To: T10 Technical Committee
From: Mark Overby, NVIDIA Corporation (moverby@nvidia.com)
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Subject: T10/05-359r2 SAT: Control Mode Page Translation

Revision History
Revision 0 - Initial draft of document
Revision 1 - Minor editorial changes and reformat of formula for self-test completion time
Revision 2 - Clarified explanation of self-test completion time to explicit reference SMART return data
        Updated formula to match T10 styles

Related Documents
SAT (T10/1711-D) Revision 5

1 Overview

This proposal introduces a translation for the control mode page.

2 Document Changes

2.1 Changes to SAT (T10/1711-D r5)

Add the following section:

10.1.6 Control mode page

10.1.6.1 General translation

The control mode page provides controls and information about behavior of the emulated SCSI device.

Table 1 describes the translation of a control mode page for an attached ATA device.

Table 1 — Control mode page fields

Field	Changeable	Description or Reference
PS	n/a	Unspecified (See SPC-3)
PAGE CODE	no	Shall be set to 0Ah (See SPC-3)
PAGE LENGTH	no	Shall be set to 0Ah (See SPC-3)
TST	no	Shall be set to 000b to indicate that a SCSI representation of an ATA device has one task set for all initiators
TMF_ONLY	no	Shall be set to 0b[a]
D_SENSE	no[b]	A SATL shall support a value of 0b for this field indicating that the emulated SCSI device uses the fixed sense data format. A SATL may support a value of 1b for this field to support the descriptor format sense data. SATL implementations that support 1b, shall also support this field as being changeable.
GLTSD	no	Shall be set to 1b. Log page translations are implemented as emulated pages based on ATA data that may not be saved by the attached ATA device.
RLEC	no	Shall be set to 0b
[a] - SATL implementations shall not support ACA, therefore this field shall be 0b. [b] - If the SATL supports the optional behavior for this field, the SATL may support this field as changable		

Table 1 — Control mode page fields

Field	Changeable	Description or Reference
QUEUE ALGORITHM MODIFIER	no	Shall be set to 1b if the ATA device supports any form of command queuing, otherwise shall be set to 0b
QERR	no	If the SATL resubmits queued commands that did not fail to the drive on behalf of any I_T Nexus, this field shall be set to 00b. Otherwise, the SATL shall set this field to 01b and comply with the unit attention requirements for a task completed with CHECK CONDITION status (see SPC-3)
TAS	no	Shall be set to 0b
RAC	Unspecified	Unspecified (See SPC-3)
UA_INTLCK_CTRL	no	Shall be set to 00b
SWP	no	Shall be set to 0b
ATO	Unspecified	Unspecified
AUTOLOAD MODE	no	Shall be set to 000b
BUSY TIMEOUT PERIOD	no[b]	The default value shall be set to FFFFh. A SATL may support variable timeout periods and allow the application client to set a new value through a MODE SELECT operation for this mode page (see SPC-3)
EXTENDED SELF-TEST COMPLETION TIME	no	See 10.1.6.2
[a] - SATL implementations shall not support ACA, therefore this field shall be 0b. [b] - If the SATL supports the optional behavior for this field, the SATL may support this field as changable		

10.1.6.2 Extended self-test completion time

A SATL implementation shall set this field to 0000h unless the attached ATA device supports SMART self-tests and the SATL supports a non-000b value for the SELF-TEST CODE field for a SEND DIAGNOSTIC command. The SATL determines if the attached ATA device supports SMART self-test by examining the IDENTIFY DEVICE data for word 84, bit 1. If word 84, bit 1 is set to one, the device supports the SMART self-test. Under these conditions, the SATL shall set the EXTENDED SELF-TEST COMPLETION TIME field as follows:

1) The SATL shall obtain the device SMART data structure by sending a SMART READ DATA command to the attached device. The SATL may cache this information for future use when a subsequent MODE SENSE command requests the control mode page. If the SATL caches such data, it is not mandatory to send a SMART READ DATA more than one time.
2) If byte 373 of the **SMART data stucture** is not FFh, the SATL shall set the extended self-test completion time to 60 times the contents of byte 373.
3) If byte 373 of the **SMART data structure** is FFh, the SATL shall set the extended self-test completion time to the lesser of FFFFh or the **result of the** following formula:

z = Contents of byte 375
w = Contents of byte 376

EXTENDED SELF-TEST COMPLETION TIME **field** = **((w x 256) + z) x 60;**

where z is the contents of byte 375 and w is the contents of byte 376.