IEEE P802.11
Wireless LANs

|  |
| --- |
| Proposed resolution for CID 9958 |
| Date: July 6, 2017 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Abhishek Patil | Qualcomm Inc. |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi | Qualcomm Inc. |  |  | aasterja@qti.qualcomm.com |
| George Cherian | Qualcomm Inc. |  |  | gcherian@qti.qualcomm.com |

Abstract

This submission proposes resolutions for CID 9958 received for TGax LB225

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Editorial fixes based on feedback received when the doc was presented (PM3 MAC ad-hoc 7/11/17)

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.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Section** | **Pg / Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 9958 | Young Hoon Kwon | 200.20 | 27.14.2 | When an HE STA receives a Probe Response frame with broadcast TWT element, the STA can participate in the random access based operation. Therefore, it'd be better if the description includes not only for associated STAs but also for unassociated STAs. Further clarification is needed. | As in the comment. | RevisedAgree with the comment. Broadcast Probe Response frames are intended for (and monitored by) unassociated STAs. Current spec (D1.3) allows an AP to include B-TWT in a broadcast probe response even when it doesn’t plan to include an RA-RU’s for unassociated STAs (i.e., AID12=2045). Therefore, per current spec, when a broadcast Probe Response frame advertises a broadcast TWT element (with flow identifier 2), there is an ambiguity as to whether the TWT SPs will have RA RUs for associated, unassociated or both. This resolution intents to fix this ambiguity by defining a condition that an AP may include B-TWT element in a broadcast probe response only if it intends to include (at least one) RA-RU with AID12=2045 in the TFs that it transmits during the Bcast TWT. Same logic applies to FILS Discovery frames which are intended to aid unassociated STAs. TGax editor: Please make changes as described in doc 11-17/1062r1  |

*
* Power save with UORA

TGax Editor: Please make the following changes to the 3rd paragraph in section 27.14.2 (D1.3 P272L20):

An associated HE STA that receives a Management frame containing a TWT element that has a value of 1 in the Broadcast subfield and a value of 2 in the TWT Flow Identifier subfield may enter the doze state until the start of that broadcast TWT SP described in 27.7.3.3 (Rules for TWT scheduled STA). An associated STA shall follow the procedure defined in 27.5.4 (UL OFDMA-based random access (UORA)) when the AP includes one or more RUs with AID12 value equal to 0 in a Trigger frame transmitted during that broadcast TWT SP.

TGax Editor: Please add the following paragraph after the 3rd paragraph in section 27.14.2 (D1.3 P272L24):

An unassociated HE STA that receives a Beacon frame or a broadcast Probe Response frame or a FILS Discovery frame containing a TWT element that has a value of 1 in the Broadcast subfield and a value of 2 in the TWT Flow Identifier subfield may enter the doze state until the start of that broadcast TWT SP described in 27.7.3.3 (Rules for TWT scheduled STA). An unassociated STA shall follow the procedure defined in 27.5.4 (UL OFDMA-based random access (UORA)) when the AP includes one or more RUs with AID12 value equal to 2045 in a Trigger frame transmitted during that broadcast TWT SP.

* **Broadcast TWT operation**
* **General**

TGax Editor: Please make the following changes to the 2nd paragraph in section 27.7.3.1 (D1.3 P242L30):

A TWT scheduling AP may include a broadcast TWT element in the Beacon frame.

The TWT scheduling AP shall not include a broadcast TWT element in broadcast Probe Response frames unless both of the following conditions are satisfied:

* the AP’s dot11FILSOmitReplicateProbeResponses is equal to true
* the TWT Flow Identifier subfield is set to 2 and the AP has scheduled transmission of a Trigger frame with at least one RU with the AID12 subfield equal to 2045 during the next scheduled TWT SP.

The TWT scheduling AP shall not include a broadcast TWT element in FILS Discovery frames unless the TWT Flow Identifier subfield is set to 2 and the AP has scheduled transmission of a Trigger frame with at least one RU with the AID12 subfield set to 2045 during the next scheduled TWT SP.

* **FILS Discovery frame format**

TGax Editor: Please make the following changes in section 9.6.8.36 (D1.3 P142L143):

***Change Table 9-325a (FILS Discovery frame format) as follows (only modified rows are shown):***

|  |
| --- |
| * **FILS Discovery frame format**
 |
| **Order** | **Information** | **Notes** |
| ~~6~~ | ~~Vendor Specific element~~ | ~~One or more Vendor Specific elements are optionally~~~~present.~~ |
| 7 | TIM element | The TIM element is optionally present when dot11HEOptionImplemented is true, otherwise it is not present. |
| 8 | Broadcast TWT element | The broadcast TWT element is optionally present when dot11HEOptionImplemented is true, otherwise it is not present. |

***Insert the following at the end of the subclause:***

The FILS Discovery frame may include a TIM element, which is defined in 9.4.2.6 (TIM element), for operation as defined in 27.14.3 (Opportunistic power save).

The FILS Discovery frame may include a broadcast TWT element, which is defined in 9.4.2.200 (TWT element), to aid unassociated STAs make decisions related to power save (as described in 27.14.2 (Power save with UORA)) and transmissions to the AP via random access as described in 27.5.4 (UL OFDMA-based random access (UORA)).