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 Subject: SES 2, Element Index Addition

The current SES 2 specification (T10/1559-D Revision 11) added an Element Index field and some reserved fields that made the Additional Element Status descriptor incompatible with previous versions of the SES 2 specification. To allow software to detect the format change and interpret the information properly, a bit should be added to indicate that the Element Index and reserved fields are present.

The ELEMENT INDEX PRESENT (EIP) bit should be added to the Additional Element Status descriptor (table 25) as bit 4 in byte 0.

The text to be added is shown in blue.

Table 25 – Additional Element Status descriptor when EIP = 1

Byte\Bit	7	6	5	4	3	2	1	0
0	INVALID	Reserved		EIP (1b)	PROTOCOL IDENTIFIER			
1	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (n - 1)							
2	Reserved							
3	ELEMENT INDEX							
4	Protocol-specific information							
n	Protocol-specific information							

The ELEMENT INDEX PRESENT (EIP) bit indicates that 2 bytes are present in the Additional Element Status descriptor header between the ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH field and the protocol-specific information. The EIP bit also indicates that the protocol-specific information has additional reserved bytes. An EIP bit set to zero indicates that the Additional Element Status descriptor follows the formats defined in tables 25a, 26a, 29a, and 31a. An EIP bit set to one indicates that the Additional Element Status descriptor follows the formats defined in tables 25, 26, 29 and 31. The EIP bit should be set to one.

Table 25a – Additional Element Status descriptor when EIP = 0

Byte\Bit	7	6	5	4	3	2	1	0
0	INVALID	Reserved		EIP (0b)	PROTOCOL IDENTIFIER			
1	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (n - 1)							
2	Protocol-specific information							
n	Protocol-specific information							

The Protocol-specific information should be updated to reflect the format with EIP set to zero and with EIP set to one, again the changes are in blue.

Table 26 – Additional Element Status descriptor for Fibre Channel when EIP = 1

Byte\Bit	7	6	5	4	3	2	1	0
0	INVALID	Reserved		EIP (1b)	PROTOCOL IDENTIFIER (0h)			
1	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (n - 1)							
2	Reserved							
3	ELEMENT INDEX							
4	Reserved							
7	Reserved							
8	NODE NAME							
15	Port descriptor list							
	...							

Table 26a – Additional Element Status descriptor for Fibre Channel when EIP = 0

Byte\Bit	7	6	5	4	3	2	1	0
0	INVALID	Reserved		EIP (0b)	PROTOCOL IDENTIFIER (0h)			
1	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (n - 1)							
2	NUMBER OF PORTS							
3	Reserved							
4	NODE NAME							
11	Port descriptor list							
	...							

Table 29 – Additional Element Status descriptor for Device and Array Device elements for SAS when EIP = 1

Byte\Bit	7	6	5	4	3	2	1	0
0	INVALID	Reserved		EIP (1b)	PROTOCOL IDENTIFIER (6h)			
1	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (n - 1)							
2	Reserved							
3	ELEMENT INDEX							
4	NUMBER OF PHY DESCRIPTORS							
5	DESCRIPTOR TYPE (00b)	Reserved					NOT ALL PHYS	
6	Reserved							
7	BAY NUMBER (see T10/05-180r1)							
	Phy descriptor list							
	...							

Table 29a – Additional Element Status descriptor for Device and Array Device elements for SAS when EIP = 0

Byte\Bit	7	6	5	4	3	2	1	0
0	INVALID	Reserved		EIP (0b)	PROTOCOL IDENTIFIER (6h)			
1	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (n - 1)							
2	NUMBER OF PHY DESCRIPTORS							
3	DESCRIPTOR TYPE (00b)	Reserved					NOT ALL PHYS	
	Phy descriptor list							
	...							

Table 31 – Additional Element Status descriptor for SAS Expander elements when EIP = 1

Byte\Bit	7	6	5	4	3	2	1	0
0	INVALID	Reserved		EIP (1b)	PROTOCOL IDENTIFIER (6h)			
1	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (n - 1)							
2	Reserved							
3	ELEMENT INDEX							
4	NUMBER OF EXPANDER PHY DESCRIPTORS							
5	DESCRIPTOR TYPE (01b)		Reserved					
6	Reserved							
7	Reserved							
8	SAS ADDRESS							
15	SAS ADDRESS							
Phy descriptor list								
...								

Table 31a – Additional Element Status descriptor for SAS Expander elements when EIP = 0

Byte\Bit	7	6	5	4	3	2	1	0
0	INVALID	Reserved		EIP (0b)	PROTOCOL IDENTIFIER (6h)			
1	ADDITIONAL ELEMENT STATUS DESCRIPTOR LENGTH (n - 1)							
2	NUMBER OF EXPANDER PHY DESCRIPTORS							
3	DESCRIPTOR TYPE (01b)		Reserved					
4	SAS ADDRESS							
11	SAS ADDRESS							
Expander phy descriptor list								
...								