DELL

To: T10 Technical Committee
From: Gary Lestage, Kyle Walczak and Kevin Marks - Dell, Inc.
Date: February 27, 2007
Subject: T10/06-394r2 - SMC-3: Element statistics log page for SMC-3

Revision History

Revision 0 (8/31/06) – Initial proposal
Revision 1 (10/2/06) – Revision based on review and migrating back to SPC-3 log structure
Revision 2 (2/27/07) – Revision based on January SMC-3 WG meeting
- Updated to SMC-3r04
- Added a VENDOR SPECIFIC OFFSET field indicating at what byte vendor specific element statistics start.
- Renamed volume tags read and invalid volume tags and define them based on the VIQ value of volume tag information.

Related Documents

SCSI Media Changer Commands - 3 (T10/1730-D - SMC-3r04)

New text to be added to SMC-3
~~Text to be deleted from SMC-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 37 - Log page codes >>

Table 37 — Log page codes

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

<<… Where YYh is 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 the 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.

Table y – Element Statistics log page

Byte\Bit	7	6	5	4	3	2	1	0
0	Reserved		PAGE CODE (YYh)					
1	Reserved							
2	(MSB)		PAGE LENGTH (n-3)					
3								(LSB)
	Element statistics log parameters							
4	First element statistics log parameter (see table y+1)							
	⋮							
n	Last element statistics log parameter (see table y+1)							

See SPC-3 for a description of PAGE 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	DS	TSD (0b)	ETC(0b)	TMC (00b)		LBIN(1b)	LP(1b)
3	PARAMETER LENGTH (n-3)							
4	Reserved							
6								
7	VENDOR SPECIFIC OFFSET							
8	(MSB)		NUMBER OF PLACES					
11								(LSB)
12	(MSB)		NUMBER OF PLACE RETRIES					
15								(LSB)
16	(MSB)		NUMBER OF PICKS					
19								(LSB)
20	(MSB)		NUMBER OF PICK RETRIES					
13								(LSB)
24	(MSB)		NUMBER OF DETERMINED VOLUME IDENTIFERS					
27								(LSB)
28	(MSB)		NUMBER OF UNREADABLE VOLUME IDENTIFERS					
31								(LSB)
n	Vendor specific element statistics							

See SPC-3 for a description of the PARAMETER CODE field. The PARAMETER CODE field contains the element address for the statistics counters being returned.

See SPC-3 for descriptions of the DU bit, DS bit TSD bit, ETC bit, TMC field, LBIN bit and LP bit. The TSD bit, ETC bit, TMC field, LBIN bit and LP bit shall be set to the values shown in table y+1.

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

The VENDOR SPECIFIC OFFSET field indicates the byte number at which vendor specific element statistics start in the log parameter that follows. A VENDOR SPECIFIC OFFSET field set to zero indicates that the log parameter contains no vendor specific element statistics.

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

The NUMBER OF DETERMINED VOLUME IDENTIFERS field contains the number times the VIQ field (see 5.3.4) in the volume tag information was set to 0h for 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 NUMBER OF DETERMINED VOLUME IDENTIFERS field shall be set to zero.

The NUMBER OF UNREADABLE VOLUME IDENTIFERS field contains the number times the VIQ field (see 5.3.4) in the volume tag information was set to 2h for 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 NUMBER OF UNREADABLE VOLUME IDENTIFERS field shall be set to zero.