T10/08-432r2 SMC-3 Use of element descriptor sense codes
To: T10 Technical Committee
From: Noud Snelder, BDT (noud.snelder@bdt.de)
Date: 25 September 2009
Subject: T10/08-432 SMC-3 Use of element descriptor sense codes

Revision History
Revision 0 (30 October 2008): initial revision
Revision 1 (10 September 2009): incorporated comments from august SMC3 WG telephone conference
Revision 2 (25 September 2009): incorporated comments from September SMC3 WG meeting

Related Documents
SMC3r13 - SCSI Media Changer Commands - 3
08-272r2 – SMC-3 New additional sense codes tracking document

Overview
The SMC3 working group is attempting to define commonly used sense codes in the standard to increase level of standardization. The document 08-272 lists new SMC-3 error codes. Some of these error codes are element descriptor sense codes used in the returned data of the READ ELEMENT STATUS command and REPORT ELEMENT INFORMATION command. This document describes new element descriptor sense codes.

Suggested Changes to SMC-3

Proposed new text is shown in blue. Proposed deletions are shown in ~~red strikeout~~.

[Add definition]

3.xx element additional sense code: a combination of the ELEMENT STATE ADDITIONAL SENSE CODE field and the ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER field to report additional element information (see 5.xx).

[Add paragraph:]

5.xx Element additional sense codes
Additional element information is reported using element additional sense codes (see 3.xx) in the element descriptor of the element status data (see 6.12.4) and in the element state data descriptor (see 6.13.5). Table x describes element additional sense codes.

Table X – Element additional sense codes

Element additional sense code	Description
DUPLICATE VOLUME IDENTIFIER	The medium residing in this element reports a volume identifier that is identical to a volume identifier of another medium inside the media changer.
ELEMENT STATUS UNKNOWN	This element has not been scanned by an inventory scan. Element status is unknown.
VOLUME IDENTIFIER INVALID	The volume identifier of the medium residing in this element cannot be determined due to failing integrity check
VOLUME IDENTIFIER MISSING	The medium residing in this element does not report volume tag information.

[Modify paragraph:]

6.11.4 Medium transport element descriptor

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Table 27 — Medium transport element descriptor

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB)	ELEMENT ADDRESS						
1								(LSB)
2	Reserved					EXCEPT	Reserved	FULL
3	Reserved							
4	ELEMENT STATE ADDITIONAL SENSE CODE							
5	ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER							
6	Reserved							
8								
9	SVALID	INVERT	Reserved		ED	MEDIUM TYPE		
10	(MSB)	SOURCE STORAGE ELEMENT ADDRESS						
11								(LSB)
•••								
(36 bytes)	PRIMARY VOLUME TAG INFORMATION (field omitted if PVOLTAG=0)							
(36 bytes)	ALTERNATE VOLUME TAG INFORMATION (field omitted if AVOLTAG =0)							
•••								
(1 byte)	Reserved				CODE SET			
(1 byte)	Reserved				IDENTIFIER TYPE			
(1 byte)	Reserved							
(1 byte)	IDENTIFIER LENGTH (x)							
(x bytes)	IDENTIFIER							
•••								
to z-1	Vendor-specific							

~~The ADDITIONAL SENSE CODE field may provide specific information on an abnormal element state. The values in this field are as defined for the ADDITIONAL SENSE CODE field of REQUEST SENSE command response data (see SPC-3). This field is valid only if the EXCEPT bit is set to one.~~

~~The ADDITIONAL SENSE CODE QUALIFIER field may provide more detailed information on an abnormal element state. The values in this field are as defined for the ADDITIONAL SENSE CODE QUALIFIER field of REQUEST SENSE command response data (see SPC-3). This field is valid only if the EXCEPT bit is set to one.~~

An EXCEPT bit is set to one indicates that the ELEMENT STATE ADDITIONAL SENSE CODE field and ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER field is valid and contain additional element information (see 5.xx). An EXCEPT bit set to zero indicates that the content of the ELEMENT STATE ADDITIONAL SENSE CODE field and the ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER field is not valid.

6.11.5 Storage element descriptor

Table 29 defines the storage element descriptor.

Table 29 — Storage element descriptor

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB)			ELEMENT ADDRESS				
1								(LSB)
2	Reserved				ACCESS	EXCEPT	Reserved	FULL
3	Reserved							
4	ELEMENT STATE ADDITIONAL SENSE CODE							
5	ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER							

6.11.6 Import/export element descriptor

Table 30 defines the import/export element descriptor.

Table 30 — Import/export element descriptor

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB)			ELEMENT ADDRESS				
1								(LSB)
2	OIR	CMC	INENAB	EXENAB	ACCESS	EXCEPT	IMPEXP	FULL
3	Reserved							
4	ELEMENT STATE ADDITIONAL SENSE CODE							
5	ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER							

6.11.7 Data transfer element descriptor

Table 31 defines the data transfer element descriptor.

Table 31 — Data transfer element descriptor

Bit Byte	7	6	5	4	3	2	1	0
0	(MSB)			ELEMENT ADDRESS				
1								(LSB)
2	Reserved				ACCESS	EXCEPT	Reserved	FULL
3	Reserved							
4	ELEMENT STATE ADDITIONAL SENSE CODE							
5	ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER							

6.13.5 Element State Data information page

…

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…

A sense data valid (SDV) bit set to one indicates that the ELEMENT STATE ADDITIONAL SENSE CODE field and ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER field is valid and contain ~~an~~ additional element information (see 5.xx) ~~sense code associated with the specified element~~. A SDV bit set to zero indicates that the content of the ELEMENT STATE ADDITIONAL SENSE CODE field and the ELEMENT STATE ADDITIONAL SENSE CODE QUALIFIER field is not valid.