IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resolution for CIDs assigned to Abhi – Part 1 | | | | |
| Date: March 11, 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 60 CIDs received for TGbe LB271 against D3.0:

15356 18259 18080 17904 15161 15162 17761 15366 18087 18088 18090 16453 15949 18093 18091

18092 17882 15007 15008 15966 16080 17863 17864 16753 16754 16178 16179 15394 15603 17819

18271 16763 18248 15968 16764 16765 16180 18241 16181 16766 16767 17915 16770 16772 16776

16182 18114 15683 16012 16445 18174 15567 16968 18175 16969 16970 16971 16973 18176 16076

Revisions:

* Rev 0: Initial version of the document.

***TGbe editor: Baseline for this document is 11be D3.0***

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** | **Clause** | **Pg.Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 15356 | John Wullert | 9.4.1.4 | 204.54 | The order of the phrases in the sentence make it hard to parse | Rephrase as "The Critical Update Flag subfield is reserved except when the Capability Information field is carried outside the Basic Multi-Link element in a Beacon or a Probe Response frame transmitted by an AP affiliated with an AP MLD." | Reserved  Agree with the comment. There are several cases for which the Critical Updates Flag subfield is reserved. The paragraph is updated to state each condition separately so that is clear when the subfield is reserved. A similar set of changes are made to callout each condition when the Nontransmitted BSSIDs Critical Update Flag subfield is reserved. Other editorial updates were made without changing the technical content.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 15356 |
| 18259 | Li-Hsiang Sun | 9.4.1.4 | 205.21 | "An AP affiliated with an AP MLD" sets the Non-transmitted BSSIDs Critical Update Flag subfield to 1" Should be AP corresponding to the transmitted BSSID sets this subfiled and the transmitted BSSID is not necessarily affiliated with a MLD | as in comment | Revised  Clause 4.3.16a and 35.3.1 states that a EHT AP is affiliated with an AP MLD. Furthermore, all APs in a multiple BSSID set share the same Capability and Operational parameters. Therefore, each (EHT) AP in a multiple BSSID set would be affiliated with an AP MLD. In addition, the proposed changes to resolve CID 15356 added a bullet which clarifies that the Critical Updates Flag subfield is valid only a Beacon and Probe Response frame and only when transmitted by an AP affiliated with an AP MLD. Since only the AP corresponding to the TxBSSID beacons in a multiple BSSID set, the cited sentence doesn’t need further clarification.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 15356 |
| 18080 | Abhishek Patil | 9.4.1.4 | 204.29 | In addition to providing capability information, this field also provides status of critical updates. Therefore, name 'Capability Information' no longer conveys the intention of this field. | Rename the field name to Capability and Status Information field. Same comment for 9.4.2.71. | Revised  Agree with the comment. The proposed change updates the name of the field to include Status indication. Similar changes proposed for element name and field name in 9.4.2.71.  TGbe editor, please replace the title of the subclause 9.4.1.4 to ‘Capability Information and Status Indication field’. Also, please replace the title of clause 9.4.2.71 to ‘Nontransmitted BSSID Capability and Status element’. Furthermore, please replace the field name ‘Nontransmitted BSSID Capability’ to ‘Nontransmitted BSSID Capability and Status’ |
| 17904 | Kazuto Yano | 9.4.1.4 | 205.09 | A period is missing at the end of this sentence. | As in comment. | Accepted |
| 15161 | Po-Kai Huang | 9.4.2.61 | 234.01 | Use non-AP STAs for STAs affiliated with a non-AP MLD. | Use non-AP STAs for STAs affiliated with a non-AP MLD. | Revised  Agree with the comment.  TGbe editor, please replace ‘STA’ with ‘non-AP STA’ in clause 9.4.2.61 at 3 instances in the phrase ‘STA [that] is not affiliated with a non-AP MLD’ |
| 15162 | Po-Kai Huang | 9.6.7.16 | 303.53 | Use non-AP STAs for STAs affiliated with a non-AP MLD. | Use non-AP STAs for STAs affiliated with a non-AP MLD. | Revised  TGbe editor, please replace ‘STA’ with ‘non-AP STA’ at P303L53 |
| 17761 | Brian Hart | 9.6.7.36 | 304.15 | Typo, "dot11MultiLinkActiviated" | "dot11MultiLinkActivated" | Accepted |
| 15366 | John Wullert | 9.4.2.312.1 | 251.62 | The sentence describing the Presence bitmap is missing pronouns and articles that would enhance clarity. | Rephrase as "The Presence Bitmap subfield is used to indicate the presence of various subfields in the Common Info field and the subfield has different formats for the different variants..." | Accepted |
| 18087 | Abhishek Patil | 9.4.2.312.1 | 252.05 | An MLO association can be for one or more links (see 35.3.5). This can be because the two MLDs happened to have only 1 link in comment (e.g., MLD 1 can operate only on 2.4 & 5 while MLD 2 can opreate only on 5 & 6). Alternatively, an ML association may reduce to a single link if an AP is removed via the ML reconfiguration procedure. | Replace 'the links' with 'one or more links' | Accepted |
| 18088 | Abhishek Patil | 9.4.2.312.1 | 252.06 | Clause 9.4.3 does not define the order of subelements. Therefore replace 'and ordering of subelements are' with 'is'. | As in comment | Accepted |
| 18090 | Abhishek Patil | 9.4.2.312.2 | 253.53 | An NSTR mobile AP MLD will not operate multiple BSSID set and therefore, the corresponding field is not applicable. | Add a new sentence at the end: "An AP affiliated with an NSTR mobile AP MLD sets this subfield to 0." | Accepted |
| 16453 | Laurent Cariou | 9.4.2.312.2.3 | 254.01 | A sentence has been removed last round: Link ID Info subfield is not present if the Basic Multi-Link element is sent by a non-AP STA. That sounded like a correct statement. Please add it back unless this is captured elsewhere. | as in comment | Revised  Agree with the comment. The sentence about Link ID Info subfield not being present in a Basic ML IE transmitted by a non-AP STA was accidently removed during the creation of D3.0. The sentence is added back as a resolution to this CID.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16453 |
| 15949 | Binita Gupta | 9.4.2.312.2.3 | 254.34 | Capture how Link ID info subfield should be set by the non-AP STA. | Capture missing description as per comment. | Revised  Agree with the comment. The sentence about Link ID Info subfield not being present in a Basic ML IE transmitted by a non-AP STA was accidently removed during the creation of D3.0. The sentence is added back as a resolution to CID 16453.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16453 |
| 18093 | Abhishek Patil | 9.4.2.312.2.3 | 260.16 | The NOTE under Table 9-401i needs to be updated to clarify that support for advertised T2LM (as described in 35.3.7.1.7) is mandatory and does not depend on the support for T2LM negotiation. | Update the NOTE as suggested by the comment. | Revised  Per clause 35.3.7.1.1, if the AP MLD supports T2LM, then a non-AP that intends to perform ML association with that AP need to have the TID-To-Link Mapping Negotiation Support subfield set to at least 1. The NOTE was updated to clarify this. Additional, changes are made to the NOTE to clarify which field it is referring to.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 18093 |
| 18091 | Abhishek Patil | 9.4.2.312.2.3 | 254.01 | For better management of its resources, an AP MLD that is operating on several links might want to limit the number of links a non-AP MLD can request for association. Per the current spec (D3.0), an AP MLD is allowed to reject one or more links that are requested during association (ML setup). However, it would be beneficial if a non-AP MLD knows up-front the upper bound so that it can request links that are most suitable to it while honoring limits set by the AP. | Standard must provide a mechanism for an AP MLD to advertise such information and provide guidance for a non-AP MLD to conform to AP MLD's requirements. The commenter will provide a contribution to address this comment. | Revised  Agree with the comment. As stated by the comment. A non-AP MLD can benefit if it has prior knowledge of a limit on the number of links an AP MLD can support for association. Based on such information, the non-AP MLD can request its most preferred links for ML association (as opposed to asking for all links and risking its preferred set of links being rejected). The proposed change provides a framework for signaling capability, advertising the limit and actions to meet the requirements.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 18091 |
| 18092 | Abhishek Patil | 9.4.2.312.2.3 | 254.01 | Within the setup links (i.e., associated links), an AP MLD may want to limit the number of links any non-AP MLD is allowed to be active on at any given time | Standard must provide a mechanism for an AP MLD to advertise such information and provide guidance for a non-AP MLD to conform to AP MLD's requirements. The commenter will provide a contribution to address this comment. | Revised  Agree with the comment. The standard must provide a mechanism for an AP MLD to advertise an upper limit on the number of links a non-AP MLD can be active simultaneously. The proposed changes provide a framework for signaling capability, advertising the limit and actions to meet the requirements.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 18092 |
| 17882 | Gaurang Naik | 9.4.2.312.2.4 | 261.61 | An NSTR mobile AP MLD should set this subfield to 0. | As in comment | Revised  Agree with the comment. The TSF of the nonprimary link in an NSTR Mobile AP MLD has the same value as the TSF on the primary link. Therefore, the TSF Offset Present subfield is not required in the STA Info field corresponding to the nonprimary link. A sentence is added to the cited paragraph to clarify that this subfield is set to 0 for an NSTR Mobile AP MLD.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 17882 |
| 15007 | Jay Yang | 35.3.3.1 | 481.14 | can we change the order to say "in an Authentication frame a (Re)Association Request frame, or in a (Re)Association Response frame are described in 35.3.5 (Multi-link (re)setup)." | as the comments | Revised  TGbe editor: Please implement the change as proposed by the comment with the addition of a comma (‘,’) between ‘Authentication frame’ and ‘a (Re)Association Request frame’. |
| 15008 | Jay Yang | 35.3.3.1 | 481.19 | "35.3.6.2.2 (Removing affiliated APs)" should be "35.3.6.2 (adding and removing affiliated APs)" | as the comments. | Rejected  The comment fails to identify an issue. Reconfiguration ML IE is included in the Beacon and Probe Response frames for AP removal case. Therefore, the reference to 35.3.6.2.2 is correct. |
| 15966 | Binita Gupta | 35.3.3.1 | 481.27 | In para "The requirements for including of a Probe Request Multi-Link element" - remove "of" | As in comment | Accepted |
| 16080 | Insun Jang | 35.3.3.1 | 481.34 | It's not clear to what "that AP MLD" means since there is no any AP MLD indicated. It should be changed to "an AP MLD". | As in the comment | Accepted |
| 17863 | Gaurang Naik | 35.3.3.1 | 481.35 | Need to clarify which is 'that' AP MLD here. | As in comment | Revised  Agree with the comment. The issue is fixed as a resolution to CID 16080. |
| 17864 | Gaurang Naik | 35.3.3.1 | 481.36 | How about when the Basic ML element is carried in MBSSID element? In that case, the link ID is not that of transmittng AP. | As in comment | Revised  Agree with the comment. The sentence is revised to clarify that the link ID subfield in Common Info field of the Basic ML IE identifies the AP affiliated with the AP MLD that is described by the element.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 17864 |
| 16753 | Mark RISON | 35.3.3.1 | 481.41 | "to carry complete or partial profile" missing article | Change to "to carry a complete or partial profile". Ditto 3 lines down | Accepted |
| 16754 | Mark RISON | 35.3.3.1 | 481.43 | "may include Link Info field" missing article | Change to "may include a Link Info field". Also add two missing articles at line 65 | Accepted |
| 16178 | Ming Gan | 35.3.3.1 | 481.47 | The sentence is not complete | Add "set" after "multiple BSSID" | Accepted |
| 16179 | Ming Gan | 35.3.3.1 | 481.56 | Change "contained" to "carried" | As in the comment | Accepted |
| 15394 | John Wullert | 35.3.3.2 | 482.27 | The requirement does not clearly specify which Link ID it describes | Revise to "The link ID associated with any specific tuple of Operating Class, Operating Channel, and BSSID shall not change for the lifetime of the BSS that is set up on the link associated with the link ID nor for the lifetime of any BSS of the other AP(s) affiliated with the same AP MLD. | Revised  TGbe editor: Please implement the change as proposed by the comment except for replacing ‘any specific’ to ‘a specific’. |
| 15603 | Bo Sun | 35.3.3.3 | 482.54 | There is a redundant left parenthesis in this sentence. Please delete it | as in comment | Accepted |
| 17819 | Yunbo Li | 35.3.3.3 | 484.24 | It is easy to misunderstand that "subject to inheritance" is the title of Table 9-62 | changes to: as defined in Table 9-62, and subject to inheritance | Accepted  TGbe editor, a visio file for the updated figure will be provided. |
| 18271 | Xiaofei Wang | 35.3.3.3 | 484.36 | extra space between "non-" and "AP" | as in comment | Revised  TGbe editor, please delete the extra space between "non-" and "AP" at the cited location. |
| 16763 | Mark RISON | 35.3.3.3 | 484.53 | "NOTE 4--Listen interval is not included within a STA Profile field (see 35.3.3.4 (Fields and elements not carried in a per-STA profile)). Therefore, Capability Information field is" missing articles | Change to "NOTE 4--The listen interval is not included within a STA Profile field (see 35.3.3.4 (Fields and elements not carried in a per-STA profile)). Therefore, the Capability Information field is" | Revised  Agree with the comment. As part of the resolution a few details were added to the NOTE to clarify why Listen Interval field is not included in the STA Profile field of the Basic ML IE and that the NOTE only applies to Association Request frame.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16763 |
| 18248 | Li-Hsiang Sun | 35.3.3.4 | 485.01 | TID to link mapping/multilink traffic indication element should not be in per-STA profile from either side | add TID-to-link mapping indication element after SSID element on L1, add Multilink traffic indication element in the list on p484L63 | Revised  Agree with the comment. Multi-Link Traffic Indication element is added to the 1st paragraph. In addition, the text at multiple location is fixed to clarify that the fields are not carried in the STA Profile field of the Per-STA Profile Subelement of the Basic ML IE.  Since the 2nd paragraph talks about two elements (SSID and Basic ML IE), the bullets are updated to clarify that the ‘element’ is Basic ML IE.  Since T2LM is at the MLD level, it is carried in Beacon and Probe Response frames of each affiliated AP. Therefore, the T2LM IE will be either inherited (if identical) by the nonTxBSSID profile or explicitly carried in the nonTxBSSID profile if different. T2LM IE will not be included in the STA Profile field of Basic ML IE. The text in the 1st paragraph is updated to include T2LM IE.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 18248 |
| 15968 | Binita Gupta | 35.3.3.4 | 485.14 | NOTE 1 mentions TIM element (which is not applicable) in text related to Timestamp field "For an AP MLD that is not an NSTR mobile AP MLD, the Timestamp field is specific to each link and the value for each can be obtained on the respective link (i.e., Beacon frame includes Timestamp field and TIM element and Probe Response frame includes Timestamp field)." | Remove mention of "TIM element" from the indicated sentence. Change to "For an AP MLD that is not an NSTR mobile AP MLD, the Timestamp field is specific to each link and the value for each can be obtained on the respective link (i.e., Beacon frame and Probe Response frame includes Timestamp field)." | Revised  There was an error in the text. The intention was to refer to TIM frame. The sentence is revised to clarify that a non-AP MLD can obtain the TSF of a link by receiving a Beacon, Probe Response or TIM frame on that link.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 15968 |
| 16764 | Mark RISON | 35.3.3.4 | 485.01 | "SSID element" missing article | "an SSID element" | Accepted  TGbe editor, the ‘accepted’ change is shown in 11-23/0296r0 for clarity since there are many other changes being made to the cited paragraph |
| 16765 | Mark RISON | 35.3.3.4 | 485.15 | "Beacon Interval field is an explicit subfield in STA Info field for the reported AP. AID field and BSS Max Idle Period element apply at the MLD level and have the same value for all links." more missing articles | As it says in the comment | Revised  The NOTE is moved to be after the 1st paragraph since the 1st paragraph provides rules related to the fields/elements discussed in the NOTE. In addition, the NOTE is split into 3 NOTEs for clarity. In addition, missing articles are added.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16765 |
| 16180 | Ming Gan | 35.3.3.4 | 485.17 | It is ambiguous to say "Max Idle Period element has the same value for all links". Does that mean each link maintains a Max Idle Period? | Remove "and have the same value for all links" | Revised  Agree with the comment. The text is updated to clarify that cited field/element are carried in the core frame (i.e., outside the Basic ML IE).  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16180 |
| 18241 | Li-Hsiang Sun | 35.3.3.4 | 485.19 | BSS max idle period should not be in per-STA profile from non-AP side in (re)association request | as in comment | Revised  Agree with the comment. Added BSS Max Idle Period element to the list. Also clarified that the fields are not carried in the STA Profile field of the Per-STA Profile Subelement of the Basic ML IE.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 18241 |
| 16181 | Ming Gan | 35.3.3.4 | 485.23 | It is ambiguous to say "Listen Interval field has the same value for all links". Does that mean each link maintains a Listen Interval? | Remove "and have the same value for all links" | Revised  Agree with the comment. The text is updated to clarify that cited fields are carried in the core frame (i.e., outside the Basic ML IE).  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16181 |
| 16766 | Mark RISON | 35.3.3.4 | 485.23 | "NOTE 2--Listen Interval field and Current AP Address field apply at the MLD level and have the same value for all links." missing articles | As it says in the comment | Revised  Text is updated to include the missing articles.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16766 |
| 16767 | Mark RISON | 35.3.3.4 | 485.34 | "There is no RSNE/RSNXE included" is a bit weird | Change to "No RSNE/RSNXE is included" | Revised  Agree with the comment. In addition, other editorial fixes were made to the NOTE (such as adding missing articles) and clarifying that the fields are not carried in the STA Profile field of the Per-STA Profile Subelement of the Basic ML IE. Similar changes are applied to the paragraph before the NOTE.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16767 |
| 17915 | Kazuto Yano | 35.3.3.5 | 485.60 | A period is missing at the end of this sentence. | As in comment. | Accepted |
| 16770 | Mark RISON | 35.3.3.6.1 | 486.44 | "carries complete profile" missing article. Also line 49 | As it says in the comment | Revised  The missing article is added at line 44 and 49 as suggested by the comment. In addition, editorial updates were made to the 1st paragraph to improve readability.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16770 |
| 16772 | Mark RISON | 35.3.3.6.1 | 487.44 | "arries complete per- STA profile " missing article | As it says in the comment | Revised  The missing article is added at the cited location as suggested by the comment. In addition, editorial updates were made to the paragraph to improve readability.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16772 |
| 16776 | Mark RISON | 35.3.3.7 | 489.41 | "less than or equal 255 octets" missing "to" after "equal" | As it says in the comment | Accepted |
| 16182 | Ming Gan | 35.3.3.7 | 489.42 | Should be "equal to"? | add "to" after "equal" | Accepted |
| 18114 | Abhishek Patil | 35.3.4.2 | 492.52 | Table 9-34 specifies a limit on the PPDU length (octets) and duration (ms). If an AP MLD is operating several links and a non-AP MLD sends a multi-link probe request that does not contain Link Info field, the AP is expect to provide complete profile of all the affiliated APs. This is a lot of information which may not fit within the same frame (per Table 9-34) | The standard must clarify that an AP affiliated with an AP MLD provides partial list of profiles in response to an ML probe if it cannot fit all the requested complete profiles to meet the requirement in Table 9-34. An interested non-AP MLD can perform subsequent (targeted) ML probing to gather information of affiliated APs that were not reported in the initial response. | Revised  Agree with the comment. A NOTE is added after the 1st paragraph in 35.3.4.3 to clarify that an AP’s probe response might not be able to fit all the content while meeting the requirements from Table 9-34. In such case, the non-AP MLD can perform another multi-link probe to solicit information of the missing profiles.  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 18114 |
| 15683 | Oren Kedem | 35.3.3.2 | 523.30 | Oren Kedem | The definition for "Link" should be in section 3.2 | Rejected  The definition for ‘link’s exists in baseline spec (please see REVme D2.1 P216L57) |
| 16012 | Binita Gupta | 35.3.7.1.7 | 519.41 | The NOTE 2 should be converted into a requirement and advertised TID-To-Link Mapping element for an MLD of a nontransmitted BSSID needs to be always carried in the nontransmitted BSSID profile, since AP MLDs of transmitted BSSID and nontransmitted BSSID can disable links independently. So, this element should never be inherited. | Convert NOTE to a requirement. | Revised  Agree with the comment. The intention of the NOTE is not clear and should be stated as normative text. The NOTE is replaced with normative text stating the set of conditions (all of) which need to be satisfied for a nonTxBSSID profile to inherit the T2LM IE(s). Otherwise, the nonTxBSSID profile needs to include the T2LM IE(s).  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16012 |
| 16445 | Laurent Cariou | 35.3.7.1.7 | 519.40 | Note is not very clear. It really means that Advertised T2LM is not inherited by NonTransmitted BSSIDs in a MultiBSS, so can be re-worded that way | as in comment | Revised  Agree with the comment. Same resolution as 16012  TGbe editor, please make changes as shown in 11-23/0296r0 tagged 16012 |
| 18174 | Abhishek Patil | 35.3.20 | 575.50 | BSSID' missing after 'transmitted'. Also on P576L25, BSS should be changed to BSSID. | Add 'BSSID' between 'transmitted' and 'or' | Accepted |
| 15567 | Chaoming Luo | 35.3.20 | 575.53 | "that is affiliated with APs" is a little bit confusing. | Change to: whose affiliated APs | Accepted |
| 16968 | Mark RISON | 35.3.20 | 575.53 | "Each AP MLD, that is affiliated with APs belonging to a multiple BSSID set or a co-hosted BSSID set, shall independently assign a Link ID to each of its affiliated APs." spurious commas | Delete the commas | Accepted |
| 18175 | Abhishek Patil | 35.3.20 | 575.54 | Provide reference to 35.3.3.2 after the term Link ID | As in comment | Revised  TGbe editor, please add “(see 35.3.3.2 (Link ID))” between ‘Link ID’ and ‘to’ at P575L54. |
| 16969 | Mark RISON | 35.3.20 | 576.02 | "the AP corresponding nontransmitted BSSID" should be "the AP corresponding to the nontransmitted BSSID" | As it says in the comment | Accepted |
| 16970 | Mark RISON | 35.3.20 | 576.15 | "include Basic Multi-Link element" missing article | As it says in the comment | Revised  TGbe editor, please add ‘a’ before ‘Basic Multi-Link element’ at the cited location |
| 16971 | Mark RISON | 35.3.20 | 576.15 | "corresponding to the AP MLD, with which the transmitted BSSID is affiliated with" spurious comma and excess with | Delete the comma and the second "with" | Accepted |
| 16973 | Mark RISON | 35.3.20 | 576.17 | "carry complete profile" missing article | As it says in the comment | Revised  TGbe editor, please add ‘a’ before ‘complete profile’ at the cited location. |
| 18176 | Abhishek Patil | 35.3.20 | 576.33 | Since the multi-link probe request was directed to a specific nonTxBSSID, it is optional to include the nonTxBSSID profile(s) for other AP(s) in the set. | Add "(if present)" after "nontransmitted BSSID profile(s)" | Accepted |
| 16076 | Binita Gupta | AA.3 | 996.55 | Labeling of SSID 4 is missing in top part of Figure AA-6. SSID 4 is used for MLD H | Label SSID 4 for ESS 4 in the Figure. Remove the additional label for SSID 3. | Accepted  TGbe editor: Visio file showing the change will be provided. |

x-x-x-x-x-x-x-x- Start of changes related to CID 15356 - x-x-x-x-x-x-x-x

**9.4.1.4 Capability Information field**

***TGbe editor: Please replace the 1st paragraph in this subclause as shown below:***

The Critical Update Flag subfield is reserved when the Capability Information field is carried in:

* A frame transmitted by a non-AP STA or
* A frame transmitted by an AP that is not affiliated with an AP MLD or
* Frames other than a Beacon frame or a Probe Response frame transmitted by an AP affiliated with an AP MLD or
* A Per-STA Profile subelement contained in a Basic Multi-Link element that includes a complete profile of a reported AP.

Otherwise, the Critical Update Flag subfield is present in the Capability Information field.

***TGbe editor: Please update the 3rd paragraph and the following NOTE in this subclause as shown below:***

Otherwise, the AP sets the Critical Update Flag subfield to 0.

NOTE—An AP sets the Critical Update Flag subfield to 1 in Beacon frame(s) until and including the next DTIM Beacon frame by following the procedure defined in 35.3.10 (BSS parameter critical update procedure).

***TGbe editor: Please add the following paragraph before the 4th paragraph in this subclause as shown below:***

The Nontransmitted BSSIDs Critical Update Flag subfield is reserved when the Capability Information field is carried in:

* A frame transmitted by a non-AP STA or
* A frame transmitted by an AP that is not affiliated with an AP MLD or
* A frame transmitted by an AP that is affiliated with an AP MLD and does not belong to a multiple BSSID set or
* The Nontransmitted BSSID Capability element contained within the Nontransmitted BSSID Profile subelement of the Multiple BSSID element transmitted by an AP corresponding to the transmitted BSSID in a multiple BSSID set or
* Frames other than a Beacon frame or a Probe Response frame transmitted by an AP affiliated with an AP MLD which corresponds to a transmitted BSSID in a multiple BSSID set or
* A Per-STA Profile subelement contained in a Basic Multi-Link element that includes a complete profile of a reported AP.

Otherwise, the Nontransmitted BSSIDs Critical Update Flag subfield is present in the Capability Information field.

***TGbe editor: Please update the now shifted 4th paragraph in this subclause as shown below:***

An AP affiliated with an AP MLD sets the Nontransmitted BSSIDs Critical Update Flag subfield to 1 if the Critical Update Flag subfield of the Nontransmitted BSSID Capability field (see 9.4.2.71 (Nontransmitted BSSID Capability element)) is set to 1 in at least one Nontransmitted BSSID Profile subelement carried in the Multiple BSSID element in the same frame. Otherwise, the AP sets the Nontransmitted BSSIDs Critical Update Flag subfield to 0.

x-x-x-x-x-x-x-x- End of changes related to CID 15356 - x-x-x-x-x-x-x-x

**9.4.2.312.2.3 Common Info field of the Basic Multi-Link element**

***TGbe editor: Please add the following paragraph after the 4th paragraph in this subclause as shown below:***

[16453]Link ID Info subfield in the Common Info field is not present if the Basic Multi-Link element is sent by a non-AP STA.

***TGbe editor: Please update the NOTE in Table 9-401i in this subclause as shown below:***

**Table 9-401i—Subfields of the MLD Capabilities and Operations field**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| … | … | … |
| [18093]NOTE—Indicating support for TID-to-link mapping negotiation by setting the TID-To-Link Mapping Negotiation Support subfield to a nonzero value also indicates support for negotiations applicable to all smaller values. In addition, if an AP MLD has indicated a nonzero value in the TID-To-Link Mapping Negotiation Support subfield, then a non-AP MLD that intends to perform multi-link (re)setup with that AP MLD for at least two links must have the TID-To-Link Mapping Negotiation Support subfield set to at least 1 (see 35.3.7.1.1). | | |

x-x-x-x-x-x-x-x- Start of changes related to CID 18091 & 18092- x-x-x-x-x-x-x-x

**9.4.2.312.2.2 Presence Bitmap subfield of the Multi-Link Control field in a Basic Multi-Link element**

***TGbe editor: Please update the contents of the following figure in this subclause as shown below:***

B0 B1 B2 B3

|  |  |  |  |
| --- | --- | --- | --- |
| Link ID Info Present | BSS Parameters Change Count Present | Medium Synchronization Delay Information Present | EML Capabilities Present |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bits: | | 1 | 1 | | | 1 |  | | 1 |  |
|  | | B4 | B5 | | | B6 | B7 | |  |  |
| MLD Capabilities and Operations Present | | | AP MLD ID Present | Extended MLD Capabilities And Operations Present | | | Limit Association And Active Links Present / Support Limiting Association And Active Links | | | |

Bits: 1 1 1 1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | B8 B11 |  | |  |  |  |  |
| Reserved | | |

Bits: 4

**Figure 9-1002g—Presence Bitmap subfield of the Basic Multi-Link element format**

***TGbe editor: Please add the following paragraphs after the paragraph starting “The Extended MLD Capabilities And Operations Present subfield” in this subclause as shown below:***

An AP sets the Limit Association And Active Links Present subfield to 1 if Limit Association And Active Links subfield is present in the Common Info field of the Basic Multi-Link element. Otherwise, it sets the Limit Association And Active Links Present subfield to 0.

A non-AP STA sets the Support Limiting Association And Active Links subfield to 1 to indicate support for receiving the Max Allowed Association subfield and the Max Active Links subfield carried in an AP’s Basic Multi-Link element. Otherwise, it sets the Support Limiting Association And Active Links subfield to 0.

**9.4.2.312.2.3 Common Info field of the Basic Multi-Link element**

***TGbe editor: Please update the contents of the following figure in this subclause as shown below:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Common Info Length | MLD MAC  Address | Link ID Info | BSS  Parameters Change Count | Medium Synchronization Delay Information |

Octets: 1 6 0 or 1 0 or 1 0 or 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| EML  Capabilities | MLD  Capabilities and Operations | AP MLD ID | Extended MLD Capabilities And Operations | Limit Association And Active Links |

Octets: 0 or 2 0 or 2 0 or 1 0 or 2 0 or 1

**Figure 9-1002h—Common Info field of the Basic Multi-Link element format**

***TGbe editor: Please add the following figure and paragraph after Table 9-40j in this subclause as shown below:***

The format of a Limit Association And Active Links subfield is defined in Figure 9-1002xx (Limit Association And Active Links subfield format). A Basic Multi-Link element transmitted by a non-AP STA does not include Limit Association And Active Links subfield. A Basic Multi-Link element transmitted by an AP includes Limit Association And Active Links subfield if either Max Allowed Association subfield or Max Active Links subfield is set to a nonzero value.

B0 B3 B4 B7

Max Active Links

Max Allowed Association

Bits: 4 4

Reserved

Max Allowed Association

**Figure 9-1002xx—** **Limit Association And Active Links subfield format**

The Max Allowed Association subfield indicates the number of links a non-AP MLD can request during multi-link (re)setup. A value of 0 indicates that AP MLD does not impose such a limit.

The Max Active Links subfield indicates the number of links amongst the setup links that a non-AP MLD is permitted to be active on. A value of 0 indicates that the AP MLD does not impose such a limit.

**9.4.1.9 Status Code field**

***TGbe editor: Please add a row to Table 9-78 in this subclause as shown below:***

**Table 9-78—Status codes**

|  |  |  |
| --- | --- | --- |
| **Status code** | **Name** | **Meaning** |
| <ANA> | REFUSED\_EXCEEDS\_MAX\_ALLOWED\_ASSOCATION | The requested link is not allowed to be part of the multi-link (re)setup since the number of accepted links exceeds the set limit. |

**35.3.5.4 Usage and rules of Basic Multi-Link element in the context of multi-link (re)setup, authentication, and FT action frame exchange between two MLDs**

***TGbe editor: Please add a new paragraph after the paragraph starting “For each Per-STA Profile subelement included in the Link Info field…” in this subclause as shown below:***

If the Limit Association And Active Links subfield is present in the Basic Multi-Link element transmitted by an AP affiliated with an AP MLD and the AP has indicated nonzero value in either the Max Allowed Association subfield or the Max Active Links subfield and the Support Limiting Association And Active Links subfield in the Basic Multi-Link element transmitted by a non-AP STA affiliated with the non-AP MLD is set to:

* 0, then the AP MLD shall not accept, during multi-link (re)setup, total links greater than the value indicated in the Max Active Links subfield in Basic Multi-Link element transmitted by the AP affiliated with the AP MLD.
* 1 and the number of links requested by the non-AP MLD, during multi-link (re)setup, exceeds the value indicated in the Max Allowed Association subfield in Basic Multi-Link element transmitted by the AP affiliated with the AP MLD, then the AP MLD shall not accept links greater than the value indicated in the Max Allowed Association subfield.
  + 1. **Multi-link power management**

**35.3.12.1 General**

***TGbe editor: Please add a new paragraph as the last paragraph in this subclause as shown below:***

If an AP MLD has imposed a limit, L, on the number of links that can be active for any non-AP MLD (via the Max Active Links subfield of the Basic Multi-Link element), and if the non-AP MLD has set PM=0 for more than L links, then the AP MLD shall consider the last L links, on which it has most recently received PM=0 from a non-AP MLD, as active links for that non-AP MLD.

x-x-x-x-x-x-x-x- End of changes related to CID 18091 & 18092- x-x-x-x-x-x-x-x

**9.4.2.312.2.4 Link Info field of the Basic Multi-Link element**

***TGbe editor: Please update the 2nd and 3rd paragraphs in this subclause as shown below:***

[17882]The TSF Offset Present subfield is set to 1 if the TSF Offset subfield is present in the STA Info field; otherwise, the TSF Offset Present subfield is set to 0. A non-AP STA sets the TSF Offset Present subfield to 0 in the transmitted Basic Multi-Link element. An AP affiliated with an NSTR Mobile AP MLD sets this subfield to 0. An AP affiliated with an AP MLD that is not an NSTR Mobile AP MLD sets this subfield to 1 when the element carries complete profile.

**35.3.3 Advertisement of multi-link information in Multi-Link element**

**35.3.3.1 General**

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

The value carried in the Link ID subfield of the Per-STA Profile subelement carried in a Basic, Reconfiguration or Priority Access Multi-Link element identifies a reported AP affiliated with that AP MLD (see 35.3.3.2 (Link ID)). [17864]The value carried in the Link ID subfield of the Common Info field of the Basic Multi-Link element identifies the AP that is affiliated with the AP MLD described by the element.

**35.3.3.3 Advertisement of complete or partial per-link information**

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

[16763]NOTE 4—Since the listen interval is applied at the MLD level, the Listen interval field is not included within a STA Profile field (see 35.3.3.4 (Fields and elements not carried in a per-STA profile)) of the Basic Multi-Link element carried in an Association Request frame. As a result, the Capability Information field is the only field carried in the STA Profile field of the Basic Multi-Link element carried in an Association Request frame and is followed by elements applicable to the reported STA.

**35.3.3.4 Fields and elements not carried in a per-STA profile**

***TGbe editor: Please update the contents of this subclause as shown below:***

[18248]An AP affiliated with an AP MLD shall not include a Timestamp field, a Beacon Interval field, an AID field, a BSS Max Idle Period element, a Neighbor Report element, a Reduced Neighbor Report element, a Multiple BSSID element, TIM element, Multiple BSSID-Index element, Multiple BSSID Configuration element, TID-to-Link Mapping element, Multi-Link Traffic Indication element or another Multi-Link element in the STA Profile field of the Basic Multi-Link element.

[16765]

[16765]NOTE 1a – [15968]by receiving a Beacon frame, a Probe Response frame or a TIM frame or can be determined based on the TSF Offset subfield carried in the STA Info field corresponding to the reported AP

[16765]NOTE 1b – The The the [16180] are carried outside the Basic Multi-Link element

An AP affiliated with an AP MLD shall not include [16764]an SSID element in the [18248]STA Profile field of the Basic Multi-Link element for a reported AP unless both of the following conditions are satisfied for the element:

* The Basic Multi-Link element carries complete profile of the reported AP.[18248]
* The Basic Multi-Link element is contained in a multi-link probe response transmitted by the AP corresponding to the transmitted BSSID in a multiple BSSID set in response to a multi-link probe request directed to an AP corresponding to the nontransmitted BSSID in the same multiple BSSID set.[18248]

[18241]A non-AP STA affiliated with a non-AP MLD shall not include a Listen Interval field, a Current AP Address field, an SSID element, BSS Max Idle Period element or another Multi-Link element in the STA Profile field of the Basic Multi- Link element.

NOTE 2—[16766]The Listen Interval field and [16766]the Current AP Address field apply at the MLD level and [16181]are carried outside the Basic Multi-Link element.

NOTE 3—All APs affiliated with the same AP MLD advertise the same SSID (see 35.3.1 (General)) and therefore, the same (SSID) value applies to a reported (AP or non-AP) STA.

[16767]A STA affiliated with an MLD shall not include the FTE and the MDE for each reported STA in the reported STA’s STA Profile field of the Basic Multi-Link element carried in a (Re)Association Request frame or a (Re)Association Response frame that it transmits. Also see 13.4.2 (FT initial mobility domain association in an RSN) and 13.7 (FT reassociation).

[16767]NOTE 4—No RSNE/RSNXE is included in the Basic Multi-Link element carried in a (Re)Association Request frame because there is only one RSNE/RSNXE provided by non-AP MLD during multi-link (re)setup. See 12.6.3.1 (General). An AP MLD can have a different MFPR carried in the RSNE for each of its affiliated APs and in such case, the (Re)Association Response frame includes the RSNE in the corresponding STA Profile field of Basic Multi-Link element. See 12.6.2 (RSNA selection).

**35.3.3.6.1 Inheritance in the per-STA profile of Basic Multi-Link element**

***TGbe editor: Please update the contents of the 1st and 2nd paragraphs in this subclause as shown below:***

[16770]It is likely that STAs affiliated with the same MLD have similar capabilities and operational parameters for operating on their respective links. As a result, an element that is applicable to a reported STA might have the same value as the corresponding element applicable to a reporting STA which is carried in the frame outside the Basic Multi-Link element. To reduce the frame size, when a Per-STA Profile subelement carries a complete profile for a reported STA, it inherits the elements from the reporting STA based on the rules defined in this subclause.

The inheritance mechanism described in this subclause shall apply only when the Per-STA Profile subelement of the Basic Multi-Link element carries a complete profile of the reported STA (i.e., the Complete Profile subfield in the STA Control field of the subelement is set to 1).

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

[16772]When an AP corresponding to a transmitted BSSID in a multiple BSSID set transmits a multi-link probe response in response to a multi-link probe request directed to an AP corresponding to a nontransmitted BSSID in the same multiple BSSID set and the Basic Multi-Link element corresponding to the AP MLD of the nontransmitted BSSID carries a complete per-STA profile for a requested AP, then the inheritance (or non-inheritance) for the per-STA profile is with respect to the elements carried in the Probe Response frame that are outside the Multiple BSSID element.

**35.3.4.3 Non-AP MLD behavior**

***TGbe editor: Please add the following NOTE after the 1st paragraph in this subclause as shown below:***

[18114]NOTE – If a non-AP MLD requests complete profile of several APs affiliated with the AP MLD by including the corresponding Per-STA Profile subelements in the Probe Request Multi-Link element or if the non-AP MLD’s multi-link probe request is directed to an AP MLD, that operates on several links and the non-AP MLD’s request does not include Link Info field in the Probe Request Multi-Link element, then the responding AP might not be able to fit all the requested profiles due to size or duration limits specified in Table 9-34. If a non-AP MLD receives a multi-link probe response that does not carry one or more requested profiles (which are either explicitly or implicitly requested), then it can send another multi-link probe request to solicit information of the missing profiles that it is interested in by including the corresponding Per-STA Profile subelement(s) in the Probe Request Multi-Link element.

**35.3.7.1.7 Advertised TID-to-link mapping in Beacon and Probe Response frames**

***TGbe editor: Please replace NOTE 2 in this subclause with the following paragraph shown below:***

[16012]In a multiple BSSID set, a nontransmitted BSSID shall inherit the TID-to-Link Mapping element(s) only if all the following conditions are satisfied:

* The advertised TID-to-Link mapping for an AP MLD corresponding to that nontransmitted BSSID is the same as that of the AP MLD corresponding to the transmitted BSSID in the same multiple BSSID set.
* The number of APs affiliated with both the AP MLDs is the same.
* The assigned Link ID for each of the affiliated APs that is operating on the same channel is the same for both AP MLDs.

Otherwise, the TID-to-Link Mapping element(s) are not inherited and included within nontransmitted BSSID profile.