### IEEE P802.11 Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **REVme CR for assigned CIDs – Part 1** | | | | |
| Date: 2023-06-20 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Alfred Asterjadhi | Qualcomm Inc. | San Diego, California |  |  |

Abstract

This document contains proposed resolutions for several LB 273 REVme comments (3 CIDs):

* 4416, 4413, 4005.

Revisions:

* Rev 0: Initial version of the document
* Rev 1: Amended after presenting on June 23. CID 4416 and 4414 are updated and are R4M. CID 4005 needs more work.
* Rev 2: Updated resolution for CID 4005, including the feedback received during the presentation.

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 REVme Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the REVme Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***REVme Editor: Editing instructions preceded by “REVme Editor” are instructions to the REVme editor to modify existing material in the REVme draft. As a result of adopting the changes, the REVme editor will execute the instructions rather than copy them to the REVme Draft.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| 4416 | Alfred Asterjadhi | 2002.00 | QoS null entry is missing. It was added by IEEE802.11ax. | Please add the entry for QoS Null. I have noticed a couple of entries missing out. So please check that proposed changes from IEEE802.11ax make it to baseline. | Revised –  Agree with the comment. Proposed resolution is to provide editorial instructions to the editors to make the change.  **REVme Editors Note:** Please ensure that all changes of IEEE802.11ax-2021 are incorporated in IEEE802.11REVme.  **REVme Editors:** Please insert a new bullet “QoS Null” in P2002L39 of IEEE802.11REVme D3.0. |
| 4413 | Alfred Asterjadhi | 3911.00 | TWT field of B-TWT has a unit of 1 TU (since the 9 last bits are 0) but TWT wake interval has a unit of 1 us. Something does not add up. | Ensure that they have consistent time units and that the signaling between the TWT and Wake interval is aligned. | Revised –  Agree in principle with the comment. Proposed resolution is to clarify that the TWT wake interval is set to values that are multiples of 1 TU, so that the times indicated by the TWT field and the TWT wake interval + the previous TWT fields are consistent. This is for the periodic case.  **TGme editor: please implement changes as shown in 11-23/951r1 tagged 4413.** |
| 4005 | Abhishek Patil | 705.18 | The paragraph starting P705L18 describes a behavior which should be covered in normative clause on TWT. In addition, it is not clear which STA (non-AP or AP) transmits another TWT request frame (I'm guessing it is the non-AP STA) - please clarify this aspect. Furthermore, the paragraph suggests that the TWT element might not be present in the Association Response frame even when the Association Request frame carried it; which means the first condition must say "...element is optionally present..." instead of "... is present..." unless this condition applies to a specific type of TWT (i.e., individual or broadcast TWT) - please clarify this aspect as well. If, based on the above explanation, the term 'present' is replaced with 'optional' in the 1st paragraph, then the two conditions can be consolidated as: "The TWT element is optionally present if dot11TWTOptionActivated is true and any of the following is true: - The TWT element is present in the Association Request frame that elicited this Association Response frame. - HEOptionImplemented is true and the TWT Requester Support field in the HE Capabilities element in the Association Rquest frame that elicited this Assocition Response frame is 1."   The same comment applies for Reassoc Response frame. | As in comment | Revised –  Agree in principle with the comment. The following items were clarified to address the comment:   1. The behavior is moved to clause 10.47 as a recommendation for an AP that has dot11HEOptionImplemented to true to be recommended to transmit the TWT element in (re)assoc response frames, inline with the text in these tables, 2. Fixed the conflict between the first paragraph (which is targeting STAs that are not HE STAs) and the second paragraph (which is targeting HE STAs) in terms of presence of the TWT element in the respective (re)assoc response frames, 3. Clarified that it is the non-AP STA that sends the TWT request frame, as part of the note being introduced in 10.47 to reflect the possibility of sending a new TWT request.   **TGme editor: please implement changes as shown in 11-23/951r2 tagged 4005.** |

### CID 4416 - Discussion

***Discussion - Below is a snapshot of IEEE802.11ax D8.0***

****



***Below is a snapshot of IEEE802.11REVme D3.0***

****

### CID 4413

* **Broadcast TWT operation**
* **Rules for TWT scheduling AP**

**REme Editor: *Change the paragraph below of this subclause as follows (#CID 4413):***

The TWT scheduling AP shall include a nonzero value for the TWT wake interval in the TWT Wake Interval Exponent and TWT Wake Interval Mantissa fields for a periodic TWT and a zero value for an aperiodic TWT. The TWT wake interval shall be a multiple of 1 TU.*(#4413)*

### CID 4005

* **Association Response frame format**

**REme Editor: *Change the entry below of this table as follows (#CID 4005):***

|  |  |  |
| --- | --- | --- |
| * **Association Response frame body** | | |
| **Order** | **Information** | **Notes** |
| … | | |
| 40 | TWT | The TWT element is present if dot11TWTOptionActivated is true, dot11HEOptionImplemented is not true and the TWT element is present in the Association Request frame that elicited this Association Response frame.*(#4005)*  The TWT element is optionally present if dot11TWTOptionActivated is true, dot11HEOptionImplemented is true, and the TWT Requester Support field in the HE Capabilities element in the Association Request frame that elicited this Association Response frame is 1.  Otherwise, the TWT element is not present.  *(#4005)* |
| … | | |

* **Reassociation Response frame format**

**REme Editor: *Change the entry below of this table as follows (#CID 4005):***

|  |  |  |
| --- | --- | --- |
| * **Reassociation Response frame body** | | |
| **Order** | **Information** | **Notes** |
| … | | |
| 43 | TWT | The TWT element is present if dot11TWTOptionActivated is true, dot11HEOptionImplemented is not true and the TWT element is present in the Reassociation Request frame that elicited this Reassociation Response frame.*(#4005)*  (The TWT element is optionally present if dot11TWTOptionActivated is true, dot11HEOptionImplemented is true, and the TWT Requester Support field in the HE Capabilities element in the Reassociation Request frame that elicited this Reassociation Response frame is 1.  Otherwise, the TWT element is not present.  *(#4005)* |
| … | | |

* **Target wake time (TWT)**
* **TWT overview**

…

**REme Editor: *Change the paragraphs below of this subclause as follows (#CID 4005):***

An AP with dot11TWTOptionActivated equal to true shall transmit a TWT element to a STA that is associated to the AP and from which it received a frame containing a TWT element that contained a value of Request TWT, Suggest TWT or Demand TWT in the TWT Setup Command field(11ax) and with the TWT Request field equal to 1 except when the received frame is a (Re)Association Request frame sent by an HE STA in which case the AP should transmit a TWT element to the STA.*(#4005)* The transmitted TWT element shall be included in the frame that is the appropriate response frame to the received frame. The AP shall include a value of Accept TWT, Alternate TWT, Dictate TWT or Reject TWT in the TWT Setup Command field(11ax) of the response and shall set the TWT Request field to 0. If the AP response’s TWT Setup Command field(11ax) includes anything other than Accept TWT or Reject TWT, the STA should send a new request for a TWT value by sending another frame that contains a TWT element, modifying the parameters of the request to indicate, for example, an acceptance of a proposed alternate TWT or dictated TWT value. If the STA receives a TWT response to a TWT request with the TWT Setup Command field(11ax) value of Accept TWT, then the STA has successfully completed a TWT setup with that STA for the TWT Flow Identifier indicated in the TWT response and the STA becomes a TWT requesting STA and the STA may enter the doze state until the TSF matches the next TWT value of the STA, provided that the STA has indicated that it is in a power save mode and no other condition requires the STA to remain awake. The AP becomes a TWT responding STA of the TWT requesting STA.

NOTE 1—A TWT responding STA might choose a TWT Flow Identifier for the TWT response that is different from the TWT Flow Identifier of a received TWT request.

NOTE 2—If the frame that contains the TWT element is a (Re)Association Request frame, and the solicited (Re)Association Response frame does not contain a TWT element then the non-AP STA can transmit another TWT request to the associated AP after (re)association.*(#4005)*

NOTE 3—A TWT requesting STA might renegotiate the TWT parameters of an existing TWT agreement by sending to the TWT responding STA a TWT request with a Flow Identifier that corresponds to that TWT agreement. The TWT response sent by the TWT responding STA containing the TWT Setup Command field of Accept TWT will indicate whether the newly requested TWT parameters are accepted or whether the previously negotiated TWT parameters are still in place.*(#4005)*