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To: T10 Committee (SCSI)

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Subject: SPC-4: Log Command Corrections

1 Overview

During the discussion of proposal 04-389 it became apparent that the definitions in annex C and the LOG SELECT command contains conflicting or incomplete information. The following makes changes that will remove the conflicting incomplete information.

0.1 LOG SELECT command

The function of the LOG SELECT command is to allow an application client a method of sending parameter values to the device server.

Table 0.1 lists the definitions of the LOG SELECT CDB fields.

Table 0.1 — LOG SELECT CDB fields

LOG SELECT CDB Values				
PCR bit	**SP** bit	**PC** field	Parameter List Length	**Description**
0	-	--	-	Specifies that the device server ~~not re~~set the log parameters as specified by the PC field, LP bit, and PARAMETER LIST LENGTH field (see table 0.3).
1	x	xx	0000h	Specifies that the device server set all implemented parameter values to the vendor specific default values.
1	x	xx	> 0	This is an illegal condition.
-	0	--	-	Specifies that the device server not save any of the log parameters.
-	1	--	-	Specifies that, after performing the specified LOG SELECT operation, the device server save to nonvolatile memory all saveable log parameters. See table 0.2 to determine the interaction between the SP and DS bits to see what 'saveable' means.
-	-	00	-	Specifies that the application client is sending threshold values.
-	-	01	-	Specifies that the application client is sending cumulative values.
-	-	10	-	Specifies that the application client is sending default threshold values.
-	-	11	-	Specifies that the application client is sending default cumulative values.

Table 0.2 lists all possible save options for the LOG SELECT command.

All the log parameters that are selected for saving are saved to nonvolatile storage after the device server performs the specified LOG SELECT operation. Further save operations are a function of the TSD bit in the log parameter control byte (see 7.2) and the GLTSD bit in the Control mode page (see 7.4.6).

Table 0.2 — LOG SELECT save options

LOG SELECT CDB Values		Log Parameter Control Byte Values			
SP bit	**PC** field	**DS** bit	**LP** bit	**LBIN** bit	**Device Server Action**
0	xx	x	x	x	Do not save any of the log parameters into nonvolatile storage.
1	00	0	0	x	Save all the threshold values of the selected log page into nonvolatile storage.
1	01	0	0	x	Save all the cumulative values of the selected log page into nonvolatile storage.
1	10	0	0	x	Save all the default threshold values of the selected log page into nonvolatile storage.
1	11	0	0	x	Save all the default cumulative values of the selected log page into nonvolatile storage.
1	xx	0	1	0	Save all the list parameter values of the selected log page into nonvolatile storage. The list parameters are formatted as ASCII data (see 4.4.1).
1	xx	0	1	1	Save all the list parameter values of the selected log page into nonvolatile storage. The list parameters are formatted in binary.
1	xx	1	x	x	Do not save any of the log parameters into nonvolatile storage.

Table 0.3 lists all possible parameter values that may be controlled by a LOG SELECT command.

Table 0.3 — LOG SELECT controller parameter values (part 1 of 2)

LOG SELECT CDB Values			Log Parameter Control Byte Values		Device Server Action
PCR bit	Parameter List Length	**PC** field	**LP** bit	**LBIN** bit	Updated parameter value usage
1	>0	x	x	x	This is an illegal condition.
1	0000h	x	x	x	Specifies that the device server set all implemented parameter values to the vendor specific default values.
0	0000h	00b	x	x	This is an illegal condition.
0	0000h	01b	x	x	This is an illegal condition.
0	0000h	10b	x	x	Specifies that the device server set all implemented cumulative values to the vendor specific default values.
0	0000h	11b	x	x	Specifies that the device server set all implemented threshold values to the vendor specific default values
0	>0	00b	0	x	~~The parameter values for all the log parameters in the log page(s) sent to the device server are used as threshold values, unless the LP bit is set.~~ The device server sets the current threshold values to the threshold values specified in the log parameters received in the log page(s) sent during a LOG SELECT command, unless the LP bit is set.
0	>0	01b	0	x	~~The parameter values for all the log parameters in the log page(s) sent to the device server are used as cumulative values, unless the LP bit is set.~~ The device server sets the current cumulative values to the cumulative values specified in the log parameters received in the log page(s) sent during a LOG SELECT command, unless the LP bit is set.
0	>0	10b	0	x	The device server sets the current threshold values to the default threshold values for all the log parameters specified in the log page(s) sent during a LOG SELECT command, unless the LP bit is set.
0	>0	11b	0	x	The device server sets the current cumulative values to the default cumulative values for all the log parameters specified in the log page(s) sent during a LOG SELECT command, unless the LP bit is set.
0	>0	xxb	1	0	~~The device server replaces the current list parameter with the list parameter sent to the device server.~~ The device server sets the current list parameter to the list parameter specified in the log parameters received in the log page(s) sent during a LOG SELECT command. The list parameters are formatted as ASCII data (see 4.4.1).

Table 0.3 — LOG SELECT controller parameter values (part 2 of 2)

LOG SELECT CDB Values			Log Parameter Control Byte Values		Device Server Action
PCR bit	Parameter List Length	PC field	LP bit	LBIN bit	Updated parameter value usage
0	>0	xx	1	1	~~The device server replaces the current list parameter with the list parameter sent to the device server~~. The device server sets the current list parameter to the list parameter specified in the log parameters received in the log page(s) sent during a LOG SELECT command. The list parameters are formatted in binary.

1.1 LOG SELECT command

The LOG SELECT command (see table 1) provides a means for an application client to manage statistical information maintained by the SCSI target device about the SCSI target device or its logical units. Device servers that implement the LOG SELECT command shall also implement the LOG SENSE command. Structures in the form of log parameters within log pages are defined as a way to manage the log data. The LOG SELECT command provides for sending zero or more log pages via the Data-Out Buffer. This standard defines the format of the log pages, but does not define the conditions and events that are logged.

Table 1 — LOG SELECT command

Bit / Byte	7	6	5	4	3	2	1	0
0	OPERATION CODE (4Ch)							
1	Reserved						PCR	SP
2	PC		Reserved					
3	Reserved							
6								
7	(MSB)	PARAMETER LIST LENGTH						
8								(LSB)
9	CONTROL							

A parameter code reset (PCR) bit set to one and a parameter list length of zero shall cause all implemented parameters to be set to the vendor specific default values (e.g., zero). If the PCR bit is set to one and the parameter list length is greater than zero, the command shall be terminated with CHECK CONDITION status, with the sense key set to ILLEGAL REQUEST, and the additional sense code set to INVALID FIELD IN CDB. A PCR bit set to zero specifies that the log parameters shall not be reset.

A save parameters (SP) bit set to one specifies that after performing the specified LOG SELECT operation the device server shall save to nonvolatile memory all parameters identified as saveable by the DS bit in the log page (see 7.2). A SP bit set to zero specifies that parameters shall not be saved.

Saving of log parameters is optional and indicated for each log parameter by the DS bit in the log page. Log parameters also may be saved at vendor specific times subject to the TSD bit (see 7.2) in the log parameter and the GLTSD bit in the Control mode page (see 7.4.6). If the logical unit does not implement saved param-

eters for any log parameter and the SP bit is set to one, the command shall be terminated with CHECK CONDITION status, with the sense key set to ILLEGAL REQUEST, and the additional sense code set to INVALID FIELD IN CDB.

It is not an error to set the SP bit to one and to set the DS bit of a log parameter to one. In this case, the parameter value for that log parameter is not saved.

The page control (PC) field defines the type of parameter values to be selected. The PC field is defined in table 2.

Table 2 — Page control (PC) field

PC	LOG SELECT parameter values	LOG SENSE parameter values
00b	Current threshold values	Threshold values
01b	Current cumulative values	Cumulative values
10b	Default threshold values	Default threshold values
11b	Default cumulative values	Default cumulative values

The current cumulative values may be updated by the device server or by the application client using the LOG SELECT command to reflect the cumulative number of events experienced by the logical unit. Fields in the parameter control byte (see 7.2) of each log parameter control the updating and saving of the current cumulative parameters.

The device server shall set ~~the~~ all current threshold parameters to the default threshold values in response to a LOG SELECT command with the PC field set to 10b and the parameter list length field set to zero.

The device server shall set all cumulative parameters to their default values in response to a LOG SELECT command with the PC field set to 11b and the parameter list length field set to zero.