IEEE P802.11
Wireless LANs

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| LB271 Comment Resolution – Miscellaneous  |
| Date: 2023-7-10 |
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Abstract

This submission proposes comment resolutions for the following 9 CIDs received in LB271 on TGbe D3.0 related to

* Clause 9.4.2.315
* Clause 35.3.12.4
* Clause 35.3.17

CIDs:

18095 18097 15471 17993 17841 15700 15063 17635 15999

Revisions:

* Rev 0: Initial version of the document.

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| **CID** | **Commenter** | **Clause Number** | **Page.****Line** | **Comment** | **Proposed Change** | **Resolution** |
| 18095 | Abhishek Patil | 9.4.2.315 | 293.56 | In deployments, it has been observed that client devices from various vendors are unable to process Beacon frame beyond a certain value. As a result, they loose association (and start misbehaving). TGbe needs to make every effort to keep the beacon size under control. The Multi-Link Traffic element will cause beacon bloat which would further cause inter-op issues between an AP affiliated with an AP MLD and non-EHT clients associated with it. The size of the Multi-Link Traffic Indication element is governed by the number of link bitmaps being signaled (including the ones for legacy and default mapping) in the element. The size of each link bitmap is the same and determined by the maximum bitmap to be signaled for any client. In addition, the number of bits in the link bitmap are based on the 'spread' of the Link ID value assigned to each link on which the AP MLD operates on and current there aren't any rules requiring continuous link IDs. | Move the Multi-Link Traffic Indication element out of the Beacon frame into a separate (follow-up frame). Beacon frame can provide (a single bit) an indication of AP's intention to send the follow-up frame. The framework can be extended to carry other signaling. Thus offloading the Beacon frame. | Rejected.In LB266, CIDs 10386, 12158, 10572, 13735, 11121, and 13734 had similar comments about potentially the size of the Multi-Link Traffic Indication element can grow large and cause the beacon bloating issue to legacy STAs. As a resolution to the comments, in doc 11-23/1381r6, a proposal to move the Multi-Link Traffic Indication element to a new ‘Beacon-A frame’ that is transmitted SIFS after a Beacon frame and include the AID Bitmap element was proposed and ran a SP but didn’t reach consensus in the group (SP result was 32 Yes, 29 No, 16 Abstain). |
| 18097 | Abhishek Patil | 9.4.2.315 | 294.41 | The value l can be quiet large. For example, in a crowded enterprise deployment (such as an airport or a stadium), an AP MLD will 100 associated devices (non-MLO STAs + non-AP MLDs) with the 50 devices beyond value k=20 having TIM bit set to 1 would mean the element is going to signal 50 link bitmaps. This is a very large overhead. In busy, crowded deployments it is critical to reduce mgmt frame overhead. | As in comment | Rejected.In LB266, CIDs 10386, 12158, 10572, 13735, 11121, and 13734 had similar comments about potentially the size of the Multi-Link Traffic Indication element can grow large and cause the beacon bloating issue to legacy STAs. As a resolution to the comments, in doc 11-23/1381r6, a proposal to move the Multi-Link Traffic Indication element to a new ‘Beacon-A frame’ that is transmitted SIFS after a Beacon frame and include the AID Bitmap element was proposed and ran a SP but didn’t reach consensus in the group (SP result was 32 Yes, 29 No, 16 Abstain). |
| 15471 | Xiangxin Gu | 35.3.12.4 | 538.28 | Multi-Link Traffic Indication element is much overhead consuming and may lead to Beacon frame blown up. It is proposed to change AID in TID-TO-LINK mapping procedure to have a better management. | As the comment | Rejected.In LB266, CIDs 10386, 12158, 10572, 13735, 11121, and 13734 had similar comments about potentially the size of the Multi-Link Traffic Indication element can grow large and cause the beacon bloating issue to legacy STAs. As a resolution to the comments, in doc 11-23/1381r6, a proposal to move the Multi-Link Traffic Indication element to a new ‘Beacon-A frame’ that is transmitted SIFS after a Beacon frame and include the AID Bitmap element was proposed and ran a SP but didn’t reach consensus in the group (SP result was 32 Yes, 29 No, 16 Abstain). |
| 17993 | Vishnu Ratnam | 35.3.12.4 | 538.30 | The size of the multi-link traffic indication element can be unnecessarily too large, since the AP may not have a specific link recommendation for many AIDs. A mechanism to reduce size of the MLTI element is needed. | Introduce an AID bitmap element as an optional subfield of the MLTI element that indicates the AIDs for which traffic is pending and the AP MLD has a link recommendation. The per link traffic indication list only inludes indication for the AIDs indicated in this AID bitmap. | Rejected.In LB266, CIDs 10386, 12158, 10572, 13735, 11121, and 13734 had similar comments about potentially the size of the Multi-Link Traffic Indication element can grow large and cause the beacon bloating issue to legacy STAs. As a resolution to the comments, in doc 11-23/1381r6, a proposal to move the Multi-Link Traffic Indication element to a new ‘Beacon-A frame’ that is transmitted SIFS after a Beacon frame and include the AID Bitmap element was proposed and ran a SP but didn’t reach consensus in the group (SP result was 32 Yes, 29 No, 16 Abstain). |
| 17841 | Yunbo Li | 35.3.12.4 | 539.01 | It should clarify that one or more Multi-Link Traffic Indication element could be carried, and each element for a different segment of AIDs. Signaling overhead can be reduced in some cases, For example, different non-AP MLDs have different number of associated links, or there a large segment of non-AP MLDs that are in power save mode, but in default T2L mapping, so they don't need to be signalled in Multi-Link Traffic Indicaiton element. | changes to "include one or more Multi-Link Traffic Indication elements" | Rejected.In LB266, CIDs 10386, 12158, 10572, 13735, 11121, and 13734 had similar comments about potentially the size of the Multi-Link Traffic Indication element can grow large and cause the beacon bloating issue to legacy STAs. As a resolution to the comments, in doc 11-23/1381r6, a proposal to move the Multi-Link Traffic Indication element to a new ‘Beacon-A frame’ that is transmitted SIFS after a Beacon frame and include the AID Bitmap element was proposed and ran a SP but didn’t reach consensus in the group (SP result was 32 Yes, 29 No, 16 Abstain). |
| 15700 | Yousi Lin | 35.3.17 | 563.41 | The EMLSR mode is designed to provide enhanced mechanisms for single radio non-AP MLD. It is expected that STAs may have different capabilities on single radio. For example, the STA affiliated with a non-AP MLD in the EMLSR mode can transmit and receive with single radio while the other affiliated STAs may have constrained single radio. For the STA with full capability on single radio, it is able to receive the intial frame not limited to initial Control frame initiated by an AP MLD, which can save some overhead from the Control frames. | the commenter will bring a contribution to resolve it. | Rejected.This has been discussed in 11-22/2202r0. But the group could not reach a consensus. |
| 15063 | Michail Koundourakis | 35.3.17 | 564.30 | The non-AP STA may not be able to receive the frame unless the AP first transmits the initial Control frame.Add either a rule to enforce this, or add a capability so that the non-AP MLD can declare if it needs an initial Control frame while it transitions into EMLSR mode. | As per comment. | Revised.The text has been revised in TGbe D3.2 to clarify the EMLSR enablement procedure with the two conditions a) and b) as the following, as part of the CR for CID 15077 and 15563 in doc 11-23/340r5, which removes the ambiguity in TGbe D3.0:“(#15077)(#15563)The non-AP MLD shall operate in the EMLSR mode (#16919)on the EMLSRlinks and the other non-AP STAs affiliated with the non-AP MLD operating on the corresponding EMLSR links, which did not transmit the EML Operating Mode Notification frame, shall transition to active mode (#15885)without being required to transmit a frame with the Power Management subfield set to 0, either:a) At the end of the (#15080)transition timeout interval, orb) Before the end of the transition timeout interval, immediately after transmitting anacknowledgment as a response to the received EML Operating Mode Notification frame fromone of the APs (#16675)affiliated with the AP MLD, whichever comes first.” TGbe editor: no changes needed. |
| 17635 | Brian Hart | 9.4.2.312.2.3 | 256.22 | Although used in the baseline, "MAC padding" is not actually defined | Just write the "minimum padding duration" ... since this is already confined to Control frames. Also, I only see Padding defined for the Trigger frames so why not be more specific here "the Padding field of the iintial Trigger frame ..."? | Revised.In TGbe D3.2 below, as part of the CR for CID16679 in doc 11-23/0437r3, the reference to the rules of the padding for the initial Control frame has been updated to 35.5.2.2.3(Padding for a trigger frame), which defines the MAC padding rules for the initial Control frame:“The EMLSR Padding Delay subfield indicates the minimum MAC padding duration (#16679)of the initial Control frame requested by the non-AP MLD as defined in 35.5.2.2.3 (Padding for a triggering frame).” TGbe editor: no changes needed. |
| 15999 | Binita Gupta | 35.3.6.2.2 | 513.19 | Specify behavior for the non-AP MLD and the AP MLD when an affiliated AP is removed and that results in a single EMLSR link remaining for that non-AP MLD. Does the non-AP MLD and AP MLD continue to operate in EMLSR mode on the single remaining link? | Capture behavior when a single EMLSR link is remaining for a non-AP MLD after an AP removal. | Rejected.Based on 35.3.17, the EMLSR operation is allowed on a single EMLSR link and therefore the AP MLD and the non-AP MLD continue to operate in the EMLSR mode. |