IEEE P802.11  
Wireless LANs

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| LB275 CR for Clause 35.3.7.5.2 - Part 2 | | | | |
| Date: 2023-10-06 | | | | |
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Abstract

This submission proposes CR for 7 CIDs: 19164, 19266, 19422, 19953, 20052, 20053, 20077 (LB275)

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: updating the resolution of CIDs 19164, 20053, 20077 following offline discussions with the commenters.
* Rev 2: Adding 2 options for the resolution of CID 19164 (preferred option will be selected by SP).
* Rev 3: Revising the resolution of CID 20053 following further offline discussion.

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** |
| --- | --- | --- | --- | --- | --- | --- |
| 19164 | Tomoko Adachi | 528.50 | 35.3.7.5.2 | With the condition "When an AP MLD advertises that a link is disabled for all associated non-AP MLDs,", I read that legacy STAs can be still on that link.  By saying "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 35.3.7.2.1 (General)).", broadcast frames whose intended recipients including the legacy STAs cannot be also transmitted by this statement.  If the intent is that the link disablement also includes disassociation of legacy non-MLO STAs, it should be clarified.  If legacy non-MLO STAs can still be on that link, "any frame to any of the non-AP STA ..." in pp.ll 529.22 is too strict. At least broadcast frames should be allowed so that legacy non-MLO STAs can still receive it. | As in comment. | **Revised**  The text is revised so to clarify that in case of affiliated AP link disablement case, the associated non-MLD non-AP STA will not remain associated with the affiliated AP that is operating on the link to be disabled.  **TGbe editor please implement changes as shown in doc 11-23/1400r1 tagged as 19164.** |
| 20052 | Binita Gupta | 528.53 | 35.3.7.5.2 | This sentence phrasing is long which makes it hard to follow. Suggest to simplify as follows:  "the Disabled Link Indication subfield shall be set to 1 in the MLD Parameters subfield of the TBTT Information field corresponding to the affiliated AP operating on the link being disabled, in the Reduced Neighbor Report element carried in the Beacon or Probe Response frames  transmitted by:" | Revise as per suggestion. | **Revised**  Agree with the comment. The sentence is revised as follows:” the Disabled Link Indication subfield shall be set to 1 in the MLD Parameters subfield of the TBTT Information field corresponding to the affiliated AP operating on the link being disabled and is contained in the Reduced Neighbor Report element carried in the Beacon or Probe Response frames  transmitted by:”.  **TGbe editor please implement changes as shown in doc 11-23/1400r1 tagged as 20052.** |
| 19422 | Guogang Huang | 529.01 | 35.3.7.5.2 | When an affiliated AP is disabled, the TBTT Info Field Type and TBTT Info Field Length should be set to 1 and 3, respectively. Thus, the legacy STA will not discover this disabled AP through RNR and go to probe it, which is aligned with the purpose of adding the Disabled Link Indication subfield within the MLD Parameters. | As in comment. | **Rejected**  The comment has failed to identify any technical issue.  The Disabled Link Indication subfield in the MLD Parameters field of the RNR is intended mainly for an unassociated non-AP MLD but not for a non-MLD non-AP STA (i.e. “legacy STA”) which is not aware of the MLO.  Thus, there is no technical justification for the proposed modifications in the TBTT Info type and TBTT Info length indications with this context. |
| 19266 | John Wullert | 529.24 | 35.3.7.5.2 | Does NOTE 1 apply even if the non-AP MLD only had a single link? If so, that should be stated explicitly. | Revise comment to clarify whether this applies only to non-AP MLDs with multiple setup links or applies regardless of the number of setup links | **Revised**  Agree with the comment. The sentence is revised as follows:” When an AP MLD advertises that a link is disabled for all associated non-AP MLDs, a non-AP MLD remainsassociated with the AP MLD, unless the non-AP MLD has a single setup link with the AP MLD and that link is advertised as disabled”  **TGbe editor please implement changes as shown in doc 11-23/1400r1 tagged as 19266.** |
| 19953 | Rubayet Shafin | 529.25 | 35.3.7.5.2 | Add a clarification to this note clarifying that the non-AP MLD shall be disassociated when the disablement of the link takes effect if that link is the only link that the non-AP MLD has set up with the AP MLD. | as in comment. | **Revised**  Agree with the comment. The sentence is revised as follows:” When an AP MLD advertises that a link is disabled for all associated non-AP MLDs, a non-AP MLD remainsassociated with the AP MLD, unless it has a single setup link with the AP MLD and that link is advertised as disabled”  **TGbe editor please implement changes as shown in doc 11-23/1400r1 tagged as 19266.** |
| 20053 | Binita Gupta | 529.38 | 35.3.7.5.2 | Why is it required for AP to send a Disassociation frame to a non-AP MLD which has only a single setup link with the link being disabled? The non-AP MLD can determine based on advertised TTLM that the link is being disabled and as a result determine that it gets disassociated at the end of Mapping Switch Time. An explicit Disassociation frame may not be needed. | Clarify if the requirement for AP to send an explicit Disassociation to non-AL MLD with a single setup link is required of optional. | **Revised**  Agree with the comment. The case of non-AP MLD that has one or more setup links with AP MLD and these links are advertised to be disabled is separated from the case of associated non-MLD non-AP STA.  The text is revised as follows:” When an AP MLD has advertised one or more links to be disabled using an advertised TTLM transmitted in Beacon and Probe Response frames, and the time indicated by the Mapping Switch Time field has reached, the MLME of a non-AP MLD that has all the setup links with the AP MLD operating on the disabled links, 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) “  Similarly, NOTE 4 has been modified to include the case of one or more link being disabled.  Additionally, the requirement for the non-AP STA affiliated with the non-AP MLD to avoid deleting of GTK/IGTK/BIGTK values is limited to the case where not all the setup links of the non-AP MLD are disabled.  **TGbe editor please implement changes as shown in doc 11-23/1400r3 tagged as 20053.** |
| 20077 | Li-Hsiang Sun | 529.40 | 35.3.7.5.2 | "An AP affiliated with an AP MLD that intends to turn its operating link into a disabled link should, prior to  the time indicated by the Mapping Switch Time field, transmit Disassociation frames to ...  - Each associated non-MLD non-AP STA that does not support BSS transition capability.  "  However on p528 L44, Disassociation frames are still sent for those non-MLD non-AP supporting BSS transition capability | Remove "that does not support BSS transition capability" in L40 | **Revised**  If at least part of the associated non-MLD non-AP STAs supports BSS transition capability (as defined in TGbe D4.0 P528L44), the AP affiliated with the AP MLD can:  • Use BTM Request frame to indicate the BSS termination (only for the associated non-MLD non-AP STAs that supports BSS transition capability).  • Transmit the Disassociation frame to all non-ML non-AP STA (i.e. also to those who do not support the BSS transition capability), while initiating the transmission of the Disassociation frame according to the settings defined in the BTM Request frame (i.e. in the Disassociation Timer field).  However, if none of the associated non-MLD non-AP STAs support BSS transition capability, then it may send the Disassociation frame to those non-MLD non-AP STAs (as defined in P529L40).  The text is revised so the Disassociation frame is transmitted to all associated non-MLD non-AP STAs that do not support the BSS transmission capability.  **TGbe editor please implement changes as shown in doc 11-23/1400r1 tagged as 20077.** |

*TGbe editor: Please note baseline is 11be D4.1 and REVme D**3.0*

###### **Affiliated AP link disablement and enablement**

###### **General**

An AP MLD shall use the procedures described in [35.3.7.2.4 (Advertised TTLM in Beacon and Probe](#_bookmark40) [Response frames)](#_bookmark40) in order to disable or enable a link for all associated non-AP MLDs. Further rules pertaining to the disablement and enablement are described in the subclauses below.

###### **Affiliated AP link disablement**

***Change the 4th paragraph, as follows:***

Additionally, if there are associated non-MLD non-AP STAs that support BSS transition capability, (#19709)the affiliated AP, that is operating on the link advertised as to become disabled, shall perform the following, in order to indicate the imminent termination of the BSS of these non-AP STAs:

1. The affiliated AP shall follow the procedure in 11.21.7.3 (BSS transition management request) with the BSS Transition Management Request frame fields set as follows:
   * (#19714)The Disassociation Imminent and Link Removal Imminent fields of the Request Mode field are set to 1, the BSS Termination Included field is set to 0, (#19435)the Preferred Candidate List Included field is set according to 9.6.13.9 (BSS Transition Management Request frame for- mat) if the BSS Transition Candidate List Entries field is included, and (#19712)other fields of the Request Mode field are set to 0.
   * The Disassociation Timer field is set to the number of TBTTs of the affiliated AP before it transmits Disassociation frame(s) to the (#20051)non-MLD non-AP 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 TTLM.
   * (#19414)The BSS Termination Duration field shall be present and shall contain a BSS Termination Duration subelement (see 9.4.2.35 (Neighbor Report element)), with the BSS Termination TSF field set to the same time pointed by the Mapping Switch Time field value of the advertised TTLM element and the Duration field of the subelement set to the approximate value indicated by the Expected Duration field of the advertised TTLM element.
   * The BSS Transition Candidate List Entries field may be included which contains one or more Neighbor Report elements in order to provide a BSS transition candidate list.
   * No other optional fields shall be present in the BSS Transition Management Request frame.
2. The affiliated AP 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 is 0, the affiliated AP (#19164) shall follow the procedure in 11.3.5.8 (AP, AP MLD, or PCP disassociation initiation procedure) to transmit Disassociation frames to all associated non-MLD non-AP STAs (i.e., that are not affiliated with a non-AP MLD). The affiliated AP shall not transmit Disassociation frames until the disassociation timer is 0.

***Change the 5th paragraph, as follows:***

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 (#20052)of the TBTT Information field corresponding to the AP affiliated with the AP MLD where the affiliated AP operates on the link that is being disabled and is contained in the Reduced Neighbor Report element carried in the Beacon or Probe Response frames transmitted by:
  + any of the APs affiliated with the same AP MLD as the AP that operates on the link that is being disabled and
  + any APs that have set the Co-Located AP subfield of the BSS Parameters subfield of the TBTT Information field to 1 for the affiliated AP that operates on the link that is being disabled.

If the Disabled 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.

* (#19265) a non-AP 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.
* (#19265) a non-AP STA affiliated with a non-AP MLD that is not associated with the AP MLD shall not transmit multi-link 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).
* (#19265) a non-AP 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.
* (#20053) If not all the setup links of an non-AP MLD are disabled (as advertised by the AP MLD), 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 that will be disabled.
* 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 [35.3.7.2.1 (General)](#bookmark37)).

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 (#19266) unless the non-AP MLD has a single setup link with the AP MLD and that link is advertised as disabled.

***Change the 6th paragraph, as follows:***

An AP affiliated with an AP MLD that intends to turn its operating link into a disabled link (#19164)shall, after the time indicated by the Mapping Switch Time field, transmit Disassociation frames (see 11.3.5.8 (AP, AP MLD, or PCP disassociation initiation procedure)) to (#20077) all s

* (#20053)

(#20053) When an AP MLD has advertised one or more links to be disabled using an advertised TTLM transmitted in Beacon and Probe Response frames, and the time indicated by the Mapping Switch Time field has reached, the MLME of a non-AP MLD that has all the setup links with the AP MLD operating on disabled links, 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).

NOTE 4—If a non-AP MLD has only one (#20053) or more setup links with the AP MLD and the AP MLD advertises the upcoming disablement of (#20053) these one or more links, 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)](#_bookmark32)) 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 11-23/1400r1 to the next revision of TGbe Draft 4.0, for addressing the following CIDs: 19164, 19266, 19422, 19953, 20052, 20053, 20077 (LB275)?

Straw Poll:

Do you support to incorporate the proposed draft text in this document 11-23/1400r3 to the next revision of TGbe Draft 4.1, for addressing the following CIDs: 20053 (LB275)?

Result: Yes/No/Abstain

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Discussion:

2 options are suggested for the resolution of CID19164:

Option 1: Add a clarification note that the association of the non-MLD non-AP STA with the affiliated AP operating on the link to be disabled is terminating (when the link becomes disabled). In addition, the affiliated AP is required to transmit Disassociation frame.

Option 2: The affiliated AP is required to transmit Disassociation frame.

Proposed Resolution for option 1:

###### **Affiliated AP link disablement**

***Change the 4th paragraph, as follows:***

Additionally, if there are associated non-MLD non-AP STAs that support BSS transition capability, (#19709)the affiliated AP, that is operating on the link advertised as to become disabled, shall perform the following, in order to indicate the imminent termination of the BSS of these non-AP STAs:

1. The affiliated AP shall follow the procedure in 11.21.7.3 (BSS transition management request) with the BSS Transition Management Request frame fields set as follows:
   * (#19714)The Disassociation Imminent and Link Removal Imminent fields of the Request Mode field are set to 1, the BSS Termination Included field is set to 0, (#19435)the Preferred Candidate List Included field is set according to 9.6.13.9 (BSS Transition Management Request frame for- mat) if the BSS Transition Candidate List Entries field is included, and (#19712)other fields of the Request Mode field are set to 0.
   * The Disassociation Timer field is set to the number of TBTTs of the affiliated AP before it transmits Disassociation frame(s) to the (#20051)non-MLD non-AP 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 TTLM.
   * (#19414)The BSS Termination Duration field shall be present and shall contain a BSS Termination Duration subelement (see 9.4.2.35 (Neighbor Report element)), with the BSS Termination TSF field set to the same time pointed by the Mapping Switch Time field value of the advertised TTLM element and the Duration field of the subelement set to the approximate value indicated by the Expected Duration field of the advertised TTLM element.
   * The BSS Transition Candidate List Entries field may be included which contains one or more Neighbor Report elements in order to provide a BSS transition candidate list.
   * No other optional fields shall be present in the BSS Transition Management Request frame.
2. The affiliated AP 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 is 0, the affiliated AP (#19164) shall follow the procedure in 11.3.6.8 (AP, AP MLD, or PCP disassociation initiation procedure) to transmit Disassociation frames to all associated non-MLD non-AP STAs (i.e., that are not affiliated with a non-AP MLD). The affiliated AP shall not transmit Disassociation frames until the disassociation timer is 0.

***Change the 6th paragraph, as follows:***

An AP affiliated with an AP MLD that intends to turn its operating link into a disabled link (#19164), shall transmit Disassociation frames (see 11.3.6.8 (AP, AP MLD, or PCP disassociation initiation procedure)) to (#20077) all associated non-MLD non-AP STAs that do not support BSS transition capability, (#19164) after the time indicated by the Mapping Switch Time field.

NOTE1: If a link on which an AP affiliated with an AP MLD is operating becomes disabled, an associated non-MLD non-AP STA will be considered as disassociated, even if the associated non-MLD non-AP STA does not receive a Disassociation frame.

Proposed Resolution for option 2:

###### **Affiliated AP link disablement**

***Change the 4th paragraph, as follows:***

Additionally, if there are associated non-MLD non-AP STAs that support BSS transition capability, (#19709)the affiliated AP, that is operating on the link advertised as to become disabled, shall perform the following, in order to indicate the imminent termination of the BSS of these non-AP STAs:

1. The affiliated AP shall follow the procedure in 11.21.7.3 (BSS transition management request) with the BSS Transition Management Request frame fields set as follows:
   * (#19714)The Disassociation Imminent and Link Removal Imminent fields of the Request Mode field are set to 1, the BSS Termination Included field is set to 0, (#19435)the Preferred Candidate List Included field is set according to 9.6.13.9 (BSS Transition Management Request frame for- mat) if the BSS Transition Candidate List Entries field is included, and (#19712)other fields of the Request Mode field are set to 0.
   * The Disassociation Timer field is set to the number of TBTTs of the affiliated AP before it transmits Disassociation frame(s) to the (#20051)non-MLD non-AP 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 TTLM.
   * (#19414)The BSS Termination Duration field shall be present and shall contain a BSS Termination Duration subelement (see 9.4.2.35 (Neighbor Report element)), with the BSS Termination TSF field set to the same time pointed by the Mapping Switch Time field value of the advertised TTLM element and the Duration field of the subelement set to the approximate value indicated by the Expected Duration field of the advertised TTLM element.
   * The BSS Transition Candidate List Entries field may be included which contains one or more Neighbor Report elements in order to provide a BSS transition candidate list.
   * No other optional fields shall be present in the BSS Transition Management Request frame.
2. The affiliated AP 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 is 0, the affiliated AP (#19164) shall follow the procedure in 11.3.6.8 (AP, AP MLD, or PCP disassociation initiation procedure) to transmit Disassociation frames to all associated non-MLD non-AP STAs (i.e., that are not affiliated with a non-AP MLD). The affiliated AP shall not transmit Disassociation frames until the disassociation timer is 0.

***Change the 6th paragraph, as follows:***

An AP affiliated with an AP MLD that intends to turn its operating link into a disabled link (#19164), shall transmit Disassociation frames (see 11.3.6.8 (AP, AP MLD, or PCP disassociation initiation procedure)) to (#20077) all associated non-MLD non-AP STAs that do not support BSS transition capability, (#19164) after the time indicated by the Mapping Switch Time field.

Straw Poll 1:

Which option do you support to incorporate to the draft text in this document 11-23/1400r2 to the next revision of TGbe Draft 4.1, for addressing the CID19164?

Result: Option A / Option B / Abstain

Straw Poll 2:

Do you support to incorporate the proposed draft text in this document 11-23/1400r3 to the next revision of TGbe Draft 4.1, for addressing the following CIDs: 19164, 20053 (LB275)?

Result: Yes/No/Abstain

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