IEEE P802.11
Wireless LANs

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| LB225 11ax D1.0 Comment Resolution 27.10.4 – Part II |
| Date: 2017-05-02 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Chittabrata Ghosh | Intel Corporation | 2200 Mission College Blvd., Santa Clara, CA-95054 | +1-415-244-8904 | chittabrata.ghosh@intel.com |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D1.0 with the following CIDs:

* 4795, 5696, 6031, 7606, 7607, 7608, 7609, 9731, 9948, 9949, 9950, 9951, 9952

Revisions:

* Rev 0: Initial version of the document.

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** |
| 4795 | 194 | 51 | Is the presence of an Action frame in the MT A-MPDU contained in the TB PPDU subject to the multi-TID aggregation limit? Seems not but just in case please clarify. Also please check that normative behaviors are not redundantly listed in different subclauses. From a quick check there is normatvie behavior that is redundant in different subclauses. | As in comment | **Revised**Agree in principle with the commenter; included a statement clarifying that the TID of an Action frame is not subjected to the value in the TID Aggregation Limit |
| 5696 | 194 | 40 | "when any of the buffers is empty", this part of the setnence does seem necessary and only adds confusion. | Remove "when any of the buffer is empty" | **Revised**  |
| 6031 | 195 | 20 | Can a Multi-TID A-MPDU be transmitted as a response to Trigger frame which type is other than Basic Variant Trigger frame? | Please clarify may Multi-TID A-MPDU be transmitted as a response to any Trigger frame variant, except MU-RTS. | **Revised**Agree in principle with the commenter; included a statement clarifying that a multi-TID A-MPDU is only transmitted by a non-AP STA when solicited either by a Basic Trigger or BSRP variant. |
| 7606 | 194 | 19 | It is not clear whether Action frame accounts for a TID. | Clarify it | **Revised**Agree in principle with the commenter; included a statement clarifying that the TID of an Action frame is not subjected to the value in the TID Aggregation Limit  |
| 7607 | 194 | 40 | "When any of the buffers is empty" is not right since this means when the buffer of one TID related to the primary AC is empty. | Change to "when the buffers of all TIDs related to the primay AC are empty." | **Rejected**The phrase “when any of the buffers is empty” in the comment is removed from the sentence based on CID 5696.  |
| 7608 | 194 | 51 | The paragraph at L51 is similar to the paragraph at L24. One of them should be removed. | As in comment | **Accepted** |
| 7609 | 195 | 15 | The paragraph at P195 L15 is similar to the paragraph at P194 L24. One of them should be removed. | As in comment | **Accepted**  |
| 9731 | 195 | 6 | "When the AP specifies a value defined in Table 9-25i (Preferred AC subfield encoding) in the Preferred AC subfield and a value of 1 in the AC Preference Level subfield in the Trigger Dependent User Info field of a Basic Trigger variant Trigger frame, then an HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to true may aggregate MPDUs from any other TID."The above paragraph is conflicted with the previous paragraph.Remove the corresponding paragraph. | As per comment | **Revised**Agree in principle with the commenter; modified the sentence to account for the case when there is no buffered data in any one of the TIDs from the AC indicated in the Preferred AC subfield;  |
| 9948 | 194 | 26 | Clarification is needed in case the soliciting Trigger frame is not the Basic Trigger variant. | As in the comment | **Revised**Agree in principle with the commenter; included a statement clarifying that a multi-TID A-MPDU is only transmitted by a non-AP STA when solicited either by a Basic Trigger or BSRP variant.  |
| 9949 | 195 | 6 | Not sure the difference between this paragraph and the previous paragraph. In other words, when "should" is used and when "may" is used for the same Trigger frame setting. Further clarification is needed, or delete this paragraph. | As in the comment  | **Revised**Agree in principle with the commenter; modified the sentence to account for the case when there is no buffered data in any one of the TIDs from the AC indicated in the Preferred AC subfield;  |
| 9950 | 195 | 12 | This sentence is somewhat misleading. The aggregation rule depends on Preferred AC subfield and AC Preference Level subfield. But, this sentence just generalize the aggregation rule. Therefore, without further clarification, this sentence only makes the non-AP STA's behaviour vague and unclear. Further clarification is needed. | As in the comment | **Revised**Agree in principle with the commented; however, it is to be noted that the AC Preference Level subfield does not exist in Draft 1.2; revised the sentence to reflect on the case when there is no buffered data in any one of the TIDs within the preferred AC.  |
| 9951 | 195 | 15 | This sentence is duplicate with paragraph in P194L51. | Delete the sentence in P195L15. | **Revised**Agree in principle with the commenter; modified the sentence to account for the case when there is no buffered data in any one of the TIDs from the AC indicated in the Preferred AC subfield;  |
| 9952 | 195 | 26 | This sentence is misleading. The behaviour mentioned is under the condition that AC Preference Level subfield is set to 1. | Modify the sentence to "An HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to false should select any one of the TID value within the AC value indicated in the Preferred AC subfield if AC Preference Level subfield is 1 in the Trigger Dependent User Info field of a Basic Trigger variant Trigger frame.". | **Rejected**The AC Preference Level subfield does not exist in Draft 1.2;  |

**27.10.4 A-MPDU with multiple TIDs**

***TGax editor: Modify the paragraphs in 27.10.4 as the following:***

A multi-TID A-MPDU is an A-MPDU that contains QoS Data frames with two or more different TID values.

An HE STA with dot11MPDUAskedforAckInMultiTIDAMPDU set to true shall set dot11AMPDUwithMultipleTIDOptionImplemented to true. An HE STA with dot11MPDUAskedforAckInMultipleTIDAMPDU set to true shall set the Ack Enabled Multi-TID A-MPDU Support subfield of the HE Capabilities element it transmits to 1; otherwise, the HE STA shall set it to 0. An HE transmitter shall not aggregate MPDU that asks for Ack in a multiple-TID A-MPDU to the HE recipient unless the recipient sets Ack Enabled Multi-TID A-MPDU Support subfield to 1 in its announced HE Capabilities element.

An HE STA shall construct a multi-TID A-MPDU as defined in 9.7 (Aggregate MPDU (A-MPDU)) and 10.13 (A-MPDU operation) except that the EOF subfield shall be set to 1 in a nonzero length MPDU delimiter that precedes a QoS Data frame, or Action frame if the QoS Data frame or Action frame solicits an immediate Ack frame.

A multi-TID A-MPDU may contain multiple noncontiguous nonzero length MPDU delimiters with EOF subfield equal to 1, one for each TID that solicits Ack and/or multiple noncontiguous nonzero length MPDU delimiters with EOF subfield equal to 0, one for each TID that solicits BlockAck.

An HE STA that receives a multi-TID A-MPDU shall respond with a Multi-STA BlockAck frame that contains (see 27.4 (Block acknowledgement)):

* One Per AID TID Info field(#7734) indicating an Ack for each successfully received MPDU that solicits a response that is preceded by a nonzero length MPDU delimiter whose EOF is 1 (TID value equals that of the QoS Data/QoS Null frame or 15 for the Action frame),
* One Per AID TID Info field(#7734) indicating a BlockAck for each TID of a successfully received MPDU that solicits a response that is preceded by a nonzero length MPDU delimiter whose EOF is 0 (TID value equals that of the QoS Data frame).

A non-AP STA with dot11AMPDUWithMultiTIDOptionImplemented set to true may send a multi-TID A-MPDU when solicited by an HE AP either by a Basic Trigger variant or by a BSRP Trigger frame only. (CIDs 9948, 6031)

An HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to true shall set the Multi-TID Aggregation Support subfield of the HE Capabilities element it transmits to a nonzero value. Otherwise, the HE STA shall set it to 0.

An HE STA shall not send a multi-TID A-MPDU to an HE STA that has the Multi-TID Aggregation Support subfield in the HE Capabilities element equal to 0.

An HE STA may aggregate in a multi-TID A-MPDU QoS Data frames with multiple TIDs as defined in Table 9-425 or Table 9-426.

If the multi-TID A-MPDU is transmitted in a PPDU that is not an HE TB PPDU, then the number of different TID values in the multi-TID A-MPDU shall not exceed the number specified by the intended recipient in the Multi-TID Aggregation Support field of the HE Capabilities element.

If the multi-TID A-MPDU is transmitted in an HE TB PPDU, then the number of different TID values in the multi-TID A-MPDU shall not exceed the value specified in the TID Aggregation Limit subfield in the Trigger Dependent User Info field of a Basic Trigger variant Trigger frame that allocated resources for the HE TB PPDU.

The TID of an Action frame in a multi-TID A-MPDU sub-frame is not subjected to the value in the Multi-TID Aggregation Limit subfield indicated either in the HE Capabilities element or in the Trigger Dependent User Info field of the User Info field in a Basic Trigger variant (CIDs 4795, 7606)

A multi-TID A-MPDU shall not be transmitted in an HE SU PPDU or HE ER SU PPDU except when TXOP limit is not zero for the AC that is used to gain access to the medium. This AC is defined as the primary AC. When TXOP limit is not zero then the STA may aggregate QoS Data frames from one or more TIDs in the A-MPDU under the following conditions:

* The A-MPDU shall be carried in an HE SU PPDU or an HE ER SU PPDU transmitted within the obtained TXOP
* The A-MPDU shall contain one or more MPDUs with any of the TIDs that correspond to the primary AC
* (CID 5696) When no more MPDUs can be aggregated in the A-MPDU from any of the TIDs that correspond to the primary AC then the A-MPDU may additionally contain one or more MPDUs with TIDs that do not correspond to the primary AC if the TIDs correspond to any AC that has a higher priority with respect to the primary AC and the addition of these MPDUs does not cause the STA to exceed the current TXOP duration

The Multi-STA BlockAck frame shall be used to acknowledge the MPDUs in a multi-TID A-MPDU. The rules for Multi-STA BlockAck are defined in subclause 27.4 (Block acknowledgement).

(CID 7609)For an HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to true and having a single A-MPDU containing MPDUs with different value of TIDs, the MPDUs with the same TID value may be aggregated in non-contiguous A-MPDU subframes.

When the AP specifies a value defined in Table 9-25i in the Preferred AC subfield (#3018)in the Trigger Dependent User Info field of a Basic Trigger variant Trigger frame, then an HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to true and with buffered traffic in any one TID of (CIDs 9731, 9949, 9951) the indicated preferred AC should aggregate MPDUs from any one of the TIDs from the same AC or higher AC as indicated in the Preferred AC subfield of the Trigger Dependent User Info field in the Trigger frame.

When the AP specifies a value defined in Table 9-25i in the Preferred AC subfield (#3018)in the Trigger Dependent User Info field of a Basic Trigger variant Trigger frame, then an HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to true and with no buffered traffic in any of the TIDs related to the AC (#CID 7607) indicated in the Preferred AC subfield should aggregate MPDUs from an AC higher than the value indicated in the Preferred AC subfield.(CIDs 9731, 9949, 9951) .

The STA may aggregate MPDUs from TIDs in other ACs within the remaining time to the UL PPDU duration value indicated in the Length subfield in the Common Info field of the Trigger frame.

(CID 7608)When the AP indicates AC\_BK(#3018) in the Preferred AC (CID 9950) subfield in the Trigger Dependent User Info field of a Basic Trigger variant Trigger frame, then an HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to true may aggregate MPDUs from any AC/TID or combination of TIDs, up to the limit indicated in the TID Aggregation Limit subfield in Trigger Dependent User Info field of the Trigger frame.

An HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to false should select any one of the TID values within the AC value indicated in the Preferred AC subfield (#3018)in the Trigger Dependent User Info field of a Basic Trigger variant Trigger frame.

An HE STA with dot11AMPDUwithMultipleTIDOptionImplemented set to false may select a TID from any AC when the Preferred AC subfield is AC\_BK(#3018) in the Trigger Dependent User Info field of a Basic Trigger variant Trigger frame.

NOTE—A multi-TID A-MPDU allows the aggregation of an Action Ack frame as well.

An HE AP may aggregate MPDUs from any TIDs in multi-TID A-MPDU for DL HE MU PPDU transmission and the number of TIDs in multi-TID A-MPDU shall not be more than the Multi-TID Aggregation Support announced by the recipient.