IEEE P802.11
Wireless LANs

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| **CIDs: Section 9.3.1.9.3 Compressed BA format** |
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| **Author(s):** |

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| **Name** | **Affiliation** | **Address** | **Phone** | **Email** |
| George Cherian | Qualcomm | 5775 Morehouse Dr. San Diego, CA, USA |   | gcherian@qti.qualcomm.com |
| Tomoko Adachi | Toshiba |  |  |  |
| Kaiying Lv | ZTE |  |  |  |
| Deng Yu | Huawei |  |  |  |
| Xiaofei Wang | InterDigital |  |  |  |

Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs (**10 CIDs**):

* 1275, 1270, 1269, 1139, 97, 2213, 1809, 1808, 1807, 1806

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** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 1275 | Mark RISON | 18.30 | "for 4 fragments of each of the 16 MSDUs" -- what if the 16 are not all MSDUs, but some are A-MSDUs? Can they still be fragmented? | Either say only the first bit is used in the case of A-MSDUs, or add "or A-MSDUs" | REVISED. A-MSDU cannot be fragmented. It is clarified in the Note. Please see below. |
| 1270 | Mark RISON | 18.30 | "for 4 fragments of each of the 16 MSDUs" -- the MSDUs might not be fragmented into 4 fragments | Change to "for the up to the 4 fragments of each of the 16 MSDUs" | REVISED. Please see below. |
| 1269 | Mark RISON | 18.21 | "Bit position n of the Block Ack Bitmap field, if equal to 1, acknowledges receipt of an MPDU with sequence number value, SN and fragment number value, FN with n equal to 4 x (SN - SSN) + FN" -- doesn't this result in aliasing (e.g. SN 3 FN 5 is the same bit as SN 4 FN 1)? | Add a requirement that no more than 4 fragments are allowed | REJECT. No need to add a condition, as it is already clarified in 25.3.2. There, it says that the fragmentation number is limited up to 4 fragments. |
| 1139 | Kwok Shum Au | 18.29 | There is no BlockAck Bitmap field. | Change "BlockAck Bitmap field" with "Block Ack Bitmap field". | REVISED. Please see below. |
| 97 | Alfred Asterjadhi | 18.12 | The BlockAck Bitmap subfield of the C-BA can be 256 bits as well (32 Octets). There was a motion on this (where differentiation between the two lengths was in the FN subfield). Amend the subclause to account for this case, ensuring that the signaling is consistent. Perhaps it is good to have a table to map the values of the FN and the bitmap lenghts and when fragment level 3 mapping of the bitmap is enabled. | As in comment. | REVISED. Please see below. |
| 2213 | Tomoko Adachi | 18.00 | The one that does not have fragment information is the Compressed BlockAck. When fragment information is included, the Multi-STA BlockAck can be used. No need to add variations. | Delete change to 9.3.1.9.3. | Rejected. The compressed BA is the default frame used in HT immediate BA sesisons and its extension to have 256 bitmaps provides benefits in high throughput in SU mode. Also, by limiting the BA frame to be a multi-STA BA format when fragmented doesn’t give much merit at the originator, as judging whether it is a compressed BA or a multi-STA BA is necessary anyway. |
| 1809 | Rojan Chitrakar | 18.29 | "16 subbitmaps", "16 MSDUs" may no longer be valid since the bitmap length may vary. | Change 16 to "BA Bitmap length"/4. | REVISED. Please see below. |
| 1808 | Rojan Chitrakar | 18.29 | Since some of the bits of the fragment number subfield may be used for other purposes (for e.g. to indicate the Bitmap length), it is incorrect to say "fragment number subfield is 1." | Change "fragment number subfield" to the specific bit/s used to indicate use of dynamic fragmentation. | REVISED. Please see below. |
| 1807 | Rojan Chitrakar | 18.20 | Since some of the bits of the fragment number subfield may be used for other purposes (for e.g. to indicate the Bitmap length), it is incorrect to say "fragment number subfield is 1." | Change "fragment number subfield" to the specific bit/s used to indicate use of dynamic fragmentation. | REVISED. Please see below. |
| 1806 | Rojan Chitrakar | 18.11 | Since some of the bits of the fragment number subfield may be used for other purposes (for e.g. to indicate the Bitmap length), it is incorrect to say "fragment number subfield is 0." | Change "fragment number subfield" to the specific bit/s used to indicate use of dynamic fragmentation. | REVISED. Please see below. |

##### 9.3.1.9.3 Compressed BlockAck variant

Change subclause 9.3.1.9.3 as follows:

The TID\_INFO subfield of the BA Control field of the Compressed BlockAck frame contains the TID for which this BlockAck frame is sent.

The BA Information field of the Compressed BlockAck frame comprises the Block Ack Starting Sequence Control subfield and the Block Ack Bitmap subfield, as shown in Figure 9-34 (BA Information field (Compressed BlockAck)). The Starting Sequence Number subfield of the Block Ack Starting Sequence Control subfield contains the sequence number of the first MSDU or A-MSDU for which this BlockAck frame is sent. The value of this subfield is defined in 10.24.7.5 (Generation and transmission of BlockAck frames by an HT STA or DMG STA). ~~The Fragment Number subfield of the Block Ack Starting Sequence Control subfield is set to 0.~~

Change Figure 9-34 as follows:

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| --- | --- | --- |
|  | Block Ack Starting Sequence Control | Block Ack Bitmap |
| Octets: | 2 | 8 or 32 |

Figure 9-34—BA Information field (Compressed BlockAck) [CID97, CID1809, CID1808, CID1807, CID1806][CID97] The Fragment Number subfield is set as defined in Table 9-x.

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| Table 9-x Mapping for the Fragment Number subfield of the Compressed BlockAck variant |
| **Fragment Number subfield** | **Fragmentation Level-3: [ON/OFF]** | **BA Bitmap Length field [Octets]** | **Maximum number of MSDUs/A-MSDUs that can be acknowledged** |
| **B3** | **B2-B1** | **B0** |  |
| 0 | 0 | 0 | OFF | 8 Octets | 64 |
| 0 | 1 | 0 | Reserved  | Reserved |
| 0 | 2 | 0 | 32 Octets | 256 |
| 0 | 3 | 0 | Reserved | Reserved |
| 0 | 0 | 1 | ON | 8 Octets | 16 |
| 0 | 1 | 1 | Reserved  | Reserved |
| 0 | 2 | 1 | 32 Octets | 64 |
| 0 | 3 | 1 | Reserved | Reserved |
| 1 | Any | Any |  | Reserved |
| NOTE—A Compressed Block Ack frame with the LSB of the Fragment Number subfield set to 1 can only be sent to an HE STA whose HE Fragmentation Support subfield in the HE Capabilities element it transmits is 3 (see 25.3 (Fragmentation)). |

[CID97]When the B0 of the Fragment Number subfield is 0, the Block Ack Bitmap subfield of the BA Information field of the Compressed BlockAck frame is used to indicate the receive status of up to 64 or 256 MSDUs and A-MSDUs depending upon the value of B2-B1 in the Fragment Number subfield as shown in the Table 9-x. Each bit that is equal to 1 in the compressed Block Ack Bitmap field acknowledges the successful reception of a single MSDU or A-MSDU in the order of sequence number, with the first bit of the Block Ack Bitmap field corresponding to the MSDU or A-MSDU with the sequence number that matches the value of the Starting Sequence Number subfield of the Block Ack Starting Sequence Control subfield.

When [CID1806] the B0 of the Fragment Number subfield is 1, the Block Ack Bitmap subfield of the BA Information field of the Compressed BlockAck frame is used to indicate the receive status of up to 16 or 64 MSDUs and A-MSDUs depending upon the value of B2-B1 in the Fragment Number subfield as shown in the Table 9-x. Bit position *n* of the Block Ack Bitmap field, if equal to 1, acknowledges receipt of an MPDU with sequence number value, *SN* and fragment number value, *FN* with *n* equal to 4 × (*SN* – *SSN*)+ *FN*, where *SSN* is the value of the Starting Sequence Number subfield of the Block Ack Starting Sequence Control subfield and the operations on the sequence numbers are performed modulo 4096. When bit position *n* of the Block Ack Bitmap field is equal to 0 it indicates that the MPDU has not been received.

NOTE—When the [CID1808] B0 of the Fragment Number subfield is equal to 1 then the [CID1139] Block Ack Bitmap field is split into [CID1809] (BA Bitmap length/4) subbitmaps, each of which indicates receive status for [CID1270] up to 4 fragments of each of the MSDUs as indicated in the table 9-x. [CID1275] For an A-MSDU, only the first bit of the subbitmap is used, as fragmentation is not allowed in an A-MSDU.