IEEE P802.11
Wireless LANs

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| LB225, Comment resolution for 10.24.10 |
| Date: 2017-03-07 |
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Abstract

The document contains comment resolutions to 14 CIDs related clause 10.24.10.

Revision r0:

* The resolved CIDs are: 3051, 3052, 3053, 3207, 3208, 3209, 3210, 3211, 3212, ~~7538~~, 7786, 7787, 9695, 9864

References:

[1] Draft P802.11ax\_D1.0

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| 3051 | Abhishek Patil | 134.10 | Add text clarifying that GCR mechanism is used only for STAs that have indicated support for GCR (via bit 51 / 52 of Extended Capabilities Element). | As in comment | Revised -TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 3052 | Abhishek Patil | 134.26 | Why should AP send MU-BAR to solicit BA for a GCR session? | Remove MU BAR to solicit BA for GCR session | Accepted -TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 3053 | Abhishek Patil | 134.41 | Procedure for GCR MU BAR reception is missing | Add procedure upon reception of GCR MU BAR | Revised -TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 3207 | Ahmadreza Hedayat | 134.26 | "Upon reception of the BlockAck frame from one or more HE STAs, the originator may send an MU-BAR frame to one or more other HE STAs that have a GCR block ack agreement, and this process may be repeated multiple times." | "Upon reception of the BlockAck frame from one or more HE STAs, the originator may send an MU-BAR variant Trigger frame or a GCR MU-BAR variant Trigger frame to one or more other HE STAs that have a GCR block ack agreement, and this process may be repeated multiple times." | Revised -The mention of GCR MU-BAR Trigger frame is added to the referred text. TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 3208 | Ahmadreza Hedayat | 134.39 | "When an HE STA receives an MU-BAR frame with User Identifier subfield set to the AID of the HE STA, the HE STA shall transmit BlockAck frame in the indicated resource unit SIFS after the Trigger frame. The BlockAck frames report the HE STA's reception status of the block of group addressed frames requested by the MU-BAR frame." | "When an HE STA receives an MU-BAR variant Trigger frame or a GCR MU-BAR variant Trigger frame with User Identifier subfield set to the AID of the HE STA, the HE STA shall transmit Ack, BlockAck, or Multi-STABlockAck frame carried in the HE trigger-based PPDU sent as a response SIFS after the Trigger frame. The BlockAck frames report the HE STA's reception status of the block of group addressed frames requested by the MU-BAR variant Trigger frame or the GCR MU-BAR variant Trigger frame." | Revised -The mention of GCR MU-BAR Trigger frame is added to the referred text.TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 3209 | Ahmadreza Hedayat | 135.35 | "After completing the BlockAckReq or MU-BAR and BlockAck frame exchanges ..." | "After completing the BlockAckReq frame, MU-BAR variant Trigger frame, or GCR MU-BAR variant Trigger frame and BlockAck frame exchanges ..." | Revised -The mention of GCR MU-BAR Trigger frame is added to the referred text.TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 3210 | Ahmadreza Hedayat | 135.53 | "An originator may also send an MU-BAR frame with AID12 fields set to AIDs of HE STAs that transmit the BlockAck frames and the Block Ack Starting Sequence Control subfield set to the Sequence Number field of the earliest A-MSDU of the GCR stream that has not been acknowledged by all group members and has not expired due to lifetime limits, in order to minimize buffering latency at receivers in the GCR group." | "An originator may also send an MU-BAR variant Trigger frame or a GCR MU-BAR variant Trigger frame with the AID12 fields set to the AIDs of HE STAs that are expected to transmit the BlockAck frames and the Block Ack Starting Sequence Control subfield set to the Sequence Number field of the earliest A-MSDU of the GCR stream that has not been acknowledged by all group members and has not expired due to lifetime limits, in order to minimize buffering latency at receivers in the GCR group." | Revised -The mention of GCR MU-BAR Trigger frame is added to the referred text.TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 3211 | Ahmadreza Hedayat | 136.03 | "If the beginning of such reception does not occur during the first slot time following a SIFS, then the originator may perform error recovery by retransmitting a BlockAckReq frame or an MU-BAR frame PIFS after the previous BlockAckReq frame or an MU-BAR frame when both of the following conditions are met" | "If the beginning of such reception does not occur during the first slot time following a SIFS, then the originator may perform error recovery by retransmitting a BlockAckReq fram, an MU-BAR variant Trigger frame, or a GCR MU-BAR variant Trigger frame PIFS after the previous BlockAckReq frame or an MU-BAR variant Trigger frame or a GCR MU-BAR variant Trigger frame when both of the following conditions are met ..." | Revised -The mention of GCR MU-BAR Trigger frame is added to the referred text. TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 3212 | Ahmadreza Hedayat | 136.11 | "The remaining duration of the GCR TXOP is longer than the total time required to retransmit the GCR BlockAckReq frame or an MU-BAR frame plus one slot time" | "The remaining duration of the GCR TXOP is longer than the total time required to retransmit the GCR BlockAckReq frame, an MU-BAR variant Trigger frame, or a GCR MU-BAR variant Trigger frame plus one slot time" | Revised -The mention of GCR MU-BAR Trigger frame is added to the referred text. TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 7538 | Li-Hsiang Sun | 113.22 | 10.2.7 of 802.11-2016 specifies that 'anMSDU is transmitted using an HT-immediate or HT-delayed block ack agreement or when the MSDU or MMPDU is carried in an A-MPDU that does not contain a VHT single MPDU, in which case the MSDU or MMPDU is transmitted without fragmentation.'.The block ack agreement used in 11ax is considered HT-immediate BA agreement. This clause in baseline contradicts with dynamic fragementation | add 10.2.7 of 802.11-2016 to the ax draft and revise the condition in comment to allow dynamic fragmentation |  |
| 7786 | Mark Hamilton | 134.40 | There is no "User Identifier" subfield in an MU-BAR frame. | Change "User Identifier" to "AID12". Change "set to the AID" to "set to the least significant 12 bits of the AID". | Accepted -TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 7787 | Mark Hamilton | 135.53 | AID12 fields hold only a truncation of AIDs | Change "AID12 fields set to AIDs" to "AID12 fields set to the 12 least significant bits of AIDs" | Accepted -TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 9695 | Yongho Seok | 134.23 | "If the originator has a GCR block ack agreement with one or more of the HE STAs for this group address, the originator may send an MU-BAR frame (MU-BAR variant Trigger frame) or GCR MU-BAR frame (GCR MU-BAR variant Trigger frame) to one or more of the HE STAs."Two mechanisms (first is MU-BAR and second is GCR MU-BAR) for soliciting an UL MU based GCR Block ACK are defined.Remove GCR MU-BAR procedure from 10.24.10.3 (also remove 9.3.1.23.6). | As per commnet. | Revised -The only trigger frame that is proposed to be used for GCR mechanisem is the GCR MU-BAR Trigger frame and the mention of MU-BAR Trigger frame is now removed. TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |
| 9864 | Young Hoon Kwon | 134.24 | It is not clear if both MU-BAR and GCR MU-BAR are allowed to request BA for GCR frames. If MU-BAR can be used, why GCR MU-BAR is additionally defined? Need further clarification. | As in the comment. | Revised -The only trigger frame that is proposed to be used for GCR mechanisem is the GCR MU-BAR Trigger frame and the mention of MU-BAR Trigger frame is now removed. TGax editor to make the changes shown in 11-16/8888r0 under all headings that include this CID. |

***TGax editor: Modify the following clauses accordingly***

**10.24 Block acknowledgement (block ack)**

**10.24.10 GCR block ack**

**10.24.10.1 Introduction**

***TGax editor: Add the following to the end of 10.24.10.1***

An HE AP shall not send a GCR MU-BAR Trigger frame to a non-AP HE STA if it the STA has not indicated support via Extended Capabilities element bit 52 or 53. (#3051)

**10.24.10.3 GCR block ack BlockAckReq and BlockAck frame exchanges**

***Change the following 2nd and 3rd paragraphs as follows:***

When the retransmission policy for a group address is GCR Block Ack, an originator shall not transmit more than the GCR buffer size number of A-MSDUs with RA set to the GCR concealment address and the DA field of the A-MSDU subframe set to the GCR group address before sending a BlockAckReq frame to one of the STAs that has a GCR block ack agreement for this group address. The RA field of the BlockAckReq frame shall be set to the MAC address of the destination STA. Upon reception of the BlockAck frame, an originator may send a BlockAckReq frame to another STA that has a block ack agreement for this group address, and this process may be repeated multiple times. If the originator has a GCR block ack agreement with one or more of the HE STAs for this group address, the originator may send a GCR MU-BAR Trigger frame to one or more of the HE STAs. Upon reception of the BlockAck frame from one or more HE STAs, the originator may send a GCR MU-BAR Trigger frame to one or more other HE STAs that have a GCR block ack agreement, and this process may be repeated multiple times. (#3052, 3053, 3207, 3208, 9695, 9864)

NOTE 1— If the originator sends a BlockAckReq frame to a STA with a MAC address that matches the SA in any of the A-MSDUs transmitted during the GCR TXOP, the Block Ack Bitmap subfield does not indicate the MSDUs sourced from this STA. This is because the STA will have discarded all group addressed MPDUs transmitted by the AP that have the source address equal to their MAC address (see 10.3.6 (Group addressed MPDU transfer procedure)).

When a recipient receives a BlockAckReq frame with the GCR Group Address subfield equal to a GCR group address, the recipient shall transmit a BlockAck frame at a delay of SIFS after the BlockAckReq frame. The BlockAck frame acknowledges the STA’s reception status of the block of group addressed frames requested by the BlockAckReq frame. When an HE STA receives a GCR MU-BAR Trigger frame with the AID12 subfield set to the least significant 12 bits of the (#7786) AID of the HE STA, the HE STA shall transmit BlockAck frame in the indicated resource unit SIFS after the Trigger frame. The BlockAck frames report the HE STA's reception status of the block of group addressed frames requested by the GCR MU-BAR Trigger frame. (#3209, 3210, 9695, 9864)

Figure 10-36 (Example of a frame exchange with GCR block ack retransmission policy) shows an example of a frame exchange when the GCR block ackretransmission policy is used. The AP sends several A-MSDUs using the GCR block ack retransmission policy. The AP then sends a BlockAckReq frame to group member 1 of the GCR group, waits for the BlockAck frame, and then sends a BlockAckReq frame to group member 2. After receiving the BlockAck frame from GCR group member 2, the AP determines whether any A-MSDUs need to be retransmitted and sends additional A-MSDUs (some of which might be retransmissions of previous A-MSDUs) using the GCR block ack retransmission policy.

***TGax editor: Modify Figure 10-36a as follows: Change the instances of “MU-BAR Trigger” to “GCR MU-BAR Trigger”***

***Insert the following paragraph and associated figure:***

Figure 10-36a (Example of a frame exchange with GCR block ack retransmission policy) shows another example of a frame exchange when the GCR block ack retransmission policy is used. The HE AP sends sev-eral A-MSDUs using the GCR block ack retransmission policy. The HE AP then sends an MU-BAR to group members 1 and 2 of the GCR group, waits for the BlockAck frames, and then sends an MU-BAR to group members 3 and 4 and then waits for the BlockAck frame. The HE AP then sends a BAR frame to group member 5, which is a non-HE STA, and waits for the BlockAck frame. After receiving the BlockAck frames, the HE AP determines whether any A-MSDUs need to be retransmitted and sends additional A- MSDUs (some of which might be retransmissions of previous A-MSDUs) using the GCR block ack retrans-mission policy.

***Change the 6th,7th and 8th paragraph as follows:***

After completing the BlockAckReq or GCR MU-BAR Trigger and BlockAck frame exchanges, the originator determines from the information provided in the BlockAck bitmap and from the missing BlockAck frames which, if any, A-MSDUs need to be retransmitted.

An originator adopting the GCR block ack retransmission policy for a GCR group address chooses a lifetime limit for the group address. The originator may vary the lifetime limit for the group address at any time and may use different lifetime limits for different GCR group addresses. The originator transmits and retries each A-MSDU until the appropriate lifetime limit is reached or until each one has been received by all group members to which a BlockAckReq frame or a GCR MU-BAR Trigger frame has been sent, whichever occurs first.

For GCR streams with retransmission policy equal to GCR Block Ack, an originator may regularly send a BlockAckReq frame with the GCR Group Address subfield in the BAR Information field set to the GCR group address and the Block Ack Starting Sequence Control subfield set to the Sequence Number field of the earliest A-MSDU of the GCR stream that has not been acknowledged by all group members and has not expired due to lifetime limits, in order to minimize buffering latency at receivers in the GCR group. An originator may also send a GCR MU-BAR Trigger frame with AID12 fields set to the 12 least significant bits of (#7787) AIDs of HE STAs that transmit the BlockAck frames and the Block Ack Starting Sequence Control subfield set to the Sequence Number field of the earliest A-MSDU of the GCR stream that has not been acknowledged by all group members and has not expired due to lifetime limits, in order to minimize buffering latency at receivers in the GCR group.

NOTE 2—This is because an originator might transmit Management frames, QoS Data frames with a group address in the Address 1 field (including different GCR streams), and non-QoS Data frames intermingled. Since these are transmitted using a single sequence counter, missing frames or frames sent to group addresses absent from a receiving STA’s dot11GroupAddresses table complicate receiver processing for GCR streams with a GCR block ack retransmission policy since the cause of a hole in a receiver’s block ack bitmap is ambiguous: it is due either to an MPDU being lost from the GCR stream or to transmissions of MPDUs not related to the GCR service using the same sequence number counter.

***Change the last paragraph as follows:***

If the beginning of such reception does not occur during the first slot time following a SIFS, then the origi-nator may perform error recovery by retransmitting a BlockAckReq frame or a GCR MU-BAR Trigger frame PIFS after the previous BlockAckReq frame or a GCR MU-BAR Trigger frame when both of the following conditions are met:

— The carrier sense mechanism (see 10.3.2.1 (CS mechanism)) indicates that the medium is idle at the TxPIFS slot boundary (defined in 10.3.7 (DCF timing relations)) after the expected start of a Block- Ack frame, and

— The remaining duration of the GCR TXOP is longer than the total time required to retransmit the GCR BlockAckReq frame or a GCR MU-BAR Trigger frame plus one slot time. (#3211, 3212, 9695, 9864)

NOTE 3—If an originator fails to receive a BlockAck frame in response to a BlockAckReq frame and there is insufficient time to transmit a recovery frame, the AP retransmits the BlockAckReq frame in a new TXOP.