IEEE P802.11
Wireless LANs

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| CC36 CR for AAR |
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Abstract

This submission proposes resolutions of comments received from TGbe comment collection CC36 based on TGbe D1.2.

* 4239 4240 4484 4729 4731 4732 5318 5707 6322 6926 6991 7575 8218 8219 (15 CIDs)

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Editorial change based on the received comments from Shawn Kim
* Rev 2~3: Editorial change based on the received comments from Liuming Lu
* Rev 4: Change with green color based on the received comments from Alfred and Dibakar
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** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 4239 | Alfred Asterjadhi | 35.3.14.7.2 | 280.48 | Does the frame carrying the AAR Control field need to solicit an immeidate repsonse? Please clarify. Also my guess is that this cant be generated y the AP side. Hence add a statement that an AP shall not generate a frame carrying AAR Control or smth like that. | As in comment. | Revised-Clarify that the frame which carries the AAR Control subfield needs to solicit the immediate response and the forbidden behavior at the AP side.TGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 4239. |
| 4240 | Alfred Asterjadhi | 35.3.14.7.2 | 280.58 | Undefined term UL PPDU. I guess you mean TB PPDU. Also another guess: you mean schedule for transmission rather than transmit. | As in comment. | Revised-Agree with the comment in principle. Change “UL PPDU” to “UL frame”, and change “transmit” to “schedule for a transmission”.TGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 4240. |
| 4484 | Arik Klein | 35.3.14.7.2 | 280.55 | Add "s" to the word "equal" in the following sentence: "...which it has not received an EHT Capabilities element with the AAR Support subfield of the EHT MAC Capabilities Information field \*equal\* to 1" | As in comment | Rejected-Here “equal” is adjective, not verb. |
| 4731 | Chittabrata Ghosh | 35.3.14.7.2 | 280.47 | If the STA has lost medium synchronization on one link, it would not be able to receive the Trigger frame that the other STA is soliciting on the other link using AAR Control subfield in its ongoing transmission? Please clarify that the Trigger frame is transmitted after the end of the ongoing transmission."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 AP MLD supports reception of the AAR Control subfield and the other AP does not have frame exchanges already scheduled with another STA." | Please rephrase the sentence as follows:"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 after the end of the current transmission on other link by another AP affiliated with the same AP MLD to solicit an UL PPDU if the AP MLD supports reception of the AAR Control subfield and the other AP does not have frame exchanges already scheduled with another STA." | Revised-Agree with the comment in principle. The transmission of a Trigger frame is scheduled after receiving a frame which contains AAR Control subfield. Propose resolution to account for the suggested change.TGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 4731. |
| 4732 | Chittabrata Ghosh | 35.3.14.7.2 | 280.47 | As pointed out in my previous comment, I have suggested to rephrase the sentence that the TF is transmitted on other link after the end of ongoing transmission (soliciting the TF transmission using AAR Control field) in one link. If the suggestion is accepted, do we still need this procedure of TF solicitation in one link and TF transmission in other link where the STA has lost synchronization. The rational is that the STA might be able to sync to the medium on the link after the end of transmission in the other link."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 AP MLD supports reception of the AAR Control subfield and the other AP does not have frame exchanges already scheduled with another STA." | As in comment | Rejected-According to the draft 1.0 of P802.11be, the TF solicitation in one link is for the other link where a STA has lost medium synchronization. In this case, the STA does not know when it could sync up to the medium (The comment also implies this), and this status may last for long time. If there is AP assistance, then that STA could quickly sync up to the medium and send out its frames. |
| 4755 | Chunyu Hu | 35.3.14.7.2 | 280.47 | If the non-AP STA mentioned in the first sentence has disabled UL MU via the HE OMI UL MU (or MU Data) Disable field, the STA shall not request AP of the procedure mentioned in this subclause. | As commented | Revised-Agree with the comment, and add a the following condition for sending AAR Control subfield: the other STA that belongs to the NSTR link pair and has lost medium synchronization intends to transmit a frame.TGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 4755. |
| 5318 | Jarkko Kneckt | 35.3.14.7 | 280.40 | AP assisted Medium recovery procedure should work without AAR signaling. A non-AP NSTR STA may blind on the NAV and channel CCA, so it is not clear how relevant is link recommendation/selection from the blind non-AP NSTR STA for UL triggering. | Define AAR as a general mechanism to signal a time, TID and optionally a link in which the associated AP MLD should trigger an affiliated STA of the non-AP MLD. Such triggering indication should be able to use in all links, including STR links. | RejectedAAR field is needed because the AP needs to know which STA that had lost medium sync intends to send an UL frame. Regarding blindness on the NAV, AP MLD is STR such that each AP affiliated with the AP MLD knows channel state information. In this case, AP assistance can help the non-AP STA sync up to the medium quickly |
| 5707 | kaiying Lu | 35.3.14.7.2 | 280.40 | Define the machanism to improve the fairness on channel access under AP assisted medium synchronization recovery procedure | Please clairify it | Revised-Add a note to clarify the ED threshold that a non-AP STA uses when the non-AP STA responds to the received trigger frame with CS Required subfield equal to 1.TGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 5707. |
| 6926 | Ryuichi Hirata | 35.3.14.7.2 | 280.57 | Medium synchronization might be lost at several non-AP STAs affiliated with the same non-AP MLD due to UL interference. In-AP STAs affiliated with the same non-AP MLD to recover their medium synchronization. | Clarify that AP MLD might transmit several Trigger frames to non-AP STAs affiliated with the same non-AP MLD which lost their medium synchronization to solicit UL PPDUs from those non-AP STAs affiliated with the same non-AP MLD. | Revided-Agree with the comment in principle. Propose resolution to account for the suggested changeTGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 6296. |
| 8219 | Yusuke Tanaka | 35.3.14.7.2 | 280.51 | Here says "which indicates the link identifier of another AP affiliated with the same AP MLD to solicit the other AP to transmit a Trigger frame", but the AP receiving the AAR may intend to send a Trigger frame to non-APs to solicit UL transmissioin other than medium synchronization recovery. Therefore, the restriction "the other AP" is unnessesary. | "which indicates the link identifier of another AP affiliated with the same AP MLD to solicit APs affiliated with the same AP MLD to transmit a Trigger frame" | Revised-The cited sentence is rephrased such that to make it clear.TGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 8219. |
| 4729 | Chittabrata Ghosh | 35.3.14.7.2 | 280.47 | Please rephrase the underlined phrase of the sentence:"A non-AP STA with dot11AAROptionImplemented equals to true and affiliated with a non-AP MLD that belongs to a NSTR link pair may transmit the AAR Control subfield in a frame to its associated AP affiliated with an AP MLD, which indicates the link identifier of another AP affiliated with the same AP MLD to solicit the other AP to transmit a Trigger frame to the other non-AP STA affiliated with the same non-AP MLD that belongs to the same NSTR link pair." to"A non-AP STA with dot11AAROptionImplemented equals to true and affiliated with a non-AP MLD that belongs to a NSTR link pair may transmit the AAR Control subfield in a frame to its associated AP affiliated with an AP MLD that indicates the link identifier of another AP affiliated with the same AP MLD to solicit the other AP to transmit a Trigger frame to the other non-AP STA affiliated with the same non-AP MLD that belongs to the same NSTR link pair." | As in comment | Revised-Agree with the commenter that the cited sentence is not clear, and then separate the cited sentence into two partsTGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 4729. |
| 6991 | Sanghyun Kim | 35.3.14.7.2 | 280.58 | If STA1 transmits end-time aligned PPDU (with a PPDU of STA2) the STA 1 shall not be a target STA to recover medium sync of AAR control transmitted by the STA2. Because the STA1 will not lost its medium sync. | Clarify rules to set Assisted AP Link ID Bitmap subfield of the AAR Control subfield. | Revised-Agree with the comment in principle. Add description to clarify AP assistance is for the non-AP STA which has lost its medium sync.TGbe editor to make the changes shown in 21/1685r6 under all headings that include CID 6991. |
| 7575 | Tomoko Adachi | 35.3.14.7.2 | 280.57 | "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. It needs to be a shall. | As in comment. | Accepted- |
| 6322 | Ming Gan | 35.3.14.7.2 | 280.57 | Since there is capability for AP tp support this action and the corresponding condition (not have frame exchanges), should be "shall" here | as in the comment | Accepted- |
| 8218 | Yusuke Tanaka | 35.3.14.7.2 | 280.48 | Are there any restriction of frames that AAR Control subfield can be included in? AAR Control subfield can be included in a regular data frame or in a QoS Null frame to only indicate AAR Control field? | Please clarify. | Rejected-There is no any technical change required on the TGbe draft for the comment.Note to the commenter: there is no any restriction to carry this AAR Control subfield as long as the frame sent by an ETH STA contains an HT-control field. |

**Discussion:** None.

***TGbe editor: Please modify the subclause 35.3.15.8.2 AP assisted medium synchronization recovery procedure as follows***

**35.3.15.8.2 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. (#CID 6991)

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

A STA affiliated with a non-AP MLD with dot11AAROptionImplemented 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 (#CID 4239) 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 the EMLSR/EMLMR links needs assistance in transmitting frames to its associated AP in the other link (#CID 4755).

The AAR Control subfield transmitted by the STAshall indicate the link identifier(s) of the other assisting AP(s) affiliated with the same AP MLD by setting the corresponding bits to 1(#CID 6926, 8219 and 4729).

Each of the other assisting AP(s) affiliated with the AP MLD shall (#CID 7575, 6322) schedule for a transmission a Trigger frame to the assisted STA that is associated with it and affiliated with the non-AP MLD to solicit an - UL frame (#CID 4240) after the AP affiliated with the same AP MLD successfully received the AAR Control subfield in a frame if it does not have frame exchanges already scheduled with another STA.(#CID 6926, 4731)

Note- If the CS Required subfield in a Trigger frame is 1, then the non-AP STA uses CCA-ED threshold as defined in 36.3.20.6 (CCA sensitivity) during the SIFS between the Trigger frame and the PPDU sent in response to the Trigger frame. (#CID 5707)

A non-AP STA with dot11AAROptionImplemented equals 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. (#CID 6991)

An AP shall not transmit the AAR Control subfield in a frame to its associated non-AP STAs. (#CID 4239)