IEEE P802.11
Wireless LANs

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| Resolution for CIDs related to Multi-Link element (CC 34) – Part 3 |
| Date: March 21, 2021 |
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 Abstract

This submission proposes resolutions for following 11 CIDs received for TGbe CC34:

2159, 2161, 3018, 1908, 3019, 2587, 1906, 1907, 2436, 1776, 3127

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revised the document to include approved changes in doc 11-21/397r7.
* Rev 2: Corrected the clause number where the note is inserted for resolution of CID 3127.
* Rev 3: Minor correction based on suggestion from Rajat

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. This introduction is 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 802.11 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** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 2159 | Laurent Cariou | 0.00 | 9.4.2.247 | Remove TBD fields in common part and in per-STA profile. If we need to add fields, we will add them, but there's no need to keep a TBD for them | as in comment | **Revised**The TBD was removed in the Common Info field in Figure 9-788eh and in the following text. The TBD in the Link Info field was removed, and the size of Per-STA Control field was set to 2 octets as resolution for CIDs 1906 and 1907. The TBD in the text was also removed.**Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 2159.** |
| 2161 | Laurent Cariou | 0.00 | 9.4.2.295b.2 | Remove TBD fields in common part and in per-STA profile. If we need to add fields, we will add them, but there's no need to keep a TBD for them | as in comment | **Revised**The TBD was removed in the Common Info field in Figure 9-788eh and in the following text. The TBD in the Link Info field was removed, and the size of Per-STA Control field was set to 2 octets as resolution for CIDs 1906 and 1907. The TBD in the text was also removed.**Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 2161.** |
| 3018 | Xiaofei Wang | 74.45 | 9.4.2.295b.2 | If no field has been determined to be included, it should be removed, instead of including a "TBD" field. | remove TBD field | **Revised**The TBD was removed in the Common Info field in Figure 9-788eh and in the following text. **Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 3018.** |
| 1908 | Jeongki Kim | 75.60 | 9.4.2.295b.2 | For "Other subfields are TBD." , if we have further subfields, remove this sentence | As in comment | **Revised**The TBD in the text was also removed.**Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 1908.** |
| 3019 | Xiaofei Wang | 75/26 | 9.4.2.295b.2 | Pre-STA Profile should be Per STA Profile | As in comment | **Revised**The error was fixed.**Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 3019.** |
| 2587 | Rojan Chitrakar | 128.08 | 35.3.2.3 | 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 commenter. The text was updated to state that one or more Per-STA Profile subelements can be carried as Optional subelements in the Link Info field.**Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 2587.** |
| 1906 | Jeongki Kim | 75/42 | 9.4.2.295b.2 | If we decide the size of Per-STA Control field as 1 octet, change TBD to B7.If we decide the size of Per-STA Control field as 2 octet, change TBD to B15. | As in comment | **Revised**The TBD was resolved to B15. The Per-STA Control field is likely to carry certain subfields that will act as indicators for presence of fields in the Per-STA Profile subelement. There are only 3 reserved bits if the size of the Per-STA Control field is 1 octet. Hence, the size of the Per-STA Control field was set to 2 octets. **Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 1906.** |
| 1907 | Jeongki Kim | 75/47 | 9.4.2.295b.2 | If we decide the size of Per-STA Control field as 1 octet, change TBD to 3.If we decide the size of Per-STA Control field as 2 octet, change TBD to B11. | As in comment | **Revised**The TBD was resolved to 11. The Per-STA Control field is likely to carry certain subfields that will act as indicators for presence of fields in the Per-STA Profile subelement. There are only 3 reserved bits if the size of the Per-STA Control field is 1 octet. Hence, the size of the Per-STA Control field was set to 2 octets. **Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 1907.** |
| 2436 | namyeong kim | 75/57 | 9.4.2.295b.2 | Modify "complete" to "complete profile" for clarification. | Please see comment. | **Revised**The cited sentence was updated.**Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 2436.** |
| 1776 | Insun Jang | 75/52 | 9.4.2.295b.2 | Usage of Link ID during multi-link setup has been agreed. After the sentence "The Link ID subfield specifies a value that uniquely...", we need to mention that (Please see Doc. 21/76r1 (as PDT)) | After the sentence, please add as follows: The usage of link ID during multi-link setup is defined in 35.3.5.4 (Usage and rules of Basic variant Multi-link element in the context of multi-link setup) | **Revised**Agree with the commenter. However, Link ID is not only used in multi-link setup but also used in discovery. A reference to clause 35.3.2.1 was inserted and the corresponding text was inserted in Clause 35.3.2.1.**Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 1776.** |
| 3127 | Yiqing Li | 86/09 | 9.4.2.295b.2 | The Link ID subfield should be specified | Link id should be connected with the tuple <Channel Number, MAC Address, Operating Class> and is different within the MLD. | **Revised**Agree with the commenter. A note was inserted in subclause 35.3.2.1 to indicate the relationship between the Link ID and the three-tuple, i.e., the Link ID is a unique mapping within an AP MLD to the <Channel Number, BSSID, Operating Class> tuple.**Tgbe editor please implement changes as shown in doc 11-21/0506r3 tagged as 3127.** |

***TGbe editor: Please note Baselines are REVmd D5.0, 11ax D8.0, 11be D0.4 and approved changes in 11-21/397r7***

**9.4.2.295b.2 Basic variant Multi-Link element**

***TGbe editor: Please remove the TBD subfield in Figure 9-788ei (Common Info field of the Basic variant Multi-Link element format) and the text as shown below. Please note that Figure 9-788eh includes changes approved in 11-21/397r7.***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | MLD MAC Address |  Link ID Info | Change Sequence | ~~TBD~~ |
| Octets: | 0 or 6 | 0 or 1 | 0 or 1 | ~~TBD~~ |
| Figure 9-788eh—Common Info field of the Basic variant Multi-Link element [CID 2159,2161,3018] |

|  |  |  |
| --- | --- | --- |
|  | B0 B3 | B4 B8 |
|  | Link ID | Reserved |
| Bits: | 4 | 4 |
| Figure 9-788xx—Link ID Info |

The format of the Link ID Info subfield is defined in Figure 9-788xx (Link ID Info format). The Link ID subfield indicates the link identifier of the AP that transmits the Basic variant Multi-link element or the nontransmitted BSSID in the same multiple BSSID set as the AP that transmits the Basic variant Multi-link element and affiliated with the MLD that is described in the Multi-link element. Link ID Info subfield in the Common info field is not present if the Basic variant Multi-link element is sent by the non-AP STA.

The Change Sequence subfield in the Common Info field is an unsigned integer, initialized to 0, that increments when a critical update occurs to the operational parameters for the AP that tranmits the Basic variant Multi-link element or the nontransmitted BSSID in the same multiple BSSID set as the AP that transmits the Basic variant Multi-link element and affiliated with an MLD that is described in the Multi-link element. The critical updates are defined in 11.2.3.15 (TIM Broad­cast). The Change Sequence subfiled in the Common info field is not present if the Basic variant Multi-link element is sent by the non-AP STA.

The condition for the presence of the MLD MAC Address subfield, the Link ID Info subfield, and the Change Sequence subfield in the Common Info field is defined in 35.3.5.4 (Usage and rules of Basic variant Multi-link element in the context of multi-link setup), 35.3.4.3 (Multi-link element usage rules in the context of discovery) and 35.3.8 (BSS parameter critical update procedure).

[CID 2159,2161,3018]

***TGbe editor: Please update the text/Table/figures below Figure 9-788ei (Link Info field of the Basic variant Multi-Link element format)***

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

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 | Per-STA Profile [CID 3019] | Yes |
| 1–220 | Reserved |  |
| 221 | Vendor Specific | Vendor defined |
| 222–255 | Reserved |  |

[CID 2587]The Optional Subelements field can carry zero or more Per-STA Profile subelements.

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).

The format of the Per-STA Control field is defined in [Figure 9-788ek (Per-STA Control field format)](#bookmark46).

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

### Figure 9-788ek—Per-STA Control field format [CID 1906, 1907]

[CID 1776]The Link ID subfield specifies a value that uniquely identifies the link where the reported STA is operating on. The usage of Link ID is defined in 35.3.2.1 (General).

[CID 2436]The Complete Profile subfield is set to 1 when the Per-STA Profile subelement of the Multi-Link element carries the complete profile as defined in 35.3.2.2 (Complete or partial per-STA profile). Otherwise the subfield is set to 0.

[CID 1908,2159,2161]**…**

**35.3.2 Container for multi-link information**

**35.3.2.1 General**

***TGbe editor: Please insert the following text as the last statement in subclause 35.3.2.1 (General)***

[CID 1776] The Link ID subfield of the Per-STA Profile subelement carried in a Basic variant Multi-Link element is used in the context of multi-link discovery as described in 35.3.4.4 (Multi-link element usage rules in the context of discovery) and multi-link setup as described in 35.3.5.4 (Usage and rules of Basic variant Multi-link element in the context of multi-link setup).

[CID 3127]NOTE – The Link ID of an AP affiliated with an AP MLD is a representation of the tuple consisting of Operating Class, Operating Channel, and BSSID of the AP affiliated with the AP MLD. The Link ID is unique to every AP affiliated with an AP MLD.