To:      T10 Technical Committee
From:    Rob Elliott, HP (elliott@hp.com)
Date:    22 March 2007
Subject: 07-104r1 SES-2 Clarify IDENT bit for unusual elements

**Revision history**
Revision 0 (3 March 2007) First revision
Revision 1 (22 March 2007) Incorporated comments from March 2007 CAP WG

**Related documents**
ses2r15 - SCSI Enclosure Services - 2 (SES-2) revision 15
02-192 SES-2 IDENT bit for each element (Dennis Spicher and Rob Elliott, HP) - incorporated into SES-2
      revision 1
07-097 SES-2 Add failure indicator support to most elements (Rob Elliott and Dennis Spicher, HP)

**Overview**
02-192 added RQST IDENT and IDENT bits to most of the SES-2 elements to control a visual identification
indicator.

However, this functionality is not very clear for two elements:

   a)  the Language element does not represent a physical entity. The March 2007 CAP WG preferred to
       leave the bits, mentioning that the visual indicator could be considered a display of what language is
       currently being used.
   b)  the Simple Subenclosure element manages a subenclosure other than the primary subenclosure that
       does not support anything but the Short Enclosure Status diagnostic page. If used as a primary
       subenclosure, it would not provide any mechanism for identification control, so it is unlikely to offer
       that when not primary. The March 2007 CAP WG preferred to leave the bit in, on the theory that the
       primary subenclosure might be the one providing the indicator for the subenclosure (rather than the
       simple subenclosure providing its own visual indicator).

The WG also asked that the RQST FAIL and FAIL bits proposed in 07-097r0 be added to the Simple
Subenclosure element (again based on the idea that the primary subenclosure manages the visual indicator
on behalf of the simple subenclosure).

**Suggested changes to SES-2**

**7.3.18 Language element**

The Language element manages the language used for visual displays.

The format of the control field for a Language element is defined in table 104.

**Table 104 — Language element for control-type diagnostic pages**

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----------|---|---|---|---|---|---|---|---|
| 0 | COMMON CONTROL | | | | | | | |
| 1 | RQST IDENT | Reserved | | | | | | |
| 2 | (MSB) | LANGUAGE CODE | | | | | | |
| 3 | | | | | | | | (LSB) |

The COMMON CONTROL field is specified in 7.2.2.

A RQST IDENT (request identify) bit set to one specifies that the enclosure services process identify the element
by a visual indication. A RQST IDENT bit set to zero specifies that the enclosure services process not identify
the element by a visual indication.

The LANGUAGE CODE field specifies the language and character encoding to be used in all fields that are defined as being modified by the Language element. The enclosure should provide external indications in the requested language.

If the LANGUAGE CODE field contains:

a) 0000h: the enclosure services process shall use the default language of English with the US-ASCII character set encoding as defined by ISO/IEC 8859-1 (i.e., encoded as 8-bit characters with each MSB set to zero);

b) two characters containing the ISO 639-1 two-letter code for a language that is supported by the enclosure services process (e.g., "en" for English, "fr" for French, "de" for German, or "jp" for Japanese) expressed as US-ASCII characters as defined by ISO/IEC 8859-1 (i.e., encoded as 8-bit characters each with its MSB set to zero): the enclosure services process shall use UCS-2 as defined by ISO 10646-1 (i.e., encode using 16-bit characters); or

c) a value other than 0000h or the two-letter code of a language that is supported by the enclosure services process: the enclosure services process shall use the default language of English with the US-ASCII character set encoded as defined by ISO/IEC 8859-1 (i.e., encoded as 8-bit characters with each MSB set to zero) and shall report an invalid field error (see 4.5).

The format of the status field for a Language element is defined in table 105.

**Table 105 — Language element for status-type diagnostic pages**

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----------|---|---|---|---|---|---|---|---|
| 0 | COMMON STATUS | | | | | | | |
| 1 | IDENT | Reserved | | | | | | |
| 2 | (MSB) | LANGUAGE CODE | | | | | | |
| 3 | | | | | | | | (LSB) |

The COMMON STATUS field is specified in 7.2.3.

An IDENT (identify) bit set to one indicates that the enclosure services process is currently identifying the element by a visual indication because the RQST IDENT bit was set to one in the control-type diagnostic page. An IDENT bit set to zero indicates that the enclosure services process is not currently identifying the element by a visual indication based on the RQST IDENT bit in the control-type diagnostic page, or a visual indication is not implemented. Since the Language element may not represent a physical element, the visual indication may be an indication of the language being used.

The LANGUAGE CODE field indicates the language and character encoding that the enclosure services process uses for those fields that have the capability of being modified by the Language element. A LANGUAGE CODE field set to 0000h indicates the enclosure services process is using the default language of English and the US-ASCII character set encoded as defined by ISO/IEC 8859-1 (i.e., encoded as 8-bit characters with each MSB set to zero). A LANGUAGE CODE field set to an ISO 639-1 two-letter code (e.g., "en" for English, "fr" for French, "de" for German, or "jp" for Japanese) expressed as US-ASCII characters as defined by ISO/IEC 8859-1 (i.e., encoded as 8-bit characters each with its MSB set to zero) indicates the enclosure services process is using the indicated language and is using UCS-2 as defined by ISO/IEC 10646-1 (i.e., encoding using 16-bit characters).

### 7.3.19 Simple Subenclosure element

The Simple Subenclosure element manages a subenclosure that only provides the Short Enclosure Status diagnostic page (see 6.1.11).

The format of the control field for a Simple Subenclosure element is defined in table 106.

**Table 106 — Simple Subenclosure element for control-type diagnostic pages**

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----------|---|---|---|---|---|---|---|---|
| 0 | COMMON CONTROL | | | | | | | |
| 1 | RQST IDENT | RQST FAIL | Reserved | | | | | |
| 2 | Reserved | | | | | | | |
| 3 | Reserved | | | | | | | |

The COMMON CONTROL field is specified in 7.2.2.

A RQST IDENT (request identify) bit set to one specifies that the enclosure services process identify the element by a visual indication. A RQST IDENT bit set to zero specifies that the enclosure services process not identify the element by a visual indication.

A RQST FAIL (request failure indication) bit set to one specifies that that the enclosure services process shall enable a visual indication that a failure is present in the element. A RQST FAIL bit set to zero specifies that the enclosure services process shall disable a visual indication that a failure is present in the element, unless the enclosure services process is itself detecting a failure in the element.

The format of the status field for a Simple Subenclosure element is defined in table 107.

**Table 107 — Simple Subenclosure element for status-type diagnostic pages**

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|----------|---|---|---|---|---|---|---|---|
| 0 | COMMON STATUS | | | | | | | |
| 1 | IDENT | FAIL | Reserved | | | | | |
| 2 | Reserved | | | | | | | |
| 3 | SHORT ENCLOSURE STATUS | | | | | | | |

The COMMON STATUS field is specified in 7.2.3.

An IDENT (identify) bit set to one indicates that the enclosure services process is currently identifying the element by a visual indication because the RQST IDENT bit was set to one in the control-type diagnostic page. An IDENT bit set to zero indicates that the enclosure services process is not currently identifying the element by a visual indication based on the RQST IDENT bit in the control-type diagnostic page, or a visual indication is not implemented.

A FAIL bit set to one indicates that the enclosure services process is currently identifying the element with a visual failure indication based on the RQST FAIL bit in the control-type diagnostic page or its own detection of a failure. A FAIL bit set to zero indicates that:

    a)   the enclosure services process is not currently identifying the element with a visual failure indication based on the RQST FAIL bit in the control-type diagnostic page or its own detection of a failure (e.g., the ELEMENT STATUS CODE field is not set to 1h (i.e., OK)); or

    b)   a visual failure indication is not implemented.

The SHORT ENCLOSURE STATUS field contains the contents of the SHORT ENCLOSURE STATUS field of the Short Enclosure Status diagnostic page (see 6.1.11) from the specified subenclosure.