IEEE P802.11
Wireless LANs

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| CIDs related to UORA procedure – Part 1 (Initialization) |
| Date: 2018-05 |
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Abstract

Comment resolution with proposed changes to TGax D2.3 for CIDs from the WG LB for TGax related to UORA initialization.

The CID list is:

 13400, 13653, 13761, 13095.

The proposed changes on this document are based on TGax Draft 2.3.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: update after receiving some comments (mainly clarify the added sentence in 27.5.5.3)
* Rev 2: update after presentation in ad-hoc (no OCW update upon reception of an UORA parameter set with OCWmin < OCW)

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.***

**CIDs**

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| CID | Commenter | Clause | Page No. | Comment | Proposed Change | Resolution |
| 13400 | ron porat | 27.5.5.2 | P258 L52 | HE STA reinitialize OBO counter only after successful 'random access' HE TB PPDU transmission, not on every HE TB PPDU transmission, according to the example shown in Figure 27-5 and also description on paragraph starting at line 63. | Change to:"After each successful HE TB PPDU transmission in a random access RU," | AcceptedModifications in doc 11-18-0360r2 solves this comment. Changes are already incorporated in D2.3.  |
| 13653 | Tomoko Adachi | 27.5.5.2 | P258 L18 | "If the HE TB PPDU is not successfully transmitted in the selected random access RU, then the STA shall update its OCW to 2 x OCW + 1 when the OCW is less than the value of OCWmax, and shall randomly select its OBO counter in the range of 0 and OCW." What happens when the OCW range changes? For example, the current OCW or 2 x OCW + 1 may become larger than the latest OCWmax. Or they may be less than the latest OCWmin. Need a description. Furthermore, the part ", and shall randomly select its OBO counter in the range of 0 and OCW" is obvious to do so from the concept of OCW. | Change to "If the HE TB PPDU is not successfully transmitted in the selected random access RU, then the STA shall update its OCW to 2 x OCW + 1 under the condition that the updated OCW is within the range of the latest OCWmin and OCWmax. If 2 x OCW + 1 exceeds the latest OCWmax, then the STA shall updates its OCW to the latest OCWmax. If 2 x OCW + 1 is less than the latest OCWmin, then the STA shall updates its OCS to the latest OCWmin." | RevisedAgree with the principle.The updated OCW remains within the range [OCWmin, OCWmax] obtained from the most recently received UORA Parameter Set element.TGax editor, please make changes as shown in doc 11-18/0695r2 that are marked with CID 13653 |
| 13761 | Xiaofei Wang | 27.5.5.3 | P260 L00 | "If the HE TB PPDU is not successfully transmitted in the selected random access RU, then the STA shall update its OCW to 2OCW + 1 when the OCW is less than the value of OCWmax, ..."The sentence is not clear. In one understanding, when OCW is less than OCWmax, we could use OCWnew=2OCW+1, but it is possible that OCWnew is greater than OCWmax. | Change the phrase "update its OCW to 2OCW+1" to "update its OCW to min(2 OCW+1, OCWmax)." | RevisedAgree with the principle.Same as previous comment.The updated OCW remains within the range [OCWmin, OCWmax] obtained from the most recently received UORA Parameter Set element.TGax editor, please make changes as shown in doc 11-18/0695r2 that are marked with CID 13761 |
| 13095 | Patrice Nezou | 27.5.5.2 | P258 L52 | "After each successful HE TB PPDU transmission, an HE STA shall set the value of OCW to the OCWmin obtained from the most recent OCWmin indicated in the UORA Parameter Set element from the HE AP and shall initialize its OBO counter to a random integer value in the range of 0 and OCW."How to initialize OCW when no successful HE TB PPDU transmission occur ? | Modify the text as following:"After each successful HE TB PPDU transmission and upon the first time that a Trigger frame containing random access RUs is received, an HE STA shall set the value of OCW to the OCWmin obtained from the most recent OCWmin indicated in the UORA Parameter Set element from the HE AP and shall initialize its OBO counter to a random integer value in the range of 0 and OCW." | RevisedAgree with the comment.Text is amended to clearly mention the initialization by a non-AP HE STA of the OCW and OBO for first transmission after setting the RAPS configuration. This covers also the non-associated STA case. TGax editor, please make changes as shown in doc 11-18/0695r2 that are marked with CID 13095 |

**Proposed text**

* UL OFDMA-based random access (UORA)
* General

***TGax Editor: Please make changes as shown below:***

[13095]A non-AP HE STA with dot11OFDMARandomAccessOptionImplemented equal to true shall set the UL OFDMA RA Support subfield in the HE MAC Capabilities Information field of the HE Capabilities element to 1. Otherwise, it shall set the UL OFDMA RA Support subfield to 0.

NOTE—A STA that does not support UORA can contend for the WM using EDCA for sending UL frames to the AP with which it intends to communicate.

A non-AP STA with dot11OFDMARandomAccessOptionImplemented(#11985) set to true shall follow the procedure defined in 27.5.5.2 (UORA procedure) to contend for an eligible RA-RU.(#11033, #13196)

(18/360r2)An HE AP that transmits a Trigger frame for random access, shall set the AID12 subfield of a User Info field in the Trigger frame to 0 to indicate that the RA-RU is allocated for a STA associated with it, and shall set the AID value 2045 to indicate that the RA-RU is allocated for a STA not associated with it.(#14210)

An HE AP may transmit a Basic Trigger frame, BQRP Trigger frame or a BSRP Trigger frame that contains one or more RUs for random access.

NOTE—Trigger frame variants other than Basic, BQRP or BSRP are not allowed to carry RA-RUs(#11033).

An HE AP that transmits a Basic Trigger frame should set the TID Aggregation Limit subfield in the User Info field indicating an RA-RU(#11033) to 0 or 1.

The HE AP may include the UORA Parameter Set element (see 9.4.2.239 (UL OFDMA-based Random Access (UORA) Parameter Set element) in Management frames(#12146) that it transmits(18/360r2). The AP shall indicate the range of OFDMA contention window (OCW) in the UORA Parameter Set element for HE STAs to initiate random access following the Trigger frame transmission.

An HE BSS belonging to a Multiple BSSID set (see 11.11.14 (Multiple BSSID set)) may advertise OCW Range values via the UORA Parameter Set element carried in the Management frames sent by the transmitted BSSID.(18/360r2) An HE AP may include the UORA Parameter Set element in a nontransmitted BSSID profile subelement carried in the Multiple BSSID element (see 9.4.2.46 (Multiple BSSID element)) to provide different OCW Range values for STAs associated with that nontransmitted BSSID.

(#13651)An HE STA shall maintain an internal OCW and an internal OBO counter. OCW is an integer in the range *OCWmin* to *OCWmax*(#Ed). A non-AP HE STA shall obtain *OCWmin* and *OCWmax* from the most recently received UORA Parameter Set element carried in the Management frames transmitted by its associated AP. A non-AP STA with dot11MultiBSSIDActivated set to true and associated with a nontransmitting BSSID shall inherit the OCW range values from the UORA Parameter Set element when advertised by the transmitted BSSID if the element is not carried in the Nontransmitted BSSID Profile subelement for that BSSID.(#12222)

(#13651)An HE STA that has not received a UORA Parameter Set element from the AP with which it intends to communicate, shall use the default values *OCWmin* = 7 and *OCWmax* = 31 when contending for RA-RUs allocated by that AP.(#14208, #12224)

***TGax Editor: Please add a new paragraph with its corresponding note after the last paragraph as indicated below (27.5.5.1 11ax D2.3 P290L1):***

[13095]Each time a non-AP HE STA associates with a different AP (or a different BSSID for non-AP STA with dot11MultiBSSIDActivated set to true), and prior an initial attempt of RA-RU transmission towards it, the STA shall set the value of OCW to the *OCWmin* value, and shall initialize its OBO counter in the range 0 to OCW as defined in 27.5.5.3 (UORA procedure).

* UORA procedure

***TGax Editor: Please make the following changes to the 3rd paragraph in 27.5.5.2 (11ax D2.3 P291L1):***

[13095]After each successful HE TB PPDU transmission in a RA-RU, a non-AP HE STA shall set the value of OCW to the *OCWmin* obtained from the most recent *OCWmin* indicated in the UORA Parameter Set element from the HE AP or the default (if UORA Parameter Set element was not received) and shall initialize its OBO counter to a random integer value in the range of 0 to OCW(#Ed)..

* Retransmission procedure for UORA

An HE STA whose HE TB PPDU transmission sent in a RA-RU(#11033) of a Trigger frame is unsuccessful, may attempt to retransmit the failed PPDU using EDCA or as a response to a Trigger frame.

If the HE TB PPDU is not successfully transmitted in the selected RA-RU(#11033), then the STA shall update its OCW to 2OCW + 1 when the OCW is less than the value of *OCWmax*, and shall randomly select its OBO counter in the range of 0 and OCW. Once the OCW reaches *OCWmax* for successive retransmission attempts, the OCW shall remain at the value of *OCWmax* until the OCW is reset as described in 27.5.5.3 (UORA procedure).

***TGax Editor: Please insert a new paragraph after the 2nd paragraph, with the changes as indicated below (27.5.5.3 11ax D2.3 P292L8):***

[13653, 13761]A HE STA shall update its OCW value under the condition that the updated OCW remains in the range *OCWmin* to *OCWmax* obtained from the most recently received UORA Parameter Set element (see 9.4.2.239 (UL OFDMA-based Random Access (UORA) Parameter Set element)). If the updated OCW becomes greater than *OCWmax* as consequence of receiving a modified UORA Parameter Set element, then the HE STA shall set the value of OCW to the new *OCWmax* value.

The transmission of the HE TB PPDU does not affect QSRC[AC] and QLRC[AC] (see 10.22.2.11 (Retransmit procedures)).

* Additional considerations for unassociated STAs(#13796)

***TGax Editor: Please make the following changes to the 4th paragraph in 27.5.5.5 (11ax D2.3 P292L42):***

[13095]An unassociated non-AP STA that has not received an UORA Parameter Set element from the AP with which it intends to communicate shall use the default OCW values as defined in 27.5.5.1 (General).(#11732) Each time an unassociated HE STA communicates with a different AP using random access it shall initiate its OFDMA contention window (OCW)using the default values or the parameters from the UORA Parameter Set element received from that AP(#13796) , and shall initialize its random access backoff (OBO) counter as defined in 27.5.5.3 (UORA procedure).