IEEE P802.11
Wireless LANs

|  |
| --- |
| D5.0 CR for ML Reconfiguration part 1  |
| Date: 2024-02-16 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Binita Gupta | Cisco Systems |  |  | binitag@cisco.com |
| Brian Hart | Cisco Systems |  |  | brianh@cisco.com |

 Abstract

This submission proposes resolutions for following CIDs received in TGbe SA Ballot on 802.11be D5.0:

22018 22019 22020 22021 22022 22023 22039 22040 22041 22075

22076 22077 22078 22079 22080 22081 22088 22089 22090 22091

22092 22093 22166 22167 22168 22225 22226 22227 22272 22301

22302 22303 22331 22332 22333 22334 22335 22336 22337 22388

22397 22398

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1: Updates to resolution for few CIDs based on feedback from Arik.
* Rev 2: Revision for CIDs 22019 and 22020 based on feedback in the TGbe MAC call.
* Rev 3: Revisions made during the Feb 28 TGbe call. Deferred CIDs 22081and 22333

***TGbe editor: The baseline for this document is 11be D5.0.***

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** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 22018 | Binita Gupta | 35.3.6.4 | 523.27 | For the add link case, if there is no change to the MLD Capabilities And Operations and the EML Capabilities , then the non-AP MLD does not need to include these subfields. Hence, the inclusion of these subfields should not be required always for add link and a non-AP MLD can include these if it wants to update these capabilities. | Update text to indicate that a non-AP MLD may include the MLD Capabilities And Operations subfield and the EML Capabilities subfield with add link operation if it intends to update its MLD level capability. If these capabilities have not changed, then the non-AP MLD does not include these subfields. | RevisedAgree with the commenter. The text has been revised to indicate that a non-AP MLD “may” update its MLD level capabilities by including specific capability subfields for the add link case.TGbe editor, please make the changes tagged by CID #22018 in in 11-24/0304r3. |
| 22019 | Binita Gupta | 35.3.6.4 | 523.29 | The Reconfiguration Multi-link element includes the MLD Capabilities and Operations subfield in case of add link operation, to enable a STA to update its MLD level capabilities. An Extended MLD Capabilities and Operations subfield has been added to the Basic ML element for additional MLD level capabilities. This new subfield should also be included in the Reconfiguration Multi-link element for add link to enable STA to update those other MLD level capabilities as well. | Enhance Reconfiguration Multi-link element to optionally include the Extended MLD Capabilities and Operations subfield as well for the add link case. | RevisedAgree with the commenter. Added the Extended MLD Capabilities and Operations subfield to the Reconfiguration Multi-link element and related text in 35.3.6.4.TGbe editor, please make the changes tagged by CID #22019 in in 11-24/0304r3. |
| 22020 | Binita Gupta | 35.3.6.4 | 523.40 | Modify NOTE 2 to also clarify that the AP MLD uses the updated MLD level capabilities provided in the Link Reconfiguration Request frame for add link. | Clarify NOTE as per comment. | RevisedAgree that text need to clarify that the AP MLD uses any updated MLD capabilities received in the Link Reconfiguration request. This should be captured as a separate requirement for the AP MLD and not in the NOTE. Added requirement text.TGbe editor, please make the changes tagged by CID #22020 in in 11-24/0304r3. |
| 22021 | Binita Gupta | 35.3.6.3 | 520.12 | Change "﻿The Operation Parameters Present \*bit\* shall be set to 0." to "﻿The Operation Parameters Present \*subfield\* shall be set to 0." to be consistent with the rest of the text. | As in the comment. | RevisedAgree with the commenter. Revised text as per suggestion. TGbe editor, please make the changes tagged by CID #22021 in in 11-24/0304r3. |
| 22022 | Binita Gupta | 35.3.6.3 | 519.27 | The following text could be misinterpreted to infer that the Probe Response frames are tranmitted by the AP MLD, which is incorrect (it is transmitted by the affiliated APs). Suggest to rephase to simplify and avoid any confusion. "﻿The AP MLD shall announce the removal of any affiliated AP through a Reconfiguration Multi-Link element (see 9.4.2.312.4 (Reconfiguration Multi-Link element)) in all Beacon frames transmitted by its affiliated APs, as well as in all Probe Response frames it transmits, until the affiliated AP is removed." | Modify text as follows "﻿﻿The AP MLD shall announce the removal of any affiliated AP through a Reconfiguration Multi-Link element (see 9.4.2.312.4 (Reconfiguration Multi-Link element)) in all \*\*Beacon and Probe Response frames transmitted by its affiliated APs,\*\* until the affiliated AP is removed." | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22022 in in 11-24/0304r3. |
| 22023 | Binita Gupta | 35.3.6.2 | 519.07 | This clause does not capture normative requirement for a non-AP MLD to identify that an affiliated AP has been added to its associated AP MLD. Only descriptive text is captured. Similar to AP Removal, a non-AP MLD also need to have shall requirement to identify new affiliated APs being added. This is desired so that non-AP MLDs can take full advantage of all available MLO links. | Add normative requirement for a non-AP MLD to identify that an affiliated AP has been added to its associated AP MLD. | RevisedAgree with the commenter. Revised the descriptive text to a ‘may’ requirement, since the requirement for adding a new link is also a “may” requirement. TGbe editor, please make the changes tagged by CID #22023 in in 11-24/0304r3. |
| 22039 | Binita Gupta | 35.3.6.3 | 522.54 | Paragraph on P522L20 is a repeat of para on P522L5. Also para on P522L25 is a repeat of para on P522L11 Tracing back this repeat happened in D4.1 because of resolution for CID 20024, which had inline instructions for the editor. As a result, these two paragraphs got repeated mistakenly. These two paragraphs need to be removed. | Remove the paragraphs on P522L20 and P522L25, which are repeats of other paragraphs as indicated in the comment. Also, change "﻿and the SME of the non-AP MLD shall delete…" on P522L13 to "﻿and the non-AP MLD shall delete…" to integrate the fix for CID #19769. | RevisedAgree with the commenter. The suggested paragraphs have been marked for deletion and text is revised as per suggestion. TGbe editor, please make the changes tagged by CID #22039 in in 11-24/0304r3. |
| 22040 | Binita Gupta | 35.3.6.3 | 521.52 | There is a single Reconfiguration Multi-Link element transmitted in Beacon and Probe Response. Remove plural from below text and text at P524L6 "﻿At the TBTT indicated by the value of the AP Removal Timer subfield in transmitted Reconfiguration Multi-Link \*elements\*, the AP MLD shall remove..." | Modify indicated text as per comment | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22040 in in 11-24/0304r3. |
| 22041 | Binita Gupta | 35.3.6.3 | 521.18 | Text on P520L60 and P521L25 refer to legacy STAs as non-MLD non-AP STA(s). For consistency, change the following text to use similar language "﻿to transmit Disassociation frame(s) to all non-AP STAs associated with the AP being removed that are not affiliated with a non-AP MLD." | Change as follows "﻿to transmit Disassociation frame(s) to all \*non-MLD non-AP STAs\*associated with the AP being removed." | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22041 in in 11-24/0304r3. |
| 22075 | Michael Montemurro | 35.3.6.5 | 527.54 | [AK] replace: "delete in the ML setup.." --> "delete from the ML setup..." | As in comment | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22075 in in 11-24/0304r3. |
| 22076 | Michael Montemurro | 35.3.6.4 | 525.36 | [AK] add "s" for plurality of conditions in the following sentence: " The AP MLD shall reject an add link request if any of the following condition is true:" | As in comment | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22076 in in 11-24/0304r3. |
| 22077 | Michael Montemurro | 35.3.6.4 | 525.26 | [AK] The Status Code field is set to a value, not indicate a value. Please revise the sentence, as suggested | Please revise the sentence as follows:" ...and the Status Code field included in the corresponding STA Profile subfield of the Per-STA Profile subelement in the Basic Multi-Link element for that link ID shall \*be set to\* SUCCESS." | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22077 in in 11-24/0304r3. |
| 22078 | Michael Montemurro | 35.3.6.4 | 524.34 | [AK] The NSTR Indication Bitmap Present is a subfield (with a size of 1 bit), not a bit (see also 9.4.2.312.4, P261L27). Please use the proper terminology, as suggested. | Replace the word “bit” with “subfield” in the following sentence:” The NSTR Indication Bitmap Present bit shall be set to 0” | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22078 in in 11-24/0304r3. |
| 22079 | Michael Montemurro | 35.3.6.4 | 524.08 | [AK] The last part of the sentence is unclear and cumbersome. Please rephrase the sentence as suggested. | Pleas revise the sentence as follows:” The STA MAC Address subfield in the STA Info field shall be set to the STA MAC address of the non-AP STA that \*will operate on the link to be added and is\* indicated by the link ID.” | RevisedText has been revised to make it read better.TGbe editor, please make the changes tagged by CID #22079 in in 11-24/0304r3. |
| 22080 | Michael Montemurro | 35.3.6.4 | 523.08 | [AK] The MLD does not transmit the Basic Multi-Link element, but only its affiliated STAs. Please revise the sentence as suggested. | Please revise the sentence as follows:” A non-AP MLD in the associated state that has dot11EHTLinkReconfigurationOperationActivated equal to true may request link reconfiguration to its ML setup by sending a Link Reconfiguration Request frame from an affiliated non-AP STA to the corresponding AP affiliated with the associated AP MLD that has the Link Reconfiguration Operation Support subfield set to 1 in the MLD Capabilities And Operations subfield of the Basic Multi-Link element that is transmitted by its affiliated AP(s)”. | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22080 in in 11-24/0304r3. |
| 22081 | Michael Montemurro | 35.3.6.2 | 522.60 | [AK] Need to add a requirement to remove any corresponding link from any NSTR Indication bitmap field that is carried in frames transmitted by the remaining APs affiliated with the AP MLD | Please add the requirement after the sentence in P522L60 | RevisedAgree with the commenter. Revised requirement as per suggestion.TGbe editor, please make the changes tagged by CID #22081 in in 11-24/0304r3. |
| 22088 | Michael Montemurro | 35.3.6.3 | 521.46 | [AK] Add the useful description corresponding the AP Removal timer subfield for the clarity of the sentence, as suggested | Please revise the sentence as follows: “When the affiliated AP being removed does not transmit BSS Transition Management Request frame(s) to notify of the termination of its BSS, the affiliated AP shall terminate the corresponding BSS at the TBTT indicated by the value of the AP Removal Timer subfield \*in the Reconfiguration Multi-Link element carried in Beacon or Probe Response frames\*” | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22088 in in 11-24/0304r3. |
| 22089 | Michael Montemurro | 35.3.6.3 | 521.42 | [AK] Replace the “BTM” with “BTM Request frame” in the following sentence:” When a non-AP STA affiliated with a non-AP MLD receives a BSS Transition Management Request frame …, the non-AP MLD shall interpret the BTM to indicate that the BSS corresponding to the AP is being terminated.” | As in comment | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22089 in in 11-24/0304r3. |
| 22090 | Michael Montemurro | 35.3.6.2 | 519.16 | [AK] The MLD does not transmit the Basic Multi-Link element, but only its affiliated STAs. Please revise the sentence as suggested. | Please revise the sentence as follows: “When the non-AP MLD detects that an AP has been added to its associated AP MLD, it may use … if it has dot11EHTLinkReconfigurationOperationActivated equal to true and the associated AP MLD has the Link Reconfiguration Operation Support subfield set to 1 in the MLD Capabilities And Operations subfield of the Basic Multi-Link element that is transmitted by its affiliated AP(s)”. | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22090 in in 11-24/0304r3. |
| 22091 | Michael Montemurro | 35.3.6.2 | 518.52 | [AK] The following cited sentence should be rephrased for proper terminology usage and ease of readability, as suggested:" If an existing AP of the AP MLD where the affiliated AP is being added corresponds to a nontransmitted BSSID in a multiple BSSID set,.....". | Please revise the sentence as follows:" If an affiliated AP is added by an AP MLD and corresponds to a nontransmitted BSSID in a multiple BSSID set,....." | RevisedThe cited sentence is not to say that the affiliated AP is a nontransmitted BSSID. It is covering the scenario when an affiliated AP is added to an AP MLD which also has another affiliated AP which corresponds to a nontransmitted BSSID. In this case the transmitted BSSID announces the added AP as captured in the text. Discussed with commenter and have revised text to clarify and make it read better.TGbe editor, please make the changes tagged by CID #22091 in in 11-24/0304r3. |
| 22092 | Michael Montemurro | 35.3.6.2 | 518.49 | [AK] Since multiple affiliated APs can be added to an AP MLD, the RNR includes additional TBTT Information field for each added affiliated AP, not only for a single added AP. Please revise the sentence as suggested. | Please revise the sentence as follows:” The added affiliated AP(s) shall be announced through the Basic Multi-Link element by …and through the Reduced Neighbor Report element by including a TBTT Information field carrying the MLD Parameters subfield for \*each\* added \*affiliated\* AP, in the Beacon and Probe Response frames transmitted by other APs affiliated with the same AP MLD” | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22092 in in 11-24/0304r3. |
| 22093 | Michael Montemurro | 35.3.6.2 | 518.43 | [AK] The MLME-START.request primitive is initiated by the SME of an AP MLD, not by the AP MLD. Please revise the sentence as suggested. | Please revise the sentence as follows: “The SME of an AP MLD may add one or more affiliated APs to the AP MLD by initiating the MLME-START.request primitive (see 6.5.11.2 (MLME-START.request)) for each AP to be added.” | RevisedAgree with the commenter. Revised text as per suggestion.TGbe editor, please make the changes tagged by CID #22093 in in 11-24/0304r3. |
| 22166 | Gaurav Patwardhan | 35.3.6.3 | 521.35 | Move the phrase “for the non-AP MLDs” from line 37 and move it to before “associate” on line 36 to make sense of the sentence. | As in comment | RevisedRevised text to clarify.TGbe editor, please make the changes tagged by CID #22166 in in 11-24/0304r3. |
| 22167 | Gaurav Patwardhan | 35.3.6.3 | 519.20 | Plural missing. It should be ‘…one or more of its affiliated AP(s)..’ | as in comment | RevisedRevised text as per suggestion.TGbe editor, please make the changes tagged by CID #22167 in in 11-24/0304r3. |
| 22168 | Gaurav Patwardhan | 35.3.6.2 | 518.63 | Kind of a roundabout way of saying ‘transmitted BSSID’ | Replace ‘…not a nontransmitted BSSID.. ‘ with ‘…a transmitted BSSID…’ | RevisedThe quoted text “…when it is not a nontransmitted BSSID of a multiple BSSID set…” is meant to also cover the case when the added AP is not part of a multiple BSSID set. It is not only referring to the case when the added AP is a transmitted BSSID. Similar text is used in clause 35.3.4.1. Slightly text revision to use similar text as 35.3.4.1.TGbe editor, please make the changes tagged by CID #22168 in in 11-24/0304r3. |
| 22225 | Stephen McCann | 35.3.6.5 | 527.25 | The text “link(s) to be added or deleted” isn’t consistent with earlier text in clause 9.6.35.12 P323L53, which says “addition and/or deletion”. | Change the text “link(s) to be added or deleted” to “link(s) to be added and/or deleted”. | Accepted |
| 22226 | Stephen McCann | 35.3.6.4 | 523.10 | The text “adding a link or deleting a link” isn’t consistent with earlier text in clause 9.6.35.12 P323L53, which says “addition and/or deletion”. | Change the text “for adding a link or deleting a link” to “for adding and/or deleting link(s)”. | Accepted |
| 22227 | Stephen McCann | 9.6.35.13 | 324.36 | The text “to request addition or deletion of links” isn’t consistent with earlier text in the previous clause 9.6.35.12 P323L53, which says “addition and/or deletion”. | Change the text “to request addition or deletion of links” to “to request addition and/or deletion of links” | Accepted |
| 22272 | stephane baron | 35.3.6.1 | 518.34 | This paragraph (line 31 to 38) is difficult to read because there is no break, and put the reader out of breath before the end of the 7th line… Please consider adding comas. | Add at least a coma in line 34 after “as described in 35.3.6.5 (AP MLD recommendation for link reconfiguration)” | RevisedRevised and added comma to break the sentence.TGbe editor, please make the changes tagged by CID #22272 in in 11-24/0304r3. |
| 22301 | Alfred Asterjadhi | 35.3.6.3 | 524.61 | [Liuming Lu] The description is confusing. | Please clarify the case that the only EMLSR link is removed. | RejectedIf there is only one EMLSR link for a non-AP MLD and if AP corresponding to that link is removed, then the text still applies and that link is removed from the EMLSR links for that non-AP MLD. No changes needed. |
| 22302 | Alfred Asterjadhi | 35.3.6.3 | 523.29 | [Liuming Lu] The descrption is confusing as the affiliated AP cannot send any frame after the affiliated AP is removed from the AP MLD | Please clarify the case that an affiliated AP that is being removed should transmit a Disassociation frame after the affiliated AP is removed from the AP MLD | RevisedThe text is revised to add clarification.TGbe editor, please make the changes tagged by CID #22302 in in 11-24/0304r3. |
| 22303 | Alfred Asterjadhi | 35.3.6.2 | 520.40 | [Liuming Lu] The description of “35.3.6.2 Adding affiliated APs” is incomplete. | Suggest to change “35.3.6.2 Adding affiliated APs” to “35.3.6.2 Adding affiliated AP(s)” | Accepted |
| 22331 | Alfred Asterjadhi | 35.3.6.5 | 529.47 | [Xiandong Dong] How about the setting of NSTR Indication Bitmap Present. It may also be set to 0. Therefore, it is ncluding to explain here. The same issue exists in P529L58. | As in comment | RevisedAgree with the commenter. The text is revised as per the suggestion.TGbe editor, please make the changes tagged by CID #22331 in in 11-24/0304r3. |
| 22332 | Alfred Asterjadhi | 35.3.6.4 | 528.51 | [Xiandong Dong] The direction of the TIDs mapped to the newly added links should be specified. | As in comment | Revised Agree with the commenter. The text is revised to specify the TID direction.TGbe editor, please make the changes tagged by CID #22332 in in 11-24/0304r3. |
| 22333 | Alfred Asterjadhi | 35.3.6.4 | 527.21 | [Xiandong Dong] "Reconfiguration Status Duple subfield" should be "Reconfiguration Status List subfield". Pls modify the full text. | As in comment | RejectedThe Reconfiguration Status List includes one or more Reconfiguration Status Duple subfield as defined in ﻿Figure 9-1201a (Reconfiguration Status Duple subfield format), providing status for a Link ID. The text is referring to including this subfield for each Link ID. No changes needed.  |
| 22334 | Alfred Asterjadhi | 35.3.6.3 | 524.52 | [Xiandong Dong] The direction should be the same as the direction mapped to the removed link, hence direction should be materialize. The same issue exists in P529L20. | As in comment | RejectedThere is an overarching requirement in clause 35.3.7.2.1 (General) – “At any point in time, a TID shall always be mapped to at least one setup link both in DL and UL,…”. Current text is written in accordance with this requirement. No changes needed. |
| 22335 | Alfred Asterjadhi | 35.3.6.3 | 524.11 | [Xiandong Dong] Since the Reconfigurable Multi-Link element transmitted by an AP MLD may indicate AP MLD recommendation for link reconfiguration, hence the Reconfigurable Multi-Link element should be specific. | Pls add "in which the Reconfiguration Operation Type subfield(s) of one or more STA Control field equal to 0." after "Reconfiguration Multi-Link element". | RevisedAgree with the commenter. The text is revised as per the suggestion.TGbe editor, please make the changes tagged by CID #22335 in in 11-24/0304r3. |
| 22336 | Alfred Asterjadhi | 35.3.6.3 | 524.04 | [Xiandong Dong] This paragraph is redundant because the second paragraph below (P522L20) repeats this content. | As in comment | RevisedAgree with the commenter. One of the paragraphs is removed. Same resolution as CID #22039.TGbe editor, please make the changes tagged by CID #22039 in in 11-24/0304r3. |
| 22337 | Alfred Asterjadhi | 35.3.6.3 | 522.35 | [Xiandong Dong] “affiliated APs of the AP MLD” should be “APs that are affiliated with the AP MLD”. Pls modify the full text. | As in comment | RejectedThe phrase “affiliated APs of the AP MLD” is used at many places in the 11be draft. There is no issue with text. No changes needed. |
| 22388 | Xiangxin Gu | 35.3.6 | 513.29 | This sentence is not precise enough and may let to some misunderstanding. | Change “No other subfields shall be included in the STA Info field.” To “No other optional subfields shall be included in the STA Info field.” | RevisedAgree with the commenter. Text is revised as per suggestion.TGbe editor, please make the changes tagged by CID #22388 in in 11-24/0304r3. |
| 22397 | Kazuto Yano | 35.3.6.3 | 519.47 | “transmitted by the transmitted BSSID” should be modified to “transmitted by the AP corresponding to the transmitted BSSID”. | As in comment. | Accepted |
| 22398 | Kazuto Yano | 35.3.6.3 | 519.36 | “transmitted by the transmitted BSSID” should be modified to “transmitted by the AP corresponding to the transmitted BSSID”. | As in comment. | Accepted |

﻿**9.4.2.312.4 Reconfiguration Multi-Link element**

*TGbe editor: Please make changes in this subclause as shown below (#22019).*

…

﻿The format of the Presence Bitmap subfield of the Multi-Link Control field in a Reconfiguration Multi-Link

element is defined in Figure 9-1001u (Presence Bitmap subfield format of the Reconfiguration Multi-Link

element).

﻿

 B0 B1 B2 B3 B4 B11

Bits: 1 1 1 1 8

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MLD MACAddress Present | EML Capabilities Present | MLD Capabilities And Operations Present | Extended MLD Capabilities And Operations Present | Reserved |

﻿**Figure 9-1001u—Presence Bitmap subfield format of the Reconfiguration Multi-Link element**

…

The Extended MLD Capabilities And Operations Present subfield is set to 1 if the Extended MLD Capabilities And Operations subfield is present in the Common Info field. Otherwise, the Extended MLD Capabilities And Operations Present subfield is set to 0.

﻿The format of the Common Info field of the Reconfiguration Multi-Link element is defined in Figure 9-1001v (Common Info field format of the Reconfiguration Multi-Link element).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Common Info Length | MLD MAC Address | EML Capabilities | MLD Capabilities And Operations | Extended MLD Capabilities And Operations |

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

**﻿Figure 9-1001v—Common Info field format of the Reconfiguration Multi-Link element**

…

﻿﻿The MLD Capabilities And Operations subfield has the same definition as the MLD Capabilities And Operations subfield of the Common Info field of the Basic Multi-Link element (see Figure 9-1001k (MLD Capabilities And Operations subfield format)).

The Extended MLD Capabilities And Operations subfield has the same definition as the Extended MLD Capabilities And Operations subfield of the Common Info field of the Basic Multi-Link element (see Figure 9-1001l (Extended MLD Capabilities And Operations subfield format)).

…

﻿**35.3.6.1 General**

…

﻿Every EHT STA affiliated with an (#22272)MLD that supports link reconfiguration operation

for adding and deleting links to the ML setup as described in 35.3.6.4 (Link reconfiguration to the ML setup), and supports recommendation for ML reconfiguration to the ML setup as described in 35.3.6.5 (AP MLD recommendation for link reconfiguration), shall set the

dot11EHTLinkReconfigurationOperationActivated equal to true, and shall set the Link Reconfiguration

Operation Support subfield to 1 in the MLD Capabilities And Operations subfield of the Basic Multi-Link

element and the Reconfiguration Multi-Link element that it transmits.

﻿**35.3.6.2 Adding affiliated APs**

﻿(#22093)The SME of an AP MLD may add one or more affiliated APs to the AP MLD by initiating the MLME-START.request

primitive (see 6.5.11.2 (MLME-START.request)) for each AP to be added. The added affiliated AP(s) shall

be announced through the Basic Multi-Link element by incrementing the Maximum Number Of

Simultaneous Links subfield of the MLD Capabilities And Operations subfield by 1 for each added affiliated

AP, and through the Reduced Neighbor Report element by including a TBTT Information field carrying the

MLD Parameters subfield for (#22092)each added affiliated AP, in the Beacon and Probe Response frames transmitted by other APs affiliated with the same AP MLD.

﻿If an (#22091) affiliated AP is added to an AP MLD which has another affiliated AP that corresponds to a nontransmitted BSSID in a multiple BSSID set, then the AP that corresponds to the transmitted BSSID in the same multiple BSSID set shall follow the procedures in 35.3.4.4 (Multi-Link element usage in the context of discovery) and 35.3.4.1 (AP behavior) to announce the added affiliated AP through the Basic Multi-Link element and the Reduced Neighbor Report element.

For the added affiliated AP, rules defined in 35.3.4.4 (Multi-Link element usage in the context of discovery)

and 35.3.4.1 (AP behavior) shall be followed for including Basic Multi-Link element and Reduced Neighbor

Report element in the Beacon and Probe Response frames transmitted by the added AP when (#22168) the AP does not correspond to a nontransmitted BSSID of a multiple BSSID set, and for including those elements by the transmitted BSSID

of a multiple BSSID set when the added AP corresponds to a nontransmitted BSSID of that multiple BSSID set.

…

﻿A non-AP MLD (#22023)may determine that an affiliated AP has been added to its associated AP MLD from the Basic Multi-Link element or from the Reduced Neighbor Report element contained in the Beacon or Probe

Response frames transmitted by any of the APs affiliated with the AP MLD. When the non-AP MLD detects

that an AP has been added to its associated AP MLD, it may use the ML reconfiguration procedure as

defined in 35.3.6.4 (Link reconfiguration to the ML setup) to add a new link to the added affiliated AP in its

ML setup, if it has dot11EHTLinkReconfigurationOperationActivated equal to true and the associated AP

MLD has the Link Reconfiguration Operation Support subfield set to 1 in the MLD Capabilities And

Operations subfield of the Basic Multi-Link element (#22090)transmitted by its affiliated AP(s).

﻿**35.3.6.3** (#22167)**Removing affiliated AP(s)**

The SME of an AP MLD may remove one or more of its affiliated (#22167)AP(s) by initiating the MLME-BSS-APREMOVAL.request primitive (see 6.5.24c.2 (MLME-BSS-AP-REMOVAL.request)) for each affiliated AP to be removed. Upon receiving an MLME-BSS-AP-REMOVAL.request primitive, an AP MLD shall follow the procedures defined in this subclause to remove the affiliated AP indicated by the BSSID parameter in that primitive. An AP MLD that is an NSTR mobile AP MLD shall not remove the affiliated AP operating on the primary link (see 35.3.19 (NSTR mobile AP MLD operation)). The AP MLD shall announce the removal of any affiliated AP through a Reconfiguration Multi-Link element (see 9.4.2.312.4 (Reconfiguration Multi-Link element)) in all Beacon (#22022)and Probe Response frames transmitted by its affiliated APs, until the affiliated AP is removed.

…

In the Reconfiguration Multi-Link element, the EML Capabilities Present subfield(#22019), the MLD Capabilities And Operations Present subfield, and the Extended MLD Capabilities And Operations Present subfield shall be set to 0. For each affiliated AP that the AP MLD intends to remove, the Reconfiguration Multi-Link element shall include a Per-STA Profile subelement with the (#22388) fields set as follows:

* The Link ID subfield shall be set to the link identifier of the AP being removed.
* The Complete Profile subfield shall be set to 0 and the STA MAC Address Present subfield shall be set to 0.
* The AP Removal Timer Present subfield shall be set to 1 and the Reconfiguration Operation Type subfield shall be set to 0. The Operation Parameters Present (#22021)subfield and the NSTR Indication Bitmap Present subfield shall be set to 0.
* The AP Removal Timer subfield in the STA Info field shall be set to the number of TBTTs of the affiliated AP before it is removed or for the NSTR mobile AP MLD the AP Removal Timer subfield shall be set to the number of the TBTTs of the AP operating on the primary link before the affiliated AP operating on the nonprimary link is removed. The initial value of the AP Removal Timer subfield shall be set to the value of the APRemovalTimer parameter of the MLME-BSS-AP- REMOVAL.request primitive and the AP Removal Timer value shall be decremented by 1 in each subsequent Beacon frame. The initial value of the AP Removal Timer subfield specified by the APRemovalTimer parameter should point to a TBTT value that provides sufficient time to announce the removal of the affiliated AP such that all associated non-AP MLDs including the ones that have all affiliated non-AP STAs in power save mode have the opportunity to receive the Reconfiguration Multi-Link element at least once before the AP is removed.
* No other (#22388)optional subfields shall be included in the STA Info field.
* (#22388)The STA Profile field shall not be included.

…

*TGbe editor: Please update following paragraph in this subclause on P521 as shown below.*

…

1. Once the disassociation timer reaches a value of 0, and before the TSF indicated by the BSS Termination TSF field, it shall follow the procedure in 11.3.6.8 (AP, AP MLD, or PCP disassociation initiation procedure) to transmit Disassociation frame(s) to all (#22041)non-MLD non-AP STAs associated with the AP being removed. The affiliated AP shall not transmit Disassociation frames until the disassociation timer has a value of 0.

…

﻿An affiliated AP that is being removed should transmit a Disassociation frame to associated non-MLD non-AP STAs that do not support (#22302)BTM capability. If transmitted, the Disassociation frame(s) shall be transmitted after the affiliated AP is removed from the AP MLD (i.e., after the TBTT indicated by the AP Removal Timer subfield) and before the corresponding BSS is terminated.

﻿﻿A BSS Transition Management Request frame transmitted by the affiliated AP that is being removed may

provide preference for other (#22166)AP MLDs,for association as per 35.3.23 (BSS transition management for

MLDs), for the non-AP MLDs that have a single setup link with the AP being removed.

When a non-AP STA affiliated with a non-AP MLD receives a BSS Transition Management Request frame

from an AP with BSS Termination Included subfield and Link Removal Imminent subfield equal to 1, the

non-AP MLD shall interpret the BTM (#22089)Request frame to indicate that the BSS corresponding to the AP is being terminated.

﻿When the affiliated AP being removed does not transmit BSS Transition Management Request frame(s) to

notify of the termination of its BSS, the affiliated AP shall terminate the corresponding BSS at (#22302)or after the TBTT

indicated by the value of the AP Removal Timer subfield (#22088)for that AP in the Reconfiguration Multi-Link element carried in the transmitted Beacon or Probe Response frames.

(#22302)NOTE: If the affiliated AP being removed has any associated non-MLD non-AP STAs that do not support BTM capability and the AP transmits ﻿Disassociation frame(s) to those STAs (after the TBTT indicated by the AP Removal Timer), then the affiliated AP terminates the corresponding BSS after the TBTT indicated by the AP Removal Timer subfield.

…

*﻿*At the TBTT indicated by the value of the AP Removal Timer subfield in transmitted Reconfiguration

Multi-Link (#22040)element, the AP MLD shall remove the affiliated AP indicated by the Link ID subfield in the

STA Control field of the Per-STA Profile subelement that includes the AP Removal Timer subfield. After

removing the affiliated AP, the AP MLD shall remove the Per-STA Profile subelement from the Reconfiguration Multi-Link element corresponding to the removed AP, and if there is still at least one Per-STA Profile subelement remaining in the Reconfiguration Multi-Link element, the AP MLD shall continue to transmit the Reconfiguration Multi-Link element in the subsequent Beacon and Probe Response frames of the remaining affiliated APs, otherwise, the AP MLD shall stop transmitting the Reconfiguration Multi-Link element in the subsequent Beacon and Probe Response frames of the remaining affiliated APs. After the affiliated AP is removed, the AP MLD shall remove the Per-STA Profile subelement for that affiliated AP (if ﻿any) from the Basic Multi-Link element that is carried in the subsequent Beacon and Probe Response frames

of the remaining affiliated APs.

*TGbe editor: Please update following paragraphs in this subclause on P522 as shown below.*

﻿At the TBTT indicated by the value of the AP Removal Timer subfield in transmitted Reconfiguration

Multi-Link (#22040)element, the AP MLD shall consider a non-AP MLD as disassociated if the link corresponding

to the removed AP is the only setup link between the AP MLD and the non-AP MLD.

A non-AP MLD identifies one or more affiliated APs being removed from its associated AP MLD from the

Reconfiguration Multi-Link element received from the AP MLD (#22335) in which the Reconfiguration Operation Type subfield(s) of one or more STA Control fields is set to 0. At the TBTT indicated by the value of the

AP Removal Timer subfield in the received Reconfiguration Multi-Link element, an associated non-AP

MLD shall consider the link corresponding to the removed AP nonexistent, and the (#22039)non-AP

MLD shall delete any information maintained for that link. After a non-AP MLD deletes any information

maintained for the link corresponding to the removed AP, if there are no other setup links with the AP MLD,

then the non-AP MLD shall consider that it has been disassociated from the AP MLD and shall delete the

corresponding association information.

(#22039)(#22039)

…

﻿If an AP affiliated with an AP MLD is removed, any STR or NSTR requirements and capabilities (see

35.3.16.2 (MLD capability and operation signaling), 35.3.16.3 (Simultaneous transmit and receive (STR)

operation), and 35.3.16.4 (Nonsimultaneous transmit and receive (NSTR) operation)) that correspond to a

link pair that includes the link corresponding to the removed AP shall no longer apply. (#22081)The NSTR Indication Bitmap field in the Basic Multi-Link element carried in the management frames transmitted by other APs affiliated with the AP MLD shall be updated to remove the link corresponding to the removed AP, if that link was indicated as part of one or more NSTR link pairs for the AP MLD.

**35.3.6.4 Link reconfiguration to the ML setup**

﻿A non-AP MLD in the associated state that has dot11EHTLinkReconfigurationOperationActivated equal to

true may request link reconfiguration to its ML setup by sending a Link Reconfiguration Request frame

from an affiliated non-AP STA to the corresponding AP affiliated with the associated AP MLD that has the

Link Reconfiguration Operation Support subfield set to 1 in the MLD Capabilities And Operations subfield

of the Basic Multi-Link element that (#22080)is transmitted by its affiliated AP(s).

…

﻿﻿In the Reconfiguration Multi-Link element included in a Link Reconfiguration Request frame a non-AP

MLD shall set the MLD MAC Address Present subfield to 1 and shall set the MLD MAC Address subfield

in the Common Info field to its non-AP MLD MAC Address.

If the non-AP MLD is requesting to add a link in the Link Reconfiguration Request frame, then the non-AP MLD (#22018):

* (#22018)may update its MLD capabilities and operations by setting the MLD Capabilities And Operations Present subfield to 1 in the Reconfiguration Multi-Link element and by including the MLD Capabilities And Operations subfield in the Common Info field. Otherwise, the non-AP MLD shall set the MLD Capabilities And Operations Present subfield to 0.
* (#22019)may update its MLD capabilities and operations by setting the Extended MLD Capabilities And Operations Present subfield to 1 in the Reconfiguration Multi-Link element and by including the Extended MLD Capabilities And Operations subfield in the Common Info field. Otherwise, the non-AP MLD shall set the Extended MLD Capabilities And Operations Present subfield to 0.

﻿A non-AP MLD that is requesting to add a link in the Link Reconfiguration Request frame and has

dot11EHTEMLSROptionActivated equal to true or dot11EHTEMLMROptionActivated equal to true (#22018)may update its EML capabilities by setting the EML Capabilities Present subfield to 1 in the Reconfiguration Multi-Link element and by including the EML Capabilities subfield in the Common Info field. Otherwise, the non-AP MLD shall set the EML Capabilities Present subfield to 0.

(#22019)NOTE 2—When performing add link operation, a non-AP MLD can update its MLD capabilities and operations and/or the EML capabilities by including the MLD Capabilities And Operations subfield, the Extended MLD Capabilities And Operations subfield, and/or the EML Capabilities subfield in the Link Reconfiguration Request frame.

(#22020)If the AP MLD accepts link addition for one or more links for a non-AP MLD, the AP MLD shall update the MLD capabilities and operations and/or the EML capabilities for that non-AP MLD to the values received (if any) in the corresponding Link Reconfiguration Request frame. Otherwise, the AP MLD shall not update these parameters and shall continue to use the last accepted MLD capabilities and operations and the EML capabilities for that non-AP MLD.

…

*TGbe editor: Please update following paragraphs in this subclause on P524 as follows:*

The following rules apply for each Per-STA Profile subelement corresponding to a non-AP STA that is contained in the Reconfiguration Multi-Link element included in the Link Reconfiguration Request frame:

* If the non-AP MLD is indicating to add a link, it shall set the fields in the Per-STA Profile subelement as follows:
	+ The Link ID subfield shall be set to the link identifier of the AP affiliated with the associated AP MLD that is operating on the link that the non-AP MLD is requesting to add. The Complete Profile subfield and the STA MAC Address Present subfield shall be set to 1. The AP Removal Timer Present subfield shall be set to 0. The Reconfiguration Operation Type subfield shall be set to 2. The Operation Parameters Present subfield shall be set to 0. The NSTR Bitmap Size subfield shall be set to indicate the size of the NSTR Indication Bitmap subfield.
	+ The NSTR Indication Bitmap Present (#22078)subfield shall be set to 1 if at least one NSTR link pair is present for the non-AP MLD that contains the link corresponding to the link ID, otherwise, this (#22078)subfield shall be set to 0.
	+ The STA MAC Address subfield in the STA Info field shall be set to the (#22079)MAC address of the non-AP STA that will operate on the link which is requested to be added and indicated by the link ID.
	+ If the NSTR Indication Bitmap Present (#22078)subfield is set to 1, the NSTR Indication Bitmap subfield in the STA Info field shall be included and shall be set to indicate STR or NSTR for each pair of links formed between the link corresponding to the link ID and other setup links for the non-AP MLD, by setting the corresponding bit to 0 or 1.
	+ The STA Profile field shall include the complete profile for the corresponding non-AP STA identified by the STA MAC Address and shall consist of all the elements and fields that would be included in the STA Profile field for that non-AP STA in a Reassociation Request frame that includes the corresponding non-AP STA as a reported STA in the Basic Multi-Link element as defined in [35.3.3.3 (Advertisement of complete or partial per-link information)](#_bookmark14) and [35.3.3.4](#_bookmark15) [(Fields and elements not carried in a per-STA profile)](#_bookmark15), except no inheritance is applied and all the applicable elements and fields are included in the STA Profile field itself.
* If the non-AP MLD is indicating to delete an existing link, it shall set the fields in the Per-STA Profile subelement as follows:
	+ The Link ID subfield shall be set to the link identifier of the AP affiliated with the AP MLD that is operating on the link that is requested to be deleted from the ML setup. The Complete Profile subfield shall be set to 0. The STA MAC Address Present subfield shall be set to 1. The AP Removal Timer Present subfield shall be set to 0. The Reconfiguration Operation Type subfield shall be set to 3. The Operation Parameters Present subfield shall be set to 0. The NSTR Indication Bitmap Present (#22078)subfield shall be set to 0.
	+ The STA MAC Address subfield in the STA Info field shall be set to the (#22079)MAC address of the non-AP STA operating on the link indicated by the link ID, which is requested to be deleted.
	+ The NSTR Indication Bitmap subfield shall not be included.
	+ The STA Profile field shall not be included.

…

*TGbe editor: Please update following paragraphs in this subclause on P525 as shown below.*

﻿

﻿In the Link Reconfiguration Response frame, the AP MLD shall include a Reconfiguration Status Duple

subfield for each link ID indicated in the Per-STA Profile subelements of the corresponding Link

Reconfiguration Request frame. If the AP MLD accepts an add link request for a link ID, the corresponding

Status subfield shall be set to SUCCESS in the Reconfiguration Status Duple subfield and the Status Code

field included in the (#22077)STA Profile subfield of the Per-STA Profile subelement corresponding to that link ID in the Basic Multi-Link element shall be set to SUCCESS.

…

The AP MLD shall reject an add link request if any of the following (#22076)conditions is true:

* The non-AP STA affiliated with the non-AP MLD corresponding to the link does not support all of the rates in the BSSBasicRateSet parameter and all of the membership selectors in the BSSMembershipSelectorSet parameter of the AP affiliated with the AP MLD corresponding to the link in the MLME-START.request primitive.
* The non-AP STA affiliated with the non-AP MLD corresponding to the link does not support all of the MCSs in the Basic HT-MCS Set field of the HT Operation parameter of the AP affiliated with the AP MLD (if present) corresponding to the link in the MLME-START.request primitive.
* The non-AP STA affiliated with the non-AP MLD corresponding to the link does not support all of the <VHT-MCS, NSS> tuples indicated by the Basic VHT-MCS And NSS Set field of the VHT Operation parameter of the AP affiliated with the AP MLD (if present) corresponding to the link in the MLME-START.request primitive.
* The non-AP STA affiliated with the non-AP MLD corresponding to the link does not support all of the <HE-MCS, NSS> tuples indicated by the Basic HE-MCS And NSS Set field of the HE Operation parameter of the AP affiliated with the AP MLD corresponding to the link in the MLME- START.request primitive.
* The non-AP STA affiliated with the non-AP MLD corresponding to the link does not support all of the <EHT-MCS, NSS> tuples indicated by the Basic EHT-MCS And NSS Set field of the EHT Operation parameter of the AP affiliated with the AP MLD corresponding to the link in the MLME- START.request primitive.
* (#22076) The non-AP STA affiliated with the non-AP MLD corresponding to that link has the same MAC address as another non-AP STA (that is affiliated with a non-AP MLD or not affiliated with a non-AP MLD) associated with the AP affiliated with the AP MLD and corresponding to the link.

…

*TGbe editor: Please update following paragraphs in this subclause on P525 as shown below.*

﻿If an ML reconfiguration operation results in one or more links being added to the ML setup of a non-AP

MLD, the non-AP MLD and the AP MLD shall operate with all the TIDs mapped to the newly added links (#22332)both for DL and UL until a TTLM is updated according to the procedure defined in 35.3.7.2 (TID-To-Link Mapping (TTLM)).

﻿**35.3.6.5 AP MLD recommendation for link reconfiguration**

…

﻿In the Link Reconfiguration Notify frame, an AP MLD shall set the MLD MAC Address Present subfield,

the EML Capabilities Present subfield(#22019), the MLD Capabilities And Operations Present subfield, and the Extended MLD Capabilities And Operations Present subfield to 0 in the Common Info field of the Reconfiguration Multi-Link element.

The following rules apply for each Per-STA Profile subelement contained in the Reconfiguration Multi-Link element included in the Link Reconfiguration Notify frame:

* If the AP MLD is recommending to add a link (#22075)to the ML setup, it shall set the fields in the Per-STA Profile subelement as follows:
	+ The Link ID subfield shall be set to the link identifier of the AP affiliated with the AP MLD that is operating on the link that the AP MLD is recommending to add to the ML setup of the non-AP MLD.
	+ The Complete Profile subfield, the STA MAC Address Present subfield, the AP Removal Timer Present subfield, (#22331)the Operation Parameters Present subfield, and the NSTR Indication Bitmap Present subfield shall be set to 0.
	+ The Reconfiguration Operation Type subfield shall be set to 2.
* If the AP MLD is recommending to delete a link (#22075)from the ML setup, it shall set the fields in the Per- STA Profile subelement as follows:
	+ The Link ID subfield shall be set to the link identifier of the AP affiliated with the AP MLD that is operating on the link that the AP MLD is recommending to delete (#22075)from the ML setup of the non- AP MLD.
	+ The Complete Profile subfield, the STA MAC Address Present subfield, the AP Removal Timer Present subfield, (#22331)the Operation Parameters Present subfield, and the NSTR Indication Bitmap Present subfield shall be set to 0.
	+ The Reconfiguration Operation Type subfield shall be set to 3.