IEEE P802.11
Wireless LANs

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| LB271 CR for Clause 35.3.7.4.2 – Part 2 |
| Date: 2023-05-02 |
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Abstract

This submission proposes CR for 13 CIDs: 15530, 15531, 16021, 16022, 16023, 16113, 16191, 16511, 16512, 16513, 17815, 18155, 18201 (LB271) regarding clause 35.3.7.4.2 - Affiliated AP link disablement

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: minor updates, due to offline comments
* Rev 2: More updates due to comments during discussion.
* Rev 3: Updating the resolution of deferred CIDs: 16021, 16513
* Rev 4: Updated resolution of 16513 during discussion. CID 16021 deferred for further discussion.
* Rev 5: Updated resolution of CID 16021 following more offline discussions

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** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- | --- |
| 17815 | Yunbo Li | 524/01 | 35.3.7.3.2 | "non-PA EHT STA" are used in most of places, but there are still about 20 places using "EHT non-AP STA". | search in the whole spec, and change "EHT non-AP STA" to "non-AP EHT STA" | **Revised**The change from “an EHT non-AP STA” to “a non-AP EHT STA” for all instances in the TGbe D3.0 is already resolved in 11-23/351r1 (CID 16348).**TGbe editor – Please implement the changes for CID16348 in 11-23/351r1.** |
| 16113 | Insun Jang | 524/06 | 35.3.7.3.2 | "ML Probe" should be "multi-link probe" | As in the comment | **Revised**Agree in principle with the comment.ML Probe Request is not a name of a frame, thus need to revise the sentence as follows:” .. shallnot transmit Probe Request, Authentication, (Re)association Request frames and multi-link probe request to the APaffiliated with the AP MLD”**TGbe editor please implement changes as shown in doc 11-23/0738r2 tagged as 16113.** |
| 16511 | Arik Klein | 524/06 | 35.3.7.3.2 | Need to add (non ML) Probe Request to the list of frames that an EHT non-AP STA affiliated with a non-AP MLD that is not associated with the AP MLD shall not transmit to the AP affiliated with the AP MLD while the link is disabled | As in comment | **Revised**Agree in principle with the comment.ML Probe Request is not a name of a frame, thus need to revise the sentence as follows:” .. shallnot transmit Probe Request, Authentication, (Re)association Request frames and multi-link probe request to the APaffiliated with the AP MLD”**TGbe editor please implement changes as shown in doc 11-23/0738r2 tagged as 16113.** |
| 18155 | Abhishek Patil | 524/06 | 35.3.7.3.2 | There is no such frame as Multi-Link Probe Response. | Replace as multi-link probe response. | **Revised**Agree in principle with the comment.Please note that the referred sentence includes “ML Probe Request” and not “ML Probe Response.”ML Probe Request is not a name of a frame, thus need to revise the sentence as follows:” .. shallnot transmit Probe Request, Authentication, (Re)association Request frames and multi-link probe request to the APaffiliated with the AP MLD”**TGbe editor please implement changes as shown in doc 11-23/0738r2 tagged as 16113.** |
| 16512 | Arik Klein | 524/15 | 35.3.7.3.2 | Rephrase the following sentence for better clarity, as suggested: "a non-AP STA affiliated with the non-AP MLD shall not delete the GTK/IGTK/BIGTK values for the disabled link" | Revise the sentence as follows: "a non-AP STA affiliated with the non-AP MLD shall not delete the GTK/IGTK/BIGTK values \*corresponding to the affiliated AP operating on\* the disabled link" | **Revised**Agree in principle with the comment.The sentence shall be revised as follows:” a non-AP STA affiliated with the non-AP MLD shall not delete the GTK/IGTK/BIGTK values corresponding to the affiliated AP operating on the link to become disabled”**TGbe editor please implement changes as shown in doc 11-23/0738r2 tagged as 16512.** |
| 16513 | Arik Klein | 524/17 | 35.3.7.3.2 | Add a requirement for an AP affiliated with an AP MLD that is operating on a disabled link for all associated non-AP MLDs to avoid sending any frame to any of its associated non-AP MLD on that link while the link is disabled, as suggested. | Consider adding the following requirement: "An AP affiliated with an AP MLD that is operating on an disabled link for all associated non-AP MLDs shall not transmit any frame to any of the non-AP STA affiliated with its associated non-AP MLD that are operating on that link while the link is disabled (as indicated in the Expected Duration field in the advertised TID-To-Link Mapping element that does not include Mapping Switch time field)" | **Revised**Agree in principle with the comment.The sentence shall be revised as follows: “An AP affiliated with an AP MLD that is operating on a link that is disabled for all associated non-AP MLDs shall not transmit any frame to any of the non-AP STAs affiliated with its associated non-AP MLD as defined in 35.3.7.1.1"**TGbe editor please implement changes as shown in doc 11-23/0738r4 tagged as 16513.** |
| 16021 | Binita Gupta | 524/18 | 35.3.7.3.2 | Clarify in NOTE 1 that this is the case even when the disabled link was the only setup link between the non-AP MLD and the AP MLD. | As in comment | **Revised**The case of non-AP MLD that has one setup link that is advertised by the AP MLD to be disabled shall be treated by the AP MLD as in case of non-MLD non-AP STA. The last sentence in the subclause is revised to add this case**TGbe editor please implement changes as shown in doc 11-23/0738r5 tagged as 16021.** |
| 16022 | Binita Gupta | 524/21 | 35.3.7.3.2 | NOTE 2 conflicts with the requirement on pg 523 line 49 where it says that 'affiliated AP shall not transmit Disassociation frames until the disassociation timer has a value of 0' and shall transmit BTM frame. Also a Note can not contain normative may. | Suggest to remove the Note since the behavior about sending BTM and Disassociation frame is already captured on the previous page. | **Revised**There is no inherent conflict between this note and the requirements related to the usage of BTM Request frame (P/L 523/49), so both rules can be kept using proper values setting in Disassociation Timer and Mapping Switch Time fields**TGbe editor please implement changes as shown in doc 11-23/0738r2 tagged as 16022.** |
| 15530 | Chaoming Luo | 524/22 | 35.3.7.3.2 | Should also describe the non-AP MLD case. | "Change to:The AP affiliated with an AP MLD that is operating on the link to become disabled may disassociate or use BTM in advance for non-AP STAs not affiliated an MLD and non-AP MLDs that become no enabled link.” | **Rejected**The usage of BTM Request frame is only for non-MLD non-AP STAs (which can not parse the advertised TID-To-Link Mapping element). It is not used for non-AP MLDs, which are indicated for the disabled link through the advertised TID-To-Link Mapping element or Disabled Link Indication subfield in the RNR. |
| 16191 | Ming Gan | 524/24 | 35.3.7.3.2 | groupcast contains broadcast | delete "broadcast/" | **Revised**Change the groupcast to group addressed Management frames**TGbe editor please implement changes as shown in doc 11-23/0738r2 tagged as 16191.** |
| 18201 | Gaurav Patwardhan | 524/25 | 35.3.7.3.2 | How is reception process being mandated in this note #3? Shouldn't it be transmission based? | As in comment | **Rejected**The commenter fails to point for a technical failure in the text.Note 3 simply explains the reason for the above-mentioned requirement to the non-AP STA affiliated with non-AP MLD to avoid deleting the GTK/IGTK/BIGTK. |
| 16023 | Binita Gupta | 524/28 | 35.3.7.3.2 | It is not clear why we need this should requirement and when the AP should verify this, since a procedure is defined for AP to disassociate non-AP STAs not affiliated with a non-AP MLD earlier in the clause. | Delete the should requirement. | **Revised**The procedure mentioned above relates to BTM Request frame for non-MLD non-AP STAs that support this feature. The cited sentence relates for non-MLD non-AP STAs that do not support BTM.Adding a clarification that this sentence refers to non-AP STAs that do not support BTM**TGbe editor please implement changes as shown in doc 11-23/0738r2 tagged as 16023** |
| 15531 | Chaoming Luo | 524/29 | 35.3.7.3.2 | Should also describe the non-AP MLD case. | Change to:An AP affiliated with an AP MLD that intends to turn its operating link into a disabled link should verify that it is not associated with any non-MLD non-AP STA on the link to become disabled or any non-AP MLD that becomes no enabled link. | **Rejected**Please refer to Note 1 in the same page that clearly defines that “When an AP MLD advertises that a link is disabled for all associated non-AP MLDs, a non-AP MLD remains associated with the AP MLD”, thus the cited sentence relates only to non-MLD non-AP STA that needs to be disassociated or transition to another BSS, before a link becomes disabled by an affiliated AP. |

*TGbe editor: Please note baseline is 11be D3.1 and REVme D**2.1*

###### Affiliated AP link disablement

***TGbe editor: Please modify the following subclause as follows***

Upon receiving an MLME-BSS-LINK-DISABLE.request primitive, the affiliated AP shall advertise a TID- to-link mapping in Beacon and Probe Response frames that does not map any TIDs to the disabled link on which the AP is operating. The Mapping Switch Time field for the advertised TID-to-link mapping shall point to the same time as indicated in the DisableTimer parameter of the MLME-BSS-LINK- DISABLE.request primitive. The Expected Duration field of the advertised TID-to-link mapping shall indicate the same duration as the ExpectedDuration parameter of the MLME-BSS-LINK-DISABLE.request primitive.

Additionally, in order to advertise the link disablement, the SME of that affiliated AP shall perform the following:

1. It shall follow the procedure in 11.21.7.3 (BSS transition management request) to notify all associated STAs that support BTM, with the BSS Transition Management Request frame fields set as follows:
	* The Disassociation Imminent and Link Removal Imminent subfields of the Request Mode field are set to 1, the BSS Termination Included subfield is set to 0, and other subfields of the Request Mode field are reserved.
	* The Disassociation Timer field is set to the number of TBTTs of the affiliated AP before it transmits a Disassociation frame to the STA(s) receiving the BSS Transition Management Request frame. The Disassociation Timer field value shall point to a TBTT at or later than the time pointed to by the value of the Mapping Switch Time field for the advertised TID-to-link map- ping.
	* No other optional fields shall be present in the BSS Transition Management Request frame.
2. It shall start a disassociation timer with the initial value set to the value of the Disassociation Timer field, and shall decrement the timer by one after transmitting each Beacon frame, until the timer has the value of 0. The Disassociation Timer field in all subsequent transmitted BSS Transition Management Request frames shall be set to the value of this timer.
3. Once the disassociation timer reaches a value of 0, it should follow the procedure in 11.3.6.8 (AP, AP MLD, or PCP disassociation initiation procedure) to transmit Disassociation frames to all associated STAs that are not affiliated with a non-AP MLD. The affiliated AP shall not transmit Disassociation frames until the disassociation timer has a value of 0.

When an AP MLD advertises that a link is disabled for all associated non-AP MLDs, after the time indicated by the Mapping Switch Time field is reached:

the Disabled Link Indication subfield shall be set to 1 in the MLD Parameters subfield corresponding to the AP affiliated with the AP MLD and operating on the link that (#15118)is included in the Neighbor AP Information field in the Reduced Neighbor Report element carried in the Beacon or Probe Response frames transmitted byany of the APs affiliated with the AP MLD and any APs that set the Co-Located AP bit of the BSS Parameters subfield of the TBTT Information field of the Neighbor AP Information field to 1 for the disabled AP. If the Disabled (#15119)Link Indication subfield corresponding to a reported AP is set to 1, then the Neighbor AP TBTT Offset subfield included in the same TBTT Information field of the Reduced Neighbor Report element shall be set to 255.

* (#16348)a non-AP EHT STA affiliated with a non-AP MLD that is associated with the AP MLD shall not use the link to transmit individually addressed frames to the AP affiliated with the AP MLD that is operating on a link that is disabled.
* (#16348)a non-AP EHT STA affiliated with a non-AP MLD that is not associated with the AP MLD shall not transmit (#16113) Probe Request, Authentication, and (Re)association Request frames to the AP affiliated with the AP MLD while the link is disabled (as indicated in the Expected Duration field in the advertised TID-To-Link Mapping element that does not include Mapping Switch time field, or as indicated in the Disabled Link Indication subfield in the Reduced Neighbor Report element).
* (#16348)a non-AP EHT STA affiliated with a non-AP MLD that is not associated with the AP MLD should not use the link to transmit other individually addressed management frames to the AP affiliated with the AP MLD that is operating on a link that is disabled.
* a non-AP STA affiliated with the non-AP MLD shall not delete the GTK/IGTK/BIGTK values (#16512) corresponding to the affiliated AP operating on the link that will be disabled.
* (#16513) The AP affiliated with an AP MLD that is operating on that link shall not transmit any frame to any of the non-AP STAs affiliated with its associated non-AP MLD (see 35.3.7.1.1)

NOTE 1—When an AP MLD advertises that a link is disabled for all associated non-AP MLDs, a non-AP MLD remains associated with the AP MLD.

NOTE 2—(#16022)The AP affiliated with an AP MLD that is operating on the link that will be disabled might disassociate or use a BTM Request frame for non-AP STAs not (#15120)affiliated with an MLD.

NOTE 3—The non-AP MLD uses the GTK/IGTK/BIGTK for the reception of protected (#16191) group addressed Management frames when the link becomes enabled again.

An AP affiliated with an AP MLD that intends to turn its operating link into a disabled link should (#16021), prior to the time indicated by the Mapping Switch Time field, transmit Disassociation frames (see 11.3.6.8 (AP, AP MLD, or PCP disassociation initiation procedure)) to:

* All associated non-AP MLDs that have setup only that link with the AP MLD.
* All associated non-MLD non-AP STA (#16023) that does not support BTM.

NOTE: If a non-AP MLD has only one setup link with the AP MLD and the AP MLD advertises the upcoming disablement of that link, the non-AP MLD can maintain association with the AP MLD by performing an ML reconfiguration operation (see 35.3.6.4 (ML reconfiguration to the ML setup)) to switch its link with the AP MLD to a link that is not disabled or due to be disabled.

Straw Poll:

Do you support to incorporate the proposed draft text in this document 11-23/0738r5 to the next revision of TGbe Draft 3.1, for addressing the following CIDs: 15530, 15531, 16021, 16022, 16023, 16113, 16191, 16511, 16512, 16513, 17815, 18155, 18201 (LB271)?

Result: Yes/No/Abstain