IEEE P802.11  
Wireless LANs

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| Comment Resolutions for 11be D0.3 ML element Type CIDs | | | | |
| Date: 2021-02-22 | | | | |
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Abstract

This submission proposes resolutions of comments received from TGbe comment collection (TGbe Draft 0.3).

* Part I (MLE Type field): CIDs: 1905, 2160, 2857 (3 CIDs)
* Part II (Probe Request variant MLE): 1732, 1834, , 2164, 3247 (6 CIDs)
* Pat III: CID 2587 (1 CID)
* Total: 8 CIDs

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Made editorial changes suggested by Mark Rison.
* Rev 2: Made few more editorial changes suggested by Mark Rison; renamed “Per-STA Profile Subelements” field as “STA Profiles”.
* Rev 3: To avoid confusions with “STA Profile” field in the Basic variant (as proposed in 21/254r5), swapped the names of the “STA Profile” field and the “Request Profile” field.
* Rev 4: Deferred CIDs 2162, 2163 on Ming’s request.
* Rev 5: Added CR for CID 2587 and simplified the text related to format of the Link Info field for both MLE variants based on feedback from payam. Changes highlighted in Cyan.
* Rev 6: Resolved CIDs 2162, 2163. Changes highlighted in green.

1. **Introduction**

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbe Draft. The introduction and the explanation of the proposed changes are not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe Draft (i.e. they are instructions to the 802.11be editor on how to merge the text with the baseline documents).***

***TGbe Editor: Editing instructions preceded by “TGbe Editor” are instructions to the TGbe editor to modify existing material in the TGbe draft. As a result of adopting the changes, the TGbe editor will execute the instructions rather than copy them to the TGbe Draft.***

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| Part I (MLE Type field) | | | | | | | |
| CID | Commenter | Clause | Page | Line | Comment | Proposed Change | Resolution |
| 1905 | Jeongki Kim | 9.4.2.295b.1 | 73 | 58 | Define the size of Type field of Multi-Link Control field. 4bits seems to be reasonable for furture extension because currently there are only two types of ML element. | Change TBD to 4 and change Reserved to 3 | **Revised.**  While we agree with the comment that 4 bits is a reasonable size for the Type field considering future usage of the ML element, based on feedbacks 3 bits is chosen as the size for the Type field. 1 bit (B3) is kept as reserved for future use.    TGbe editor to make the changes shown in 21/0301r4 under all headings that include CID 1905. |
| 2160 | Laurent Cariou | 9.4.2.247 |  |  | table 9-322am. Remove the TBD Reserved field and set to field to 1 bit. | as in comment | **Revised.**  Agree with the comment to remove the TBD but 1 bit for the Type field means there is no room for any other variants of ML element. Based on feedbacks, 3 bits is chosen as the size for the Type field considering future usage of the ML element.    TGbe editor to make the changes shown in 21/0301r4 under all headings that include CID 1905. |
| 2857 | Stephen McCann | 9.4.2.295b.1 | 74 | 13 | Why is the "probe request" option required. If a STA receives a ML-element in a probe request, there does not need to be a type value stating that it is within a probe request. In addition, clause 9.3.3.9 states that a Basic variant Multi-Link element is present in a ML probe request. | Delete "probe request" from Table 9-322am and possibly simplify the whole ML-element structure within the clause. Delete the sentence at P129L61, as the identification of an MLD Probe Request should be identified in a simpler way. | **Rejected.**  The 11be group decided to define a new ML element variant for Probe Request to differentiate the format/usage from the Basi variant MLE after much deliberation. Cluase 9.3.3.9 has been updated to clarify that Probe Request frame carries a Probe Request variant MLE. |
| Part II (Probe Request variant MLE) | | | | | | | |
| CID | Commenter | Clause | Page | Line | Comment | Proposed Change | Resolution |
| 1732 | Hanseul Hong | 9.4.2.295b.3 | 76 | 28 | Confusing sentence: "'The Per-STA Profile Subelements' field contains zero or more per-STA profile subelements...." | Rename the field of Table 9-788ek. One example is "Optional subelements" as defined in 9.4.2.295b.2 | **Revised.**  Agree with the comment that sentence is confusing. STA Profile field is used instead of Per-STA profile subelements.    TGbe editor to make the changes shown in 21/0301r4 under all headings that include CID 1732. |
| 1834 | Jarkko Kneckt | 9.4.2.295b.2 | 76 | 28 | It is not clear why the probe request variant Multi-Link element may contain optional subelements. | Please remove possiblity to add other optional subelements to probe request variant multi-link element, or describe how the optional subelements are going to be used and why they are needed. | **Revised.**  There is no direct mention of inclusion of optional subelements in the probe request variant MLE. The confusion is probably due to reference to 9.4.2.295b.2 (Basic variant Multi-Link element) which has been deleted. Reference is made to Table 9-322an—Optional subelement IDs for Basic variant Multi-Link element instead.  TGbe editor to make the changes shown in 21/0301r4 under all headings that include CID 1834. |
| 2162 | Laurent Cariou | 9.4.2.295b.3 |  |  | "The subfields of the Multi-Link Control field of the Probe Request variant Multi-Link element except the Type subfield are TBD." All these subfields should be set to 0 as no other information is needed in MLD probe request | as in comment | **Revised.**  Agree with the comment that the presence bits in the Multi-link control field are not required for ML Probe Request.    TGbe editor to make the changes shown in 21/0301r6 under all headings that include CID 2162. |
| 2163 | Laurent Cariou | 9.4.2.295b.3 |  |  | "The presence and format of the Common Info field in the Probe Request variant Multi-Link element are TBD." It is much simpler if the format is identical as the basic type, and to set all control bits that indicate presence of fields to 0, so that there are no fields present | as in comment | **Revised.**  Agree with the comment that the Common Info field is not present in the Probe variant ML element.    TGbe editor to make the changes shown in 21/0301r6 under all headings that include CID 2163. |
| 2164 | Laurent Cariou | 9.4.2.295b.3 |  |  | "The Per-STA Profile Subelements field contains zero or more per-STA profile subelements as defined in 9.4.2.295b.2 (Basic variant Multi-Link element). Each per-STA profile subelement starts with a Per-STA Control field as defined in 9.4.2.295b.2 (Basic variant Multi-Link element). Presence of other fields and/or elements is TBD." If we agree to be able to do partial information request per AP, then the only possible element that is present is the (extended) request element. If we agree that the request for partial information is the same for all APs identified in the MLD probe request, then no elements are included in the per-STA profile, which would therefore contain only the linkID of the AP that is requested. | as in comment | **Revised.**  Agree with the comment but the cited TBD has already been resolved in D0.4 along the lines of the comment. Some editorial changes are made to the text.  TGbe editor to make the changes shown in 21/0301r4 under all headings that include CID 2164. |
| 3247 | Young Hoon Kwon | 9.4.2.295b.3 | 76 | 29 | In Basic variant ML element, each Per-STA Profile subelement indicates properties of each reported STA. However, in the Probe Request variant ML element, each Per-STA Profile subelement indicates "requesting AP", not the "reported STA". In this sense, it is hot 100% true to say that "as defined in 9.4.2.295b.2". Further clarification is needed. | As shown in the comment. | **Revised.**  Agree with the comment that there are differences between the different variants of MLEs. The intention of the text is that only the subelement ID and the format of the Per-STA Control field to be specified in this sub-clause, the cited confusion is probably due to the reference to 9.4.2.295b.2 (Basic variant Multi-Link element) which has been deleted. Reference is made to Table 9-322an—Optional subelement IDs for Basic variant Multi-Link element instead. In order to make the different MLE variants as independent as possible, the presence bits in the Multi-link control field, as well as the Common Info field and the Link Info field are redefined for each variant.  TGbe editor to make the changes shown in 21/0301r4 under all headings that include CID 3247. |
| **Part III (Added in r5)** | | | | | | | |
| 2587 | Rojan Chitrakar | 35.3.2.3 | 128 | 08 | Revmd\_D5.0 clause 9.4.3 (Subelements) mentions this: "Unless stated otherwise, no more than one subelement with the same Subelement ID, apart from Vendor Specific subelements, is present within an element."  Since the case here is a clear deviation, it should be clearly stated that multiple Per-STA Profile subelements (with same subelement IDs) may be carried within a single ML element. | clearly state that multiple Per-STA Profile subelements (with same subelement IDs) may be carried within a single ML element. | **Revised.**  Agree with the comment that it should be clearly stated that more than one Per-STA Profile sublements may be carried within a single ML element. At the same time the text regarding the format of the Link ID field is simplified.    TGbe editor to make the changes shown in 21/0301r5 under all headings that include CID 2587. |

**Part I (MLE Type field)**

**Discussion:** None.

**Propose:**

Revised for CIDs 1905, 2160, 3247 as per discussion and editing instructions in 21/0301r4.

9.4.2.295bMulti-Link element

9.4.2.295b.1 General (CIDs 1905, 2160, 3247, 2587)

***TGbe editor: Modify figure 9-788eg as the following (Track Changes ON):***

B0 B2 B3 B4 B15

|  |  |  |
| --- | --- | --- |
| Type | Reserved | Presence Bitmap |

Bits: 3 1 12

**Figure 9-788eg—Multi-Link Control field**

***TGbe editor: Modify Table 9-322am as the following (Track Changes ON):***

Table 9-322am—Type subfield encoding

|  |  |
| --- | --- |
| **Type subfield value** | **Multi-Link element variant name** |
| 0 | Basic |
| 1 | Probe Request |
| 2 - 7 | Reserved |

***TGbe editor: Modify the fifth paragraph as the following (Track Changes ON):***

The Presence Bitmap subfield is used to indicate the presence of various subfields in the Common Info field as described in 9.4.2.295b.2 (Basic variant Multi-Link element) and 9.4.2.295b.3 (Probe Request variant Multi-Link element)). (#3247)

9.4.2.295b.2 Basic variant Multi-Link element

***TGbe editor: Modify the subclause as the following (Track Changes ON):***

The Basic variant Multi-link element is used to carry information of an MLD and its affiliated STAs during multi-link discovery (see 35.3.4.3 (Multi-link element usage rules in the context of discovery)) and multi-link setup (see 35.3.5.4 (Usage and rules of Basic variant Multi-link element in the context of multi-link setup)).

The format of the Presence Bitmap subfield of the Basic variant Multi-Link element is defined in Figure 9-788xx (Presence Bitmap subfield of the Basic variant Multi-Link element format). (#3247)

B0 B1 B11

|  |  |
| --- | --- |
| MLD MAC  Address Present | Reserved |

Bits: 1 11

**Figure 9-788xx—Presence Bitmap subfield of the Basic variant Multi-Link element format**

***TGbe editor: Please insert any new presence bits added by the latest revision of 21/222, 21/319, 21/397 to the above figure (instead of figure 9-788eg) and move the corresponding texts from the General sub-clause to this sub-clause in correct order.***

The MLD MAC Address Present subfield is set to 1 if the MLD MAC Address field is present in the Common Info field. Otherwise the subfield is set to 0.

**…**

(#2587)

The Link Info field contains zero or more subelements. The subelement format and ordering of subelements are defined in 9.4.3 (Subelements). (#2587)

The Subelement ID field values for the defined subelements are shown in Table 9-322an (Optional subelement IDs for Basic variant Multi-Link element).

### Table 9-322an—Optional subelement IDs for Basic variant Multi-Link element

|  |  |  |
| --- | --- | --- |
| **Subelement ID** | **Name** | **Extensible** |
| 0 | Pre-STA Profile | Yes |
| 1–220 | Reserved |  |
| 221 | Vendor Specific | Vendor defined |
| 222–255 | Reserved |  |

Zero or more Per-STA Profile subelements are included in the list of subelements. (#2587)

Each Per-STA Profile subelement starts with Per-STA Control field followed by a variable number of fields and elements as defined in 35.3.2 (Container for multi-link information).

**Part II (Probe Request variant MLE)**

**Discussion:** None.

**Propose:**

Revised for CIDs 2162, 2163 as per discussion and editing instructions in 21/0301r6.

SP: Do you agree to incorporate the changes provided in 21/0301r6 for CIDs 2162, 2163 to the next revision of 802.11be draft?

9.4.2.295bMulti-Link element

9.4.2.295b.3 Probe Request variant Multi-Link element (CIDs 1732, 1834, 2162, 2163, 3247)

***TGbe editor: Modify the subclause as the following (Track Changes ON):***

The Probe Request variant Multi-Link element is used to request an AP to provide information of other APs affiliated with the same AP MLD as the AP. The inclusion of a Probe Request variant Multi-Link element in a Probe Request frame identifies it as an MLD probe request.

(#2162)

The Presence Bitmap subfield of the Probe Request variant Multi-Link element is reserved. (#2162)

The Common Info field is not present in the Probe Request variant Multi-Link element. (#2163)

(#2587)

The Link Info field contains zero or more Per-STA Profile subelements. (#2587)

***Note to TGbe editor: The change in the above sentence supersedes the changes made for CID 1732 in 21/301r4 (Changing Per-STA Profile Subelement field to Request Profile field):***

(#1732)

The format of a Per-STA Profile subelement is defined in Figure 9-788xx (Per-STA Profile subelement of the Probe Request variant Multi-Link element format). (#3247)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Subelement ID | | | Length | STA Control | STA Profile |
| Octet: |  | 1 |  | 1 | 2 | variable |

**Figure 9-788xx—Per-STA Profile subelement of the Probe Request variant Multi-Link element format**

The Subelement ID field value is defined in Table 9-322an (Optional subelement IDs for Basic variant Multi-Link element). The subelement format and ordering of subelements are defined in 9.4.3 (Subelements).

(#1732, #1834, #3247)

The format of the STA Control field is defined in Figure 9-788xx ([STA Control of the Probe Request variant Multi-Link element field format)](#bookmark46). (#3247)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 |  | B3 | B4 | B5 B15 |
|  | Link ID | | Complete  Profile | Reserved |
| Bits: |  | 4 |  | 1 | 11 |

### Figure 9-788xx—STA Control field of the Probe Request variant Multi-Link element format

The Link ID subfield specifies a value that uniquely identifies the AP from which information is requested. (#3247)

The Complete Profile subfield is set to 1 when complete information is requested from the AP as defined in 35.3.4.2 (Use of ML probe request and response). Otherwise the subfield is set to 0. (#2164)

The STA Profile field of a Per-STA Profile subelement includes only an (Extended) Request element if the non-AP STA requests partial information from the AP corresponding to the per-STA profile, and is not present if the non-AP STA requests complete information from the AP. (#2164)