**IEEE P802.15**

**Wireless Personal Area Networks**

|  |  |  |
| --- | --- | --- |
| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title |  | |
| Date Submitted | 11 March 2011 | |
| Source | [] [BCA, Dust, SSN] [Los Gatos, CA] | Voice: [+1 408 395 7207 Fax: [ ] E-mail: [ ben @ blindcreek.com ] |
| 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 | |
| Notice | This document has been prepared to assist the IEEE P802.15. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. | |
| Release | The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15. | |

# 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-0xe | Reserved |  |
| 0xf | Termination of IE list |  |

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.