DELL

To: T10 Technical Committee
From: Gary Lestage, Kyle Walczak and Kevin Marks - Dell, Inc.
Date: August 30, 2006
Subject: T10/06-394r0 - SMC-3: Element statistics log page for SMC

Revision History
Revision 0 (8/31/06) – Initial proposal

Related Documents
SCSI Media Changer Commands - 3 (T10/1730-D - SMC-3r02)

New text to be added to SSC-3
~~Text to be deleted from SSC-3~~
Editorial text

Overview

As part of the ISV feedback resolution and that Dell sees a need to standardize log pages that will allow for the collection of information required during field analysis and troubleshooting of media changer devices. This proposal is beneficial to those applications that report diagnostic information back via diagnostic software. Special code will no longer need to be written specific to the media changer device being used. This proposal defines a per element statistics log page that is the companion to the Media changer statistics log page in 06-182.

Suggested Changes to SMC-3:
<< Add new row to Table 30 - Log page codes >>

Table 30 — Log page codes

Page Code	Description	Reference
….	….	….
YYh	Element Statistics log page	7.2.y
….	….	….

<<… Where YYh are the assigned log pages.. >>

7.2.y Element Statistics log page

The Element Statistics log page (see table y) defines data counters associated with elements of media changer device. A device server that implements the Element Statistics log page shall implement one parameter for each element in the media changer device. All parameters shall be persistent across I_T nexus loss, logical unit reset and power-on. The parameters may be reset with the use of a LOG SELECT command.

Table y – Element Statistics log page

Byte\Bit	7	6	5	4	3	2	1	0
0	DS	SPF (0b)	PAGE CODE (YYh)					
1	SUBPAGE CODE (00h)							
2	(MSB)	PAGE LENGTH (n-3)						
3								(LSB)
	Element statistics log parameters							
4	First element statistics log parameter							
	. . .							
n	Last element statistics log parameter							

See SPC-4 for a description of the DS bit, SPF bit, PAGE CODE field, SUBPAGE CODE field and PAGE LENGTH field.

The Element Statistics log parameter format is shown in table y+1.

Table y+1 – Element Statistics log parameter format

Byte\Bit	7	6	5	4	3	2	1	0
0	(MSB)	PARAMETER CODE (element address)						
1								(LSB)
2	DU	Obsolete	TSD (0b)	ETC(0b)	TMC (00b)		FORMAT AND LINKING (11b)	
3	PARAMETER LENGTH (n-3)							
4	(MSB)	TOTAL NUMBER OF PLACES						
7								(LSB)
8	(MSB)	TOTAL NUMBER OF PLACE RETRIES						
11								(LSB)
12	(MSB)	TOTAL NUMBER OF PICKS						
15								(LSB)
16	(MSB)	TOTAL NUMBER OF PICK RETRIES						
19								(LSB)
20	(MSB)	TOTAL NUMBER OF VOLUME TAGS READ						
23								(LSB)
24	(MSB)	TOTAL NUMBER OF INVALID VOLUME TAGS RETURNED						
27								(LSB)

The PARAMETER CODE field contains the element address for the statistics counters being returned.

See SPC-4 for descriptions of the DU bit, TSD bit, ETC bit, TMC field and FORMAT AND LINKING field. The TSD bit, ETC bit, TMC field and FORMAT AND LINKING field shall be set to the values shown in table y+1.

The PARAMETER LENGTH field indicates the number of bytes in the log parameter the follow.

If the element being described in the log parameter by the PARAMETER CODE field is a not medium transport element then, the TOTAL NUMBER OF PLACES field contains the total number of medium place operations to the element address indicated in the PARAMETER CODE field. If the element being described in the log parameter by the PARAMETER CODE field is a medium transport element then, the

TOTAL NUMBER OF PLACES field contains the total number of medium place operations by the medium transport element address indicated in the PARAMETER CODE field.

If the element being described in the log parameter by the PARAMETER CODE field is a not medium transport element then, the TOTAL NUMBER OF PLACE RETRIES field contains the total number of retried medium place operations to the element address indicated in the PARAMETER CODE field. If the element being described in the log parameter by the PARAMETER CODE field is a medium transport element then, the TOTAL NUMBER OF PLACE RETRIES field contains the total number of retried medium place operations by the medium transport element address indicated in the PARAMETER CODE field.

If the element being described in the log parameter by the PARAMETER CODE field is a not medium transport element then, the TOTAL NUMBER OF PICKS field contains the total number of medium (e.g., cartridge) pick operations from the element address indicated in the PARAMETER CODE field. If the element being described in the log parameter by the PARAMETER CODE field is a medium transport element then, the TOTAL NUMBER OF PICKS field contains the total number of medium pick operations by the medium transport element address indicated in the PARAMETER CODE field.

If the element being described in the log parameter by the PARAMETER CODE field is a not medium transport element then, the TOTAL NUMBER OF PICK RETRIES field contains the total number of retried pick operations from the element address indicated in the PARAMETER CODE field. If the element being described in the log parameter by the PARAMETER CODE field is a medium transport element then, the TOTAL NUMBER OF PICK RETRIES field contains the total number of retried medium pick operations by the medium transport element address indicated in the PARAMETER CODE field.

If the media changer device contains a volume tag reader (i.e., the Volume Tag Reader Present (VTRP) bit in the Device Capabilities mode page is set to one), then the TOTAL NUMBER OF VOLUME TAGS READ field contains the total number of volume tags read by the volume tag reader at the element address indicated in the PARAMETER CODE field. If the media changer device does not contains a volume tag reader or the element being described in the log parameter by the PARAMETER CODE field is a medium transport element, then the TOTAL NUMBER OF VOLUME TAGS READ field shall be set to zero.

If the media changer device contains a volume tag reader (i.e., the Volume Tag Reader Present (VTRP) bit in the Device Capabilities mode page is set to one), then the TOTAL NUMBER OF INVALID VOLUME TAGS RETURNED field contains the total number of invalid volume tags returned by the volume tag reader at the element address indicated in the PARAMETER CODE field. If the media changer device does not contains a volume tag reader or the element being described in the log parameter by the PARAMETER CODE field is a medium transport element, then the TOTAL NUMBER OF INVALID VOLUME TAGS RETURNED field shall be set to zero.