IEEE P802.11
Wireless LANs

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| Comment Resolutions for CC36 D1.0 Probe Request ML element CIDs |
| Date: 2021-08-03 |
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Abstract

This submission proposes resolutions of comments received from TGbe comment collection 36 (TGbe Draft 1.0).

* Rev 2: CIDs: 5741, 5827, 5834, 6451, 6700, 6701, 6890, 6891, 6892, 6893, 6975, 7585, 7586, 7587, 7673, 8057, 8165, 8291 (18 CIDs)
* Rev 3: CIDs: 5833, 6130, 6131, 8167 (4 CIDs)

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Some changes in the resolution text for CIDs 5833 and 8167 based on feedback from Lei Wang. Added CR for CID 6975.
* Rev 2: Deferred 5 CIDs (5833, 6130, 6131, 8060, 8167) based on comments during the call.
* Rev 3: Resolves 4 more CIDs (5833, 6130, 6131, 8167). CID 8060 is transferred to Jason. The definition of the Subelement IDs is moved to the MLE General subclause based on feedback by Arik, and added references to clause 35 subclauses that clarify that the STA Profile field is optionally present in a Per-STA Profile elment; changes highlighted in cyan.
* Rev 4: Minor editorial fixes.
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.***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CID | Commenter | Clause  | Page | Line | Comment | Proposed Change | Resolution |
| 5741 | Laurent Cariou | 9.4.2.295b.1 | 128 | 19 | Can we make it clear that the type subfield is always the same for all types, while the presence bitmap encoding is different depending on the types | as in comment | **Revised.**Agree with the comment, it is made clear that the encoding of the Type subfield is common to all variants of Multi-link element, while the encoding of the Presence Bitmap subfield is different for different variants. TGbe editor to make the changes shown in IEEE 802.11-21/1274r2 under all headings that include CID 5741.  |
| 5827 | Lei Wang | 9.4.2.295b.2 | 128 | 54 | The bit numbering in Figure 9-788eh, B0 to B11 does not match the bit position (B4 to B15) of the Presence Bitmap subfield in Figure 9-788eg--Multi-Link Control field. | Change the bit numbering in Figure 9-788eh to match the bit position of the Presence Bitmap subfield in Figure 9-788eg--Multi-Link Control field. | **Rejected.**The bit numbering in Figure 9-788eh (B0 to B11) is in reference to the Presence Bitmap subfield and not in reference to the Multi-Link Control field and as such it is correct. |
| 5833 | Lei Wang | 9.4.2.295b.3 | 135 | 48 | Based on the sentence in line 48 page 135, the both variants of Multi-Link Elements, Basic variant and Probe Request variant, use the same subelement ID definition table. Then it should be made explicit. | Change the title of Table 9-322ap to "Subelement IDs for Multi-Link element". | **Revised.**Agree with the comment, that if the same subelement ID definition table is used, the title of Table 9-322ap should be amended. Also, since the subelement ID definition table is used for all variants of MLE, the table is moved to the general subclause (from the Basic MLE subclause). TGbe editor to make the changes shown in IEEE 802.11-21/1274r4 under all headings that include CID 5833. |
| 5834 | Lei Wang | 9.4.2.295b.3 | 136 | 10 | Should the reference to (Extended) Request element be provided here? | Add a reference to 802.11-2020 Section 9.4.2.10 for (Extended) Request element. | **Revised.**Agree with the comment that it would be good to provide references to 9.4.2.9 (Request element) and 9.4.2.10 (Extended Request element). TGbe editor to make the changes shown in IEEE 802.11-21/1274r2 under all headings that include CID 5834. |
| 6130 | Mark RISON | 9.4.2.295b.3 | 136 | 12 | "if the non-AP STA requests complete information from the AP" -- what does this mean? | Change to ""if the Complete Profile subelement is set to 1" | **Revised.**Agree with the comment to make the suggested change. TGbe editor to make the changes shown in IEEE 802.11-21/1274r4 under all headings that include CID 6130. |
| 6131 | Mark RISON | 9.4.2.295b.3 | 136 | 12 | "The STA Profile field of a Per-STA Profile subelement includes only an (Extended) Request ele-ment if the non-AP STA requests partial information from the AP corresponding to the per-STA profile" is not clear. Does this mean "(Extended) Request element not allowed unless partial info requested" or does it mean "nothing other than (Extended) Request element allowed if partial info requested" and/or does it mean "field is empty if complete info requested"? | Clarify | **Revised.**The cited sentence is reworded to clarify that the STA Profile field is optionally present if partial profile is requested, and if present it includes exactly one Request element or one Extended Request element or one Request element and one Extended Request element. TGbe editor to make the changes shown in IEEE 802.11-21/1274r4 under all headings that include CID 6131. |
| 6451 | namyeong kim | 9.4.2.295b.3 | 135 | 37,44,54,64 | Change "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element" | Please see the comment. | **Revised.**Agree with the comment. Changed "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element" TGbe editor to make the changes shown in IEEE 802.11-21/1274r2 under all headings that include CID 6451. |
| 6700 | Rojan Chitrakar | 9.4.2.295b.2 | 128 | 40 | The term "Basic variant Multi-Link element" can be simplified as "Basic Multi-Link element" similar to Basic Trigger frame. | Replace all occurrence of "Basic variant Multi-Link element" with "Basic Multi-Link element" throughout D1.0. | **Accepted.** |
| 6701 | Rojan Chitrakar | 9.4.2.295b.3 | 135 | 25 | The term "Probe Request variant Multi-Link element" can be simplified as "Probe Request Multi-Link element" similar to Basic Trigger frame. | Replace all occurrence of "Probe Request variant Multi-Link element" with "Probe Request Multi-Link element" throughout D1.0. | **Accepted.** |
| 6890 | Rubayet Shafin | 9.4.2.295b.3 | 135 | 37 | This section is on Probe Request variant Multi-Link element. In this sentence, please change the "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element" | as in comment | **Revised.**Agree with the comment. Resolution is the same as for CID 6451: changed "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element". Notes to TGbe editor: No further action required for CID 6890. |
| 6891 | Rubayet Shafin | 9.4.2.295b.3 | 135 | 55 | This section is on Probe Request variant Multi-Link element. In this sentence, please change the "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element" | as in comment | **Revised.**Agree with the comment. Resolution is the same as for CID 6451: changed "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element".Notes to TGbe editor: No further action required for CID 6891. |
| 6892 | Rubayet Shafin | 9.4.2.295b.3 | 135 | 44 | This section is on Probe Request variant Multi-Link element. In the title of the figure, please change the "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element" | as in comment | **Revised.**Agree with the comment. Resolution is the same as for CID 6451: changed "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element".Notes to TGbe editor: No further action required for CID 6892. |
| 6893 | Rubayet Shafin | 9.4.2.295b.3 | 135 | 63 | This section is on Probe Request variant Multi-Link element. In the title of the figure, please change the "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element" | as in comment | **Revised.**Agree with the comment. Resolution is the same as for CID 6451: changed "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element".Notes to TGbe editor: No further action required for CID 6893. |
| 7585 | Tomoko Adachi | 9.4.2.295b.3 | 136 | 1 | "The Link ID subfield specifies a value that uniquely identifies the AP from which information is requested." It can be read like the AP is the one that requests information. | Change it to read "The Link ID subfield specifies a value that uniquely identifies the AP to which information is requested." | **Revised.**The proposed change is to change the phrase “the AP from which” to “the AP to which”; instead the phrase is changed to “AP whose” to better represent the intention.TGbe editor to make the changes shown in IEEE 802.11-21/1274r2 under all headings that include CID 7585. |
| 7586 | Tomoko Adachi | 9.4.2.295b.3 | 136 | 5 | "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(#2583)(#3360))." Isn't this a Probe Request? The non-AP side will request the complete information to the AP. | Change it to read "The Complete Profile subfield is set to 1 when complete information is requested to the AP as defined in 35.3.4.2 (Use of ML probe request and response(#2583)(#3360))." | **Revised.**The proposed change is to change the phrase “from the AP” to “to the AP”. Since the referred AP is not the AP that receives the Probe Request frame, “to the AP” is also not correct. The sentence is rephrased as “.. the complete profile of the AP identified by the Link ID subfield.” to better capture the original intention.TGbe editor to make the changes shown in IEEE 802.11-21/1274r2 under all headings that include CID 7586. |
| 7587 | Tomoko Adachi | 9.4.2.295b.3 | 136 | 10 | "The STA Profile field of a Per-STA Profile subelement includes only an (Extended) Request element ..." Only limited to one Request element? Why can't have multiple (Extended) Request elements? | Change it to read "The STA Profile field of a Per-STA Profile subelement includes one or more (Extended) Request element(s) if the non-AP STA requests partial information from the AP corresponding to the per-STA profile, and ... ." | **Revised.**Since the Request element only includes element IDs < 255, and the Extended Request element only includes element ID extensions, agree with the comment that it should be allowed to carry one Request element and one Extended Request element in the same Per STA profile subfield.TGbe editor to make the changes shown in IEEE 802.11-21/1274r2 under all headings that include CID 7587. |
| 7673 | Xiangxin Gu | 9.4.2.295b.3 | 135 | 44 | Figure 9-788er Per-STA Profile subelement of the Probe Request variant Multi-Link element format instead of Per-STA Profile subelement of the Probe Response variant Multi-Link element formeFigure 9-788es has the same editorial mistake | as in the comment | **Revised.**Agree with the comment. Resolution is the same as for CID 6451: changed "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element".Notes to TGbe editor: No further action required for CID 7673. |
| 8057 | Yuchen Guo | 9.4.2.295b.3 | 135 | 37 | There's no Probe Response variant Multi-Link element. Same for Line 55 and the Captions of Figure 9-788er and Figure 9-788es | Change "Probe Response variant" to "Probe Request variant" | **Revised.**Agree with the comment. Resolution is the same as for CID 6451: changed "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element".Notes to TGbe editor: No further action required for CID 8057. |
|  |  |  |  |  |  |  |  |
| 8165 | Yunbo Li | 9.4.2.295b.1 | 127 | 60 | What's the benefit to introduce a layer of Presence Bitmap? Doesn't directly introduce multiple Present bits is more strightforward? | remove the concept of Present Bitmap, and directly introduce each Present bit. | **Rejected.**This has been extensively discussed in the past and the 11be group agreed to be able to customize the presence bitmap (and the content of the Common Info field) for each MLE variant. Doing so will help to reduce the number of bits required in the presence bitmap since the content of the common info field is different for different variants. |
| 8167 | Yunbo Li | 9.4.2.295b.3 | 135 | 48 | "The Subelement ID field value is defined in Table 9-322ap (Optional subelement IDs for Basic variant Multi-Link element)." The sublement ID for Probe Respose variant ML element is also defined in Table 9-322qp, so it is better to change the title of 9-322ap to "Optional subelement IDs for Multi-Link element" | as in comment | **Revised.**Agree with the comment, that if the same subelement ID definition table is used, the tile of Table 9-322ap should be amended. Also, since the subelement ID definition table is used for all variants of MLE, the table is moved to the general subclause (from the Basic MLE subclause). Notes to the TGbe editor: the resolution is the same as that for CID 5833. No further changes required for CID 8167. |
| 8291 | Zhiqiang Han | 9.4.2.295b.3 | 135 | 37 | There is no type of Probe Response variant Multi-Link element format.Please change it to Probe Request variant Multi-Link element | as in comment. | **Revised.**Agree with the comment. Resolution is the same as for CID 6451: changed "Probe Response variant Multi-Link element" to "Probe Request variant Multi-Link element".Notes to TGbe editor: No further action required for CID 8291. |
| 6975 | Sanghyun Kim | 9.4.2.295b.2 | 136 | 5 | The STA requesting complete information is the non-AP STA, not the AP STA. | change 'from the AP' to 'to the AP' | **Revised.**Agree with the comment. Resolution is the same as for CID 7586: “from an AP” is rephrased as “from the AP identified by the Link ID subfield.”Notes to TGbe editor: No further action required for CID 6975. |

The baseline for this document is 11be D1.1.

**Discussion:** None.

SP: Do you agree to incorporate the changes provided in IEEE 802.11-21/1274r4 for CIDs 5741, 5827, 5834, 6451, 6700, 6701, 6890, 6891, 6892, 6893, 6975, 7585, 7586, 7587, 7673, 8057, 8165, 8291 to the next revision of 802.11be draft?

9.4.2.295bMulti-Link element

9.4.2.295b.1 General (5741)

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

…

The Type subfield is defined in [Table 9-322am (Type subfield encoding(#1905)(#2160)(#3247))](#bookmark91) (#5741), has a common encoding for all variants of the Multi-Link element and is used to differentiate the various variants of the Multi-Link element. Different variants of the Multi-Link element are used for different multi-link operations.

**Table 9-322am—Type subfield encoding(#1905)(#2160)(#3247)**

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

(#3247)The Presence Bitmap subfield is used to indicate the presence of various subfields in the Common Info field (#5741) and has different format for different variants of the Multi-Link element as described in [9.4.2.295b.2 (Basic variant Multi-Link element)](#bookmark92) and [9.4.2.295b.3 (Probe Request](#bookmark106) [variant Multi-Link element)](#bookmark106).

(#1068)The Common Info field carries information that are common to all the links except for Link ID Info subfield and BSS Parameters Change Count subfield that are for the link on which Multi-Link element is sent and is optionally present based on the value of the Type subfield (see [9.4.2.295b.2 (Basic variant Multi-](#bookmark102) [Link element)](#bookmark102) and [9.4.2.295b.3 (Probe Request variant Multi-Link element)](#bookmark116)).

(#1078)(#1475)(#2981)The Common Info field consists of zero or more subfields whose presence is indi- cated by the subfields of the Multi-Link Control field. The subfields in the Common Info field appear in the same order as their corresponding presence subfield in the Multi-Link Control subfield.

The Link Info field carries information specific to the links and is optionally present based on the value of the Type subfield (see [9.4.2.295b.2 (Basic variant Multi-Link element)](#bookmark102) and [9.4.2.295b.3 (Probe Request](#bookmark116) [variant Multi-Link element)](#bookmark116)).

(#5833) of the Multi-Link element xx

**xx**

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| --- | --- | --- |
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|  |  |  |
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9.4.2.295b.2 Basic variant Multi-Link element (CIDs 5833)

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

…

(#2159)(#2161)(#3018)(#2587)The Link Info field contains zero or more subelements. The subelement for mat and ordering of subelements are defined in 9.4.3 (Subelements). (#5833) The Subelement ID field values are defined in Table 9-322xx (Optional subelement IDs for Multi-Link element).

(#5833)

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

Each Per-STA Profile subelement starts with STA Control field followed by a variable number of fields and elements as defined in 35.3.2 (Advertisement of multi-link information in Multi-Link element(#2294)).

…

9.4.2.295b.3 Probe Request variant Multi-Link element (CIDs 5833, 5834, 6130, 6131, 6451, 7585, 7586, 7587)

***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 ML probe request(#2583)(#3360).

(#1732)(#1834)(#3247)(#2587)The Link Info field contains zero or more (#5833) subelements. The subelement format and ordering of subelements are defined in 9.4.3 (Subelements). The Subelement ID field values are defined in Table 9-322xx (Optional subelement IDs for Multi-Link element).

(#5833) Zero or more Per-STA Profile subelements are included in the list of subelements.

(#3247)The format of a Per-STA Profile subelement is defined in [Figure 9-788er (Per-STA Profile subele-](#bookmark107) [ment of the Probe](#bookmark107) [(#6451) Request variant Multi-Link element format(#3247))](#bookmark107).

|  |  |  |  |
| --- | --- | --- | --- |
| Subelement ID | Length | STA Control | STA Profile |

Octets: 1 1 2 variable

**Figure 9-788er—Per-STA Profile subelement of the Probe (#6451) Request variant Multi-Link ele- ment format(#3247)**

(#5833)

(#3247)The format of the STA Control field is defined in [Figure 9-788es (STA Control field of the Probe](#bookmark108) (#6451) [Request variant Multi-Link element format(#3247))](#bookmark108).

B0 B3 B4 B5 B15

|  |  |  |
| --- | --- | --- |
| Link ID | Complete Profile | Reserved |

Bits: 4 1 11

**Figure 9-788es—STA Control field of the Probe (#6451) Request variant Multi-Link element for- mat(#3247)**

(#3247)The Link ID subfield specifies a value that uniquely identifies the AP (#7585) whose information is requested.

(#2164)The Complete Profile subfield is set to 1 when complete information (#7586) of the AP identified by the Link ID subfield is requested as defined in 35.3.4.2 (Use of ML probe request and response(#2583)(#3360)). Otherwise, the subfield is set to 0.

(#2164) (#6130, #6131) If the Complete Profile subfield is set to 0, the STA Profile field, if present in a Per-STA Profile subelement (see 35.3.4.2 (Use of ML probe request and response) and 35.3.2.3.2 (Inheritance in the per-STA profile of Probe Request variant Multi-Link element), includes exactly one of the following:

* one Request element (#5834) (see 9.4.2.9 (Request element)), or
* one Extended Request element (#5834) (see 9.4.2.10 (Extended Request element)), or
* (#7587) one Request element and one Extended Request element.

 If the Complete Profile subfield is set to 1, the STA Profile field is not present in a Per-STA Profile subelement.