

To: T10 Technical Committee  
From: Wayne Bellamy (wayne.bellamy@HP.com), Hewlett-Packard  
Date: May 23, 2005  
Subject: T10/05-136r1 SAT - REASSIGN BLOCKS command

### Revision History

Revision 0 (March 31, 2005) first revision  
Revision 1 (May 16, 2005) second revision

Change Details:

- 1) per 4-18-05 SAT T10 WG: Removed note below 1<sup>st</sup> para. in section 9.6.1.
- 2) per 4-18-05 SAT T10 WG: Add "perform a write with vendor specific data to the LBA if the READ VERIFY SECTOR(S) command fails"..to section 9.6.1 or Table 1 and section 9.6.2.
- 3) per 4-18-05 SAT T10 WG: "Spell it out" if the command does not support more than one LBA in the parameter list in section 9.6.2.
- 4) per 5-19-05 SAT T10 WG teleconference: Several changes and additions per the call. I was requested to post this progress even if not finished.

### Related Documents

(T10) sat-r04 – SCSI to ATA Translation (SAT), Revision 4  
(T10) sbc-2r16 – SCSI Block Commands -2, Revision 16  
(T13) ata7v1r4b – AT Attachment with Packet Interface -7 Volume1, Revision 4b

### Overview

1. Most SCSI implementations and many popular operating systems use the REASSIGN BLOCKS command even though the REASSIGN BLOCKS command is an optional SCSI command per SBC-2.
2. Complexity of the emulation of the REASSIGN BLOCKS command is (was) estimated to be minimal.

### Suggested Changes

#### 9.6 REASSIGN BLOCKS command (07h)

##### 9.6.1 Command summary

The REASSIGN BLOCKS command requests that the device server reassign a defective logical block to another area on the medium set aside for this purpose (see SBC-2). Non-packet devices do not support or have a direct translation for the REASSIGN BLOCKS command. The SATL device server shall emulate the SCSI REASSIGN BLOCKS command as defined in Table 1.

**[NOTE TO EDITOR: Based on the 5-19-05 SAT teleconference two presentations of the same information follow. One is Table1 wth all text in OPERATION CODE Description field and the next is Table 1 making reference to the same text outside the table. At the next WG meeting we can decide which presentation the team prefers. I'll delete other and re-post.]**

Table 1- REASSIGN BLOCKS command CDB fields

Field	SATType	Description or reference
OPERATION CODE	E	The SATL shall issue an ATA READ VERIFY SECTOR(S) command with the LBA provided in the REASSIGN BLOCKS command parameter list. If the non-packet device supports 48-bit Address feature set, the ATA READ VERIFY SECTOR(S) EXT command may be issued

T10/05-136r1 SAT - REASSIGN BLOCKS command

		<p>instead. If the command completes successfully the SATL shall return GOOD status for the REASSIGN BLOCKS command. Otherwise, the SATL shall:</p> <ol style="list-style-type: none"> <li>1) Issue a write command (see Table 46) with vendor specific data to the same LBA.</li> <li>2) If the write command completes successfully the SATL shall issue a second ATA READ VERIFY SECTOR(S) command or the ATA READ VERIFY SECTOR(S) EXT command with the LBA provided in the REASSIGN BLOCKS command.If the second ATA READ VERIFY SECTOR(S) command or the ATA READ VERIFY SECTOR(S) EXT command with the LBA provided in the REASSIGN BLOCKS command completes successfully the SATL shall return GOOD status for the REASSIGN BLOCKS command.</li> <li>3) If the second ATA READ VERIFY SECTOR(S) command or the ATA READ VERIFY SECTOR(S) EXT command fails the REASSIGN BLOCKS command shall be terminated with MEDIUM ERROR UNRECOVERED READ ERROR – AUTO REALLOCATE FAILED.</li> <li>4) If the write fails the REASSIGN BLOCKS command shall be terminated with HARDWARE ERROR WRITE ERROR – AUTO REALLOCATION FAILED.</li> </ol>
LONGLBA	1	(see SBC-2)
LONGLIST	1	(see SBC-2)
CONTROL	1	(see 6.4 )

**[NOTE: the following added per WG request on 5-19-05...**

**9.6.1 REASSIGN BLOCKS command operation code emulation**

The SATL shall issue an ATA READ VERIFY SECTOR(S) command with the LBA provided in the REASSIGN BLOCKS command parameter list. If the non-packet device supports the 48-bit Address feature set, the ATA READ VERIFY SECTOR(S) EXT command may be issued instead of the ATA READ VERIFY SECTOR(S) command. If the command completes successfully the SATL shall return GOOD status for the REASSIGN BLOCKS command. Otherwise, the SATL shall issue a write command (see Table 46) with vendor specific data to the same LBA. If the write command completes successfully the SATL shall issue a second ATA READ VERIFY SECTOR(S) command or the ATA READ VERIFY SECTOR(S) EXT command with the LBA provided in the REASSIGN BLOCKS command.If the second ATA READ VERIFY SECTOR(S) command or the ATA READ VERIFY SECTOR(S) EXT command with the LBA provided in the REASSIGN BLOCKS command completes successfully the SATL shall return GOOD status for the REASSIGN BLOCKS command.If the second ATA READ VERIFY SECTOR(S) command or the ATA READ VERIFY SECTOR(S) EXT command fails the REASSIGN BLOCKS command shall be terminated with MEDIUM ERROR UNRECOVERED READ ERROR – AUTO REALLOCATE FAILED. If the write fails the REASSIGN BLOCKS command shall be terminated with HARDWARE ERROR WRITE ERROR – AUTO REALLOCATION FAILED.]

**9.6.2 REASSIGN BLOCKS parameter list**

The REASSIGN BLOCKS command parameter list provided in the data-out buffer contains the defective LBA to be reassigned. The LBA provided in the parameter list shall be utilized for the LBA in any ATA READ VERIFY SECTOR(S), ATA READ VERIFY SECTOR(S) EXT, WRITE SECTOR(S), or WRITE SECTOR(S) EXT commands issued by the SATL emulation. The SATL

## T10/05-136r1 SAT - REASSIGN BLOCKS command

device server shall not support a list of more than one LBA for reassignment. If the list contains more than one LBA, the SATL device server shall terminate the command with CHECK CONDITION STATUS with the sense key set to ILLEGAL REQUEST and the additional sense code set to INVALID FIELD IN PARAMETER LIST.

The SATL device server shall support the LONGLBA and LONGLIST fields (see SBC-2).