IEEE P802.11
Wireless LANs

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| 11ax D4.0 Comment Resolution 26.6.4.2 26.6.4.4 |
| Date: 2019-06-19 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Liwen Chu | Marvell |  |  |  |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D4.0 with the following CIDs:

* 20428, 20825, 20826, 20196, 20330, 20393, 20394, 20427, 21066, 21067,
* 21137, 21607, 20776

Revisions:

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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 TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 20428 | 355 | 14 | Clarification. This subclause is for ack-enabled single TID A-MPDU opeartion, which is different from multi-TID opeation covered in 26.6.4.4. In general, it is confusing to have the term "ack-enabled multi-TID A-MPDU" but an ack-enabled A-MPDU is explicitly a disjoint set of things (because the latter must be single-TID). Rename "ack-enabled A-MPDU" as "ack-enabled single-TID A-MPDU" throughout the Standard. | Insert in subclause title: "Ack-enabled \_single-TID\_ A-MPDU operation" Similarly, insert "single-TID" in all sentences in the Standard that state "ack-enabled A-MPDU". | RevisedDiscussion: Generally agree with the commnetter to change the name to ack-enabled single-TID A-MPDU. Since the Management frame to solicit Ack can be in ack-enabled single-TID A-MPDU, the firt note in the subclause is updated to clarify that the Management frame to solicit Ack is treated as TID 15. TGax editor to make change in 11-19/1035r2 under CID 20428TGax editor: Please change “ack-enabled A-MPDU” to “ack-enabled single-TID A-MPDU” through the draft  |
| 20825 | 355 | 17 | "Table 9-532b (A-MPDU contents in theHE ack-enabled single TID immediate response context)" is not a hyperlink so will rot | As it says in the comment | RevisedDiscussion: the name will be changed to ack-enabled single-TID A-MPDU. TGax editor to make change in 11-19/1035r2 under CID 20825 |
| 20826 | 355 | 20 | "NOTE---An ack-enabled A-MPDU does not contain more than one of the following frames: QoS Data frames, Manage-ment frame that solicits acknowledgment." -- not clear because "QoS Data frame" can refer to b4-v7 of FC, or just b4 | Change to "NOTE---An ack-enabled A-MPDU does not contain more than one of the following frames: Data frame of subtype QoS Data (whether or not it solicits acknowledgment), Management frame that solicits acknowledgment." | RejectedDiscussion: QoS Data frames in A-MPDU mean frame with Type equal to Data and Subtype equal to 1000 as in 802.11 baseline spec. Please submit the comment to 11md |

***TGax editor: change 26.6.4.2 as follows:***

**26.6.4.2 Ack-enabled single-TID A-MPDU operation** (#20428)

An ack-enabled single-TID A-MPDU is an A-MPDU with contents defined in Table 9-532b (A-MPDU contents in the HE ack-enabled single-TID immediate response context). (#20428, 20825)

NOTE—An ack-enabled A-MPDU does not contain more than one of the following frames: QoS Data frames, Manage-ment frame that solicits acknowledgment. In this case the Management frame that solicits acknowledgement is treated as an MPDU with TID equal to 15. (#20428)

An HE STA shall not transmit an ack-enabled A-MPDU to a recipient STA unless it has received from the recipient STA an HE Capabilities element with the Ack-Enabled Aggregation Support subfield equal to 1.

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 20196 | 356 | 5 | "A STA that transmits an ack-enabled multi-TID A-MPDU that contains at least two MPDUs with differentTIDs carried in A-MPDU subframes that have the EOF field equal to 1 shall ignore the immediate responseif it is an Ack frame." doesn't cover all possible, legmitate case and discarding an ACK frame is not always right. E.g. if the recipient STA is only able to receive one S-MPDU and can respond with an ACK. The transmitter in this case should not discard the ACK as response. | Remove this paragraph. | **Revised****Discussion: In an ack-enabled multi-TID A-MPDU, a frame in an A-MPDU subframe with EoF field equal to 1 will always solicit Ack. When a STA that transmitted an ack-enabled multi-TID A-MPDU with two aggregated frames to solicit Ack receives a solicited Ack from the recepient, the transmitter can’t figure out which frame is correctly received by the recipient. The text about the following A-MPDU should also be added: one QoS Data frame and one Management frame in an Ack-enabled A-MPDU to solicit Ack.** **TGax editor to make changes in 11-19/1035r1 under CID 20196.** |
| 20330 | 355 | 48 | change "A non-ack-enabled multi-TID A-MPDU " to "An ack-enabled multi-TID A-MPDU" | As in comment. | Accepted |
| 20393 | 355 | 47 | A non-ack-enabled multi-TID A-MPDU is an A-MPDU with contents defined in Table 9-532d (A-MPDU contents in the HE ack-enabled multi-TID immediate response context).'should be ack-enabled multi-TID A-MPDU | remove 'non-' | Accepted |
| 20394 | 356 | 5 | A STA that transmits an ack-enabled multi-TID A-MPDU that contains at least two MPDUs with different TIDs carried in A-MPDU subframes that have the EOF field equal to 1 shall ignore the immediate response if it is an Ack frame.'If a rx is not certian how many TIDs in AMPDU, can the rx use MBA with ack type=1 and with a TID if the STA has only decoded 1 EOF-MPDU, to avoid this situation? Is using MBA in this case currently disallowed in the spec? | Add a note to clarify that rx STA could send a MBA to avoid this situation. | RejectedDiscussion: ~~currently when an EoF-MPDU is received, the recipient is not allowed to transmit Multi-STA BlockAck. We can relax this requirement: when a STA that capable of receiving ack-enabled multi-TID A-MPDU receives a A-MPDU with single EoF MPDU from a STA that supports the transmission of ack-enabled multi-TID A-MPDU and at least one undetected A-MPDU subframe is longer than a frame with minimal length, the recipient can respond with Multi-STA BlockAck.~~**~~TGax editor to make changes in 11-19/1035r1 under CID 20394~~.** The group can’t get the consensus about whether to add the text in 11ax draft about using M-BA to acknowledge an EoF MPDU with “Normal Ack” in Ack Policy Indicator subfield fwhen the recipient supports the Rx of ack-enable multi-TID A-MPDU. The result of the related straw poll: which one do you support to resolve 20394 isOption1: reject the comment 4Option2: allow the recipient to transmit M-BA 5Option 3: abstain 7  |
| 20427 | 355 | 47 | Typo | Change "non-ack-enabled" to "ack-enabled" | Accepted |
| 21066 | 355 | 47 | The first sentence tries to define a non-ack enabled AMPDU by referring to the table for ack enabled AMPDU (that is, without the "non" present) - this cannot be correct. | Fix the reference to point to the correct table. | Revised. Change "non-ack-enabled" to "ack-enabled" |
| 21067 | 356 | 5 | The condition does not seem specific enough - the ACK should only be ignored if both TIDs require acknowledgement, but this might not be true. | Add a condition to the statement, per the comment. | **Revised****Discussion: In an ack-enabled multi-TID A-MPDU, a frame in an A-MPDU subframe with EoF field equal to 1 will always solicit Ack. When a STA that transmitted an ack-enabled multi-TID A-MPDU with two aggregated frames to solicit Ack receives a solicited Ack from the recepient, the transmitter can’t figure out which frame is correctly received by the recipient. The text about the following A-MPDU should also be added: one QoS Data frame and one Management frame in an Ack-enabled A-MPDU to solicit Ack.** **TGax editor to make changes in 11-19/1035r2 under CID 21067.** |
| 21137 | 355 | 47 | Section relates to "Ack-enabled multi-TID A-MPDU operation", but the first sentence refers to "A non-ack-enabled multi-TID A-MPDU" .Isn't it a "ack-enabled multi-TID A-MPDU" ? | Please confirm and modify accordingly. | Revised. Change "non-ack-enabled" to "ack-enabled" |
| 21607 | 356 | 5 | "A STA that transmits an ack-enabled multi-TID A-MPDU that contains at least two MPDUs with differentTIDs carried in A-MPDU subframes that have the EOF field equal to 1 shall ignore the immediate responseif it is an Ack frame." doesn't cover all possible, legmitate case and discarding an ACK frame is not always right. E.g. if the recipient STA is only able to receive one S-MPDU and can respond with an ACK. The transmitter in this case should not discard the ACK as response. | Remove this paragraph. | **Revised****Discussion: In an ack-enabled multi-TID A-MPDU, a frame in an A-MPDU subframe with EoF field equal to 1 will always solicit Ack. When a STA that transmitted an ack-enabled multi-TID A-MPDU with two aggregated frames to solicit Ack receives a solicited Ack from the recepient, the transmitter can’t figure out which frame is correctly received by the recipient. The text about the following A-MPDU should also be added: one QoS Data frame and one Management frame in an Ack-enabled A-MPDU to solicit Ack.** **TGax editor to make changes in 11-19/1035r2 under CID 21607.** |
| 20776 |  |  | Re CID 16296: examples are 169.43 "frames at least one ofwhich solicits an Ack frame oracknowledgment context in aMulti-STA BlockAck frame", 214.22 " QoS Dataframe or Management frame soliciting an Ack", 314.65 "receives an EOF-MPDU soliciting acknowledgment ", 355.57 "frame thatsolicits an Ack frame acknowledgment" | Change references to soliciting an Ack etc. to soliciting the acknowledgment context per 27.4.2 | **Revised****Generally agree wit hthe commenter. The reference to table 9-532d is added.****TGax editor to make the changes in 11-19/1035r2 underr CID 20776** |

**26.6.4.4 Ack-enabled multi-TID A-MPDU operation**

***TGax editor: change 26.6.4.4 as follows:***

An ack-enabled multi-TID A-MPDU(#21462) is an A-MPDU with contents defined in Table 9-532d (A-MPDU contents in the HE ack-enabled multi-TID immediate response context).

QoS Data frames with the same TID shall have the same Ack Policy field setting.

QoS Data frames with the same TID shall be carried in A-MPDU subframes with the same value in the EOF field setting.

In an ack-enabled multi-TID A-MPDU, the EOF field of each A-MPDU subframe carrying a frame that solicits an Ack frame acknowledgment as defined in **Table 9-532d (A-MPDU contents in the HE ack-enabled multi-TID immediate response context)** shall be set to 1. The EOF field of all other A-MPDU subframes carrying frames shall be set to 0. (#20776)

An HE STA shall not transmit an ack-enabled multi-TID A-MPDU to a recipient STA unless it has received from the recipient STA an HE Capabilities element where the Multi-TID Aggregation Rx Support subfield is nonzero and the Ack-Enabled Aggregation Support subfield is 1.

A STA that receives an ack-enabled multi-TID A-MPDU responds as defined in 26.4.4 (Per-PPDU acknowledgment selection rules).

A STA that transmits an ack-enabled multi-TID A-MPDU that contains at least two EOF MPDUs shall ignore the immediate response if it is an Ack frame. (#20196, 21067, 21607)