IEEE P802.11
Wireless LANs

|  |
| --- |
| EDMG Multi-TID Block Ack Support  |
| Date: 2017-06-18 |
| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Oren Kedem | Intel  |  |  | oren.kedem@intel.com |
| Nir Paz | Intel |  |  | nir.paz@intel.com |
| Carlos Cordeiro | Intel |  |  | carlos.cordeiro@intel.com |
| Cheng chen | Intel  |  |  | cheng.chen@intel.com |
| Solomon Trainin | Qualcomm  |  |  |  |

Abstract

This document proposes modified draft for the sections that relate to EDMG Multi-TID Block Acknowledgment.

**9.3.1.8 BlockAckReq frame format
9.3.1.8.1 Overview**

 *Change Table 9-22 as follows*

|  |  |  |  |
| --- | --- | --- | --- |
| **Multi-TIDsubfield value** | **Compressed Bitmapsubfield value** | **GCR Mode subfieldvalue (B3 B4)** | **BlockAckReq frame variant** |
| 0 | 0 | 00 | Basic BlockAckReq |
| 01 | Reserved |
| 10 | Reserved |
| 11 | Reserved |
| 0 | 1 | 00 | Compressed BlockAckReq |
| 01 | GLK-GCR BlockAckReq |
| 10 | GCR BlockAckReq |
| 11 | Reserved |
| 1 | 0 | 00 | Extended Compressed BlockAckReq |
| 01 | Reserved |
| 10 | Reserved |
| 11 | Reserved |
| 1 | 1 | 00 | Multi-TID BlockAckReq |
| 01 | Reserved  |
| 10 | Reserved |
| 11 | Reserved |

**9.3.1.8.5 Multi-TID BlockAckReq variants**

**9.3.1.9 Block Ack
9.3.1.9.1 Overview**

*Change the following paragraph as follow*

The Management ACK subfield is set to one to indicate that frames of type Management that are not Action No Ack are acknowledged. This subfield is reserved if the BlockAck variant used is not EDMG Multi-TID BlockAck variant.

**9.3.1.9.8 EDMG Multi-TID BlockAck variant**

*Change paragraphs as follow*

The TID\_INFO subfield of the BA Control field of the EDMG Multi-TID BlockAck frame contains the number of TIDs minus one for which information is reported in the BA Information field. For example, a value of two in the TID\_INFO subfield means that information for three TIDs is present in the frame.

The BA Information field of the EDMG Multi-TID BlockAck frame comprises one or more instances of the Per TID
Info, Block Ack Starting Sequence Control, Block Ack Bitmap subfields and RBUFCAP subfield, as shown in Figure 7.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Octets:  | 2 | 2 | 8, 16, 32, 64 or 128  | 1 |
|  | Per TID Info | BlockAck Starting Sequence Control | BlockAck Bitmap | RBUFCAP |
|  |  |  |  |  |

Repeat for each TID

**Figure 7—BA Information field (EDMG Multi-TID BlockAck)**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

The Per TID Info subfield is shown in Figure TBD below

|  |  |  |  |
| --- | --- | --- | --- |
|  | B0 B8 |  B9 B11 | B12 B15 |
|  | Reserved  | BlockAck Bitmap Subfield Length  | TID |
| Bits |  | 3 | 4 |

The TID subfield contains the value of the TID for which the value of the BlockAck Bitmap subfield carried in this BA Information field relates to.

The BlockAck Bitmap Subfield Length is an integer in the range 0 – 4 that indicates the number of octets of the BlockAck bitmap in the BA Information field, the bitmap length is equal to 2 ^ (3+ BlockAck Bitmap subfield length).

The Block Ack Starting Sequence Control subfield is shown in Figure 9-28. The Starting Sequence Number subfield of the Block Ack Starting Sequence Control subfield is 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. The Fragment Number subfield of the Block Ack Starting Sequence Control subfield is reserved and should be set to 0.

The BlockAck Bitmap subfield of the BA Information field is used to indicate the received status of MSDU's, where each entry represents an MSDU or an A-MSDU. The size of Block Ack Bitmap subfield is negotiated during the block ack establishment (see 10.24) and may contain 8, 16, 32, 64 octet or 128 octets. Each bit that is set to 1 in the BlockAck Bitmap subfield acknowledges the successful reception of a single MSDU or A-MSDU in the order of sequence number. The first bit of the BlockAck Bitmap subfield corresponds to the MSDU or A-MSDU with the sequence number that matches the value of the Starting Sequence Number subfield of the BlockAck Starting Sequence Control subfield. The maximum size of all BlockAck Bitmap subfields appended for all TIDs in one EDMG Multi-TID BlockAck is 256 bytes.

The RBUFCAP field is defined in 9.3.1.9.5.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

**9.4.2.250 EDMG Capabilities element**

**9.4.2.250.1 General**

*Change table 2 – Capability IDs as follows*

**Table 2—Capabilities IDs**

|  |  |
| --- | --- |
| **Capability**  | **Capabilities ID** |
| Beamforming  | 0 |
| Multi-BF  | 1 |
| Antenna Polarization Capability  | 2 |
| PHY Capability  | 3 |
| Supported Channels | 4 |
| EDMG Multi-TID  | 5 |

**9.4.2.250.6 Multi-TID field**

The EDMG Multi-TID capability field is defined in Figure TBD

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  | Reserved | EDMG Multi-TID Block-Ack Support |
| Bits: | 4 | 4 |

**Figure TBD— EDMG Multi-TID capability field format**

The EDMG Multi-TID Block-Ack Support subfield is defined in Table TBD

|  |  |  |
| --- | --- | --- |
| Subfield | Definition | Encoding |
| EDMG Multi-TID Block-Ack Support | Indicates the number of TIDs can be supported by STA in EDMG Multi-TID BlockAck.  | Set to the number of supported TIDs minus 1, Setting the subfield to ‘0’ indicates that STA do not support EDMG Multi-TID BlockAck format. |

**10.24.6 Selection of BlockAck and BlockAckReq variants**

*Change the following paragraph after the fourth paragraph*

In a DMG BSS, BlockAck and BlockAckReq frames transmitted between EDMG STAs as part of the HT-immediate agreement shall be of EDMG Compressed BlockAck variant and Compressed BlockAckReq variant or EDMG Multi-TID BlockAck variant and Multi-TID BlockAckReq variant, respectively.

*Insert the following paragraph after the last paragraph*

An EDMG originator may send Multi-TID BlockAckReq frame to its responder only if its respective EDMG Multi-TID BlockAck Support subfield has a non-zero value, the number of BAR Information fields included in the Multi-TID BlockAckReq frame shall not be greater than the value indicated in EDMG Multi-TID BlockAck Support subfield minus one and shall not exceeds BlockAck Bitmaps subfields size of more than 256 Bytes for all requested TIDs.

An EDMG STA that supports the EDMG Multi-TID BlockAck and receives a Multi-TID BlockAckReq frame shall respond with an EDMG Multi-TID BlockAck frame that contains a Per TID Info field with a Block Ack Bitmap subfield for each of the TIDs contained in the BlockAckReq frame, with Starting Sequence Number subfield set to the Starting Sequence Number subfield of the Block Ack Request Starting Sequence Control subfield and the length of the Block Ack Bitmap subfield calculated as defined in 10.24.2 (Setup and modification of the block ack parameters). The Responder shall not allocate more than 256 bytes for all the BlockAck Bitmaps subfields in one EDMG Multi-TID Block Ack.