 | VERIFY OPERATION IN PROGRESS |

~~If the IMMED bit is one, an initiator not subject to a reservation conflict may receive a deferred error indication on any subsequent command.~~ While the device server is performing the ~~immediate~~ operation, an application client may test the progress of the operation by interpreting the progress indication information in the sense-key specific field of the sense data. During the operation, the device server ~~shall~~ may report a sense key value of NO SENSE and additional sense information ~~of OPERATION IN PROGRESS~~from the ASC column in Table 3. The device server should use the sense key specific function for progress indication to provide information on the completion of the operation.

For the following immediate operations where the device server is ready or will become ready, an application client may follow the progress of the operation (see table 4).

**Table 4 — Commands changing ready state and providing progress indication**

| Operation | Options | Subclause |
|---|---|---|
| FORMAT MEDIUM | ~~IMMED = 1~~ | 7.1 |
| LOAD UNLOAD | ~~IMMED = 1,~~ LOAD = 1, EOT = 0 | 7.2 |
| LOAD UNLOAD | ~~IMMED = 1,~~ LOAD = 1, EOT = 1 | 7.2 |

~~If the IMMED bit is one, an initiator not subject to a reservation conflict may receive a deferred error indication on any subsequent command.~~ While the device server is performing the ~~immediate~~ operation, an application client may test the progress of the operation by interpreting the progress indication information in the sense-key specific field of the sense data. During the operation, the device server ~~shall~~ may report a sense key value of NOT READY and additional sense information of LOGICAL UNIT NOT READY, OPERATION IN PROGRESS, NOT READY, FORMAT IN PROGRESS or LOGICAL UNIT IS IN PROCESS OF BECOMING READY, as appropriate. The sense key specific function for progress indication may be used by the device server to provide information on the completion of the operation.

NOTE 2 A REQUEST SENSE command following a TEST UNIT READY command that results in CHECK CONDITION status may provide information, which if acted upon, may lead to unexpected conditions. For example, progress indication reporting is useful when a medium changer is used to service a sequential-access device following an unload operation with IMMED=1b. A TEST UNIT READY command may receive CHECK CONDITION status and a NOT READY sense key reported in the subsequent sense data, which might imply that the unload operation is finished. If the initiator ignores the progress indication information in the sense data, an EXCHANGE MEDIUM or MOVE MEDIUM command (see SMC) to move the dismounted volume from the device may fail to grab the volume if the unload operation is still in progress.

## Changes in SPC-3

Add new ASC / ASCQ combination for the following conditions:

| Condition | Suggested ASC / ASCQ (h) |
|---|---|
| ERASE OPERATION IN PROGRESS | 00 18 |
| LOCATE OPERATION IN PROGRESS | 00 19 |
| REWIND OPERATION IN PROGRESS | 00 1A |
| SET CAPACITY OPERATION IN PROGRESS | 00 1B |
| VERIFY OPERATION IN PROGRESS | 00 1C |