IEEE P802.11
Wireless LANs

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| HE Variant HT Control – Some Remaining CIDs |
| Date: 2016-11-01 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D0.5 with the following CIDs (8 **CIDs**):

* 93, 824, 819, 989, 1067, 2388, 147, 161

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Some editorial fixes.

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** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
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| 93 | Alfred Asterjadhi | 31.63 | This TBD needs to be removed from the Control ID values rows of the A-Control field. We do need a value for Buffer Status Report to support the normative behavior defined in 25.5.2.5 and maybe a value for CQI feedback. | Insert two rows, with Control ID value 3, and 4, one for Buffer Status Report, one for CQI Feedback Report, and replace remove TBD row. Replace 8 with 5 in the last row. For each of the new rows add the subfields length, add "See 9.2.4.6.4.4" in the last column of the row, and determine all missing fields that are necessary for each of the subfields and add their description) in new subclauses that follow 9.2.4.6.4.4. | **Already motioned in 11-16/0806r0.** |
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| 824 | Jinsoo Ahn | 13.63 | In order to request buffer status report by A-Control field in MU UL, at least trigger info and buffer status report request info need to be included in A-control field. However, using each A-control subfield is not feasible due to lack of A-control bits. | Add some control ID value for BSR and BSRR with/without trigger infoControl ID for BSRR with trigger infoControl ID for BSRR without trigger infoControl ID for Non-triggered BSR((TID, granularity, Queue size)Control ID for Triggered BSR (TID and granularity is not included)Based on buffer status report procedure, some options above could to be neglected | **Already motioned in 11-16/0806r0.** |
| 819 | Jinsoo Ahn | 11.31 | To utilize More data bit as a presence indicator of UL data. More Data subfield chapter shall be updated. | Insert the following"9.2.4.1.8 More Data subfieldA non-AP HE STA sets the More Data subfield to 1 in any type of individually addressed frame if the non-AP HE STA has buffered Data which have not transmitted." | Revised –The proposed resolution for the UL aspect of the MD setting is the same as for CID 818 which was approved during the July meeting (Ref CID 818 in 11-16/0806r0): “Signaling BSR with MD bit is inefficient because it does not provide to the AP information on the amount of data the STA has buffered. Both QoS Control and BSR A-Control reporting procedures defined enable the STA to provide sufficient information to the AP to efficiently allocate UL MU resoures.”However, agree with the commenter that the More Data subclause needs to be updated to accommodate the possibility of setting the MD bit of Ack, BlockAck, Multi-STA BlockAcks to a nonzero value that does not indicate an early termination event (refer to 11-16/1189r2).TGax editor to make the changes shown in 11-16/1360r1 under all headings that include CID 819. |
| 989 | kaiying Lv | 37.46 | the condition for "Immediate BlockAckReq frames" in the table 9-426a should be changed to "At most one BAR frame for one TID that there is no data frames sent under" | as the comment | Revised –Agree in principle with the comment. The proposed resolutions that were provided in previous resolutions for subclause 9.7 (A-MPDU contents) resolve this issue as well. Namely this table is not present anymore in the draft 0.5. **Note: Already accounted for in D0.5 so no further action is required by the TGax editor.**TGax editor to delete Table 9-426a (Multiple TID A-MPDU contents in the data enabled immediate response context). |
| 1067 | Kiseon Ryu | 15.26 | Control signaling of buffer status report for multiple TIDs/ACs should be defined to support the multi-TID A-MPDU. | Define the Control subfield for multiple TIDs/ACs buffer status report as an HE variant HT Control field. | **Already motioned in 11-16/0806r0.** |
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| 2388 | Yongho Kim | 13.63 | Since the request for buffer status from AP and buffer status report frame can be sent as in 25.5.2.5(HE buffer status feedback operation UL MU), request for buffer status and buffer status report(BSR) need to be included in Control Information | Insert Buffer Status Report trigger and Buffer Status Report(BSR) in Table 9-18a:Insert Buffer Status Report trigger with Control ID 3Insert Buffer Status Report with Control ID 4Insert the following 9.2.4.6.4.5 Buffer Status Report trigger after 9.2.4.6.4.4:"9.2.4.6.4.5 Buffer Status Report triggerThe Control Information subfield, when the Control ID subfield is 3, contains trigger information for buffer status report(see 25.5.2.5 (HE buffer status feedback operation for UL MU)).The format of the Control Information subfield consists of UL PPDU length subfield, RU allocation subfield, TID subfield, and Granualrity subfield.The UL PPDU Length subfield indicates the length of the HE trigger-based PPDU response and is set to a nonzero value that is TBD.The RU Allocation subfield indicates the resource unit (RU) assigned for transmitting the HE trigger-based PPDU response.The TID subfield indicates TID of TC or TS.The Granularity subfield indicates TBD granularity of the Queue Size for an HE STA to report."Insert the following 9.2.4.6.4.6 Buffer Status Report after 9.2.4.6.4.5:"9.2.4.6.4.6 Buffer Status ReportThe Control Information subfield, when the Control ID subfield is 4, contains buffer status report(see 25.5.2.5 (HE buffer status feedback operation for UL MU)).The format of the Control Information subfield consists of TID subfield, Granualrity subfield, and Queue Size subfieldThe TID subfield indicates TID of TC or TS.The Granularity subfield indicates TBD granularity of the Queue Size for an HE STA to report .The Queue Size subfield indicates the indicates the amount of buffered traffic for a given TC or TS at the HE STA sending this frame." | **Already motioned in 11-16/0806r0.** |
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| 147 | Alfred Asterjadhi | 1337.65 | "When an A-MPDU contains multiple QoS Control fields, bits 4 and 8-15 of these QoS Control fields shall be identical." this would not be valid anymore (as 8-15 report the Buffer size per TID) when the A-MPDU contains MPDUs with different TIDs (as each MPDU reports its buffer status for its own TID which cannot be identical). | As in comment. | **Already motioned in 11-16/0806r0.** |
| 161 | Alfred Asterjadhi | 1335.20 | Control wrapper frames can only carry a 4 byte HT Cotnrol field which is limiting. Instead of using control wrapper frames add the HE A-Control field to the newly defined Multi-STA blockack frame and use this frame to deliver HE control information. And deprecate +HTC for 11ax. | As in comment. | Revised –Agree in principle with the comment in terms of deprecating +HTC frames due to implementation complexity for their support. Regarding the addition of the HE A-Control field in Multi-STA BlockAck frames the commenter is invited to submit a proposal. TGax editor to make the changes shown in 11-16/1360r1 under all headings that include CID 161. |

**Discussion:** *None.*

**9.2.4.1.8 More Data subfield**

***TGax Editor: Change the paragraphs below as follows:***

An AP optionally sets the More Data subfield to 1 in Ack frames sent to a non-DMG non-HE STA and in Ack, BlockAck, and Multi-STA BlockAck frames sent to an HE STA from which it has received a frame that contains a QoS Capability element in which the More Data Ack subfield is equal to 1 and that has one or more ACs that are delivery enabled and that is in PS mode to indicate that the AP has a pending transmission for the STA. An HE AP indicates that it can set the More Data subfield to 1 by setting the More Data Ack subfield to 1 in the QoS Info field of frames it transmits.*(#819)*

A TDLS peer STA optionally sets the More Data subfield to 1 in Ack frames sent to a non-HE STA and in Ack, BlockAck, and Multi-STA BlockAck frames sent to an HE STA that has TDLS peer PSM enabled and that has the More Data Ack subfield equal to 1 in the QoS Capability element of its transmitted TDLS Setup Request frame or TDLS Setup Response frame to indicate that it has a pending transmission for the STA. An HE TDLS peer STA indicates that it can set the More Data subfield to 1 by setting the More Data Ack subfield to 1 in the QoS Capability element it transmits.*(#819)*

**11.2.2.6 AP operation during the CP**

***TGax Editor: Change the paragraph below as follows:***

g)…

If there are buffered BUs to transmit to the STA, the AP may set the More Data bit in a QoS +CFAck frame to 1 in response to a QoS Data frame to indicate that it has one or more pending BUs buffered for the PS STA identified by the RA in the QoS +CF-Ack frame. An AP may also set the More Data bit in an Ack frame to 1 in response to a QoS Data frame to indicate that it has one or more pending BUs buffered for the PS STA identified by the RA in the Ack frame, if that PS STA has set the More Data Ack subfield in the QoS Capability element to 1. An HE AP may also set the More Data bit in a BlockAck or Multi-STA BlockAck frame to 1 to indicate that it has one or more pending BUs buffered for the HE PS STA identified by the RA in the BlockAck or Multi-STA Blockack frame, if that HE PS STA has set the More Data Ack subfield in the QoS Capability element to 1. An HE AP indicates support of sending Ack, BlockAck, or Multi-STA BlockAck frames with a nonzero More Data subfield by setting the More Data Ack subfield to 1 in the QoS Info field of frames it transmits.

Unless indicated above, the AP shall set the More Data bit to 0.

**11.2.2.8 Receive operation for STAs in PS mode during the CP**

***TGax Editor: Change the paragraph below as follows:***

e) …If a STA has set the More Data Ack subfield in QoS Capability element to 1, then if it receives an Ack frame from its AP with the More Data bit equal to 1, the STA shall operate exactly as if it received a TIM with its AID bit equal to 1. If an HE STA has set the More Data Ack subfield in QoS Capability element to 1, then if it receives a BlockAck, or Multi-STA BlockAck frame from its AP with the More Data bit equal to 1, the STA shall operate exactly as if it received a TIM with its AID bit equal to 1. For example, a STA that is using the PS-Poll delivery method shall issue a PS-Poll frame to retrieve a buffered BU. See also 10.3.6 (Group addressed MPDU transfer procedure).

***TGax Editor: Insert the following after the last paragraph of subclause 25.7.2 and after the fourth paragraph of subclause 25.7.3.3 of TGax D0.5:***

The classification of a More Data field equal to 0 in an Ack, BlockAck, Multi-STA BlockAck frame as an early termination event can occur only when both STAs have indicated support of transmitting, or receiving the frame with a nonzero More Data subfield, which is indicated in the More Data Ack subfield of the QoS Info field of frames they transmit (see 11.2.2 (Power management in a non-DMG infrastructure network)). *(#819)*

**TGax Editor: *Change the subclause below as follows (#CID 161):***

**10.10 Control Wrapper operation**

A STA supporting the HT Control field that receives a Control Wrapper frame shall process it as though it received a frame of the subtype of the wrapped frame. An HE STA shall not send Control Wrapper frames to another HE STA.*(#161)*