To: T10 Technical Committee
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Subject: 04-382r1 SES-2 Enclosure Nickname diagnostic page

Revision history
Revision 0 (9 November 2004) First revision
Revision 1 (13 November 2004) Incorporated comments from November CAP WG.

Related documents
ses2r09 - SCSI Enclosure Services - 2 revision 9
spc3r16 - SCSI Primary Commands - 3 revision 16

Overview
Each subenclosure reports this information in the Enclosure descriptor in the Configuration diagnostic page:
   a)   ENCLOSURE LOGICAL IDENTIFIER field: a 64-bit binary NAA format worldwide name
   b)   ENCLOSURE VENDOR IDENTIFICATION field: ASCII string identifying the vendor (a T10 vendor ID)
   c)   PRODUCT IDENTIFICATION field: ASCII string identifying the model
   d)   PRODUCT REVISION LEVEL field: ASCII string identify the firmware revision level

Item a) uniquely identifies an enclosure, but it is not particularly user-friendly. The others cannot pinpoint a specific enclosure if more than one of the same model are being used.

A diagnostic page is proposed to read and write a subenclosure nickname, so the user can save a user-friendly string that management tools can display in addition to or in place of the ENCLOSURE LOGICAL IDENTIFIER field value.

The stored string is 32 bytes long. If alternative languages are supported, then a 2-byte LANGUAGE CODE field (as defined by the Language element) is also stored. If US-ASCII is used, the string supports 32 characters; if another language is used, the string supports 16 characters. When setting the nickname, the language in effect at that time (according to the Language element) is assumed and remembered with the stored string. When reading the nickname, the stored LANGUAGE CODE is returned.

Similar but insufficient: The Enclosure Descriptor diagnostic page allows a vendor-specific ASCII string (not honoring the Language element) to be returned for each element. This could be provided for an Enclosure element. The meaning of the string is not defined, however, so it cannot be reliably used as a nickname. Plus, it is up to 64 KB long, which is too long for a shorthand name. Plus, it is not writeable in any standard way.

Suggested changes

6.1.1 Diagnostic parameters overview

This clause describes the diagnostic page structure and the diagnostic pages that are applicable to enclosure services devices and other device types that provide communications access to an enclosure services process. Control pages are accessed with the SEND DIAGNOSTIC command; status pages are accessed with the RECEIVE DIAGNOSTIC RESULTS command.

The diagnostic page format is specified in SPC-3. All diagnostic pages have the diagnostic page header defined in SPC-3, including the PAGE CODE and PAGE LENGTH fields.

The PAGE CODE field identifies the diagnostic page being sent or requested. The page codes are defined in table 1.

Table 1 — Diagnostic page codes for enclosure service devices

Page code	Description	Control or status	Reference
00h	Supported Diagnostic Pages	Status	SPC-3
01h	Configuration diagnostic page	Status	6.1.2
02h	Enclosure Control diagnostic page	Control	6.1.3
	Enclosure Status diagnostic page	Status	6.1.4
03h	Help Text diagnostic page	Status	6.1.5
04h	String Out diagnostic page	Control	6.1.6
	String In diagnostic page	Status	6.1.7
05h	Threshold Out diagnostic page	Control	6.1.8
	Threshold In diagnostic page	Status	6.1.9
06h	Obsolete		
07h	Element Descriptor diagnostic page	Status	6.1.10
08h	Short Enclosure Status diagnostic page	Status	6.1.11
09h	Enclosure Busy diagnostic page	Status	6.1.12
0Ah	Device Element Status diagnostic page	Status	6.1.13
0Bh	Subenclosure Help Text diagnostic page	Status	6.1.14
0Ch	Subenclosure String Out diagnostic page	Control	6.1.15
	Subenclosure String In diagnostic page	Status	0.0.2
0Dh	Supported SES Diagnostic Pages diagnostic page	Status	6.1.17
0Eh	*Download Microcode diagnostic page [04-377]*	*Control*	*6.1.xx*
	Download Microcode Status diagnostic page [04-377]	*Status*	*6.1.xx*
0Fh	Subenclosure Nickname Control diagnostic page	Control	6.1.xx
	Subenclosure Nickname Status diagnostic page	Status	6.1.xx
0Eh 0Fh	Reserved for this standard		
10h-1Fh	Vendor-specific SES diagnostic pages		
20h-2Fh	Reserved for this standard		
30h-3Fh	Reserved for all device types		SPC-3
40h-7Fh	See specific device type for definition. Reserved for the SES device type		SPC-3
80h-FFh	Vendor-specific pages		SPC-3

0.0.1 Subenclosure Nickname Control diagnostic page [all new]

The Subenclosure Nickname Control diagnostic page transmits an ASCII string to the enclosure services process to serve as the nickname for the specified subenclosure. The nickname is saved to non-volatile storage (e.g., a flash ROM) so it may be retrieved after future hard resets.

The Subenclosure Nickname Control diagnostic page is written by the SEND DIAGNOSTIC command. A RECEIVE DIAGNOSTIC RESULTS command with a PCV bit set to one and a PAGE CODE field set to 0Fh is defined as the request to read the Subenclosure Nickname Status diagnostic page (see 0.0.2).

Table 12 describes the Subenclosure Nickname Control diagnostic page.

Table 2 — Subenclosure Nickname Control diagnostic page

Byte\Bit	7	6	5	4	3	2	1	0
0	PAGE CODE (0Fh)							
1	SUBENCLOSURE IDENTIFIER							
2	(MSB)							
3	PAGE LENGTH (36)							(LSB)
4	(MSB)							
7	GENERATION CODE							(LSB)
8								
39	SUBENCLOSURE NICKNAME							

The PAGE CODE field is set to 0Fh.

The SUBENCLOSURE IDENTIFIER field specifies the vendor-specific identifier for the subenclosure to which the application client is sending the subenclosure nickname. If the SUBENCLOSURE IDENTIFIER value does not match a SUBENCLOSURE IDENTIFIER value found in the Configuration diagnostic page the enclosure services process shall set the SUBENCLOSURE NICKNAME STATUS field to 80h in the Subenclosure Nickname Status diagnostic page.

The PAGE LENGTH field specifies the length in bytes of the remainder of the diagnostic page. If the PAGE LENGTH field value does not match the length of the page, the enclosure services process shall not change the subenclosure nickname and set the SUBENCLOSURE NICKNAME MICROCODE STATUS field to 80h in the Subenclosure Nickname Status diagnostic page.

The GENERATION CODE field specifies the value expected to be found in the GENERATION CODE field of the Configuration diagnostic page (see 6.1.2). To prevent the misinterpretation of the microcode data, the enclosure services process shall verify that the value of the GENERATION CODE field matches the generation code value known by the enclosure services process. If there is a mismatch, the enclosure services process shall not change the subenclosure nickname and set the SUBENCLOSURE NICKNAME MICROCODE STATUS field to 80h in the Subenclosure Nickname Status diagnostic page.

The SUBENCLOSURE NICKNAME field specifies the subenclosure nickname. If a Language element (see 7.3.18) is available, the SUBENCLOSURE NICKNAME field shall contain characters using the language and character set indicated by the Language element and the enclosure services process shall store the language code value indicated by the Language element along with the subenclosure nickname. If a Language element is not available, the SUBENCLOSURE NICKNAME field shall contain US-ASCII characters and the enclosure services process shall store the language code value of 0000h along with the subenclosure nickname.

0.0.2 Subenclosure Nickname Status diagnostic page [all new]

The Subenclosure Nickname Status diagnostic page transmits the nickname of each subenclosure to the application client.

The transmission of a page using the SEND DIAGNOSTIC command with a PAGE CODE field set to 0Fh is defined as the transmission of a Subenclosure Nickname Control diagnostic page (see 6.1.15).

Table 3 describes the Subenclosure Nickname Status diagnostic page.

Table 3 — Subenclosure Nickname Status diagnostic page

Byte\Bit	7	6	5	4	3	2	1	0
0	PAGE CODE (0Fh)							
1	NUMBER OF SUBENCLOSURES							
2	(MSB)			PAGE LENGTH (z - 3)				
3								(LSB)
4	(MSB)			GENERATION CODE				
7								(LSB)
	Subenclosure nickname status descriptor list							
8	Subenclosure nickname status descriptor (primary subenclosure)							
47								
	...							
z - 39	Subenclosure nickname status descriptor							
z								

The PAGE CODE field is set to 0Fh.

The NUMBER OF SUBENCLOSURES field indicates the number of separate subenclosure nickname status descriptor values that are included, not including the primary subenclosure. The NUMBER OF SUBENCLOSURES value shall be the same as the number of subenclosures value in the Configuration diagnostic page.

The PAGE LENGTH field indicates the length in bytes of the remainder of the diagnostic page.

The GENERATION CODE field contains the same value as the GENERATION CODE field in the Configuration diagnostic page (see 6.1.2).

Table 4 describes the format of each subenclosure's enclosure nickname status descriptor. The first subenclosure nickname status descriptor shall be for the primary subenclosure; subenclosure nickname status descriptors for the remaining subenclosures may follow in any order

Table 4 — Subenclosure nickname status descriptor format

Byte\Bit	7	6	5	4	3	2	1	0
0	Reserved							
1	SUBENCLOSURE IDENTIFIER							
2	SUBENCLOSURE ENCLOSURE NICKNAME STATUS							
3	SUBENCLOSURE ENCLOSURE NICKNAME ADDITIONAL STATUS							
4	Reserved							
5								
6	(MSB)			SUBENCLOSURE NICKNAME LANGUAGE CODE				
7								(LSB)
8	SUBENCLOSURE NICKNAME							
39								

The SUBENCLOSURE IDENTIFIER field indicates the subenclosure identifier to which the subenclosure nickname status descriptor applies.

The SUBENCLOSURE NICKNAME STATUS field indicates the status of nickname operations for the subenclosure and is defined in table 5. After reporting a non-zero value, the enclosure services process shall set the SUBENCLOSURE NICKNAME STATUS field to 00h and shall set the SUBENCLOSURE NICKNAME ADDITIONAL STATUS field to 00h.

Table 5 — SUBENCLOSURE NICKNAME STATUS field

Code	Description
00h	No errors
80h	Error in one or more of the Subenclosure Nickname Control diagnostic page fields. The SUBENCLOSURE NICKNAME ADDITIONAL STATUS field shall be set to the offset of the lowest byte of whichever field in the Subenclosure Nickname Control diagnostic page which is in error.
81h	Internal error; nickname is lost.
82h	Internal error; previous nickname preserved.
All others	Reserved

The SUBENCLOSURE NICKNAME ADDITIONAL STATUS field provides additional status for certain values of the SUBENCLOSURE NICKNAME STATUS field as described in table 5.

The SUBENCLOSURE NICKNAME LANGUAGE CODE field indicates the language and character set of the subenclosure nickname, as defined by the LANGUAGE CODE field in the Language element (see 7.3.18).

The SUBENCLOSURE NICKNAME field indicates the subenclosure nickname.