IEEE P802.11
Wireless LANs

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| LB271 – CR for some CIDs related to 35.3.12.4 |
| Date: 2020-07-0 |
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Abstract

Spec text proposal for resolution of following CIDs for LB271 on 11be D3.0:

16457, 15542, 18162, 15087, 15871, 16043, 16535, 15088, 18165, 16448, 16449, 17994

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 16457 | 35.3.12.4 | 538.28 | Link recommendation procedure using Link recommendation frame does not really relate to Traffic indication and should be moved to a new subclause dedicated to link recommendation | as in comment |  Revised – agree with the commenter. Create a new subclause in 35.3.7 to include description of operation with link recommendation frame. Apply the changes marked as #16457 in this document. |
| 15542 | 35.3.12.4 | 538.48 | Beacon shall be broadcast addressed, whilst Link Recommendation frame may be individually addressed or broadcast addressed. And the word "AP's indication" is not consistent with previous sentences. | Change: The AP's indication may be carried in a broadcast or a unicast frameTo: The Link Recommendation frame may be Individually addressed or broadcast addressed. |  Accept |
| 18162 | 35.3.12.4 | 538.48 | The term indication is being used in the context of traffic indication in this subclause. Therefore, 'indication' can be confused with traffic indication. | Replace 'indication' with 'recommendation' |   |
| 15087 | 35.3.12.4 | 540.47 | "transmission a Link Recommendation frame" should be "transmission of a Link Recommendation frame" | As in the comment. | Reject – The sentence is correct: the AP schedules for transmission a Link Recommendation frame is widely used in baseline. |
| 15871 | 35.3.12.4 | 540.47 | The description of the case where the Multi-Link Traffic Indication element is included in a Link Recommendation frame doesn't belong to a subclause describing how to indicate/retrieve frames buffered at AP as part of the power saving mechanism. Need to re-structure this part otherwise it's hard to locate the normative text for this feature. | Re-structure this part of description related to the Link Recommendation frame. |  Revised – agree with the commenter. Move usage of Link Recommendation frame to a new subclause in 35.3.7 and move there the corresponding spec text. |
| 16043 | 35.3.12.4 | 540.47 | The Link Recommendation feature logically belongs to Link Management clause (35.3.7) instead of under Traffic Indication. | Move the Link Recommendation feature under Link Management clause (35.3.7). |   Revised – agree with the commenter. Move usage of Link Recommendation frame to a new subclause in 35.3.7 and move there the corresponding spec text. |
| 16535 | 35.3.12.4 | 540.47 | The paragraphs that deals with Link Recommendation frame shall be moved to section 35.3.7 (as a separate subclause) rather than in the current location (Multi-link power management) since the link recommendation applies to general frame exchange in DL and UL and not specifically to the BU retrieve (which is more directed to Power management topic). | Please move the paragraphs in P540L47 - P541L17 under section 35.3.7 |  Revised – agree with the commenter. Move usage of Link Recommendation frame to a new subclause in 35.3.7 and move there the corresponding spec text.  |
| 15088 | 35.3.12.4 | 540.54 | In the following sentence, since the AID Bitmap element indicates Per-Link Traffic Indication Bitmap subfiels included in the Multi-Link Traffic Indication element in the Link Recommendation frame, the AID Offset subfield is not needed:"-- The Multi-Link Traffic Indication element includes Per-Link Traffic Indication Bitmap subfield(s), in the Per-Link Traffic Indication Bitmap List field, which correspond(s) to the AID(s) of the nonAP MLD(s), starting from the bit number k of the AID bitmap of the AID Bitmap element carried in the Link Recommendation frame. The AID Offset subfield of the Multi-Link Traffic Control field of the Multi-Link Traffic Indication element contains the value k. The order of the ... " | Revise the sentence as follows by deleting the part related to the AID Offset subfield and k:"-- The Multi-Link Traffic Indication element includes Per-Link Traffic Indication Bitmap subfield(s), in the Per-Link Traffic Indication Bitmap List field, which correspond(s) to the AID(s) of the non-AP MLD(s) indicated in the Partial AID Bitmap subfield of the AID Bitmap element carried in the Link Recommendation frame. The order of the ..."Also make the following change in 9.4.2.315 (Multi-Link Traffic Indication element) in P294L34:"The AID Offset subfield indicates a bit numbered k of the traffic indication virtual bitmap when the Multi-Link Traffic Indication element is included in the Beacon frame. When the Multi-Link Traffic Indication element is included in the Link Recommendation frame, the AID Offset subfield is reserved." | Revised – agree with the commenter. There is indeed a mistake in the naming of he field. Apply the changes marked as #15088.  |
| 18165 | 35.3.12.4 | 540.55 | Is the 'k' based on AID Offset of ML Traffic IE or offset from the AID Bitmap IE? Please clarify. | As in comment |  Revised – as mentioned by several other comments, the AID offset is redundant and not needed when included in a Link Recommendation frame. Make it reserved in that case. Apply the changes marked as #18165 in this document |
| 16448 | 35.3.12.4 | 540.57 | " starting from the bit number k of the AID bitmap of the AID Bitmap element carried inthe Link Recommendation frame." There is no AID Bitmap field but a Partial AID Bitmap field. Please correct. | as in comment |  Revised – agree with the commenter. There is indeed a mistake in the naming of he field. Apply the changes marked as #16448. |
| 16449 | 35.3.12.4 | 540.58 | There is not real need for AID offset in the case of link recommendation frame cause the range of STAs is already defined in the AID Bitmap element. | Make the AID offset reserved in that situation |  Revised – as mentioned by several other comments, the AID offset is redundant and not needed when included in a Link Recommendation frame. Make it reserved in that case. Apply the changes marked as #16449 in this document |
| 17994 | 35.3.12.4 | 541.10 | A mechanism should be provided for an AP affiliated with an AP MLD to recommend to a STA affiliated with a non-AP MLD to wake up STAs operating on other links to receive BUs when the traffic buffer at AP MLD is large. | Suggest to incorporate changes in proposal 11-22/1201r6 to resolve this issue. |  Reject – There has been already discussion on this proposal, which did not reach consensus in the group. |

1. **Introduction**
2. **Proposed spec text**

###### **Traffic indication**

tGbe editor: Modify the following paragraph in ***35.3.14.2 Traffic Indication***

An AP MLD may use Multi-Link Traffic Indication element and TIM element carried in a Beacon frame to recommend a non-AP MLD to use one or more enabled links to retrieve individually addressed buffered BU(s). An AP MLD may also use Multi-Link Traffic Indication element and AID Bitmap element in a Link Recommendation frame to recommend a non-AP MLD to use one or more enabled links for all exchanges both for DL and UL ***(#15871, #16043, #16535, #16457)*** as described in subclause 35.3.7.3 (Link recommendation). ***(#15542)***The Link Recommendation frame may be individually addressed, or broadcast addressed.

tGbe editor: Modify the following paragraph in ***35.3.14.2 Traffic Indication***

An AP affiliated with an AP MLD may schedule for transmission a Link Recommendation frame to provide link recommendation for a set of non-AP MLDs as follows:

* The bit corresponding to the AID of a non-AP MLD shall be set to 1 in the Partial AID Bitmap subfield of the AID Bitmap element in the Link Recommendation frame if the AP intends to provide a link recommendation for this non-AP MLD.
* The Multi-Link Traffic Indication element includes Per-Link Traffic Indication Bitmap subfield(s), in the Per-Link Traffic Indication Bitmap List field, which correspond(s) to the AID(s) of the non- AP MLD(s)(#15088, #16448)indicated in the the (#15088, #16448)Partial AID bitmap (#15088, #16448)subfield of the AID Bitmap element carried in the Link Recommendation frame. (#15088, #18165, #16449)The order of the Per-Link Traffic Indication Bitmap subfield(s) follows the order of the bits that are set to 1 in the Partial AID Bitmap subfield of the AID Bitmap element carried in the Link Recommendation frame that corresponds to the AID(s) of the non-AP MLD(s). The bit position *i* of the Per-Link Traffic Indication Bitmap subfield in the Multi-Link Traffic Indication element that corresponds to the link with the link ID equal to *i* on which a non-AP STA affiliated with the non-AP MLD is operating shall be set to 1 to indicate to the non-AP MLD that it should exchange frames on this link both in DL and UL, while following the rules defined in [35.3.7.1.1 (General)](#bookmark52).
* A link shall not be recommended by the AP MLD for a non-AP MLD if the link is disabled for the non-AP MLD (see [35.3.7.1.1 (General)](#bookmark52)).
* The Address 1 field of the Link Recommendation frame shall be set to the broadcast address.

NOTE 2—One or more links can be recommended by the AP MLD to a non-AP MLD.

If a non-AP MLD receives a Link Recommendation frame with the bit corresponding to its AID set to 1 in the Partial AID Bitmap subfield of the AID Bitmap element in the Link Recommendation frame, it should exchange frames both in DL and UL on enabled links identified as recommended in the Multi-Link Traffic Indication element in the Link Recommendation frame, while following the rules defined in [35.3.7.1.1](#bookmark52) [(General)](#bookmark52).

 **9.4.2.315 Multi-Link Traffic Indication element**

tGbe editor: Modify the following paragraph in 9.4.2.315 Multi-Link Traffic Indication element (#15088, #18165, #16449)

The AID Offset subfield indicates a bit numbered *k* of the traffic indication virtual bitmap when the Multi-Link Traffic Indication element is included in the Beacon frame. When the Multi-Link Traffic Indication element is included in the Link Recommendation frame, the AID Offset subfield is reserved.

TGbe editor: Modify 35.3.7.3 Affiliated AP link disablement and enablement to 35.3.7.4 Affiliated AP link disablement and enablement. Create a new subclause 35.3.7.3 Link recommendation. ***Move in this new subclause the paragraph starting with “An AP affiliated with an AP MLD may also schedule for transmission a Link Recommendation frame” in 35.3.14.2 Traffic Indication, and modify the first sentence of the paragraph to remove the word “also” and apply the changes done to this paragraph in this document. Move in this new subclause the paragraph starting with “If a non-AP MLD receives a Link Recommendation frame” in 35.3.14.2 Traffic Indication, (#15871, #16043, #16535, #16457)***