IEEE P802.11
Wireless LANs

|  |
| --- |
| LB266: CR for Clause 9.3.3 |
| Date: July 10, 2022 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Gaurang Naik | Qualcomm Inc. |  |  | gnaik@qti.qualcomm.com |
| Abhishek Patil | Qualcomm Inc. |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi | Qualcomm Inc. |  |  | aasterja@qti.qualcomm.com |
| George Cherian | Qualcomm Inc. |  |  | gcherian@qti.qualcomm.com |
| Duncan Ho | Qualcomm Inc. |  |  | dho@qti.qualcomm.com |
| Yanjun Sun | Qualcomm Inc. |  |  | yanjuns@qti.qualcomm.com |
| Abdel Karim Ajami | Qualcomm Inc. |  |  | aajami@qti.qualcomm.com |

 Abstract

This submission proposes resolutions for following 14 CIDs received for TGbe LB266:

10532, 10534, 11379, 11052, 13251, 10984, 12051, 13727, 11049, 13456, 10536, 11380, 11051, 11050

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1: Changes based on offline feedback.

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** | **Section** | **Pg.Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 10532 | Abhishek Patil | 9.3.3.2 | 172.05 | The underline of the new content added to Management frames in clause 9.3.3 is not consistent. For example, in Table 9-60 only the new content under the Notes column for Quiet element needs to be underline. The rest of the content doesn't need to be underlined. Similarly, the content under Order in Table 9-62 doesn't need to be underlined. | As in comment | **Revised**Agree with the commenter about the inconsistency in underlining the newly added text. All newly added entries are underlined in Tables where the editorial instructions are to update an existing row and insert new rows. All underlines are removed in Tables where the editorial instructions are only to insert new rows.**TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-01-00be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 10532** |
| 10534 | Abhishek Patil | 9.3.3.2 | 172.20 | Update the description to include ML Reconfig IE. Same comment for Probe Response frame. | As in comment | **Revised**Agree with the commenter. A statement is added to indicate that the Reconfiguration Multi-Link element is optionally present in Beacon and Probe Response frames if dot11MultiLinkActivated is true.**TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 10534** |
| 11379 | Gaurang Naik | 9.3.3.2 | 172.20 | Only Basic Multi-Link element is mentioned here. However, as per 35.3.6 the Reconfiguration variant can also be present in the Beacon frames when an AP of an AP MLD is being removed. Pls add Reconfig ML element in the Notes. | As in comment | **Revised**Agree with the commenter. A statement is added to indicate that the Reconfiguration Multi-Link element is optionally present in Beacon and Probe Response frames if dot11MultiLinkActivated is true.**TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 10534** |
| 11052 | Po-Kai Huang | 9.3.3.5 | 172.49 | For the sentence "The Basic Multi-Link element is present if dot11MultiLinkActivated is true; otherwise it is not present.", it may be better to elaborate. Note that for autehntication frame, we use "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the frame exchange is with a peer STA that is affiliated with an MLD. Otherwise it is not present." | Revise "The Basic Multi-Link element is present if dot11MultiLinkActivated is true; otherwise it is not present." as "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the frame exchange is with a peer STA that is affiliated with an MLD. Otherwise it is not present." | **Revised**Agree with the commenter. The statement is revised as suggested. **TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 11052** |
| 13251 | Binita Gupta | 9.3.3.6 | 173.11 | The last sentence for the TWT element in Table 9-63 is cut off. Fix the issue. | As in comment | **Revised**Agree with the commenter. The complete statement from the baseline (REVme D1.3) is added. Same change is made for the (Re)Association Response frame.**TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 13251. Please note that the deleted text is to be removed from 11be draft but not from the baseline (REVme D1.3).** |
| 10984 | Yanjun Sun | 9.3.3.6 | 173.32 | Incomplete sentence in the last column for TWT. Please delete or revise it. | As in comment | **Revised**Agree with the commenter. The complete statement from the baseline (REVme D1.3) is added. Same change is made for the (Re)Association Response frame.**TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 13251. Please note that the deleted text is to be removed from 11be draft but not from the baseline (REVme D1.3).** |
| 12051 | Massinissa Lalam | 9.3.3.6 | 173.32 | The TWT IE description's end has been cut. Full sentence should be added "If the TWT element is present in the Association Request frame that solicits the Association Response frame but the TWT element is not present in the Association Response frame, then the STA can transmit another TWT request frame after association." same for other frames in subsequent subclauses | As in comment | **Revised**Agree with the commenter. The complete statement from the baseline (REVme D1.3) is added. Same change is made for the (Re)Association Response frame.**TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 13251. Please note that the deleted text is to be removed from 11be draft but not from the baseline (REVme D1.3).** |
| 13727 | Yunbo Li | 9.3.3.6 | 173.32 | "If the TWT element is present in the Association Request frame that solicits the Association Response frame but the TWT element", the sentence is broken. | make the sentence complete. | **Revised**Agree with the commenter. The complete statement from the baseline (REVme D1.3) is added. Same change is made for the (Re)Association Response frame.**TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 13251. Please note that the deleted text is to be removed from 11be draft but not from the baseline (REVme D1.3).** |
| 11049 | Po-Kai Huang | 9.3.3.6 | 173.35 | For the sentence "The Basic Multi-Link element is present if dot11MultiLinkActivated is true; otherwise it is not present.", it may be better to elaborate. Note that for autehntication frame, we use "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the frame exchange is with a peer STA that isaffiliated with an MLD. Otherwise it is not present." | Revise "The Basic Multi-Link element is present if dot11MultiLinkActivated is true; otherwise it is not present." as "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the frame exchange is with a peer STA that isaffiliated with an MLD. Otherwise it is not present." | **Revised**Agree with the commenter. The statement is revised as suggested. **TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 11049** |
| 13456 | Liwen Chu | 9.3.3.6 | 173.34 | This is present if dot11MultiLinkActivated is true and the solicited Associated Request carries Multi-Link element; | change the text per the comment | **Revised**Agree with the commenter. The statement is revised to indicate that the Basic Multi-Link element is included if the frame exchange is with a peer STA that is affiliated with an MLD. **TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 11049** |
| 10536 | Abhishek Patil | 9.3.3.6 | 173.35 | The NOTES column states that "The Basic Multi-Link element is present if dot11MultiLinkActivated is true". Does it mean the IE is present even when the request comes from a legacy non-MLO STA? Same comment for Reassociation Request frame. | Update the description to add condition that dot11MultiLinkActivated is true and the received request contains Basic ML IE. | **Revised**Agree with the commenter. The statement is revised to indicate that the Basic Multi-Link element is included if the frame exchange is with a peer STA that is affiliated with an MLD. **TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 11049** |
| 11380 | Gaurang Naik | 9.3.3.6 | 173.35 | Only if both peers support MLO, Assoc Response frame can carry the ML element. Even if dot11MultiLinkActivated is true at the AP MLD, if the non-AP STA does not support MLO, the Assoc Response frame does not carry the ML element. Revise the text in the Notes column to describe this. Same comment for Reassociation Response frame. | As in comment | **Revised**Agree with the commenter. The statement is revised to indicate that the Basic Multi-Link element is included if the frame exchange is with a peer STA that is affiliated with an MLD. **TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 11049** |
| 11051 | Po-Kai Huang | 9.3.3.7 | 174.13 | For the sentence "The Basic Multi-Link element is present if dot11MultiLinkActivated is true; otherwise it is not present.", it may be better to elaborate. Note that for autehntication frame, we use "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the frame exchange is with a peer STA that is affiliated with an MLD. Otherwise it is not present." | Revise "The Basic Multi-Link element is present if dot11MultiLinkActivated is true; otherwise it is not present." as "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the frame exchange is with a peer STA that is affiliated with an MLD. Otherwise it is not present." | **Revised**Agree with the commenter. The statement is revised as suggested. **TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 11051** |
| 11050 | Po-Kai Huang | 9.3.3.8 | 175.35 | For the sentence "The Basic Multi-Link element is present if dot11MultiLinkActivated is true; otherwise it is not present.", it may be better to elaborate. Note that for autehntication frame, we use "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the frame exchange is with a peer STA that is affiliated with an MLD. Otherwise it is not present." | Revise "The Basic Multi-Link element is present if dot11MultiLinkActivated is true; otherwise it is not present." as "The Basic Multi-Link element is present if dot11MultiLinkActivated is true and the frame exchange is with a peer STA that is affiliated with an MLD. Otherwise it is not present." | **Revised**Agree with the commenter. The statement is revised as suggested. **TGbe editor: Please implement the changes shown in document [**[https://mentor.ieee.org/802.11/dcn/22/11-22-1019-02-00be-lb266-cr-for-clause-9-3-3.docx](https://mentor.ieee.org/802.11/dcn/22/11-22-1019-00-000be-lb266-cr-for-clause-9-3-3.docx)] **tagged as 11050** |

***TGbe editor: Please note Baseline is 11be D1.4 and REVme D1.3***

**9.3.3 (PV0) Management frames**

**9.3.3.2 Beacon frame format**

***TGbe editor: Please update the row corresponding to Multi-Link element as shown below [CID 10534]***

**Table 9-60—Beacon frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <Last assigned + 1> | Multi-Link | If dot11MultiLinkActivated is true, the Basic Multi-Link element is present and the Reconfiguration Multi-Link element is optionally present (see 35.3.6.2.2 (Removing affiliated APs)); otherwise Multi-Link is not present. (#10534) |

**9.3.3.10 Probe Response frame format**

***TGbe editor: Please update the row corresponding to Multi-Link element as shown below [CID 10534]***

**Table 9-67—Probe Response frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <Last assigned + 1> | Multi-Link | If dot11MultiLinkActivated is true, the Basic Multi-Link element is present and the Reconfiguration Multi-Link element is optionally present (see 35.3.6.2.2 (Removing affiliated APs)). Otherwise Multi-Link element is not present. (#10534). |

**9.3.3.5 Association Request frame format**

***TGbe editor: Please update the row corresponding to the Multi-Link element and remove the underline in the ‘Order’ column as shown below [CID 11052, 10532]***

***Insert three new rows to Table 9-62 (Association Request frame body) in numeric order:***

**Table 9-62—Association Request frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <Last assigned + 1> | Multi-Link | The Basic Multi-Link element is present if dot11MultiLinkActi- vated is true and the Association Request frame is sent to an AP affiliated with an AP MLD (#11052); otherwise it is not present. |
| <Last assigned + 2> | EHT Capabilities | The EHT Capabilities element is present if dot11EHTOptionIm- plemented is true; otherwise it is not present. |
| <Last assigned + 3> | TID-To-Link Map- ping | One or two TID-To-Link Mapping elements are present if dot11- MultiLinkActivated is true, dot11TIDtoLinkMappingActivated is true, and a non-AP STA affiliated with a non-AP MLD initiates both an MLD association (see 11.3 (STA authenticationAuthenti- cation and association)) and a TID-to-link mapping negotiation. Otherwise it is not present.- If two TID-To-Link Mapping elements are present then the Direction subfield in one of the TID-To-Link Mapping elements is set to 0 and the Direction subfield in the other TID-To- Link Mapping element is set to 1. |

**9.3.3.6 Association Response frame format**

***TGbe editor: Please update the rows corresponding to TWT and Multi-Link elements and underline text in the last* four rows *in Columns ‘Information’ and ‘Notes’ as shown below [CID 13251, 11049, 10532]***

***Update existing order 40 and insert four new rows to Table 9-63 (Association Response frame body) in numeric order:***

**Table 9-63—Association Response frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| 40 | TWT | The TWT element is present if dot11TWTOptionActivated is true and the TWT element is present in the Association Request frame that elicited this Association Response frame.The TWT element is optionally present if dot11TWTOptionActi- vated is true, dot11HEOptionImplemented is true, and the TWT Requester Support field in the HE Capabilities element in the Association Request frame that elicited this Association Response frame is 1.The TWT element is present if dot11RestrictedTWTOptionImple- mented is true and the soliciting Association Request frame is sent by an EHT STA that has the Restricted TWT Support subfield in the transmitted EHT Capabilities elements set to 1, and the AP has at least one r-TWT schedule as described in 35.9.3 (r-TWT service periods announcement). (#13251)Otherwise, the TWT element is not present. (#13251) |
| <Last assigned + 1> | Multi-Link | The Basic Multi-Link element is present if dot11MultiLinkActi- vated is true and the Association Response frame is sent to a non-AP STA affiliated with a non-AP MLD (#11049); otherwise it is not present. |
| <Last assigned + 2> | EHT Capabilities | The EHT Capabilities element is present if dot11EHTOptionIm- plemented is true; otherwise it is not present. |
| <Last assigned + 3> | EHT Operation | The EHT Operation element is present if dot11EHTOptionImple- mented is true; otherwise it is not present. |
| <Last assigned + 4> | TID-To-Link Map- ping | One or two TID-To-Link Mapping elements are present if dot11- MultiLinkActivated is true, dot11TIDtoLinkMappingActivated is true, and the AP sends an Association Response frame in response to a received Association Request frame that is initiating both a multi-link setup and a TID-to-link mapping negotiation. Other- wise it is not present.- If two TID-To-Link Mapping elements are present then the Direction subfield in one of the TID-To-Link Mapping ele- ments is set to 0 and the Direction subfield in the other TID-To- Link Mapping element is set to 1. |

**9.3.3.7 Reassociation Request frame format**

***TGbe editor: Please update the row corresponding to Multi-Link element and remove the underline in the ‘Order’ column as shown below [CID 11051, 10532]***

***Insert three new rows to Table 9-64 (Reassociation Request frame body) in numeric order:***

**Table 9-64—Reassociation Request frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <Last assigned + 1> | Multi-Link | The Basic Multi-Link element is present if dot11MultiLinkActi- vated is true and the Reassociation Request frame is sent to an AP affiliated with an AP MLD (#11051); otherwise it is not present. |
| <Last assigned + 2> | EHT Capabilities | The EHT Capabilities element is present if dot11EHTOptionIm- plemented is true; otherwise it is not present. |
| <Last assigned + 3> | TID-To-Link Map- ping | One or two TID-To-Link Mapping elements are present if dot11- MultiLinkActivated is true, dot11TIDtoLinkMappingActivated is true, and a non-AP STA affiliated with a non-AP MLD initiates both a multi-link resetup and a TID-to-link mapping negotiation. Otherwise it is not present.- If two TID-To-Link Mapping elements are present then the Direction subfield in one of the TID-To-Link Mapping ele- ments is set to 0 and the Direction subfield in the other TID-To- Link Mapping element is set to 1. |

**9.3.3.8 Reassociation Response frame format**

***TGbe editor: Please update the rows corresponding to TWT and Multi-Link elements and underline text in the last* four rows *in Columns ‘Information’ and ‘Notes’ as shown below [CID 13251, 11050, 10532]***

***Update existing order 43 and insert four new rows to Table 9-65 (Reassociation Response frame body) in numeric order:***

**Table 9-62—Reassociation Response frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| 43 | TWT | The TWT element is present if dot11TWTOptionActivated is true and the TWT element is present in the Reassociation Request frame that elicited this Reassociation Response frame.The TWT element is optionally present if dot11TWTOptionActi- vated is true, dot11HEOptionImplemented is true, and the TWT Requester Support field in the HE Capabilities element in the Reassociation Request frame that elicited this Reassociation Response frame is 1.The TWT element is present if dot11RestrictedTWTOptionImple- mented is true and the soliciting Reassociation Request frame is sent by an EHT STA that has the Restricted TWT Support subfield in the transmitted EHT Capabilities elements set to 1, and the AP has at least one r-TWT schedule as described in 35.9.3 (r-TWT service periods announcement). (#13251)Otherwise, the TWT element is not present. (#13251) |
| <Last assigned + 1> | Multi-Link | The Basic Multi-Link element is present if dot11MultiLinkActi- vated is true and the Reassociation Response frame is sent to a non-AP STA affiliated with a non-AP MLD (#11050); otherwise it is not present. |
| <Last assigned + 2> | EHT Capabilities | The EHT Capabilities element is present if dot11EHTOptionIm- plemented is true; otherwise it is not present. |
| <Last assigned + 3> | EHT Operation | The EHT Operation element is present if dot11EHTOptionImple- mented is true; otherwise it is not present. |
| <Last assigned + 4> | TID-To-Link Map- ping | One or two TID-To-Link Mapping elements are present if dot11- MultiLinkActivated is true, dot11TIDtoLinkMappingActivated is true, and the AP sends a Reassociation Response frame in response to a received Reassociation Request frame that is initiat- ing both a multi-link resetup and a TID-to-link mapping negotia- tion. Otherwise it is not present.- If two TID-To-Link Mapping elements are present then the Direction subfield in one of the TID-To-Link Mapping ele- ments is set to 0 and the Direction subfield in the other TID-To- Link Mapping element is set to 1. |

**9.3.3.9 Probe Request frame format**

***TGbe editor: Please remove the underline in the ‘Order’ column as shown below [CID 10532]***

***Insert two new rows to Table 9-66 (Probe Request frame body) in numeric order:***

**Table 9-66—Probe Request frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <Last assigned + 1> | Multi-Link | The Probe Request Multi-Link element is present if dot11Multi- LinkActivated is true and the Probe Request frame is a Multi-Link probe request as defined in 35.3.4.2 (Use of Multi-Link probe request and response). Otherwise the Multi-Link element is not present. |
| <Last assigned + 2> | EHT Capabilities | The EHT Capabilities element is present if dot11EHTOptionIm- plemented is true; otherwise it is not present. |

**9.3.3.11 Authentication frame format**

***TGbe editor: Please remove the underline in the ‘Order’ column as shown below [CID 10532]***

***Insert a new row to Table 9-68 (Authentication frame body) in numeric order:***

**Table 9-68—Authentication frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| <Last assigned + 1> | Multi-Link | The Basic Multi-Link element is present if dot11MultiLinkActi- vated is true and the frame exchange is with a peer STA that is affiliated with an MLD. Otherwise it is not present. |