memorandum

T10/05-308r0

To	From	Subject	Date
INCITS T10 Committee	Michael Banther, HP	SPC-4 Remove restriction on counting log parameters	5 September 2005

Revision History

Revision 0 – Initial document.

Related documents

SCSI Primary Commands - 4 (SPC-4). Date: 2005/09/03, Rev: 01, Status: Development, Project: 1731-D, File: spc4r01.pdf.

SSC-3 TapeAlert Enhancements. Document number: T10/05-154.

Background

In 7.2.1, spc4r01 places an unnecessary and un-useful restriction on the behavior of counting log parameters that share a log page. When such a parameter reaches its maximum value all counters on that log page freeze until a LOG SELECT command reinitializes the page.

HP's proposal to rationalize TapeAlert log parameters, T10/05-154, depends on log counters continuing to count after another counter on a log page reaches its maximum value.

This document proposes changes to allow the desired behavior whilst maintaining backwards compatibility.

Additions to existing text appear in blue. Deletions from existing text appear in red strikeout. Editorial comments that do not form part of the proposed text changes appear in pink.

Changes to draft standard

7.2.1 Log page structure and page codes for all device types

If the application client sends a log parameter value that is outside the range supported by the logical unit, and rounding is implemented for that parameter, the device server may either:

a) Round to an acceptable value and terminate the command as described in 5.4; or

b) 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.

~~When any~~ If the DCBP field is set to zero (see 7.4.7) for a log page, a counter in ~~a~~ that log page ~~reaches~~ reaching its maximum value~~, incrementing of~~ shall cause all counters in that log page ~~shall~~ to cease incrementing until reinitialized by the application client via a LOG SELECT command. ~~If the RLEC bit of the Control mode page is set to one, then the device server shall report the exception condition.~~

> Editorial Note: The second sentence of the paragraph above restates a requirement already defined (see the paragraph in 7.2.1 defining the behaviour of a log parameter with the LP bit equals zero). Consequently I've struck this sentence.

7.4.7 Control Extension mode page

The Control Extension mode page (see table 251) is a subpage of the Control mode page (see 7.4.6) and provides controls over SCSI features that are applicable to all device types. The mode page policy (see 6.7) for this mode page shall be shared. If a field in this mode page is changed while there is a task already in the task set, it is vendor specific whether the old or new value of the field applies to that task.

Table 251 — Control Extension mode page

Bit Byte	7	6	5	4	3	2	1	0
0	PS	SPF (1b)	PAGE CODE (0Ah)					
1	SUBPAGE CODE (01h)							
2	(MSB)	PAGE LENGTH (1Ch)						
3								(LSB)
4	Reserved				TCMOS	SCSIP	IALUAE	
5	Reserved			INITIAL PRIORITY				
6	DCBP		LOG PAGE CODE					
67	Reserved							
31								

The INITIAL PRIORITY field specifies the priority that may be used as the task priority (see SAM-3) for tasks received by the logical unit on any I_T nexus (i.e., on any I_T_L nexus) where a priority has not been modified by a SET PRIORITY command (see 6.30). If a MODE SELECT command specifies an initial priority value that is different than the current initial priority, then the device server shall set any priorities that have not be set with a SET PRIORITY command to a value different than the new initial priority value to the new priority. The device server shall establish a unit attention condition for the initiator port associated with every I_T_L nexus that receives a new priority, with the additional sense code set to PRIORITY CHANGED.

The LOG PAGE CODE field specifies the log page to which the DCBP field applies. If an application client attempts to set the LOG PAGE CODE field to 00h or to a reserved or unsupported value, the device server shall return a status of CHECK CONDITION and shall set the sense key to ILLEGAL REQUEST and the additional sense code to INVALID FIELD IN PARAMETER LIST.

The Data Counter Behaviour Policy (DCBP) field specifies the behaviour of the data counters on the log page specified by the LOG PAGE CODE field (see table x).

Table x – Data Counter Behaviour Policy (DCBP) field

Code	Description
00b	When a data counter in the log page reaches its maximum value, all data counters in that log page shall cease to increment until reinitialized by the application client via a LOG SELECT command.
01b	When a data counter in the log page reaches its maximum value, only that data counter shall cease to increment until reinitialized.
10b – 11b	Reserved

Editorial Note: The legacy behaviour described for 00b specifies behaviour until a very specific event occurs, re-initialization by the application client via a LOG SELECT command. It's the same behaviour as specified in spc4r01 today. However NOTE 35 of spc4r01 states:

> When updating cumulative log parameter values, a device server may use volatile memory to hold these values until a LOG SELECT or LOG SENSE command is received with an SP bit set to one or a vendor specific event occurs. As a result the updated cumulative log parameter values may be lost if a power cycle occurs.

Since cumulative log parameters are often (always?) data counters, it appears that a log page could have all of its data counters set to their default values, due to a power cycle, and yet still have all of these same data counters disabled from incrementing. This situation would arise if, prior to the power-cycle, one of the data counters had reached its maximum value and no application client has subsequently reinitialized the log page via a LOG SELECT command. Is this really the behaviour the committee wants to preserve?