IEEE P802.11
Wireless LANs

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| 11ax D6.0 comment resolution of misc CIDs |
| Date: 2020-03-28 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D6.0 with the following CIDs:

* 24432, 24345, 24353, 24136, 24378, 24379, 24380.

Revisions:

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** |
| 24432 | 450 | 63 | "except for group addressed Data frames, which may also be sent within an A-MPDU subject to the rules in 10.12.4" is wrong, because "sent as an A-MPDU" is meaningless given that everything in HE is sent in an A-MPDU. CID 22146's resolution agreed, but the comment missed this instance | Change to "which are not required to be sent as an S-MPDU, but are required to follow 10.12.4 (A-MPDU aggregationof group addressed Data frames)" | RevisedDiscussion: Both S-MPDU and A-MPDU with multiple group-ddressed frames can be carried in one RU of HE MU PPDU. The baseline has the separate description of S-MPDU and A-MPDU with multiple aggregated frames. Some clarification text about A-MPDU is added.*TGax editor: change the last paragraph in 26.15.7 as follows:*Group addressed frames transmitted in an HE MU PPDU shall be sent as an S-MPDU (see Table 9-532 (AMPDU contents in the S-MPDU context)) except that group addressed Data frames are not required tobe sent as an S-MPDU , but are required to follow the rules in 10.12.4 (A-MPDU aggregation of group addressed Data frames).(#24432) |
| 24345 | 43 | 1 | "ack-enabled single-traffic identifier (TID) aggregate medium access control (MAC) protocol data unit(ack-enabled single-TID A-MPDU): An A-MPDU that contains at least two A-MPDU subframes wheremore than one MPDU in the A-MPDU subframes from same traffic identified (TID) are not allowed andonly one of the A-MPDU subframes includes an EOF MPDU that solicits an immediate acknowledgment.NOTE--The single Management frame that solicits the acknowledgment in an ack-enabled single-TID A-MPDU istreated as a frame from a TID, e.g. soliciting Ack of TID 15 in multi-STA BlockAck frame.ack-enabled multi-traffic identifier (TID) aggregate medium access control (MAC) protocol data unit(ack-enabled multi-TID A-MPDU): An A-MPDU where at least one EOF MPDU that solicits Ackacknowledgment is aggregated in the A-MPDU, and MPDUs from more than one TID that solicit Ackacknowledgment or Block Ack acknowledgment are aggregated in the A-MPDU.NOTE--The single Management frame that solicits the acknowledgment in an ack-enabled multi-TID A-MPDU istreated as a frame from a TID, e.g. soliciting Ack of TID 15 in multi-STA BlockAck frame."has various grammatical issues. Also, "solicits an acknowledgement" is not precise enough.Also "Ack acknowledgment" is not the wording used elsewhere.Also some abbreviations not expanded. Also "identified" typo. | Change to"ack-enabled single-traffic identifier (TID) aggregate medium access control (MAC) protocol data unit (MPDU)(ack-enabled single-TID A-MPDU): An A-MPDU that contains at least two A-MPDU subframes, where thetraffic identifiers (TID) all differ, and whereonly one of the A-MPDU subframes includes an end of frame (EOF) MPDU that solicits the acknowledgment context.NOTE--A Management frame that solicits an acknowledgment in an ack-enabled single-TID A-MPDU istreated as if had had a TID of 15.ack-enabled multi-traffic identifier (TID) aggregate medium access control (MAC) protocol data unit (MPDU)(ack-enabled multi-TID A-MPDU): An A-MPDU where at least one end of frame (EOF) MPDU that solicits theacknowledgment context is aggregated in the A-MPDU, and MPDUs from more than one TID that solicit theacknowledgment or block ack acknowledgment context are aggregated in the A-MPDU.NOTE--A Management frame that solicits an acknowledgment in an ack-enabled multi-TID A-MPDU istreated as if it had a TID of 15." | RevisedTGax editor to make changes in 11-20/0594r5 under CID 24345Note: the only difference from the proposed change and the draft spec change is change “had had” to “it had” |
| 24353 |  |  | Prior to 11ax, once you hit an MPDU delimiter with EOF=1 you knew that you didn't need to look for any more MPDU delimiters. However, with EOF MPDUs in 11ax, this is no longer the case. It is not clear at what point an 11ax device (especially one that supports ack-enabled A-MPDUs with lots of TIDs) can stop looking for more MPDU delimiters | Specify that (a) an EOF=1 Len=0 MPDU delimiter shall not appear before any Len != 0 MPDU delimiter (i.e. EOF=1 Len=0 is only used to pad the end of an A-MPDU) and (b) an EOF=1 Len=0 MPDU should appear after the last MPDU (EOF MPDU or normal MPDU) in an A-MPDU | RevisedDiscussion: what the commenter asks for in (a) is already in 802.11ax D6.0 P374 L46: In an HE PPDU, a STA shall not add an A-MPDU subframe with the EOF field set to 1 and with the MPDU Length field set to 0 before an A-MPDU subframe with a nonzero MPDU Length field. We can add a sentence about case (b).TGax editor to make changes in 11-20/0594r5 under CID 24353 |
| 24136 | 275 | 17 | The statement "The inclusion of secondary AC traffic in an HE MU PPDU shall not cause the TXOP limit of the primary AC to be exceeded" may be incorrect, if what is intended is that secondary AC traffic in an HE MU PPDU is allowed only when it will not cause the TXOP limit of the primary AC to be exceeded. IF that is what you meant, you missed. | Change to: Secondary AC traffic in an HE MU PPDU shall be included only when it will not cause the TXOP limit of the primary AC to be exceeded. | Revised*TGax editor: change P275 L17 sentence of 11ax D6.0“*The inclusion of secondary AC traffic in an HE MU PPDU shall not cause the TXOP limit of the primary AC to be exceeded*” as follows: “*Secondary AC traffic in an HE MU PPDU shall not be included if it would cause the TXOP limit of the primary AC to be exceeded*”* |
| 24378 | 315 | 12 | [Resubmission of comment withdrawn on D5.0] "A successfully acknowledged frame transmitted by a non-AP STA in response to a Basic Trigger frame" - we don't have successful acks, we have successful tx | Change the cited text to "A frame successfully transmitted by a non-AP STA in response to a Basic Trigger frame" | Accepted |
| 24379 | 315 | 12 | [Resubmission of comment withdrawn on D5.0] "A successfully acknowledged frame transmitted by a non-AP STA in response to a Basic Trigger frame is a successful frame exchange initiated by the STA as referred to in Clause 11 and Clause 12." is not clear. The exchange is not initiated by the STA. The exchange does not end at the ack (in the case of cascading) | Delete the cited text | RevisedDiscussion: the hahavior defined in Clause 11 and Clause 12 is based on the successful frame exchange from STA’s point of view. Since in UL MU frame exchange, the AP will send Ack/BA/M-BA to acknowledge the STA’s frames in HE TB PPDU, TGax group decides that the acknowledged frames in TB PPDU can also be used in Clause 11 and Clause 12 the same way as the frame exchange initiated by STA. The frame exchange is not seen from AP’s point of view. It is ok that there are additional frame exchanges through MU cascading. However the following frame exchange result doesn’t have influence to the operation of Clause 11 and Clause 12. The start of the sentence is changed per CID 24378 to “A frame successfully transmitted by a non-AP STA in response to a Basic Trigger frame”  |
| 24380 | 315 | 12 | [Resubmission of comment withdrawn on D5.0] "A successfully acknowledged frame transmitted by a non-AP STA in response to a Basic Trigger frame is a successful frame exchange initiated by the STA as referred to in Clause 11 and Clause 12." is not clear. The exchange is not initiated by the STA. The exchange does not end at the ack (in the case of cascading) | Change the cited text to "The transmission of an acknowledgment by an AP in response to a frame transmitted by a non-AP STA in response to a Basic Trigger frame constitutes a successful frame exchange initiated by the AP, as referred to in Clause 11 and Clause 12, even if this is part of an MU cascading sequence (see 26.5.3) that includes non-successful transmission by the AP or a non-AP STA." | RevisedDiscussion: the hahavior defined in Clause 11 and Clause 12 is based on the successful frame exchange from STA’s point of view. Since in UL MU frame exchange, the AP will send Ack/BA/M-BA to acknowledge the STA’s frames in HE TB PPDU, TGax group decides that the acknowledged frames in TB PPDU can also be used in Clause 11 and Clause 12 the same way as the frame exchange initiated by STA. The frame exchange is not seen from AP’s point of view. It is ok that there are additional frame exchanges through MU cascading. However the following frame exchange result doesn’t have influence to the operation of Clause 11 and Clause 12. The start of the sentence is changed per CID 24378 to “A frame successfully transmitted by a non-AP STA in response to a Basic Trigger frame” |

**3.2 Definitions specific to IEEE 802.11**

***TGax editor to make the following changes in 3.2 (there is no change to the text now shown here): (24345)***

**……**

**ack-enabled single-traffic identifier (TID) aggregate medium access control (MAC) protocol data unit (ack-enabled single-TID A-MPDU):** An A-MPDU that contains at least two A-MPDU subframes, where the traffic identifiers (TID) all differ , and where only one of the A-MPDU subframes includes an EOF MPDU that solicits the acknowledgment context.

NOTE—A Management frame that solicits an acknowledgment in an ack-enabled single-TID A-MPDU is treated as as if it had a TID of 15.

ack-enabled multi-traffic identifier (TID) aggregate medium access control (MAC) protocol data unit (MPDU)
(ack-enabled multi-TID A-MPDU): An A-MPDU where at least one end of frame (EOF) MPDU that solicits the acknowledgment context is aggregated in the A-MPDU, and MPDUs from more than one TID that solicit the
acknowledgment or block ack acknowledgment context are aggregated in the A-MPDU.
NOTE--A Management frame that solicits an acknowledgment in an ack-enabled multi-TID A-MPDU is
treated as if it had a TID of 15."

**ack-enabled multi-traffic identifier (TID) aggregate medium access control (MAC) protocol data unit (ack-enabled multi-TID A-MPDU):** An A-MPDU where at least one one end of frame (EOF) MPDU that solicits acknowledgment context is aggregated in the A-MPDU, and MPDUs from more than one TID that solicit Ack acknowledgment or Block Ack acknowledgment context are aggregated in the A-MPDU.

NOTE—A Management frame that solicits an acknowledgment in an ack-enabled multi-TID A-MPDU is treated as if it had a TID of 15.

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**26.6.2 A-MPDU padding in an HE PPDU**

**26.6.2.1 General**

***TGax editor to make the following changes in 26.6.2.1: (24353)***

In an HE PPDU, a STA shall not add an A-MPDU subframe with the EOF field equal to 1 and with the MPDU Length field equal to 0 before an A-MPDU subframe with a nonzero MPDU Length field. In an HE PPDU, a STA should add an A-MPDU subframe with the EOF field equal to 1 and with the MPDU Length field equal to 0 (i.e., EOF padding) immediately after the last A-MPDU subframe with a nonzero MPDU Length field. NOTE—While it is recommended that the STA adds EOF padding immediately after the last A-MPDU subframe with a nonzero Length field, the STA might still add non-EOF padding or not add any EOF padding at all.