IEEE P802.11
Wireless LANs

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| LB271 CR for CIDs with tag E |
| Date: 2023-03-08 |
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Abstract

This submission proposes resolutions of comments received from TGbe comment collection LB271 based on TGbe D3.0.

16999 17165 15695 16741 17914 15517 16464 16745 15397 15855 16465 16786 18273 15010 15482 15604 15696 16130 16809 15538 16593 16594 16595 16810 16811 16596 16812 16597 16911 16910 16912 16615 16255 16227 16913 15560 16993 16994 16996 16997 (40 CIDs)

Revisions:

* Rev 0: Initial version of the document.
1. **Introduction**

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. The introduction and the explanation of the proposed changes are 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 802.11be 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** |
| 16999  | 35.3.24 | 0.00 | "TWT information frame" should be "TWT Information frame" | Change throughout this page | Accepted-Note to TGbe editor, please change "TWT information frame" to "TWT Information frame" throught the draft 3.0 |
| 17165 | 35.3.1 | 479.20 | add "the" in front of "association". | as in comment | Accepted- |
| 15695 | 35.3.1 | 479.29 | missing period at end of sentence | add period to end of sentence | Accepted- |
| 16741 | 35.3.1 | 479.29 | Missing full stop at end of sentence | As it says in the comment | Accepted- |
| 17914 | 35.3.1 | 479.29 | A period is missing at the end of this sentence. | As in comment. | Accepted- |
| 15517 | 35.3.1 | 479.58 | The sentence is conflict and confusing. It's better to spell it out that it's talking about BSS-transition. | Change to:When a non-AP MLD transitions to one non-AP EHT STA , the non-AP EHT STA shall set dot11MultiLinkActivated to false and the MAC address of the non-AP EHT STA may be set to the MLD MAC address of the non-AP MLD. When a non-AP MLD transitions to multiple non-AP EHT STAs, the non-AP EHT STAs shall set dot11MultiLinkActivated to false and the MAC addresses of the non-AP EHT STAs may not change. See 4.5.3.2 (Mobility types). | Revised-This is not BSS transition, is about the role change between single EHT STA and MLD. When non-AP MLD plays a role of single EHT non-AP MLD, such as having a legacy association (without basic ML element carried in both association request and response frames) with an EHT AP. To avoide confusion, the reference is removed. Apply the changes marked as #15517 in this document. |
| 16464 | 35.3.1 | 479.58 | "The MAC address of a non-AP EHT STA with dot11MultiLinkActivated set to false shall be set to the MLD MAC address of the non-AP MLD that the non-AP EHT STA is affiliated with ..."Since "A non-AP EHT STA with dot11MultiLinkActivated equal to false shall not be affiliated with any non-AP MLD." as stated in the same subclause. It's not valid to set the MAC address of a non-AP EHT STA with dot11MultiLinkActivated set to false to the MLD MAC address of the non-AP MLD that the non-AP EHT STA is affiliated with. | Delete "with dot11MultiLinkActivated set to false" from the sentence. | Rejected-The commenter fails to understand this paragraph. It doesn't say that a non-AP EHT STA with dot11MultiLinkActivated equal to false is affiliated with an MLD. It just clarifies the MAC address of the EHT non-AP STA when it sets dot11MultiLinkActivated to false is the same as its MLD MAC address when it sets dot11MultiLinkActivated to true. |
| 16745 | 35.3.1 | 480.01 | "The (Re)Association Response frame sent in response to a (Re)AssociationRequest frame without including the Basic Multi-Link element does not include the Basic Multi-Link element" -- would be clearer as "The (Re)Association Response frame sent in response to a (Re)AssociationRequest frame that does not include the Basic Multi-Link element does not include the Basic Multi-Link element" | As it says in the comment | Revised-Agree. Apply the changes marked as #16745 in this document. |
| 15397 | 35.3.4.4 | 495.04 | Typo: "hen" instead of "then" | Replace "hen the AP" with "then the AP" | Accepted- |
| 15855 | 35.3.4.4 | 495.04 | "hen the AP" causes a broken sentence. | Fix the phrase/sentence. | Revised-Agree. Apply the changes marked as #15855 in this document. |
| 16465 | 35.3.4.4 | 495.04 | "...in a multiple BSSID set, hen the AP, in a Beacon frame..."Typo of "hen", please changed to "then" | As in comment | Accepted- |
| 16786 | 35.3.4.4 | 495.04 | "hen" should be "then" | As it says in the comment | Accepted- |
| 18273 | 35.3.4.4 | 495.04 | typo "hen" should be "then" | as in comment | Accepted- |
| 15010 | 35.3.4.4 | 495.05 | "hen the AP"? it's a typo? | please address the typo | Revised-Agree. Apply the changes marked as #15010 in this document. |
| 15482 | 35.3.4.4 | 495.05 | Typo: "hen" might be "then". | As in comment | Revised-Agree. Apply the changes marked as #15482 in this document. |
| 15604 | 35.3.4.4 | 495.05 | the "hen" in the sentence " ..., hen the AP, in a Beacon frame..." may be "then",please change it | as in comment | Revised-Agree. Apply the changes marked as #15604 in this document. |
| 15696 | 35.3.4.4 | 495.05 | missing character - "hen the AP" | Change 'hen the AP' to 'then the AP' | Revised-Agree. Apply the changes marked as #15696 in this document. |
| 16130 | 35.3.4.4 | 495.05 | typo, change "hen" to "then" | As in comment | Revised-Agree. Apply the changes marked as #16130 in this document. |
| 16809 | 35.3.10 | 527.63 | "For" should be "for" | As it says in the comment. Also at 528.55. At 529.1 "Set" -> "set" | Revised-Agree. Apply the changes marked as #16809 in this document. |
| 15538 | 35.3.10 | 528.18 | Better give a denoted name to the APs in this paragraph and the subbullets, e.g., the AP corresponding to the nontransmitted BSSID denoted as AP1, the AP corresponding to the transmitted BSSID denoted as AP2. Otherwise it is confusing and hard to read. | As in comment | Rejected-The commenter fails to identiy the technical issue. The corresponding part is clear. |
| 16593 | 35.3.10 | 529.06 | Remove the word "is" from the following sentence: "The flag is set to 1 until and including the later of the DTIM Beacon frame amongst the nontransmitted BSSIDs having the Critical Update Flag subfield of the Nontransmitted BSSID Capability field \*is\* set to 1" | The sentence should be revised as follows: "The flag is set to 1 until and including the later of the DTIM Beacon frame amongst the nontransmitted BSSIDs having the Critical Update Flag subfield of the Nontransmitted BSSID Capability field set to 1" | Accepted- |
| 16594 | 35.3.10 | 529.34 | typo: add "is" before "transmitted" in the following sentence: "The Basic Multi-Link element carried in the (Re)Association Response frame transmitted by an AP affiliated with..." | As in comment | Revised-It is “transmitted” without “is”. To address the confusion, change "carried" to "carries".  |
| 16595 | 35.3.10 | 529.35 | replace "carried" with "and carry the" for better clarity of the following sentence: "The Basic Multi-Link element ... with an AP MLD \*carried\* information of the AP MLD and complete profile of other AP(s) affiliated with the same MLD" | The sentence should be revised as follows: " "The Basic Multi-Link element ... with an AP MLD \*and carry the\* information of the AP MLD and complete profile of other AP(s) affiliated with the same MLD" | Revised-Agree. Apply the changes marked as #16595 in this document. |
| 16810 | 35.3.10 | 529.35 | I think "carried" should be "carries" | As it says in the comment | Revised-Agree. Apply the changes marked as #16810 in this document. |
| 16811 | 35.3.10 | 529.59 | "NOTE 2--The Probe Request frame can be either multi-link probe request or a Probe Request frame that is not multi-link probe request." missing articles | As it says in the comment. Ditto "to Probe Request frame" at line 63 and "operating on nonprimary link" at line 1 of next page | Revised-Agree. Apply the changes marked as #16811 in this document. |
| 16596 | 35.3.10 | 531.01 | Replace "included" with "carried" in the following sentence:"...corresponding to the affected AP contained in the Basic Multi-Link element \*included\* in the Beacon frame and Probe Response frame that it transmits." | As in comment | Rejected-It is not needed to do the replacement as the commenter menioned since it is clear. |
| 16812 | 35.3.10 | 531.02 | "are set to 0" should be "is set to 0" since subject is "subfield" | As it says in the comment | Accepted- |
| 16597 | 35.3.10 | 533.16 | Replace "of" with "corresponding to" for better wording and clarity in the following sentence: "...shall not be included in the per-STA profile of the affected AP in the Beacon and Probe Response frames and the Max Channel Switch Time element shall be included in the per-STA profile \*of\* the affected AP in every Beacon and Probe Response frames..." | The sentence should be revised as follows: "...shall not be included in the per-STA profile of the affected AP in the Beacon and Probe Response frames and the Max Channel Switch Time element shall be included in the per-STA profile \*corresponding to\* the affected AP in every Beacon and Probe Response frames..." | Accepted- |
| 16911 | 35.3.16.8.3 | 561.55 | "AP assisted medium synchronization recovery procedure" is missing an article and an abbreviation | Change to "The AP assisted medium synchronization recovery (AAR) procedure" | Revised-Agree partially. Add an article at the beginning. For AAR, its full name is AP assistance request. Apply the changes marked as #16911 in this document. |
| 16910 | 35.3.16.8.3 | 561.58 | "causing the collision with the existing transmission" -- poor grammar | Change to "causing a collision with another transmission" | Accepted- |
| 16912 | 35.3.16.8.3 | 561.60 | "with dot11AAROptionImplemented that is equal to true" shoul dbe "with dot11AAROptionImplemented equal to true" | As it says in the comment. Ditto first line of next page | Revised-Agree. Apply the changes marked as #16912 in this document. |
| 16615 | 35.3.16.8.3 | 561.61 | MLD Capabilities and Operations is a subfield (in the Common Info field of the Basic MLE) and not a field.Please revise as suggested. | Please revise the sentence as follows: "An AP affiliated with an AP MLD with dot11AAROptionImplemented that is equal to true shall set the AAR Support subfield in the MLD Capabilities and Operations \*subfield\* in a Basic Multi-Link element it transmits to 1;......" | Accepted- |
| 16255 | 35.3.16.8.3 | 562.06 | typo "in the other link" | Change "in the other link" to "on the other link" | Accepted- |
| 16227 | 35.3.16.8.3 | 562.13 | Typo "AP(s)" | Change "AP(s)" to "APs" | Rejected-It is not typo, it includes both singular and plural cases |
| 16913 | 35.3.16.8.3 | 562.18 | "uses CCA-ED threshold" missing article | Change to "uses the CCA-ED threshold" | Accepted- |
| 15560 | 35.3.16.8.3 | 562.28 | Change 'the associated AP' to 'its associated AP' | As in comment | Accepted- |
| 16993 | 35.3.24.1 | 585.05 | "An EHT TWT STA shall follow the rules as described in 26.8" should be "An EHT TWT STA shall follow the rules described in 26.8" | As it says in the comment | Accepted- |
| 16994 | 35.3.24.2 | 585.20 | "he STA affiliated with the same MLD, which is operating onthe indicated link" should be "he STA affiliated with the same MLD that is operating onthe indicated link" | As it says in the comment | Accepted- |
| 16996 | 35.3.24.2 | 585.39 | "to setup TWT agreement" missing article | As it says in the comment | Accepted- |
| 16997 | 35.3.24.2 | 585.62 | "AP 1 operates on 2.4 GHz band, AP 2 operates on5 GHz band, and AP 3 operates on 6 GHz band." missing articles | As it says in the comment | Revised-Agree. Apply the changes marked as #16997 in this document. |

**Discussion:** None.

35.3.24.2 Individual TWT agreements (#CID 16999)

Between an AP MLD and a non-AP MLD associated with the AP MLD, if an individually addressed TWT Information frame for individual TWT, which is intended for one STA affiliated with the associated MLD with a setup link, is transmitted to another STA affiliated with the associated MLD with a setup link and an acknowledgement in response to the TWT Information frame is received, then the STA of the intended link shall consider the corresponding TWT agreement of the intended link suspended starting as soon as practical after the TWT Information frame exchange rather than immediately as described in 26.8.4.2 (TWT Information frame exchange for individual TWT).

**35.3 Multi-link operation**

**35.3.1 General**

…

MLO enables a non-AP MLD to discover, authenticate, associate, and set up multiple links with an AP MLD. Each link enables channel access and frame exchanges between the non-AP MLD and the AP MLD based on the supported capabilities exchanged during the (#17165) association. A non-AP MLD may establish a single link TDLS direct link with another non-AP MLD or a non-AP STA as defined in 35.3.21 (TDLS procedure in multi-link operation).

…

NOTE 1—For example, each AP affiliated with an AP MLD can independently select, disable, and update its BSS color (see 26.17.3 (BSS color)) for its BSS. (#15695, 16741, 17914)

…

The MAC address of a non-AP EHT STA with dot11MultiLinkActivated set to false shall be set to the MLD MAC address of the non-AP MLD that the non-AP EHT STA is affiliated with when the non-AP EHT STA has dot11MultiLinkActivated set to true. (#15517)

…

NOTE 7—The (Re)Association Request frame sent by a non-AP EHT STA with dot11MultiLinkActivated set to false does not include the Basic Multi-Link element (see Table 9-62 (Association Request frame body) and Table 9-64 (Reassociation Request frame body)). The (Re)Association Response frame sent in response to a (Re)Association Request frame, which does not include the Basic Multi-Link element, does not include the Basic Multi-Link element either (see Table 9-63 (Association Response frame body) and Table 9-65 (Reassociation Response frame body)). (#16745)

**35.3.4.4 Multi-Link element usage rules in the context of discovery**

If an AP affiliated with an AP MLD is not in a multiple BSSID set or the AP corresponds to a transmitted BSSID in a multiple BSSID set, then (#15397 15855 16465 16786 18273 15010 15482 15604 15696 16130) the AP, in a Beacon frame and a Probe Response frame that is not a multi-link probe response that it transmits,

**35.3.10 BSS parameter critical update procedure**

If an AP affiliated with an AP MLD is not in a multiple BSSID set or corresponds to a transmitted BSSID in a multiple BSSID set, the AP shall

…

—for (#16809) each reported AP affiliated with the same AP MLD as the AP, set the All Updates Included subfield to 1 in the MLD Parameters subfield in the TBTT Information field of the Reduced Neighbor Report element corresponding to the reported AP if the updated elements that correspond to the latest critical update that generated a change to the value carried in the BSS Parameters Change Count subfield for the reported AP are included in the frame carrying the Reduced Neighbor Report element, with the updated elements selected from the elements as described in 35.3.11 (Multi-link procedures for channel switching, extended channel switching, and channel quieting), and until the updated elements are no longer included or until the BSS Parameters Change Count subfield is incremented, and set to 0 otherwise.

…

If an AP affiliated with an AP MLD is a nontransmitted BSSID in a multiple BSSID set, then the AP that corresponds to the transmitted BSSID in the same multiple BSSID set shall

…

—for (#16809) each reported AP affiliated with the same AP MLD as the AP corresponding to the nontransmitted BSSID, set the All Updates Included subfield to 1 in the MLD Parameters subfield in the TBTT Information field of the Reduced Neighbor Report element corresponding to the reported AP if all the updated elements that correspond to the latest critical update that generated a change to the value carried in the BSS Parameters Change Count subfield for the reported AP are included in the frame carrying the Reduced Neighbor Report element, with the updated elements selected from the five elements described in 35.3.11 (Multi-link procedures for channel switching, extended channel switching, and channel quieting), and until the updated elements are no longer included or until the BSS Parameters Change Count subfield is incremented, and set to 0 otherwise.

—set (#16809) the Nontransmitted BSSIDs Critical Update Flag subfield of the Capability Information field to 1 in a Beacon frame and a Probe Response frame it transmits if the Critical Update Flag subfield of the Nontransmitted BSSID Capability field is set to 1 in at least one nontransmitted BSSID profile in the Multiple BSSID element in the same frame. Otherwise, set the Nontransmitted BSSIDs Critical Update Flag subfield to 0. The flag is set to 1 until and including the later of the DTIM Beacon frame amongst the nontransmitted BSSIDs having the Critical Update Flag subfield of the Nontransmitted BSSID Capability field (#16593) set to 1.

…

NOTE 1—In a multiple BSSID set, an AP corresponding to the nontransmitted BSSID responds to a (Re)Association Request frame by transmitting a (Re)Association Response frame that does not include the Multiple BSSID element. The Basic Multi-Link element carried in the (Re)Association Response frame transmitted by an AP affiliated with an AP MLD carries (#16594 16595 16810) information of the AP MLD and complete profile of other AP(s) affiliated with the same MLD.

…

NOTE 2—The Probe Request frame can be either a multi-link probe request or a Probe Request frame that is not multi-link probe request. (#16811)

The AP affiliated with an NSTR mobile AP MLD and that is operating on the nonprimary link does not send a Beacon frame or respond to a Probe Request frame. The BSS Parameter Change Count subfield for the AP operating on the nonprimary link shall only be advertised on the primary link in the MLD Parameters subfield in the TBTT Information field of the Reduced Neighbor Report element corresponding to that AP. (#16811)

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Consequently, the All Updates Included subfield corresponding to AP1 in Beacons 27 and 28 is (#16812) set to 0.

**35.3.11 Multi-link procedures for channel switching, extended channel switching, and channel quieting**

…

If an AP affiliated with an AP MLD is switching channel, the Channel Switch Announcement element, or the Extended Channel Switch Announcement element with the Channel Switch Count field of the (Extended) Channel Switch Announcement element set to a nonzero value, and the Max Channel Switch Time element shall be included in every Beacon and Probe Response frames on all links of the AP MLD from right after the time the AP includes the elements in the Beacon frame it transmits until the estimated channel switch time. After the estimated channel switch time, the Channel Switch Announcement element and the Extended Channel Switch Announcement element shall not be included in the per-STA profile of the affected AP in the Beacon and Probe Response frames and the Max Channel Switch Time element shall be included in the per-STA profile corresponding to (#16597) the affected AP in every Beacon and Probe Response frames on all links of the AP MLD until the affected AP resumes BSS operation on the new channel. The value carried in the Switch Time field indicates the adjusted estimated time of the first Beacon frame in the new channel.

**35.3.16.8.3 AP assisted medium synchronization recovery procedure**

The (#16911)AP assisted medium synchronization recovery procedure is a service provided by an AP MLD to help a non-AP STA affiliated with a non-AP MLD that has lost medium synchronization to transmit a frame without causing the collision with another(#16910) transmission.

An AP affiliated with an AP MLD with dot11AAROptionImplemented (#16912)equal to true shall set the AAR Support subfield in the MLD Capabilities and Operations subfield(#16615) in a Basic Multi-Link element it transmits to 1; otherwise the AP shall set the AAR Support subfield to 0.

A non-AP STA affiliated with a non-AP MLD with dot11AAROptionImplemented (#16912) equal to true and that belongs to an NSTR link pair shall transmit the AAR Control subfield in a frame that solicits an immediate response to its associated AP affiliated with an AP MLD if it has received a Basic Multi-Link element from the AP with the AAR Support subfield equal to 1 and an assisted STA that belongs to the NSTR link pair needs assistance in transmitting frames to its associated AP on (#16255) the other link.

NOTE—If the CS Required subfield in a Trigger frame is 1, then the non-AP STA uses the (#16913) CCA-ED threshold as defined in 36.3.21.6 (CCA sensitivity) during the SIFS between the Trigger frame and the PPDU sent in response to the Trigger frame.

…

A non-AP STA shall not transmit a frame containing an AAR Control subfield with a value of 1 in the bit identifying the link identifier of its(#15560) associated AP.

**35.3.24 TWT operation**

**35.3.24.1 General**

An EHT TWT STA shall follow the rules (#16993) described in 26.8 (TWT operation), except that within trigger-enabled SPs, the Trigger frame may be an MU-RTS TXS Trigger frame with response rules defined in 35.2.1.2 (Triggered TXOP sharing procedure).

**35.3.24.2 Individual TWT agreements**

An MLD may negotiate individual TWT agreements with a peer MLD as defined in 10.47.1 (TWT overview) and 26.8.2 (Individual TWT agreements) via an enabled link except the following:

—A TWT requesting STA affiliated with the MLD may indicate the link(s) that are requested for setting up TWT agreement(s) in the Link ID Bitmap subfield, if present, of a TWT element in the TWT request.

•If only one link is indicated in the Link ID Bitmap subfield of the TWT element, then a single TWT agreement is requested for the STA affiliated with the same MLD that (#16994) is operating on the indicated link. The Target Wake Time field of the TWT element shall be in reference to the TSF time of the link indicated by the TWT element.

…

During the negotiation of individual TWT agreements, a TWT requesting STA affiliated with an MLD and a TWT responding STA affiliated with a peer MLD may include multiple TWT elements where each of the Link ID Bitmap subfields in each TWT element indicates different link(s) in the same TWT Setup frame. The TWT parameters provided by each TWT element shall be applied and be in reference to the respective link that is indicated by the Link ID Bitmap subfield in that TWT element to setup a (#16996)TWT agreement on that link.

In this example, an AP MLD has three affiliated APs: AP 1 operates in the 2.4 GHz band, AP 2 operates in the 5 GHz band, and AP 3 operates in the 6 GHz band. Non-AP STA 1 affiliated with the non-AP MLD sends three TWT elements in a TWT request to AP 1 affiliated with the AP MLD (#16997).