

Date: 1/14/09

To: T10 Committee (SCSI)

From: George Penokie (LSI)

Subject: SPC-4 SBC-3: Reporting support for all DIF types

1 Overview

There is currently no way for the logical unit to indicate that it is capable of supporting ~~all~~several combinations of defined protection types. This proposal adds a coded value into the SPT field that will indicate support for ~~all-defined-all defined~~ protection type combinationss.

2 Proposed changes to SPC-4 Extended INQUIRY Data VPD page

A supported protection type (SPT) field (see table 1) indicates the type of protection the logical unit supports. The SPT field shall be ignored if the PROTECT bit (see 6.4.2) is set to zero.

Table 1 — ~~Supported protection type (SPT) field~~

Code	Definition
000b	The logical unit supports type 1 protection (see SBC-3)
001b	The logical unit supports type 1 and type 2 protection (see SBC-3)
010b	The logical unit supports type 2 protection (see SBC-3)
011b	The logical unit supports type 1 and type 3 protection (see SBC-3)
011b	The logical unit supports type 3 protection (see SBC-3)
011b	The logical unit supports type 2 and type 3 protection (see SBC-3)
011b	Reserved
100b to 111b	The logical unit supports type 1, type 2, and type 3 protection (see SBC-3)

Table 2 — Supported protection type (SPT) field

Code	<u>Protection type supported</u>		
	<u>Type 1</u>	<u>Type 2</u>	<u>Type 3</u>
<u>000b</u>	<u>yes</u>	<u>no</u>	<u>no</u>
<u>001b</u>	<u>yes</u>	<u>yes</u>	<u>no</u>
<u>010b</u>	<u>no</u>	<u>yes</u>	<u>no</u>
<u>011b</u>	<u>yes</u>	<u>no</u>	<u>yes</u>
<u>100b</u>	<u>no</u>	<u>no</u>	<u>yes</u>
<u>101b</u>	<u>no</u>	<u>yes</u>	<u>yes</u>
<u>110b</u>	<u>Reserved</u>		
<u>111b</u>	<u>yes</u>	<u>yes</u>	<u>yes</u>

3 Proposed changes to SBC-3 FORMAT UNIT command

3.0.1 FORMAT UNIT parameter list

3.0.1.1 FORMAT UNIT parameter list overview

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3.0.1.2 Parameter list header

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The PROTECTION FIELD USAGE field in combination with the FMTPINFO field (see table 3) specifies the requested protection type (see 4.17.2).

Table 3 — FMTPINFO field and PROTECTION FIELD USAGE field (part 1 of 2)

Device server indication		Application client specification		Description
SPT ^a	PROTECT ^b	FMTPINFO	PROTECTION FIELD USAGE	
xxx _b	0	00 _b	000 _b	The logical unit shall be formatted to type 0 protection ^c (see 4.17.2.2) resulting in the P_TYPE field ^d being set to 000 _b .
xxx _b	0	00 _b	>000 _b	Illegal ^e
xxx _b	0	01 _b	xxx _b	Illegal ^f
xxx _b	0	1x _b	xxx _b	Illegal ^f
xxx _b	1	00 _b	000 _b	The logical unit shall be formatted to type 0 protection ^c (see 4.17.2.2) resulting in the P_TYPE field ^d being set to 000 _b .
xxx _b	1	00 _b	>000 _b	Illegal ^e
xxx _b	1	01 _b	xxx _b	Illegal ^f
000 _b 001 _b 011 _b <u>111_b</u>	1	10 _b	000 _b	The logical unit shall be formatted to type 1 protection ^g (see 4.17.2.3) resulting in the P_TYPE field ^d being set to 000 _b .
000 _b 001 _b 011 _b <u>111_b</u>	1	10 _b	>000 _b	Illegal ^e
000 _b	1	11 _b	xxx _b	Illegal ^f

^a See the Extended INQUIRY Data VPD page (see SPC-4) for the definition of the SPT field.
^b See the standard INQUIRY data (see SPC-4) for the definition of the PROTECT bit.
^c The device server shall format the medium to the logical block length specified in the mode parameter block descriptor of the mode parameter header (see SPC-4).
^d See the READ CAPACITY command (see 5.13.1) for the definition of the P_TYPE field.
^e The device server shall 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.
^f The device server shall 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 CDB.
^g The device server shall format the medium to the logical block length specified in the mode parameter block descriptor of the mode parameter header plus eight (e.g., if the logical block length is 512, then the formatted logical block length is 520). Following a successful format, the PROT_EN bit in the READ CAPACITY (16) parameter data (see 5.13.1) indicates whether protection information (see 4.17) is enabled.

Table 3 — FMTPINFO field and PROTECTION FIELD USAGE field (part 2 of 2)

Device server indication		Application client specification		Description
SPT ^a	PROTECT ^b	FMTPINFO	PROTECTION FIELD USAGE	
001b 010b 101b 111b	1	11b	000b	The logical unit shall be formatted to type 2 protection ^g (see 4.17.2.4) resulting in the P_TYPE field ^d being set to 001b.
001b 010b	1	11b	>000b	Illegal ^e
011b 100b	1	11b	000b	Illegal ^e
011b 100b 101b 111b	1	11b	001b	The logical unit shall be formatted to type 3 protection. ^g (see 4.17.2.5) resulting in the P_TYPE field ^d being set to 010b.
011b 100b 101b 111b	1	11b	>001b	Illegal ^e
010b	1	1xb	xxx b	Reserved
1xx b 110b	1	1x 1b	xxx	Reserved

^a See the Extended INQUIRY Data VPD page (see SPC-4) for the definition of the SPT field.
^b See the standard INQUIRY data (see SPC-4) for the definition of the PROTECT bit.
^c The device server shall format the medium to the logical block length specified in the mode parameter block descriptor of the mode parameter header (see SPC-4).
^d See the READ CAPACITY command (see 5.13.1) for the definition of the P_TYPE field.
^e The device server shall 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.
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^g The device server shall format the medium to the logical block length specified in the mode parameter block descriptor of the mode parameter header plus eight (e.g., if the logical block length is 512, then the formatted logical block length is 520). Following a successful format, the PROT_EN bit in the READ CAPACITY (16) parameter data (see 5.13.1) indicates whether protection information (see 4.17) is enabled.