DELL

To: T10 Technical Committee
From: Kevin Marks - Dell, Inc.
Date: August 29, 2006
Subject: T10/06-374r0 – SAT: Self-Test Results log page

Revision History
Revision 0 (August 29, 2006) – Initial proposal

Related Documents
SCSI / ATA Translation (SAT) (T10/1711-D – SAT2r08c)

New text to be added to SSC-3
Text to be deleted from SSC-3
<<…Editorial text…>

Overview

This proposal is an attempt to resolve several Dell letter ballot comments on the Self-Test Results log page.

Suggested Changes to SATr8c:

10.2.3 Self-Test Results log page

10.2.3.1 Self-Test Results log page overview

Table 68 — Self-Test Results log page fields

Field	Description or reference
PAGE CODE	Shall be set to 10h
PAGE LENGTH	~~Unspecified (see 3.4.2)~~ Shall be set to 190h

Translations of the fields for the Self-Test Results log parameters for the Self-Test Results log page are shown in table 69.

Table 69 — Self-Test Results log parameters

Field	Description or reference
PARAMETER CODE	~~Unspecified (see 3.4.2) –~~ The SATL shall return log parameters with the PARAMETER CODE field set to 0001h through 0014h.
DU	Shall be set to zero
DS	Shall be set to zero
TSD	Shall be set to zero
ETC	Shall be set to zero

LBIN	Shall be set to one
LP	Shall be set to one
PARAMETER LENGTH	Shall be set to 10h
SELF-TEST CODE	The SATL shall read the ATA log data as defined in 10.2.3.2. If the SATL reads the ATA log data using the ATA READ LOG EXT command specifying the Extended SMART self-test log, then the SATL shall check if the Self-test descriptor index in the first block of data (i.e., bytes 2 and 3) is set to zero. If the Self-test descriptor index is set to zero, then the SATL shall set the SELF-TEST CODE field to zero for each of the log parameters returned. If the Self-test descriptor index is set to a non-zero value, then the SELF-TEST CODE field is unspecified (see 3.4.2) If the SATL reads the ATA log data using the ATA SMART READ LOG command specifying the SMART self-test log, then the SELF-TEST CODE field is u~~U~~nspecified (see 3.4.2)
SELF-TEST RESULTS	The SATL shall read the ATA log data as defined in 10.2.3.2. ~~If the SATL reads the ATA log data using the READ LOG EXT command specifying the Extended SMART self-test log, then the SATL shall set the SELF-TEST RESULTS field to the value in the Self-test Execution Status bits from the Content of the self-test execution status byte (i.e., byte n + 1 of the Extended Self-test log descriptor entry) (see ATA8-ACS).~~ If the SATL reads the ATA log data using the ATA READ LOG EXT command specifying the Extended SMART self-test log, then the SATL shall check if the Self-test descriptor index in the first block of data (i.e., bytes 2 and 3) is set to zero. If the Self-test descriptor index is set to zero, then the SATL shall set the SELF-TEST RESULTS field to zero for each log parameter returned. If the Self-test descriptor index is set to a non-zero value, then the SATL shall set the SELF-TEST RESULTS field to: a) the value contained in the Self-test Execution Status bits of the Contents of the self-test execution status byte of the nth descriptor entry, where n is equal to the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one, if the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one is greater than zero; or b) zero, if the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one is less than or equal to zero. ~~If the SATL reads the ATA log data using the SMART READ LOG command specifying the SMART self-test log, then the SATL shall set the SELF-TEST RESULTS field to the value in the Content of the self-test execution status byte (i.e., byte n + 1 of the Self-test log descriptor entry)~~

	~~for the Self-test execution status bits.~~ If the SATL reads the ATA log data using the ATA SMART READ LOG command specifying the SMART self-test log, then the SATL shall set the SELF-TEST RESULTS field to the value contained in the Self-test Execution Status bits of the Contents of the self-test execution status byte of the nth descriptor entry, where n is equal to the value contained in the PARAMETER CODE field for the log parameter being returned.
SELF-TEST NUMBER	Unspecified (see 3.4.2)

TIMESTAMP	The SATL shall read the ATA log data as defined in 10.2.3.2.
	
	~~If the SATL reads the ATA log data using the READ LOG EXT command specifying the Extended SMART self-test log, then the SATL shall set the TIMESTAMP field to the values in the Life timestamp (most significant byte) and Life timestamp (least significant byte) of the Extended Self-test log descriptor entry.~~
	
	If the SATL reads the ATA log data using the ATA READ LOG EXT command specifying the Extended SMART self-test log, then the SATL shall check if the Self-test descriptor index in the first block of data (i.e., bytes 2 and 3) is set to zero. If the Self-test descriptor index is set to zero, then the SATL shall set the TIMESTAMP field to zero for each log parameter returned.
	
	If the Self-test descriptor index is set to a non-zero value, then the SATL shall set the TIMESTAMP field to:
	
	    a) the values contained in the Life timestamp (most significant byte) and Life timestamp (least significant byte) of the nth descriptor entry, where n is equal to the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one, if the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one is greater than zero; or
	    b) zero, if the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one is less than or equal to zero.
	
	~~If the SATL reads the ATA log data using the ATA SMART READ LOG command specifying the SMART self-test log, then the SATL shall set the TIMESTAMP field to the values in the Life timestamp (most significant byte) and Life timestamp (least significant byte) of the Self-test log descriptor entry.~~
	
	If the SATL reads the ATA log data using the ATA SMART READ LOG command specifying the SMART self-test log, then the SATL shall set the TIMESTAMP field to the values contained in the Life timestamp (most significant byte) and Life timestamp (least significant byte) of the nth descriptor entry, where n is equal to the value contained in the PARAMETER CODE field for the log parameter being returned.

ADDRESS OF FIRST FAILURE	The SATL shall read the ATA log data as defined in 10.2.3.2.
	
	~~If the SATL reads the ATA log data using the READ LOG EXT command specifying the Extended SMART self-test log, then the SATL shall set the ADDRESS OF FIRST FAILURE field using the values in the Failing LBA (47:40), Failing LBA (39:32), Failing LBA (31:24), Failing LBA (23:16), Failing LBA (15:8), and Failing LBA (7:0) of the Extended Self-test log descriptor entry.~~
	
	If the SATL reads the ATA log data using the ATA READ LOG EXT command specifying the Extended SMART self-test log, then the SATL shall check if the Self-test descriptor index in the first block of data (i.e., bytes 2 and 3) is set to zero. If the Self-test descriptor index is set to zero, then the SATL shall set the ADDRESS OF FIRST FAILURE field to zero for each log parameter returned.
	
	If the Self-test descriptor index is set to a non-zero value, then the SATL shall set the ADDRESS OF FIRST FAILURE field to:
	
	    a) the values contained in the Failing LBA (47:40), Failing LBA (39:32), Failing LBA (31:24), Failing LBA (23:16), Failing LBA (15:8), and Failing LBA (7:0) of the nth descriptor entry, where n is equal to the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one, if the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one is greater than zero; or
	    b) zero, if the Self-test descriptor index minus the value contained in the PARAMETER CODE field for the log parameter being returned plus one is less than or equal to zero.
	
	~~If the SATL reads the ATA log data using the SMART READ LOG command specifying the SMART self-test log, then the SATL shall set the ADDRESS OF FIRST FAILURE field using the values in the Failing LBA (most significant byte), Failing LBA (next most significant byte), Failing LBA (next least significant byte), and Failing LBA (least significant byte) of the Self-test log descriptor entry.~~
	
	If the SATL reads the ATA log data using the ATA SMART READ LOG command specifying the SMART self-test log, then the SATL shall set the ADDRESS OF FIRST FAILURE field using the values contained in the Failing LBA (27:24), Failing LBA (23:16), Failing LBA (15:8), and Failing LBA (7:0) of the nth descriptor entry where n is equal to the value contained in the PARAMETER CODE field for the log parameter being returned.

SENSE KEY	10.2.3.3
ADDITIONAL SENSE CODE	10.2.3.3
ADDITIONAL SENSE CODE QUALIFIER	10.2.3.3

10.2.3.2 A method of determining ATA command selection for field translations

To translate the SELF-TEST CODE field, SELF-TEST RESULTS field, the TIMESTAMP field, the ADDRESS OF FIRST FAILURE field, the SENSE KEY field, the ADDITIONAL SENSE CODE field, and the ADDITIONAL SENSE CODE QUALIFIER field of Self-Test Results log parameters, the SATL shall issue an ATA IDENTIFY DEVICE command to the ATA device, and from the returned data the SATL shall determine if the ATA device supports the 48-bit Address feature set. If the 48-bit Address feature set is supported (i.e., bit 10 of word 83 of ATA IDENTIFY DEVICE data is set to one), then the SATL shall issue a ATA READ LOG EXT command with the Log address set to 07h (i.e., Extended SMART self-test log) to the ATA device. If the 48-bit Address feature set is not supported (i.e., bit 10 of word 83 of ATA IDENTIFY DEVICE data is set to zero), then the SATL shall issue a ATA SMART READ LOG command with the Log address set to 06h (i.e., SMART self-test log) to the ATA device.

10.2.3.3 Sense key and additional sense code

The SATL shall determine the SENSE KEY field, the ADDITIONAL SENSE CODE field and the ADDITIONAL SENSE CODE QUALIFIER field sense key and additional sense code returned in each log parameter from the content of the self-test execution status byte returned from a ATA READ LOG EXT command or SMART READ LOG command issued to the ATA device (see 10.2.3.2). The values returned shall be translated into sense data for the sense key, and additional sense code as shown in table 70.

Table 70 — ATA Self-test execution status values translated to SCSI sense keys and sense codes
<<… Insert Table 70…>>

<<… Why was OPERATION IN PROGRESS not chosen for the ASC when the self-test was in progress, instead of NO ADDITIONAL SENSE INFORMATION with a self-test execution status byte of 15?...>>