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Subject: SAT REQUEST SENSE Clarification and Power Condition Returns

Introduction

This proposal addresses an inconsistency between REQUEST SENSE as described in SAT r2 and SPC-3 r21d regarding ASC's to be used when the device is in a low power state. In addition, text is clarified which implied that the translator sends a REQUEST SENSE command to the ATA device (which it does not).

Documents Affected

D-1711 r2

Proposed Changes

This proposal modifies clause 8.11 of SAT (revision 2) as follows:

8.11 REQUEST SENSE command (03h)

8.11.1 Command summary

Request sense command requests that any available sense data be returned to the caller. Upon errors with auto request sense enabled, the translator shall ~~issue a request sense command and send the sense data to the caller along with the status of the command that generated the CHECK CONDITION~~ generate sense data to the caller based on the status returned by the ATA device as appropriate for the command that had an error. ~~This behavior is emulated for SATA devices as well. Therefore, a separate request sense command is not necessary and shall result in a sense data block with sense key set to no sense and additional sense code set to no additional sense data. Emulate enabling and disabling of auto request sense and cache sense data if auto request sense is disabled.~~

Editor's Note 1: We need to ensure that each translated command has a sense data translation as well (or at least a statement saying that you have to generate sense data from the ATA register set)

In order accurately return the correct status, sense key, additional sense codes, and sense data (if any) the SATL must ensure that none of the conditions in table 37 exist. If none of these exception conditions exist, then the SATL shall complete this command with GOOD status with the sense key set to NO SENSE and additional sense code set to NO ADDITIONAL SENSE DATA, else the SATL shall take the actions specified in the sub clause for that condition.

Table 37 — Special REQUEST SENSE behavior reference

ATA Device Condition	See Clause
FORMAT UNIT in progress	8.11.2
SMART Threshold Exceeded Condition	8.11.3
ATA Device in Low Power State	8.11.4

Table 38 — REQUEST SENSE command CDB fields

Field	SATType	Description or Reference
OPERATION CODE	E	If no condition from table 37 exists, then return GOOD status with a sense key of NO SENSE, and an additional sense code set to NO ADDITIONAL SENSE DATA.
DESC	E	A SATL may support returning fixed format sense data, descriptor format sense data, or both. This bit shall be implemented as described in SPC-3.
ALLOCATION LENGTH	E	This field specifies how many bytes have been allocated for the returned sense data. The minimum of this value or 18 bytes shall be returned.
CONTROL	I	(see 6.4)

~~Sense data shall be returned with the sense key set to no sense and additional sense code set to no additional sense data. When a FORMAT UNIT command is outstanding, sense data indicating the progress of the format operation shall be returned. If SMART reporting is enabled, and a threshold exceeding condition is detected, the sense key set to NO SENSE and additional sense code set to GENERAL HARDWARE FAILURE shall be returned.~~

8.11.2 FORMAT UNIT In Progress

If a FORMAT UNIT command is in progress, and the SATL receives a REQUEST SENSE command, the SATL shall return BUSY status with the sense key set to NOT READY, and additional sense code set to LOGICAL UNIT NOT READY, FORMAT IN PROGRESS. The sense key specific bytes shall be set to progress indication as per SPC-3.

8.11.3 SMART Threshold Exceeded Condition

If the ATA device has the SMART feature set enabled and the most recent SMART RETURN STATUS command to the device indicates that the error threshold has been reached, the SATL shall return GOOD status with the sense key set to NO SENSE, and the additional sense code set to GENERAL HARDWARE FAILURE. Refer section 6 on SMART for further details.

8.11.4 ATA Device in Low Power State

If the ATA device is in a low power state (i.e. ATA state of STANDBY) the SATL shall return GOOD status with NO SENSE, and the additional sense code of LOW POWER CONDITION ON.