IEEE P802.11
Wireless LANs

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| A-MPDU Content |
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Abstract

This submission proposes the solution for A-MPDU Content.

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.***

**Discussion: the change of A-MPDU content is based on the straw poll/motion in IEEE 802.11-16/xxxxr0**.

**9.7.3 A-MPDU contents**

**TGax Editor: *Change Table 9-425 as follows:***

**Table 9-425—A-MPDU contents in the data enabled immediate response context**

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| MPDU Description | Conditions |
| Ack | If the preceding PPDU contains an MPDU that requires an Ack frame response, a single Ack frame at the start of the A‑MPDU. | In a non-DMG STA other than an HE STA: at most one of ~~these~~ Ack and HT-immediate BlockAck MPDUs is present.In an HE STA: at most one of these MPDUs is present.In a DMG STA: at most one Ack frame is present, and zero or more HT-immediate BlockAck frames are present. |
| HT-immediate BlockAck | In a non-DMG STA: if the preceding PPDU contains an implicit or explicit block ack request for a TID for which an HT-immediate block ack agreement exists, at most one BlockAck frame for this TID, in which case it occurs at the start of the A-MPDU.In a DMG STA: if the preceding PPDU contains an implicit or explicit block ack request for a TID for which an HT-immediate block ack agreement exists, one or more copies of the same BlockAck for this TID. |
| Multi-STA BlockAck(#Ed) | In an HE STA: If the preceding PPDU that carried a multiple-TID A-MPDU contains implicit or explicit block ack requests for multiple TIDs for which HT-immediate block ack agreement exist, at most one Multi-STA BA frame, in which case it occurs at the start of the A-MPDU. |
| Delayed BlockAcks | BlockAck frames with the BA Ack Policy subfield equal to No Acknowledgment with a TID for which an HT-delayed block ack agreement exists. |
| Delayed block ack data | QoS Data frames with a TID that corresponds to a Delayed or HT-delayed block ack agreement.These have the Ack Policy field equal to Block Ack. |
| Action No Ack | Action No Ack frames. |
| Delayed BlockAckReqs | BlockAckReq frames with a TID that corresponds to an HT-delayed block ack agreement in which the BA Ack Policy subfield is equal to No Acknowledgment. |
| Data frames without HT-immediate block ack agreement | QoS Data frames with multiple TIDs which have no HT-immediate block ack agreement See NOTE 1. | Of these, at most one of the following is present in a non-DMG BSS except HE BSS:* One or more QoS Data frames with the Ack Policy field equal to Implicit Block Ack Request
* A BlockAckReq frame

Of these, at most one of the following is present in a DMG BSS:* One or more QoS Data frames with the Ack Policy field equal to Implicit Block Ack Request
* QoS Null MPDU with Ack Policy set to No Ack
* A BlockAckReq frame with an optional QoS Null MPDU with Ack Policy set to No Ack

Of these, at most one of the following is present between two HE STAs:* One or more QoS Data frames from multiple TIDs with the Ack Policy field equal to Implicit Block Ack Request/MU Ack/ AckRequest, at most one Action, optional QoS Null with Ack Policy set to No Ack, Basic Trigger frame or BSRP variant Trigger only when AP transmits the A-MPDU
* QoS Null MPDU with Ack Policy set to No Ack
* One of BolckAckReq and Multi-TID BlockAckReq frame
* Basic Trigger or BSRP variant Trigger frame only when AP transmits the A-MPDU
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| Data frames sent under an HT-immediate block ack agreement  | QoS Data frames with the same TID, which corresponds to an HT-immediate block ack agreement.QoS Data frames with multiple TIDs, which correspond to multiple HT-immediate block ack agreements.See NOTE 1. |
| QoS Null MPDUs with Ack Policy set to No Ack | In a DMG BSS, QoS Null MPDUs with Ack Policy set to No Ack.In a HE BSS, QoS Null MPDUs with Ack Policy set to No Ack. |
| Immediate BlockAckReq | At most one BlockAckReq frame with a TID that corresponds to an HT-immediate block ack agreement.This is the last MPDU in the A-MPDU.It is not present if any QoS Data frames for that TID are present.At most one of the following cases:* Multi-TID BlockAckReq frame with TIDs that correspond to an HT-immediate block ack agreement. This is after data and management frames in the A-MPDU.
* This is the last MPDU in the A-MPDU
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| Action | At most one Action frame |
| Trigger | One or more Trigger Type is Basic Trigger, MU-BAR, BSRP. See NOTE 2 |
| NOTE 1—~~These~~ The MPDUs from the same TID all have the Ack Policy field equal to the same value, which is either Implicit Block Ack Request (Ack Request), MU Ack or Block Ack.NOTE 2—An AP including a Trigger frame and BlockAck frame is not required to include QoS Data in that A-MPDU |

**TGax Editor: *Change Table 9-426 as follows:***

**Table 9-426—A-MPDU contents in the data enabled no immediate response context**

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| MPDU Description | Conditions |
| Delayed BlockAcks | BlockAck frames for a TID for which an HT-delayed block ack agreement exists with the BA Ack Policy subfield equal to No Acknowledgment. |
| Delayed Block Ack data | QoS Data frames with a TID that corresponds to a Delayed or HT-delayed block ack agreement.These have the Ack Policy field equal to Block Ack. |
| Data without a block ack agreement | QoS Data frames with a TID that does not correspond to a block ack agreement.These have the Ack Policy field equal to No Ack and the A‑MSDU Present subfield equal to 0. |
| Action No Ack | Action No Ack frames. |
| Delayed BlockAckReqs | BlockAckReq frames with the BA Ack Policy subfield equal to No Acknowledgment and with a TID that corresponds to an HT-delayed block ack agreement. |
| Trigger | One or more Trigger frames where the Trigger Type field is Basic Trigger, BSRP when AP transmits the A-MPDU.See NOTE 1. |
| NOTE 1—An AP including Trigger frame and BlockAck is not required to include QoS Data in that A-MPDU. |

**9.4.2.218 HE Capabilities element**

**9.4.2.218.1 General**

**9.4.2.218.2 HE MAC Capabilities Information field**

**TGax Editor: *Add one-bit BSRP A-MPDUAggregation in Figure 9-589ck—HE MAC Capabilities Information field format.***

**TGax Editor: *Add the following row in Table 9-262z—Subfields of the HE MAC Capabilities Information field:***

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| BSRP A-MPDU Aggregation | Indicates whether the STA accepts BSRP which is aggregated with other control frame, data and management frames in A-MPDU destined to the STA  | Set to 1 if supported.Set to 0 otherwise. |

**25.5.2.5 HE buffer status feedback operation for UL MU**

**TGax Editor: *Add the following paragraph at the end of 25.5.2.5:***

An AP may aggregate BSRP variant Trigger frame with other control frame, data frames, management frames in one A-MPDU to a STA if the STA has BSRP A-MPDU Aggregation field being set to 1 in the STA’s HE Capabilities element. If a STA receives BSRP variant Trigger frame aggregated with control/data/management frame which asks for acknowledgement, the acknowledgement has high priority to be transmitted.

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