To: T10 Technical Committee
From: Robert Sheffield, Intel (robert.l.sheffield@intel.com)
Date: 20 May 2005
Subject: 04-391r5 SAT: Work Items List

Revision history
Revision 0 (8 November 2004) - First revision
Revision 1 (16 December 2004) - Add completed items, and target/Lun mapping.
Revision 2 (18 January 2005) - Add REASSIGN BLOCKS & reassign security modes task
Revision 3 (18 March 2005):
     a)   Add 04-218r8 INQUIRY data contents integration as a completed task.
     b)   Mark done restructuring SAT to include a clause on SCSI extensions to SAT
     c)   Tag the ATAPI extensions item as clause 14 instead of 13 (due to item-b above)
     d)   Add a task to add a subclause for reporting ATA host capabilities in INQUIRY VPD data.
     e)   Modified the scope of the ATA power modes task.
     f)   Modified target/LUN mapping task to include two PATA drives on a cable.
     g)   Added some new tasks.
     h)   Marked Passthrough Commands and SATL-specific mode page as done.
Revision 4 (18 May 2005):
     a)   Removed duplicate "Device States" work item (DF bit - in clause-5).
     b)   Change ATAPI translation task owner from Mark Overby to David Hawks
     c)   Add INQUIRY product revision translation and REQUEST SENSE cleanup tasks (both done).
     d)   Changed REPORT TASK MANAGEMENT functions task owner to "Open"
     e)   Added 16-byte commands support task.
     f)   Added caching and informational exceptions mode pages tasks.
     g)   Added log pages 0, 2Fh, and 10h tasks.
     h)   Added mode page policy VPD page task.
     i)   Added SEND DIAGNOSTIC cleanup task.
     j)   Added task to provide a mode-pages summary list.
     k)   Added an end-to-end data protection translation task.
     l)   Added a WRITE SAME translation task.
     m)   Added a projected timeline for SAT completion.
Revision 5 (20 May 2005):
     a)   Added a criticality column with items identified in the May 19, 2005 teleconference marked as critical.
     b)   Defined terms, critical and non-critical for the Criticality column.
     c)   Fixed the number of bytes used to fetch disk capacity in item (8) READ CAPACITY (16) (changed [2,4] to [4,8]).
     d)   Noted that item (9), SEND DIAGNOSTIC, also involves the self-test results page, and added Wayne Bellamy as co-owner.
     e)   Added a note to item (10) (summary of mode pages) that summaries of log pages (and parameters) and VPD pages are also required.
     f)   Reordered table 1 to put critical items first, non-critical next, and completed items last.

Related documents
SAT-r04 - SCSI / ATA Translation revision 4

Overview

There are several remaining work items yet to be done to complete the SAT standard. This document briefly describes each work item, with the intent that any of the SAT WG contributors can volunteer to draft proposals to provide the needed text related to each of these items.

The Criticality column in table 1 indicates whether the SAT editor (in accordance with the general wishes of the SAT WG) would delay start of the 30-day SAT letter ballot (table 2 row 3) in order to include the described feature. For critical items the editor would delay letter ballot. Non-critical items may (and should) be included in the standard, but their inclusion is contingent upon plenary approval to integrate the corresponding proposals into the SAT working draft by the date specified for all proposals to be integrated (table 2 row 2).

Table 1 — SAT work items (part 1 of 4)

Item	Description	Owner	Status	Criticality
1)	SMART section. Clause 11 has some skeleton text, but this section needs much elaboration to adequately address the translation, needs to be moved into a subclause under the Log Pages section of the "parameters" chapter. It needs to include translations for log pages 00h, 10h, and 2Fh.	Steve Johnson, Wayne Bellamy	In progress	Critical
2)	Define REASSIGN BLOCKS command	Bellamy	In progress	Critical
3)	Sense Data and Error Reporting. Clause 12 currently is a place-holder for error reporting. It contains general templates for CDBs and data structures, which will be deleted when this clause is completed. Many of the required ASC/ASCQ responses are specified in-line in the main text, but it is likely there is general error reporting translation that needs to be specified, but is not so directly tied to the defined command translations to warrant putting the descriptions in the command translation subclauses themselves. This section will cover any needed sense reporting translation not covered in the command translation clauses. ATAPI may need special treatment here, since in most cases the ATAPI translation will be to forward the status reported by the ATAPI device.	Wayne Bellamy	In progress	Critical
4)	Mode pages and Log pages. Clause 10 defines some mode page and log page translations. The task remaining is to take a thorough look at the defined SPC-3 and SBC-2 mode and log pages to determine what else needs specific translation in SAT. There also may be a need to define a SAT-specific mode page. Specifically: • Caching mode page. • Informational Exceptions mode page • Log page 0 - Supported log pages list • Log page 2Fh - SMART Informational Exceptions Condition • Log page 10h - diagnostic self-test results	Wayne Bellamy, (Mark Overby will help)		Critical
5)	Add a subclause for to specify ATA power modes.	Mark Evans	See editor's note in SAT-r2	Critical
6)	Draft subclause 5.3 Device Error States to describe handling of device error conditions (e.g. if DF is one, return a sense key of HARDWARE ERROR with an additional sense code of [LOGICAL UNIT FAILURE or INTERNAL TARGET FAILURE]).	Bob Sheffield	New	Critical

Table 1 — SAT work items (part 2 of 4)

Item	Description	Owner	Status	Criticality
7)	Define PIO modes for all SCSI/ATA translations that generate READ/WRITE commands to non-packet devices. This involves adding a column to the translation tables at the start of each command subclause to specify whether DMA is supported (by both the SATL and the device), and adding appropriate rows to list non-DMA PIO commands used.	Sheffield	queued	Critical
8)	Add READ CAPACITY (16) and other 16-byte CDB commands that access media. Be sure to check IDENTIFY DEVICE to determine if the 48-bit feature set is supported and enabled because the capacity is reported as a 4-byte field if it's not supported and enabled - and a 8-byte field if it is supported and enabled.	Bob Sheffield	New	Critical
9)	Clean up SEND DIAGNOSTIC command (make it consistent with SCSI). This is tied to the self-test results page.	Bob Sheffield & Wayne Bellamy		Critical
10)	Like the list of supported commands in SAT clause 7, there should be a summary of mode pages supported. Copy SBC-2 table 98 (listing mode pages) and modify to show SBC-2 & SPC-3 references in one column and SAT paragraph references where applicable in another column. Do same for log pages and parameters and INQUIRY VPD pages.	Bob Sheffield	Partly done in SAT-r4 (still need log & VPD pages)	Critical
11)	ATAPI Translations. Clause 14, "Translation for ATAPI devices" is currently a place-holder for this information. This section will probably expand to at least two sections, (ATAPI translations for Primary SCSI commands, and ATAPI translations for SCSI Block Commands), and may require an dedicated architecture section as well.	David Hawks	Placeholder	Non-critical
12)	Add a subclause for reporting ATA host capabilities in INQUIRY VPD data	Mark Overby		Non-critical
13)	Add a subclause for a SATL-specific mode page to specify ATA security modes (may be in a common SATL protocol-specific mode page).	Mark Overby	In progress	Non-critical
14)	Add a normative text in the task-management subclause referring to the SCSI-2/SPI to describe translation of "Bus Reset".	Steve Johnson	In progress	Non-critical
15)	Rewrite sections to better define NCQ mapping, including handling of commands queued internally by the SATL.	Steve Johnson	In progress	Non-critical

Table 1 — SAT work items (part 3 of 4)

Item	Description	Owner	Status	Criticality
16)	Define handling of legacy TCQ handling for SATA devices that implement TCQ instead of NCQ	Mark Overby	In progress	Non-critical
17)	Describe Target/LUN mapping options, in particular when a SATA port multiplier is involved (e.g. if the port multiplier is attached to an STP/SATA bridge in an expander, the SATL *might* present it as a target represented by the SAS address of the STP/SATA bridge with LUNs representing the SATA devices attached to the port multiplier). Also address two PATA drives on a common cable. This could also address the possibility of defining a WLUN to represent the SATL itself, even when no ATA devices are attached. This should be an informative annex - some don't want to be restricted to reporting devices as logical units or as target devices for specific configurations.	Sheffield, Elliott	New	Non-critical
18)	Draft a proposal for the READ MEDIA SERIAL NUMBER command	Mark Overby	New	Non-critical
19)	Report Supported Task Management Functions proposal. (note: April SAT WG couldn't remember why this is needed)	Open	New	Non-critical
20)	Add the mode page policy VPD page to the INQUIRY VPD section and include a table of supported mode pages indicating that each is shared, and refer to SPC-3 and SBC-2	Wayne Bellamy		Non-critical
21)	End-to-end data protection handling in SAT	Steve Johnson		Non-critical
22)	Write Same translation	Curtis Stevens		Non-critical
23)	Post rough draft defining basic content of SATL standard (T10/04-136r0 SCSI to ATA Command Translations).	Steve Johnson and Samantha Ranaweera	Done June 2004	N/A
24)	T10 plenary approval of SAT project proposal (T10/04-174r3).	Sheffield	Done July 2004	N/A
25)	Reformat for T10 standards template and post first SAT draft.	Sheffield	Done August 2004	N/A
26)	Define and incorporate common table format for translations (04-260r2).	Stevens / Sheffield	Done Sept. 2004	N/A
27)	Add SAT-specific INQUIRY page 0x83 (04-219r3)	Elliott, Bellamy, Sheffield	Done Sept 2004	N/A
28)	Define semantics to distinguish ATA devices (that don't support the packet command set) from ATAPI devices (that do support the packet command set).	Sheffield	Done-SAT-r1	N/A

Table 1 — SAT work items (part 4 of 4)

Item	Description	Owner	Status	Criticality
29)	Extend the general clause to identify objectives and guidelines to focus on consistency in implementations for SAT-aware and non-SAT aware operating systems and the importance of limiting flexibility to ensure correct results, as much as possible, for existing (non-standard) SCSI-ATA translation implementations.	Sheffield	Done - SAT-r1	N/A
30)	Applied several refinements to task-management functions and supported command op-code translations based on SAT draft review in the August '04 teleconference, September '04 SAT WG meeting, and October '04 teleconference.	Sheffield	Done - SAT-r1	N/A
31)	Add a subclause for 04-218 SAT INQUIRY contents revising standard inquiry data and adding the Device Identification VPD page.	Elliott, Bellamy	Done - SAT-r2	N/A
32)	Restructure draft standard to break-out a separate clause for SATL-specific SCSI extensions to include new SCSI commands (e.g. ATA passthrough), new SATL mode pages (e.g. a mode page to specify ATA transfer/timing modes and security modes, and power modes).	Bob Sheffield	Done - SAT-r2	N/A
33)	ATA Passtrough command	Curtis Stevens	Done	N/A
34)	Add a subclause for a SATL-specific mode page to specify ATA transfer/timing modes (may be in a common SATL protocol-specific mode page).	Mark Overby	Done	N/A
35)	Define INQUIRY product revision translation (05-137r1)	Wayne Bellamy	Done	N/A
36)	Cleanup REQUEST SENSE and deal with autosense (05-109r0)	Mark Overby	Done	N/A
37)	Move INQUIRY VPD pages from their current location in the description of INQUIRY to a subclause under the "Pages" clause 10 in SAT-r4	Bob Sheffield	Done SAT-r4	N/A
38)	Delete document template information in clause-12 (it's confusing when the clause is supposed to have error reporting information)	Bob Sheffield	Done SAT-r4	N/A

Timeline

Table-2 shows the planned timeline.

Table 2 — SAT Timeline

Item	Description	Target Date	Commit Date
1)	All contributed proposals submitted	20 June 2005	12 July 2005
2)	All proposals integrated	12 July 2005	13 Sept 2005
3)	Begin 30-day letter ballot	26 July 2005	29 Sept 2005
4)	Letter ballot close	25 Aug 2005	28 Oct 2005
5)	Letter ballot comment resolution meetings	Sept 2005	Nov 2005
6)	Posting of letter ballot comment resolution	30 Sept 2005	26 Nov 2005
7)	**Plenary vote to fwd to INCITS**	10 Nov 2005	12 Jan 2006