IEEE P802.11
Wireless LANs

|  |
| --- |
| Resolution for CIDs assigned to Abhi – part 2 |
| Date: April 17, 2023 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Abhishek Patil | Qualcomm Inc. |  |  | appatil@qti.qualcomm.com |
| Gaurang Naik |  |  |  |
| George Cherian |  |  |  |
| Alfred Asterjadhi |  |  |  |
| Duncan Ho |  |  |  |
| Yanjun Sun |  |  |  |
| Abdel Karim |  |  |  |

 Abstract

This submission proposes resolutions for following 10 CIDs received for TGbe LB271:

17484 17671 17760 16379 15976 15398 15980 16967 15447 15448

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Green tagged and minor editorial updates.

***TGbe editor: Baseline for this document is 11be D3.1***

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.

***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** | **Pg.Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 17484 | Brian Hart | 9.4.1.4 | 205.21 | 1) This is written as "An AP .. one AP .. an AP .. the AP" which is fundamentally ambiguous. 2) "An AP ... sets" is procedure that doesn't belong in clause 9 unless this is rewritten. 3) It is very unclear if " transmitted by an AP corresponding to the transmitted BSSID in a multiple BSSID set" is intended to modify the immediately prior noun ("Beacon or Probe Response", which doesn't make a lot of sense since this would seem to be mostly redundant) or something furhter back such as "Capability Information field" (but this is still weird since the AP transmtting the frame sends \*all\* the Capabilitiy fields, even those inside Multiple BSSID elements). | Needs to be written unambiguously! Try something like the following, or a fixed version of the following (since this commenter cannot fully understand what is going on here): "The Nontransmitted BSSIDs Critical Update Flag subfield in a Capability Information field is reserved except when the Capability Information field is carried outside the Basic Multi-Link element in a Beacon or a Probe Response frame, the BSSID of the frame is within a multiple BSSID set and there exists at least one AP in the multiple BSSID set where the AP is affiliated with an AP MLD. Each [The ???] Non-transmitted BSSIDs Critical Update Flag subfield [in the Capability field carried directly in the Frame Body / outside the Basic Multi-Link element and Multiple BSSID element(s) ???] in the Beacon or Probe Response frame is set to 1 if at least one nontransmitted BSSID profile in the Multiple BSSID element(s) in the same frame contains a Critical Update Flag subfield equal to 1; otherwise each [the???] Nontransmitted BSSIDs Critical Update Flag subfield is set to 0." | **Revised**The cited paragraph was updated as a resolution to CID 15356 (in 11-23/0296r3) and each condition for which the subfield is reserved is clearly called out (as separate bullets). The changes appear in TGbe D3.1. The issues pointed by this comment no longer apply. **TGbe editor, no further changes are needed to address this comment. The resolution is same as approved resolution for CID 15356.** |
| 17760 | Brian Hart | 9.6.7.16 | 303.53 | Insertion conditon is broader than just EHT STAs; creates unreasonable reqiurments on legacy devices | Try "is present for an EHT STA if the STA is ..." | **Rejected**11be/EHT is the first amendment to introduce the concept of an MLD and being “affiliated with” an MLD. The standard doesn’t need to call out ‘EHT’ non-AP STA at each instance where it says ‘non-AP STA affiliated with a non-AP MLD’. |
| 16379 | Michael Montemurro | 35.3.4.6 | 496.33 | What are "probing rules". There are no rules assocaied with that term. | At 496.33, replace "probing rules" with "active scanning procedures" | **Accepted** |
| 15976 | Binita Gupta | 35.3.4.6 | 496.39 | NOTE 1 should also list RNR as that is another way (through TBTT Information field in RNR) for non-AP MLD to gather information about an AP MLD. | Modify to "...via other means such as BSS transition management (see 35.3.23 (BSS transition management for MLDs)) or from RNR containing MLD Parameters field." | **Rejected**The previous paragraphs describe the case of discovery based on receiving Beacon frame or Probe Response frame both of which carry ML IE and RNR IE. The NOTE 1 is intended to cover other mechanisms for gathering information of the AP MLD and its affiliated APs (such as BTM frames, NR IE etc). Therefore, the NOTE doesn’t need to list RNR IE. |
| 15398 | John Wullert | 35.3.4.6 | 497.57 | Text and the contents of Figure 35.9a are confusing - text and figure caption suggest that the Beacon and (non-ML) Probe Request have the same content, but the figure only illustrates the non-ML Probe Request. | Revise text and/or figure to clarify. The clearest approach might be to separate Beacon and Probe Request descriptions, each with their own figure. Also, might be helpful to explicitly state (e.g., through a note) when the non-AP STA would send a Beacon. | **Revised**The cited paragraph incorrectly stated Beacon frame. A non-AP STA does not transmit Beacon frames. This issue was fixed as a resolution to CID 15605 (in 11-23/0296r3). The changes appear in TGbe D3.1. The issues pointed by this comment no longer apply.**TGbe editor, no further changes are needed to address this comment. The resolution is same as approved resolution for CID 15605.** |
| 15980 | Binita Gupta | 35.3.4.6 | 503.23 | Would be good to add text to clarify that in this case a Basic ML element is also included for the transmitted BSSID MLD in the ML probe response, resulting in two Basic ML element in the frame outside of MBSSID element. | Add clarification text per comment. | **Revised**Agree in principle. A sentence is added at the end of the paragraph to clarify that a 2nd basic ML IE carried in the frame outside the MBSSID IE to provide common information of the AP MLD of the TxBSSID. A reference to clause 35.3.20 is made which provide normative text.**TGbe editor, please make changes as shown in 11-23/300r1 tagged 15980** |
| 16967 | Mark RISON | 35.3.20 | 575.43 | This para is the same as the previous para except for multiple v co-hosted | Merge the two paras | **Revised**Agree in principle. The two paragraphs are merged together as suggested by the comment.**TGbe editor, please make changes as shown in 11-23/300r1 tagged 16967** |
| 15447 | John Wullert | A.3 | 966.07 | The examples in Annex AA.3 are very helpful. One thing that is not clear is what impact, if any, the use of EMLSR and EMLMR, which involve switching radios between channels, would have on MBSSID and co-hosted BSSID sets, where entities within each set are defined as sharing the same antenna connectors. | Clarify the impact on or relationship between EMLSR/EMLMR and multiple BSSID and co-hosted BSSID sets. | **Rejected**Multiple BSSID set and co-hosted BSSID set are concepts at an AP and the operation applies to a channel (not a link). Furthermore, each AP in a multiple BSSID set or a co-hosted BSSID set are affiliated with different AP MLDs (and belong to a different ESS). These concepts should not be mixed with EMLSR/EMLMR which more of a multi-link mode of operation and apply within the same MLD. |
| 15448 | John Wullert | AA.3 | 996.16 | The link between the following two sentences: "APs affiliated with the same AP MLD have the same properties (such as security, etc.). Therefore, APs belonging to the same multiple BSSID set on a channel are not affiliated with the same AP MLD" is not immediately apparent. | Add text to clarify the causal relationship between the two statements. | **Revised**Agree in principle. The cited paragraph and a similar paragraph later in the same subclause were updated to have consistent flow. In addition, the title of the subclause was updated (shortened) since the term MLO is defined in the latest draft.**TGbe editor, please make changes as shown in 11-23/300r1 tagged 15448** |
| 17671 | Brian Hart | 9.4.2.312.2.5 | 268.41 | Not clear what the Presence Bitmap subfield is when we are talking about multiple links | Specify its definition in regards to multiple links. Ditto P268L64. If multi-link is not possible here, because "reasons", add a note with a xref to said reasons | **Revised**Agree in principle. The cited paragraphs are updated to remove reference to single link TDLS. In the future, the two paragraphs can be updated (if needed) if the group decides to extend support for multi-link TDLS.**TGbe editor, please make changes as shown in 11-23/300r1 tagged 17671** |

**35.3.4.6 Frame exchange sequences during MLO discovery and multi-link setup**

***TGbe editor: Please update the following paragraph in this subclause as shown below:*** [15980]

When the multi-link probe request is addressed to the AP corresponding to a nontransmitted BSSID, the multi-link probe response is transmitted by the AP corresponding to the transmitted BSSID and includes the Basic Multi-Link element, outside the Multiple BSSID element, containing the Per-STA Profile subelement carrying information of the AP that is operating on another link and is affiliated with AP MLD to which the AP corresponding to the nontransmitted BSSID is affiliated with. This is shown in Figure 35-12c (Contents of a multi-link probe response, when soliciting frame was directed to nontransmitted BSSID corresponding to index 5, transmitted by an AP affiliated with an AP MLD that is a member of multiple BSSID set during MLO discovery). The Probe Response frame also includes a Basic Multi-Link element outside of the Multiple BSSID element, which corresponds to the AP MLD with which the transmitted BSSID is affiliated (see 35.3.20).

**35.3.20 Multi-link operation in a multiple BSSID set or co-hosted BSSID set**[16967]

***TGbe editor: Please update the following paragraphs in this subclause as shown below:***

Each AP, in a multiple BSSID set or a co-hosted BSSID set, is a member of a different ESS while all APs affiliated with the same AP MLD belong to the same ESS (see 35.3.1 (General) and AA.3 (Example illustrating the relationship between multi-link operation and multiple BSSID set or co-hosted BSSID set)). Therefore, an AP MLD shall not have more than one affiliated AP amongst APs that are members of the same multiple BSSID set or of the same co-hosted BSSID set.

***TGbe editor: Please update the title of AA.3 as shown below:*** [15448]

**AA.3 Example illustrating the relationship between MLO and multiple BSSID set or co-hosted BSSID set**

***TGbe editor: Please update the following paragraphs in this subclause as shown below:***

[15448]The first example illustrates the relationship between MLO and multiple BSSID set. Each AP in a multiple BSSID set belongs to a different ESS, is connected to a different DS and hence advertises a different SSID. On the contrary, all APs affiliated with the same AP MLD have the same properties (such as SSID, security, etc.). Therefore, APs belonging to the same multiple BSSID set on a channel cannot be affiliated with the same AP MLD. Figure AA-6 (Example of affiliated APs from different multiple BSSID sets) shows an example where APs affiliated with an AP MLD belong to a multiple BSSID set on their respective channel. Further, APs within the same AP MLD may correspond to a transmitted or nontransmitted BSSID.

***TGbe editor: Please update the following paragraphs in this subclause as shown below:***

[15448]The second example illustrates the case where APs affiliated with an AP MLD belong to a mix of a multiple BSSID set, a co-hosted BSSID set and an AP that is neither a member of multiple BSSID set nor a member of a co-hosted BSSID set. Each AP in a multiple BSSID set or a co-hosted BSSID set belongs to a different ESS, is connected to a different DS and hence advertises a different SSID. On the contrary, all APs affiliated with the same AP MLD have same properties (such as SSID, security, etc.). Therefore, APs belonging to the same co-hosted BSSID set on a channel are not affiliated with the same AP MLD and APs belonging to the same multiple BSSID set on a channel are not affiliated with the same AP MLD. Figure AA-7 (Example of affiliated APs belonging to a multiple BSSID set, a co-hosted BSSID set, and neither of these two cases) shows an example where APs affiliated with an AP MLD belong to a mix of multiple BSSID set, co-hosted set, and neither a member of multiple BSSID set nor a member of a co-hosted BSSID set.

**9.4.2.312.5 TDLS Multi-Link element**

***TGbe editor: Please update the following paragraph in this subclause as shown below:***

[17671]The Presence Bitmap subfield of the Multi-Link Control field is reserved in a TDLS Multi-Link element.

***TGbe editor: Please update the following paragraph in this subclause as shown below:***

[17671]The Link Info field is not present in a TDLS Multi-Link element.