**IEEE P802.15**

**Wireless Personal Area Networks**

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| Re: | TG4e LB 69 comment resolution | |
| Abstract | Supporting text with content to satisfy submitted ballot comments (B. Rolfe) as proposed resolutions. | |
| Purpose | Support LB60 Comment Resolution | |
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# Clarification of nested IE form

The following shows the general format of an IE when the Type Field = 1, called “payload IEs” in the draft. The following updates Figure 54o:

|  |  |  |  |
| --- | --- | --- | --- |
| Bits:1 | 4 | 11 | Variable |
| Type | ID | Length | Content |
| 1 | 0 - 15 | 0 – 2047 |  |

Figure 54o - Payload IE general form

Update text: The payload ID has the form in Figure 54o: the Type field is set to 1. The ID value mapping is shown in Table 80j.

Update table 80j for Type = 1 IE namespace:

|  |  |  |
| --- | --- | --- |
| ID Value | Description |  |
| 0x0 | Upper layer payload (SDU passed up/down) (content transparent to the MAC) |  |
| 0x1-0x8 | Un-managed |  |
| 0x9 | MLME (Nested) |  |
| 0xa-0xf | Reserved |  |

Table 80j – Payload IE Namespace

A SDU IE encapsulates upper layer payload (SDU), the content is transparent to the MAC, and it shall have the form shown in figure [54o1]

|  |  |  |  |
| --- | --- | --- | --- |
| Bits:1 | 4 | 11 | Variable |
| Type | ID | Length | Content |
| 1 | 0 | 0 - 2047 |  |

Figure 54o1 – SDU IE

The MLME IE transports MAC management information. The MLME uses a nested form as shown in figure 54o2 (Nested IE).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bits:1 | 4 | 11 | 16 | | Variable | 16 | | Variable |
| Type | ID | Length | Nested IE | | Content | Nested IE | | Content |
| 1 | 9 | 0 - 2047 | Sub-ID | Length |  | Sub-ID | Length |  |
| Outer IE Descriptor | | | Sub-IE descriptor | |  | Sub-IE descriptor | |  |

Figure 54o2 – MLME IE

Each IE nested in an MLME IE shall consist of a Nested IE descriptor, and a content. A short and long form of the nested IE are shown in figure 54o3 and figure 54o4. The Sub-ID allocation for nested IEs that may be included in an MLME IE are shown in table 80k (short form) and table 80j (long form).

|  |  |  |
| --- | --- | --- |
| Bits:1 | 7 | 8 |
| 0=Short | Sub-ID | Length |
| Nested IE Descriptor | | |

Figure 54o3

|  |  |  |
| --- | --- | --- |
| Bits:1 | 4 | 11 |
| 1=Long | Sub-ID | Length |
| Nested IE Descriptor | | |

Figure 54o4

Table 80k - Short form

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sub-ID Value | S/L | Content Length | Name | Description |
| 0x00 | 0 | variable | SDU | Upper layer provided content transparent to the MAC |
| 0x01-0x19 | 0 | TBD | Reserved | [for PHY information exchange - show as reserved in 4e] |
| 0X1a | 0 | 6 | TSCH Synchronization | Information to synchronize to a TSCH network. ASN of TSCH device and its join prority (see 7.2.4.3.8) |
| 0x1b | 0 | variable | TSCH Slotframe and Link | Slotframe and link information for joining a  TSCH device (see 7.2.4.3.9) |
| 0x1c | 0 | variable | TSCH Timeslot | Timeslot template being used by the TSCH device (see 7.2.4.3.10) |
| 0x1d | 0 | 5 | Hopping Timing | Timing information used to synchronize to an unslotted hopper (see 7.2.4.3.12) |
| 0x1e | 0 | variable | EB Filter | Response filter for EBR (see 7.2.4.3.8) |
| 0x1f | 0 | 5 | MAC Metrics 1 | MAC Metrics counters 0x91 through 0x99 (see 7.2.4.3.14) |
| 0x20 | 0 | 40 | MAC Metrics 2 | All MAC Metrics counters in Table 86l (see 7.2.4.3.14) |
| 0x21-0x3f | 0 | - | Reserved |  |
| 0x40-0x7f | 0 | - | Unmanaged. |  |
| 0x80-0xff | 0 | - | Reserved |  |

Table 80j - Long form

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sub-ID Value | S/L | Content Length | Name | Description |
| 0x0 |  | variable | SDU | Upper layer provided content transparent to the MAC |
| 0x1 – 0x8 | 1 | -- | Un-managed. |  |
| 0xa9 | 1 | variable | Channel Hopping Sequence | The Hopping Sequence being used by the device (see 7.2.4.3.11) |
| 0xa-0xf | 1 | -- | Reserved |  |

Notes (for explanation, not to be included in the standard):

1. There is no need for a termination element in the nested structure: the length of the outer IE will indicate when the sub-IE list is exhausted. Also handy in that it allows an implementation to skip the entire nested IEs if it doesn’t support the format.
2. The overhead of having the sub-descriptor (Sub-ID + length) is shorter than 3 or 4 octet IE descriptor if there are more than 2 IEs nested in the MLME IE.