IEEE P802.11
Wireless LANs

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| D5.0 CR for ML Reconfiguration part 2  |
| Date: 2024-03-20 |
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 Abstract

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

22026, 22082, 22085, 22086

22083, 22084, 22087, 22240

22287

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1:
	+ Added 5 more CIDs (22026, 22082, 22085, 22086, 22287).
	+ Revised resolution for other CIDs (22083, 22084, 22087, 22240) per feedback in the TGbe conference call

***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.***

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 22026 | 35.3.6.4 | 525.29 | If the case when a non-AP MLD has only one setup link with the AP MLD, it should not send a Link Reconfig Request asking to just delete the last link. The non-AP MLD instead should disassociate in such a case. | Add clarification text for the non-AP MLD behavior for the scenario described. | RevisedAgree with the commenter that a non-AP MLD should not send a Link Reconfig request to delete all its setup links. It should use existing frames (Disassociation or Deauthentication) for that. It is redundant to define another way to completely remove association between MLDs. Also, a delete link request should not result in deleting the last setup link, if no add link operation included in the same request is accepted. This is because such a behavior would result in the non-AP MLD losing its connectivity.Revised the text to capture this behavior.TGbe editor, please make the changes tagged by CID #22026 in in 11-24/0353r1. |
| 22082 | 35.3.6.3 | 522.30 | [AK] The sentence: " ... then the non-AP MLD shall consider that it has been disassociated from the AP MLD …" does not include any measurable, active action/step that the non-AP MLD should take if there are no other setup links with the AP MLD. Please revise the sentence as suggested. | Change the sentence as follows:" … then the MLME of the non-AP MLD shall issue an MLME-DISASSOCIATE.indication primitive to inform the SME for the disassociation of the non-AP MLD. The MLME-DISASSOCIATE.indication reason code should be set to any value except configuration or parameter mismatch, to follow the procedure defined in 11.3.5.7 (Non-AP and Non-PCP STA disassociation receipt procedure)." In addition, remove the words "and shall delete the corresponding association information" since it is already mentioned in 11.3.5.7 | RevisedThis comment refers to a duplicate paragraph which was removed in D5.1. Similar changes as suggested have been made in the other paragraph on P522L17 in D5.0.TGbe editor, please make the changes tagged by CID #22085 in in 11-24/0353r1. |
| 22085 | 35.3.6.3 | 522.17 | [AK] The sentence:"… then the non-AP MLD shall consider that it has been disassociated from the AP MLD...." does not include any measurable, active action/step that the non-AP MLD should take if there are no other setup links with the AP MLD. Please revise the sentence as suggested. | Change the sentence as follows:" … then the MLME of the non-AP MLD shall issue an MLME-DISASSOCIATE.indication primitive to inform the SME for the disassociation of the non-AP MLD. The MLME-DISASSOCIATE.indication reason code should be set to any value except configuration or parameter mismatch, to follow the procedure defined in 11.3.5.7 (Non-AP and Non-PCP STA disassociation receipt procedure)." In addition, remove the words "and shall delete the corresponding association information" since it is already mentioned in 11.3.5.7 | RevisedAgree with the commenter. Revised the text per suggestion.TGbe editor, please make the changes tagged by CID #22085 in in 11-24/0353r1. |
| 22086 | 35.3.6.3 | 522.06 | [AK] The sentence:"… 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." does not included any measurable, active action that the AP MLD should take at the TBTT indicated by the value of AP Removal Timer field. Please revise the sentence as suggested. | Change the sentence as follows:" At the TBTT indicated....,the MLME of the AP MLD shall issue an MLME-DISASSOCIATE.indication primitive to inform the SME for the disassociation of a non-AP MLD, if the link corresponding to the removed AP is the only setup link between the AP MLD and the non-AP MLD. The MLME-DISASSOCIATE.indication reason code should be set to any value except configuration or parameter mismatch, to follow the procedure defined in 11.3.5.9 (AP or PCP disassociation receipt procedure)." | RevisedAgree with the commenter. Revised the text per suggestion.TGbe editor, please make the changes tagged by CID #22086 in in 11-24/0353r1. |
| 22083 | 35.3.6.3 | 522.25 | [AK] The Reconfiguration Multi-Link element is not transmitted, but included in a frame that is transmitted. Please revise the sentence, as suggested | Please revise the sentence as follows:" At the TBTT indicated by the value of the AP Removal Timer subfield in Reconfiguration Multi-Link element \*carried in the Beacon or Probe Response frames transmitted by the affiliated APs\*, an associated non-AP MLD shall ....." | RevisedThis comment refers to a duplicate paragraph which was removed in D5.1. Revised the text in other paragraph on P522L11.TGbe editor, please make the changes tagged by CID #22083 in in 11-24/0353r1. |
| 22084 | 35.3.6.3 | 522.20 | [AK] The Reconfiguration Multi-Link element is not transmitted, but included in a frame that is transmitted. Please revise the sentence, as suggested | Please revise the sentence as follows:" At the TBTT indicated by the value of the AP Removal Timer subfield in Reconfiguration Multi-Link element \*carried in the Beacon or Probe Response frames transmitted by the affiliated APs\*, the AP MLD shall disassociate a non-AP MLD if the link corresponding to the removed AP is the only setup link between the AP MLD and the non-AP MLD" | RevisedThis comment refers to a duplicate paragraph which was removed in D5.1. Revised the text per suggestion in the other places on P522L06 and on P521L52 in D5.0.TGbe editor, please make the changes tagged by CID #22084 in in 11-24/0353r1. |
| 22087 | 35.3.6.3 | 521.61 | [AK] The Reconfiguration Multi-Link element is not transmitted, but included in a frame that is transmitted. Please replace the "transmitting" with "including", as suggested | Please revise the sentence as follows:" After removing the affiliated AP, the AP MLD shall ..., otherwise, the AP MLD shall stop \*including\* the Reconfiguration Multi-Link element in the subsequent Beacon and Probe Response frames \*transmitted by\* the remaining affiliated APs" | RevisedText has been revised incorporating the suggestion. TGbe editor, please make the changes tagged by CID #22087 in in 11-24/0353r1 |
| 22240 | 35.3.6 | 520.16 | Submitted on behalf of Po-Kai. "ML setup" usage in 35.3.6 can be revised as "setup links", The commenter goes through every instance of "ML setup" in 35.3.6 and concludes that all changes are appropriate. Note that "ML setup" is more like a description of general procedure to establish the setup links. Reconfiguration is the operation to change setup links, which is the reason why using setup links is more appropriate. | change "ML setup" to "setup links" in 35.3.6/ | RevisedAgree with the commenter that the usage of “ML setup” refers to the description of general procedure to establish the setup links in rest of the 11be draft. To align with rest of the draft, revised the text to change “ML setup” to “setup links” in clause 35.3.6. TGbe editor, please make the changes tagged by CID #22240 in in 11-24/0353r1 |
| 22287 | 35.3.6.1 | 520.19 | If the Reconfig ML element or T2LM element is present in the Beacon, add normative text that Beacon Frame Protection should be enabled by AP. Add normative language that a EHT non-AP should validate beacon before accepting a Reconfig ML element or T2LM element in the Beacon, and the EHT non-AP, upon receiving a Reconfig ML element or T2LM element in a Probe Reponse should attempt to receive and validate a beacon to confirm the information before accepting a Reconfig ML element or T2LM element. | As in comment | RevisedAgree with the commenter. It is important to enable beacon protection when the Reconfig ML element or T2LM element is included in the Beacon, because these are related to MLO manageability aspects and a non-AP STA should verify these elements before use. Added text to enable beacon protection at the AP and beacon validation at the non-AP STA when these elements are present in the Beacon. TGbe editor, please make the changes tagged by CID #22287 in in 11-24/0353r1 |

9.4.1.9 Status Code field

***TGbe editor: Please add to Table 9-78 as shown below for CID #22026.***

**Table 9-78—Status codes *(continued)***

|  |  |  |
| --- | --- | --- |
| **Status code** | **Name** | **Meaning** |
| <ANA> | DENIED\_LAST\_SETUP\_LINK\_ CANNOT\_BE\_DELETED | Link delete request is denied because the last setup link cannot be deleted. |

**35.3.6.4 Link reconfiguration to the ML setup**

﻿…

*TGbe editor: Please add following two paragraphs in this subclause on P527L9 right after NOTE 3.*

(#22026)A non-AP MLD shall not send a Link Reconfiguration Request frame requesting only delete link operation that results in deleting all the setup links of the non-AP MLD.

(#22026)NOTE: If a non-AP MLD wants to delete all its setup links it sends a Disassociation frame or a Deauthentication frame to the AP MLD.

The AP MLD shall accept a delete link request for a link ID and shall set the corresponding Status subfield

to SUCCESS in the Reconfiguration Status Duple subfield, except:

* (#22026)if a particular delete link request would result in deleting the last setup link for a non-AP MLD and no add link request (if any) included in the same request frame is accepted, in which case the AP MLD shall reject that delete link request and shall set the corresponding Status subfield to DENIED\_LAST\_SETUP\_LINK\_ CANNOT\_BE\_DELETED, or
* ﻿if it is an NSTR mobile AP MLD and the delete link request is for deleting the primary link of the NSTR mobile AP MLD, in which case the AP MLD shall reject the delete link request and shall set the corresponding Status subfield to REQUEST\_DECLINED.

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**35.3.6.3 Removing affiliated APs**

**…**

**﻿**At the TBTT indicated by the value of the AP Removal Timer subfield in (#22084)the Reconfiguration Multi-Link element included in the Beacon or Probe Response frames of the affiliated APs, 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 PerSTA 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 (#22087)including 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.

**﻿**At the TBTT indicated by the value of the AP Removal Timer subfield in (#22084)the Reconfiguration Multi-Link element(#22040)included in the Beacon or Probe Response frames of the affiliated APs, (#22086)if the link

corresponding to the removed AP is the only setup link between the AP MLD and a non-AP MLD, the MLME of the AP MLD shall issue an MLME-DISASSOCIATE.indication primitive to inform the SME of the disassociation of 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 (#22083)in the Beacon or Probe Response frames of the APs affiliated with the associated 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 (#22039)the 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 (#22085)MLME of the non-AP MLD shall issue an MLME-DISASSOCIATE.indication primitive to inform the SME of the disassociation of the non-AP MLD. The MLME-DISASSOCIATE.indication reason code should be set to any value except configuration or parameter mismatch, to follow the procedure defined in 11.3.5.7 (Non-AP and Non-PCP STA disassociation receipt procedure).

**﻿**

﻿**35.3.6 ML reconfiguration**

*TGbe editor: Please make following changes in this subclause (#22240).*

**35.3.6.1 General**

*ML reconfiguration* refers to a set of procedures through which an AP MLD can add one or more affiliated APs to the AP MLD as described in [35.3.6.2 (Adding affiliated AP(s)(#22303))](#_bookmark30), or remove one or more affiliated APs from the AP MLD as described in [35.3.6.3 (Removing affiliated AP(s)(#22167))](#_bookmark31). The ML reconfiguration also defines procedure for adding and deleting links dynamically to the setup links of a non- AP MLD without requiring (re)association between the peer MLDs as described in [35.3.6.4 (Link](#_bookmark32) [reconfiguration to the ML setup)](#_bookmark32) and for AP MLD to recommend ML reconfiguration to the setup links of its associated non-AP MLD(s) as described in [35.3.6.5 (AP MLD recommendation for link reconfiguration)](#_bookmark33).

Every EHT STA affiliated with (#22272)an MLD that supports link reconfiguration operations for adding and deleting links to the setup links as described in [35.3.6.4 (Link reconfiguration to the ML setup)](#_bookmark32), and supports recommendation for ML reconfiguration to the setup links as described in [35.3.6.5 (AP MLD](#_bookmark33) [recommendation for link reconfiguration)](#_bookmark33), 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 AP(s)(#22303)**

…

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)](#_bookmark32) to add a new link with the added affiliated AP in its setup links, 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 Removing affiliated APs**

**…**

﻿

NOTE 6—If a non-AP MLD has only one setup link with the AP MLD and the AP MLD is announcing that the affiliated AP operating on that setup link is being removed using the Reconfiguration Multi-Link element, the non-AP MLD can maintain association with the AP MLD by performing a link reconfiguration operation (see [35.3.6.4 (Link](#_bookmark32) [reconfiguration to the ML setup)](#_bookmark32)) to establish a setup link with another affiliated AP of the AP MLD.

If a non-AP MLD removes a setup link as a result of the removal of an AP affiliated with its associated AP MLD, and that results in a TID not being mapped to any of the remaining setup links in either direction for that non-AP MLD, then the non-AP MLD and the AP MLD shall operate with that TID mapped to all remaining enabled links for that direction after the removal of the setup link, until a TTLM is established for that TID.

**…**

**35.3.6.4 Link reconfiguration to the Setup links**

A non-AP MLD in the associated state that has dot11EHTLinkReconfigurationOperationActivated equal to true may request link reconfiguration to its setup links 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).

NOTE 1—The ML reconfiguration operations for (#22226)adding and/or deleting link(s) to the setup links of a non-AP MLD is performed between the two peer MLDs that are in State 4 (see Figure 11-23 (Relationship between state and services between a given pair of nonmesh STAs or nonmesh MLDs)). For a newly added link to the setup links, the non- AP STA and the AP operating on that link inherit state from their respective MLDs and are in State 4. For a link that gets deleted from the setup links, the non-AP STA and the AP that were previously operating on that link cease to inherit state from their respective MLDs and transition to State 1 (see Figure 11-23 (Relationship between state and services between a given pair of nonmesh STAs or nonmesh MLDs)).

The Link Reconfiguration Request frame shall contain a Reconfiguration Multi-Link element that includes a Per-STA Profile subelement for each affiliated non-AP STA that the non-AP MLD is requesting to add to its setup links or delete from its setup links. The Reconfiguration Multi-Link element shall not include any other Per-STA Profile subelements.

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):

* 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.

NOTE 2—When performing add link operation, a non-AP MLD can update (#22019)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.

If the EML Capabilities subfield is present in the Reconfiguration Multi-Link element included in a Link Reconfiguration Request frame, then,

* a non-AP MLD with dot11EHTEMLSROptionActivated equal to true shall set the EMLSR Support subfield of the EML Capabilities subfield to 1. Otherwise, the non-AP MLD shall set the EMLSR Support subfield to 0.
* a non-AP MLD with dot11EHTEMLMROptionActivated equal to true shall set the EMLMR Support subfield of the EML Capabilities subfield to 1. Otherwise, the non-AP MLD shall set the EMLMR Support subfield to 0.

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 Pro- file 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 sub- field 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, other- wise, this 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 iden- tified 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 setup links. 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 Indica- tion 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.

NOTE 3—A single Link Reconfiguration Request frame can indicate multiple ML reconfiguration operations, including add link(s) and/or delete link(s). Each link reconfiguration operation is specified in a separate Per-STA Profile subelement within the Reconfiguration Multi-Link element. A non-AP MLD might indicate both delete link and add link operations for the same non-AP STA in a request frame by setting the STA MAC Address subfield to the same value in the two Per-STA Profile subelements included in the Reconfiguration Multi-Link element, in the case when it wants to switch the link for that non-AP STA to another affiliated AP.

If the non-AP MLD is indicating to add one or more links, it shall include an OCI element subfield in the Link Reconfiguration Request frame to provide operating channel information for the current channel where the Link Reconfiguration Request frame is being transmitted if all the following conditions are met:

* dot11RSNAOperatingChannelValidationActivated is true for the non-AP MLD,
* the RSNE in last (Re)Association Request frame transmitted to the AP MLD indicated OCVC, and
* the RSNE in the Beacon frame of the AP corresponding to the current link indicates OCVC.

After receiving a Link Reconfiguration Request frame indicating request for adding one or more links from a non-AP STA affiliated with a non-AP MLD that indicated OCVC in its RSNE, and if the RSNE for the affiliated AP also indicates OCVC, an AP MLD shall validate the OCI element received in the request by ensuring that all of the followings are true:

* the OCI element is present,
* the Channel information in the OCI element matches current operating channel parameters (see

12.2.9 (Requirements for Operating Channel Validation)).

Otherwise, AP MLD shall reject the request by discarding the Link Reconfiguration Request frame.

After receiving a Link Reconfiguration Request frame from a non-AP MLD, the AP MLD shall respond with a Link Reconfiguration Response frame when no OCI element validation is required, or when OCI element validation is required and the validation is successful. An AP MLD shall send the Link Reconfiguration Response frame on the same link where the corresponding Link Reconfiguration Request frame was received. An AP MLD shall not send an unsolicited Link Reconfiguration Response frame to a non-AP MLD.

If the AP MLD receives a Link Reconfiguration Request frame that indicates both delete link and add link for the same non-AP STA identified by the same STA MAC Address value in the Per-STA Profile subelements for delete and add link operations, then the AP MLD shall process the delete link operation first for that non-AP STA.

In the Link Reconfiguration Response frame, the AP MLD shall include (#22333)one ore more Reconfiguration Status Duple subfield with each subfield corresponding to a 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 accept a delete link request for a link ID and shall set the corresponding Status subfield to SUCCESS in the Reconfiguration Status Duple subfield, except if it is an NSTR mobile AP MLD and the delete link request is for deleting the primary link of the NSTR mobile AP MLD in which case the AP MLD shall reject the delete link request and shall set the corresponding Status subfield to REQUEST\_DECLINED.

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 corresponding to the link.

If the AP MLD accepts link addition for one or more links, the AP MLD shall include Group Key Data subfield in the Link Reconfiguration Response frame when using RSN. For each added link, the AP MLD shall include an MLO GTK KDE, an MLO IGTK KDE, and an MLO BIGTK KDE in the Group Key Data subfield providing group keys for the added link identified by the Link ID subfield.

If the AP MLD accepts link addition for one or more links, the AP MLD shall include an OCI element subfield in the Link Reconfiguration Response frame to provide operating channel information for the current channel where the Link Reconfiguration Response frame is being transmitted if all of the following conditions are met:

* dot11RSNAOperatingChannelValidationActivated is true for the AP MLD,
* the RSNE in last (Re)Association Request frame received from the non-AP MLD indicated OCVC, and
* the RSNE in the Beacon frame of the AP corresponding to the current link indicates OCVC.

If the AP MLD accepts link addition for one or more links, it shall include in the Link Reconfiguration Response frame a Basic Multi-Link element that includes one Per-STA Profile subelement for each AP operating on the link that is accepted by the AP MLD for addition to the setup links of the non-AP MLD. The Basic Multi-Link element shall not include any other Per-STA Profile subelements. For each Per-STA Profile subelement included in the Basic Multi-Link element, the Complete Profile subfield in the STA Control field shall be set to 1, and the STA Profile field corresponding to that AP shall be complete and consists of all the elements and fields that would be included in the STA Profile field for that AP in a Reassociation Response frame that includes the corresponding AP as a reported AP 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 AP MLD rejects an add link request for a Link ID, it shall set the corresponding Status subfield in the Reconfiguration Status Duple subfield to indicate an appropriate rejection status code as per Table 9-80 (Status codes).

After receiving a Link Reconfiguration Response frame that includes a Group Key Data subfield, if the AP indicated OCVC in its RSNE and the receiving non-AP STA RSNE also indicates OCVC, the non-AP MLD shall validate the OCI element received in the response by ensuring that all of the following conditions are true:

* the OCI element is present,
* the channel information in the OCI element matches current operating channel parameters (see

12.2.9 (Requirements for Operating Channel Validation)).

Otherwise, the non-AP MLD shall discard the Link Reconfiguration Response frame.

If an ML reconfiguration operation results in one or more links being added to the setup links 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-](#_bookmark37) [To-Link Mapping (TTLM))](#_bookmark37).

The power management mode of the affiliated non-AP STA corresponding to the added link shall be in the power save mode immediately after the acknowledgement of the Link Reconfiguration Response frame, and its power state shall be in the doze state.

After sending a Link Reconfiguration Response frame to a non-AP MLD indicating SUCCESS status for a delete link operation and receiving the acknowledgement for the response frame from the non-AP MLD, the AP MLD shall consider that link to be deleted from the setup links of the associated non-AP MLD and shall delete any information maintained for that link from the setup links of that non-AP MLD.

After sending a Link Reconfiguration Response frame to a non-AP MLD indicating SUCCESS status for an add link operation and receiving the acknowledgement for the response frame from the non-AP MLD, the AP MLD shall consider that link to be added to the setup links of the associated non-AP MLD.

After receiving a Link Reconfiguration Response frame indicating SUCCESS status for a delete link operation and sending an acknowledgement for the response frame, the non-AP MLD shall consider that link to be deleted from its setup links and shall delete any information maintained for that link from its setup links.

After receiving a Link Reconfiguration Response frame indicating SUCCESS status for an add link operation and sending an acknowledgement for the response frame, the non-AP MLD shall consider that link to be added to its setup links.

If a link reconfiguration to the setup links deletes one or more links from the setup links of a non-AP MLD and that results in a TID not being mapped to any of the remaining setup links in either direction for that non-AP MLD, then the non-AP MLD and the AP MLD shall operate with that TID mapped to all remaining enabled links for that direction after the deletion of the setup link, until a TTLM is established for that TID.

#### AP MLD recommendation for link reconfiguration

An AP MLD may recommend (#22225)link(s) to be added and/or deleted to the setup links of an associated non-AP MLD by sending an individually addressed Link Reconfiguration Notify frame to that non-AP MLD. The Link Reconfiguration Notify frame shall contain a Reconfiguration Multi-Link element that includes one Per-STA Profile subelement for each affiliated AP that the AP MLD is recommending to the non-AP MLD to add to or delete from its setup links.

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 setup links, 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 setup links 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 setup links, 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 setup links 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.

In response to a Link Reconfiguration Notify frame, a non-AP MLD may initiate ML reconfiguration to its setup links by following the procedure defined in [35.3.6.4 (Link reconfiguration to the ML setup)](#_bookmark32).

*TGbe editor: Please make following changes subclauses below (#22287).*

**﻿35.3.6.3 Removing affiliated AP(s)**

**﻿**The SME of an AP MLD may remove one or more of its (#22167)affiliated AP(s) by initiating the MLME- BSS-AP-REMOVAL.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)](#_bookmark73)). The AP MLD shall announce the removal of any affiliated AP through a Reconfiguration Multi-Link element (see 9.4.2.321.4 (Reconfiguration Multi-Link element)) in all Beacon (#22022)and Probe Response frames transmitted by its affiliated APs until the affiliated AP is removed.

(#22287)If a Reconfiguration Multi-Link element is included in the Beacon frames transmitted by the affiliated APs of an AP MLD, then the AP MLD should enable beacon protection for each of its affiliated APs as per the procedure in 11.52 (﻿Beacon frame protection procedures).

A non-AP STA should validate a protected Beacon frame as per the procedure in 11.52 (﻿Beacon frame protection procedures), before accepting a Reconfiguration Multi-Link element included in that Beacon frame.

﻿**35.3.7.2.4 Advertised TTLM in Beacon and Probe Response frames**

﻿An AP MLD may advertise a mandatory TTLM by including a TID-To-Link Mapping element in the

Beacon and Probe Response frames that the APs affiliated with the AP MLD transmit.

(#22287)If a TID-To-Link Mapping element is included in the Beacon frames transmitted by the affiliated APs of an AP MLD, then the AP MLD should enable beacon protection for each of its affiliated APs as per the procedure in 11.52 (﻿Beacon frame protection procedures).

A non-AP STA should validate a protected Beacon frame as per the procedure in 11.52 (﻿Beacon frame protection procedures), before accepting a TID-To-Link Mapping element included in that Beacon frame.