IEEE P802.11
Wireless LANs

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| Resolution for CIDs related to Random Access |
| Date: May 3, 2018 |
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 Abstract

This submission proposes resolutions for comments received from TGax LB230 (2): 11713, 13925

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Fixed incorrect reference in FILS Discovery frame format.
* Rev 2: Changes in section 27.14.2 and 9.3.1.23 to capture the discussion during MAC ad-hoc 5/2 PM1
* Rev 3: Changed based on discussion during MAC ad-hoc 5/2 PM2.

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** | **Pg / Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 11713 | Evgeny Khorov | 257.15 | 27.5.5 | Add a method to send PS-Polls with UORA | Add a dedicated value of AID12 which allows sending only PS-polls. Specify the procedure of sending buffered data in downlink | **Revised**The spec allows STAs to send a PS-Polls as a response to a trigger frame when the TID Aggregation limit is set to 1. Therefore, there is no need to add another method for something that can already be done. |
| 13925 | Yongho Seok | 258.15 | 27.5.5.1 | "A non-AP STA with dot11OFDMARandomAccessOptionImlemented set to true shall follow the random access procedure defined in 27.5.5.2 (UORA procedure) to contend for an RU assigned for random access."When an AP STA transmits a public action framem to another AP, couldn't it transmit it by using the random access procedure? Probably supported. Then, change "A non-AP STA" to "A STA". | As in comment. | **Reject**Permitting a Trigger-based (random access) between APs to send trigger frames will open doors to a variety of possibilities which would lead to lengthy (and potentially messy) spec text to manage the various exception cases (e.g., which trigger variant are allowed, conditions when such triggers can be sent, the values permitted in a TF field etc). In addition, the spec would need to clarify behavior for intra/inter NAV and advertising capability information (i.e., a AP STA supports receiving TF from another AP STA), etc. The use case is quite limited and doesn’t justify the massive amount of changes and additional spec text. |

**TGax editor**: This document includes changes that are not related to the above CIDs. These changes were either missing in documents approved in the past (which were motion during previous meetings) or are required to fix ambiguities in the spec.

TGax Editor: Please move the contents of this section to the end of section 27.5.5.6 and delete this section:

* + - 1. Additional considerations for unassociated STAs

TGax Editor: Please modify the following paragraphs in this section as follows:

An unassociated non-AP STA that supports the UORA and TWT procedure may begin listening for Trigger frames at the start of a particular broadcast TWT SP after receiving a Beacon frame, a broadcast Probe Response frame or a FILS Discovery frame containing a TWT element indicating that the particular TWT SP shall include Trigger frames with at least one RA-RU for unassociated STAs (see 27.7.3.1 (General)).

TGax Editor: The below content is moved from 27.5.5.5 – please make the suggested changes and add it as a last paragraph of this section:

by following the UORA procedure

* General

TGax Editor: Please modify the following paragraph in section 10.2.1 as follows:

Change the 2nd paragraph as follows:

In a non-DMG non-S1G STA:

* The MAC provides the PCF, HCF, ~~and~~ MCF, TUA services using the services of the DCF.
* The PCF is optionally present in nonmesh STAs and absent otherwise.
* The HCF is present in QoS STAs and absent otherwise.
* The MCF is present in mesh STAs and absent otherwise.
* The TUA is present in non-AP HE STAs and absent otherwise.
* **Introduction**

***Change as follows:***

TGax Editor: Please modify the following paragraph in section 10.1 as follows:

The MAC functional description is presented in this clause. The architecture of the MAC sublayer, including the distributed coordination function (DCF), the point coordination function (PCF), the hybrid coordination function (HCF), the mesh coordination function (MCF), the Triggered UL access (TUA), and their coexistence in an IEEE 802.11 LAN are introduced in 10.2 (MAC architecture). These functions are expanded on in 10.3 (DCF), 10.4 (PCF), 10.24 (HCF), ~~and~~ 10.25 (Mesh coordination function (MCF)), and 27.2 (HE channel access). Fragmentation and defragmentation are defined in 10.5 (MPDU fragmentation) and 10.6 (MPDU defragmentation). Multirate support is addressed in 10.7 (Multirate support). A number of additional restrictions to limit the cases in which MSDUs are reordered or discarded are described in 10.8 (MSDU transmission restrictions). Operation across regulatory domains is defined in 10.23 (Operation across regulatory domains). The block ack mechanism is described in 10.26 (Block acknowledgment (block ack)). The No Ack mechanism is described in 10.27 (No Acknowledgment (No Ack)). The protection mechanism is described in 10.28 (Protection mechanisms). Rules for processing MAC frames are described in 10.29 (MAC frame processing).

TGax Editor: Please modify the title and text in the paragraph in section 10.2.6 as shown below:

***Change the title and first paragraph of 10.2.6 as follows:***

* **Combined use of DCF, PCF, ~~and~~ HCF, and TUA**

The DCF and a centralized coordination function (either PCF, ~~or~~ HCF, or TUA) are defined so they may operate within the same BSS. When a PC is operating in a BSS, the PCF and DCF access methods alternate, with a CFP followed by a CP. This is described in greater detail in 10.4 (PCF). When an HC is operating in a BSS, it may generate an alternation of CFP and CP in the same way as a PC, using the DCF access method only during the CP. The HCF access methods (controlled and contention based) operate sequentially when the channel is in CP. Sequential operation allows the polled and contention based access methods to alternate, within intervals as short as the time to transmit a frame exchange sequence, under rules defined in 10.22 (HCF).

* General

TGax Editor: Please modify the 8th & 9th paragraphs in section 27.5.5.1 as follows:

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. An HE AP may include the UORA Parameter Set element in a nontransmitted BSSID profile 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.

An HE STA shall maintain an internal OCW and an internal OBO counter. OCW is an integer in the range *OCWmin* to *OCWmax*. 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 for that BSSID.

* FILS Discovery frame format

***TGax Editor: Please modify the following paragraph of this section as shown below:***

The FILS Discovery frame may include a broadcast TWT element, which is defined in 9.4.2.200 (TWT element), to aid an unassociated STA determine when it can start listening for Trigger frames from this AP containing RA-RUs with AID12 set to 2045 (see 27.5.5.6 (Additional considerations for unassociated STAs) and 27.7.3.1 (General)).

* Power save with UORA

***TGax Editor: Please modify the 6th paragraph of this section as shown below:***

An AP shall set the No More RA-RU subfield in a User Info field with AID12 subfield equal to 0 (for an associated STA) or 2045 (for an unassociated STA) to 1 if it does not intent to allocate the corresponding RA-RUs in subsequent Trigger frames until either the end of the current TWT SP or the duration indicated by the Duration/ID field in case of no TWT SP.

***TGax Editor: Please modify the 7th paragraph of this section as shown below:***

by following the procedure described in 27.5.5.3 (UORA procedure) and if

If the OBO counter decrements to a non-zero value, then the STA may enter the doze state immediately until either the end of the current TWT SP or the duration indicated by the Duration/ID field in case of no TWT SP if no other condition requires it to remain awake and the following conditions are met:

* The More TF subfield in the Common Info field of the Trigger frame is equal to 0.
* The More TF subfield in the Common Info field of the Trigger frame is equal to 1 and the No More RA-RU subfield in User Info fields with AID12 subfield equal to 0 (for an associated STA) or 2045 (for an unassociated STA) is equal to 1.

* Trigger frame format

***TGax Editor: Please modify the following paragraph of this section as shown below:***

The No More RA-RU subfield is set to 1 to indicate that RA-RUs are not allocated in subsequent Trigger frames that are sent until either the end of the current TWT SP or the duration indicated by the Duration/ID field in the case of no TWT SP.