To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
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Subject: 06-321r0 SPC-4 Statistics and Performance log pages command cleanup

Revision history
Revision 0 (6 July 2006) First revision

Related documents
spc4r05a - SCSI Primary Commands - 4 (SPC-4) revision 5a
05-248r4 Statistics and Performance log pages (George Penokie, IBM) - incorporated into spc4r05

Overview
1. The Statistics and Performance log pages recently added to SPC-4 include READ CD and READ CD MSF in the list of read commands that are logged, but those are MMC-5 commands and MMC-5 doesn't support log pages at all.

2. READ REVERSE (16) is also in the list of read commands, but that is an SSC-3 command and SSC-3 doesn't support these log pages.

> NOTE 1 - If it were supported, then READ REVERSE (6) should also be included.

3. The SBC-3 WRITE SAME command performs a data-out transfer and a write operation, so should be included in the list of write commands.

4. The SBC-3 XDWRITEREAD command is equivalent to an XDWRITE and XDREAD, so should be considered for the same lists as XDWRITE and XDREAD. Since its command processing time is dominated by the XDWRITE portion, not the XDREAD portion, it should only be included in the list of write commands.

5. The SBC-3 XPWRITE command performs a data-out transfer, so should be included in the list of write commands.

Suggested changes to SPC-4

7.2.12 Statistics and Performance log pages

7.2.12.1 Statistics and Performance log pages overview

The Statistics and Performance log pages consist of a General Statistics and Performance log page and up to 31 Group Statistics and Performance log pages. Each Group Statistics and Performance log pages only collects statistics and performance information for the group number specified in a read CDB or a write CDB.

The General Statistics and Performance log page (see 7.2.12.2) provides the following statistics and performance results associated to the addressed logical unit:

a)   Number of read commands;
b)   Number of write commands;
c)   Number of read logical blocks transmitted by a target port;
d)   Number of write logical blocks received by a target port;
e)   Read command processing time;
f)   Write command processing time;
g)   Sum of the command weights of the read commands plus write commands;
h)   Sum of the weighted command time of the read commands plus write commands;
i)   Idle time; and
j)   Time interval.

The Group Statistics and Performance log pages (see 7.2.12.3) provide the following statistics and performance results associated to the addressed logical unit and the GROUP NUMBER field:

a)   Number of read commands;
b)   Number of write commands;
c)   Number of read logical blocks transmitted by a target port;

  d) Number of write logical blocks received by a target port;
  e) Read command processing time; and
  f) Write command processing time.

In the Statistics and Performance log pages, read and write commands are those shown in table 235.

Table 235 — Statistics and Performance log pages read and write commands

Read commands [a]	Write commands [a]
READ(6) READ(10) READ(12) READ(16) READ(32) READ CD READ CD MSF READ REVERSE(16) XDREAD(10) XDREAD(32)	WRITE(6) WRITE(10) WRITE(12) WRITE(16) WRITE(32) WRITE AND VERIFY(10) WRITE AND VERIFY(12) WRITE AND VERIFY(16) WRITE AND VERIFY(32) WRITE SAME(10) WRITE SAME(16) WRITE SAME(32) XDWRITE(10) XDWRITE(32) XDWRITEREAD(10) XDWRITEREAD(32) XPWRITE(10) XPWRITE(32)
[a] See SBC-3.	

7.2.12.2 General Statistics and Performance log page

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7.2.12.3 Group Statistics and Performance (n) log page

The Group Statistics and Performance (n) log pages (see table 242) provide logging of statistics and performance of read and write operations based on group numbers. There are 31 Group Statistics and Performance (n) log pages one for each group number. The statistics and performance information associated with each group number is collected in the corresponding Group Statistics and Performance (n) log page (e.g., operations associated with group number 16 are logged in the Group Statistics and Performance (16) log page).

Table 242 — Group Statistics and Performance log page (part 1 of 2)

Byte\Bit	7	6	5	4	3	2	1	0
0	DS	SPF (1b)	PAGE CODE (19h)					
1	SUBPAGE CODE (01h - 1Fh)							

Table 242 — Group Statistics and Performance log page (part 2 of 2)

Byte\Bit	7	6	5	4	3	2	1	0
2	(MSB)							
3			PAGE LENGTH (34h)					(LSB)
Group Statistics and Performance log parameters								
4								
55			Group n Statistics and Performance log parameter					

The DS bit, SPF bit, PAGE CODE field, and PAGE LENGTH field are described in 7.2.1.

The SUBPAGE CODE field is described in table 243.

Table 243 — Group Statistics and Performance (n) subpage codes

Subpage code	Log page name [a]	Group number [b]
...	...	...
[a] The statistics and performance information associated with a group number is collected in the corresponding Group Statistics and Performance (n) log page (e.g., operations associated with group number 10000b are logged in the Group Statistics and Performance (16) log page). [b] The GROUP NUMBER field is from the read command CDB or the write command CDB (see table 235 in 7.2.12.1 and SBC-3 and MMC 6).		

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