IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB271 CR for subclause 35.3.16.8.3 | | | | |
| Date: 2023-03-08 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Ming Gan | Huawei  Huawei |  |  | ming.gan@huawei.com |
| Jason Yuchen Guo |  |  |  |
| Yunbo Li | Huawei |  |  |  |
| Guogang Huang | Huawei |  |  |  |
| Zhi Mao | Huawei |  |  |  |
| Yue Zhao | Huawei |  |  |  |
| Ying Li | Huawei |  |  |  |
| Lan Peng | Huawei |  |  |  |
| Hongjia Su | Huawei |  |  |  |
| Michanel Montemurro | Huawei |  |  |  |
| Stephen McCann | Huawei |  |  |  |
| Edward Au | Huawei |  |  |  |
| Osama Aboul-Magd | Huawei |  |  |  |

Abstract

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

15559 18202 15707 16196 17844 16339 17900 18336 16914 18054 18053 18055 18056 (13 CIDs)

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: minor update
* Rev 2: add green tags

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.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 15559 | 35.3.16.8.3 | 561.05 | A better wording is needed. | Change: an assisted STA that belongs to the NSTR link pair needs assistance in transmitting frames to its associated AP in the other link To: the non-AP STA that operating on the other link of the NSTR link pair needs assistance in transmitting frames to its associated AP. | Revised-  Agree with the comment in principle. The corresponding sentence is rephrased. Apply the changes marked as #15559 in this document. |
| 18202 | 35.3.16.8.3 | 561.53 | When a STA of a non-AP MLD is exchanging frames with an AP affiliated with an AP MLD on one of the EMLSR links, the other STAs affiliated with the same non-AP MLD on the EMLSR links lose medium synchronization. This is similar to the blindness issue of the NSTR non-AP MLD operation. The AP assisted medium synchronization recovery procedure has been specified for non-AP MLD with a NSTR pair. But the AP assisted medium synchronization recovery procedure or rules for non-AP MLD in EMLSR mode need to be clarified. | Suggest to specify the AP assisted medium synchronization recovery procedure or rules for non-AP MLD operating in EMLSR mode. | Revised-  Agree with the comment in principle. Apply the changes marked as #18202 in this document. |
| 15707 | 35.3.16.8.3 | 561.56 | When a STA of a non-AP MLD is exchanging frames with an AP affiliated with an AP MLD on one of the EMLSR links, the other STAs affiliated with the same non-AP MLD on the EMLSR links lose medium synchronization. This is similar to the blindness issue of the NSTR non-AP MLD operation. The AP assisted medium synchronization recovery procedure has been specified for non-AP MLD with a NSTR pair in IEEE 802.11be Draft 2.0. But the AP assisted medium synchronization recovery procedure or rules for non-AP MLD in EMLSR mode need to be clarified. | Suggest to specify the AP assisted medium synchronization recovery procedure or rules for non-AP MLD operating in EMLSR mode. | Revised-  Agree with the comment in principle. Apply the changes marked as #15707 in this document. |
| 16196 | 35.3.16.8.3 | 561.56 | The AAR should be also applied to eMLSR/eMLMR. | Fix the issues mentioned in the comment | Revised-  Agree with the comment in principle. Apply the changes marked as #16196 in this document. |
| 17844 | 35.3.16.8.3 | 561.56 | The cases of EMLSR and EMLMR are missing | please complete the missing case | Revised-  Agree with the comment in principle. Apply the changes marked as #17844 in this document. |
| 16339 | 35.3.16.8.3 | 562.01 | Similar to NSTR STA MLD, EMLSR STA MLD also suffers from lost medium synchronization problem and also applies MediumSyncDelay after returning to EMLSR listening operation. AAR can also be applied to EMLSR operation. In case of non-AP MLD's EMLSR uplink response frame transmission, the current AAR method of NSTR can be applied. In EMLSR non-AP MLD's downlink reception case, QoS Null with AAR control may be transmitted with a response frame, such as the BA frame. | Please make a chage as follows: A STA affiliated with a non-AP MLD with dot11AAROptionImplemented that is equal to true and that belongs to an NSTR link pair or that operates on an EMLSR/EMLMR link shall transmit the AAR Control subfield in a frame that solicits an immediate response or a QoS Null frame with an ack policy set to No Ack 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 or that operates on another EMLSR/EMLMR link needs assistance in transmitting frames to its associated AP in the other link. | Revised-  Agree with the comment in principle. Apply the changes marked as #16339 in this document. |
| 17900 | 35.3.16.8.3 | 562.13 | "The other AP affiliated with the AP MLD should transmit a Trigger frame to the other non-AP STA affiliated with the non-AP MLD to solicit an UL PPDU if ... the other AP does not have frame exchanges already scheduled with another STA." By this "should", the AP can always be irresponsible and the mechanism will be in no use. Moreover there is capability for AP tp support this action and the corresponding condition (not have frame exchanges). It needs to be a shall. | As in the comment | Accepted- |
| 18336 | 35.3.16.8.3 | 562.13 | If the AP receives such a request for assistance from multiple STAs, how does the AP know which STA to trigger first? If some STAs have packets that must be transmitted within a certain amount of time and if the STA is not assisted by the AP before this deadline, the STA may drop the packet and AP's help may not be useful. | Spec needs to define a method by which the STA can also indicate to the AP the time before which it must be triggered. Thus, AP will know how to schedule different STAs. | Rejected-  The comment is out of scope of this subclause. To facilitate the schedule, each non-AP STA could report its low latency traffic to its associated AP. |
| 16914 | 35.3.16.8.3 | 562.29 | "An AP shall not transmit the AAR Control subfield in a frame to its associated non-AP STAs. " -- where else and whom else could it be transmitted to? | Change to "An AP shall not transmit an AAR Control subfield. " | Revised-  Agree with the comment in principle. Apply the changes marked as #16914 in this document. |
| 18054 | 35.3.16.8.3 | 562.35 | Add clarity | Change "help" to "assist" | Accepted- |
| 18053 | 35.3.16.8.3 | 562.40 | Add clarity | Change "help" to "assist" | Accepted- |
| 18055 | 35.3.16.8.3 | 562.42 | Clarify the interference caused by STA 1. | Change "Because of the interference caused by the transmission......." to "Due to the interference generated from the transmission of STA 1, this causes STA 2 and STA 3 to lose medium synchronization" | Revised-  Agree with the comment in principle. Proposed resolution accounts for the suggested changes with some minor editorials. Apply the changes marked as #18055 in this document. |
| 18056 | 35.3.16.8.3 | 562.43 | It's unclear if STA 2 and STA 3 are starting their own MediumSyncDelay timer | If STA 2 and STA 3 are starting their own timer, update the text to align with Figure 35-50 | Revised-  Agree with the comment in principle. Apply the changes marked as #18056 in this document. |

**Discussion:** None.

***TGbe Editor: please modify the following paragraphs in 23/0546r5 which passed the sp***

**35.3.16.8.3 AP assisted medium synchronization recovery procedure**

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 the existing transmission.

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

If a non-AP STA with dot11AAROptionImplemented equal to true that is affiliated with the same non-AP MLD with which another non-AP STA that has a MediumSyncDelay timer with nonzero value is affiliated, and that has received a Basic Multi-Link element from its associated AP affiliated with an AP MLDwith the AAR Support subfield equal to 1, it shall transmit the AAR Control subfield in a frame that solicits an immediate response to its associated AP when the other non-AP STA needs assistance in transmitting uplink frames. (#15559, 18202, 15707, 16196, 17844, 16339)

The AAR Control subfield transmitted by the STA shall indicate the link identifier(s) of the other assisting AP(s) affiliated with the same AP MLD operating on the enabled link(s) by setting the corresponding bits of the Link ID subfield to 1.

An assisting AP, affiliated with the AP MLD, shall (#17900) schedule for transmission a Trigger frame to the associated non-AP STA, which is requesting assistance from the assisting AP, to solicit a UL frame(s) after another AP affiliated with the same AP MLD, successfully receives the AAR Control subfield in a frame, if the assisting AP does not have frame exchanges already scheduled with another non-AP STA.

NOTE—If the CS Required subfield in a Trigger frame is equal to 1, then the non-AP STA uses 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 with dot11AAROptionImplemented that is equal to false shall not transmit a frame containing an AAR Control subfield to its associated AP.

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 the associated AP.

An AP shall not transmit the AAR Control subfield in a frame(#16914).

Figure 35-30 (Example of an AP assisted medium synchronization recovery procedure) provides an illustration of the AP assisted medium synchronization recovery procedure, where AP 2 and AP 3 are requested to assist (#18054) STA 2 and STA 3 that have lost medium synchronization to transmit a frame, respectively. In this example, for the non-AP MLD, link 1 and link 2 are an NSTR link pair, link 1 and link 3 are an NSTR link pair, and link 2 and link 3 are a STR link pair. At the beginning, STA 1 transmits Data frames to AP 1, while transmitting the AAR Control subfield carried in the Data frames to AP 1, requesting AP 2 and AP 3 to provide the medium synchronization recovery service to assist(#18053) STA 2 and STA 3 transmit uplink frames, respectively. In this case, the bits corresponding to link 2 and link 3 in the AAR Control subfield are set to 1. The interference generated from the transmission of STA 1 causes STA 2 and STA 3 to lose medium synchronization. (#18055) Then STA 2 and STA 3 start their own MediumSyncDelay timers (18056) at the end of the transmission of STA 1. After receiving Data frames at AP 1, AP 2 and AP 3 transmit Trigger frames to STA 2 and STA 3, soliciting uplink frames transmission, respectively, after receiving Data frames at AP 1. Once STA 2 and STA 3 successfully receive these Trigger frames they can recover medium synchronization.