IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CIDs related to Multiple BSSID topic – Part 3 | | | | |
| Date: January 10, 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 following CID received for TGax LB230 (10):

13261, 11753, 13143, 12222, 11339, 11036, 13780, 13794, 12175, 13012

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revised based on feedback received when the doc was presented during MAC ad-hoc (1/10/18)
  + Revised resolution for 13143 to cover AID12=0 (random access for associated STA) case.
  + Added resolution for CID 12175

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** | **Pg / Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 13261 | Robert Stacey | 235.61 | 27.4.1 | The state of dot11MultiBSSActivated is not relavant here. Whether or not a Multi-STA BlockAck frame has a "transmitted BSSID" in the TA field should depend on the capabilities of the recipient STAs as signaled in the HE Capabilities element of each. Also, if the transmitted BSSID is also the BSSID for some STAs that should be taken into account. | Correct the requirement here so that it identifies the recipient capabilities and also accounts for STAs on the BSS with the transmitted BSSID (those STAs don't need any special capability since they won't filter the frame). | **Reject**  The previous paragraph in this section (D2.0, pg 235, ln 55) already covers the case for AP to determine which STAs to include in a multi-BSS Multi-STA BA. This paragraph provides the rules for setting the TA field depending whether the multi-STA BA is for STAs within the same BSS or multi-BSS case. In case of STAs associated with transmitted BSSID, it shouldn’t matter whether the multi-STA BA is addressed to STAs within that BSS or covers multi-BSS. |
| 11753 | GEORGE CHERIAN | 235.62 | 27.4.1 | Add the condition as shown below. Change from: "An AP that transmits a Multi-STA BlockAck frame addressed to HE STAs shall set the TA field of the frame to the MAC address of the AP, except when dot11MultiBSSIDActivated is true and the Multi-STA..." To: An AP that transmits a Multi-STA BlockAck frame addressed to HE STAs shall set the TA field of the frame to the MAC address of the AP, except when dot11MultiBSSIDActivated is true and if the HE AP has received from the STA an HE Capabilities element with the Rx Control Frame To MultiBSS subfield in HE MAC Capabilities Information field set to 1, and the Multi-STA.... | As in the comment | **Reject**  The previous paragraph in this section (D2.0, pg 235, ln 55) already covers the case for AP to determine which STAs to include in a multi-BSS Multi-STA BA. This paragraph provides the rules for setting the TA field depending whether the multi-STA BA is for STAs within the same BSS or multi-BSS case. In case of STAs associated with transmitted BSSID, it shouldn’t matter whether the multi-STA BA is addressed to STAs within that BSS or covers multi-BSS. |
| 13143 | Po-Kai Huang | 249.58 | 27.5.3.3 | It should be clarified that the TA of the Trigger frame must be the associated AP or the AP that sends the transmitted BSSID, when the AID matches. | Calrify that when the AID matches the AID of the STA, the TA of the Trigger frame must be the associated AP or the AP that sends the transmitted BSSID. Same thing for AID 0. | **Revised**  Agree with the comment.  Text in this section was revised to include the multiple BSSID case. Also updated text in 27.2.5.3 to make it consistent.  **TGax editor, please make changes as suggested in doc 11-17/1861r1 under CID 13143** |
| 12222 | kaiying Lv | 257.65 | 27.5.5.1 | What OCW Range value a non-AP STA with dot11MultiBSSIDActivated set to true should use if it has received UORA Parameter Set element from both transmitted BSSID and non-transmitted BSSID | Please clarify it. | **Revised**  D2.0 has a sentence at the end of pg 257 which states that the STA inherits the value from TxBSSID only if the nonTxBSSID is not advertising a separate UORA parameter set. Changed ‘may’ to ‘shall’ to clarify that this is always the case.  **TGax editor, please make changes as suggested in doc 11-17/1861r1 under CID 12222** |
| 11339 | Alfred Asterjadhi | 270.48 | 27.7.3.1 | How does broadcast TWT joining, leaving work with the multiple BSSID stuff? Is the MAC address that of the VAP or that of the transmitted BSSID? | Clarify. | **Revised** Agree with the comment. The current spec doesn’t provide guidance on how TWT element is advertised in case of multiple BSSID set. The proposed change suggests that the TWT element be advertised by nontransmitted BSSID if it wishes to have a different TWT schedule(s) or parameter set(s) for its BSS. STAs associated with a nonTxBSSID get the TWT parameter set from their associated (nonTxBBSID) or inherit from the TxBSSID when not advertised by their BSS.  **TGax editor, please make changes as suggested in doc 11-17/1861r1 under CID 11339** |
| 11036 | Abhishek Patil | 273.37 | 27.7.2 | The note only mentions TA being set to transmitted BSSID which applies only for the case of multiple BSSID. It should also cover a more general case where the AP is not a member of a multiple BSSID set. The same comment applies to note on P286L43 | As in comment | **Revised**  Agree with the comment.  The note was updated to capture the single BSSID case where the TA field is set to the MAC address of the AP.  **TGax editor, please make changes as suggested in doc 11-17/1861r1 under CID 11036** |
| 13780 | Yanjun Sun | 273.37 | 27.7.2 | The TA of a TF may be transmitted BSSID under certain conditions (e.g., AP belongs to a multiple BSSID set and TF is addressed to STAs belonging to more than one BSS of the multi-BSS set). The statement needs to also cover the case that TA is the address of the AP that transmitted the TF. | Replace the sentence as: "The Trigger frame can have multiple recipients, each of which is identified by the presence of the 12 LSBs of the recipient's AID in any of its User Info fields (see 27.5.3 (UL MU operation)), and can have in the TA field set to the MAC address of its associated AP or the transmitted BSSID under the conditions defined in 27.5.3.2.3 (Allowed settings of the Trigger frame fields and UMRS Control field)." | **Revised**  Agree with the comment.  The note was updated to capture the single BSSID case where the TA field is set to the MAC address of the AP.  **TGax editor, please make changes as suggested in doc 11-17/1861r1 under CID 13780** |
| 13794 | Yanjun Sun | 286.43 | 27.7.5 | The TA of a TF may be transmitted BSSID under certain conditions (e.g., AP belongs to a multiple BSSID set and TF is addressed to STAs belonging to more than one BSS of the multi-BSS set). The statement needs to also cover the case that TA is the address of the AP that transmitted the TF. | Replace the first sentence in the note 2 as: "A Trigger frame, sent by the TWT scheduling AP, is defined as intended for the TWT scheduled STA when the Trigger frame contains the AID of the STA in one of its Per User Info fields (see 27.5.3 (UL MU operation)), and can have in the TA field as the MAC address of the its associated AP or the transmitted BSSID under the conditions defined in 27.5.3.2.3 (Allowed settings of the Trigger frame fields and UMRS Control field)." | **Revised**  Agree with the comment.  The note was updated to capture the single BSSID case where the TA field is set to the MAC address of the AP.  **TGax editor, please make changes as suggested in doc 11-17/1861r1 under CID 13794** |
| 12175 | kaiying Lv | 311.64 | 27.14.1 | Miss the case of Multiple BSSID. | Please clarify it | **Revised**  Agree with the comment.  The text in this section is updated to cover multiple BSSID case.  **TGax editor, please make changes as suggested in doc 11-17/1861r1 under CID 12175** |
| 13012 | Massinissa Lalam | 322.37 | 27.16.2.2.2 | In "NOTE--All APs that are members of a multiple BSSID set use the same BSS color (see 27.11.4 (BSS\_COLOR)). A non-AP HE STA should filter such BSSs while determining if there is a BSS color collision.", why "should" is used? It should be "shall", no need to send false alarm when an HE STA is anyway mandated to support multiBSSID and is able to filter such BSSs. This would be an inefficient use of the medium which goes against 11ax purpose. | As in comment | **Revised**  A note cannot be normative text – so ‘shall’ won’t be appropriate. Instead, the note was updated to convey the meaning that it is required a non-AP STA filter BSS that are co-located or belong to the multiple BSSID set as the associated BSS.  **TGax editor, please make changes as suggested in doc 11-17/1861r1 under CID 13012** |

* STA behavior for UL MU operation

***TGax Editor: Please make the following changes to the 5th paragraph in this section (11ax D2.0 P248L1):***

A STA shall commence the transmission of an HE TB PPDU at the SIFS time boundary after the end of a received PPDU, when the following conditions are met:

* The received PPDU contains either a Trigger frame (that is not an MU-RTS variant) with a User Info field addressed to the STA, or an MPDU addressed to the STA that contains an UMRS Control field. The User Info field in the Trigger frame is addressed to a STA if one of the following conditions are met:
* The AID12 subfield is equal to the 12 LSBs of the AID of the STA and the Trigger frame is sent by the AP with which the STA is associated with or by the AP corresponding to the transmitted BSSID if STA is associated with a nontransmitted BSSID and has indicated support for receiving Control frames with TA set to the transmitted BSSID by setting the Rx Control Frame To MultiBSS subfield to 1 in the HE Capabilities element that the STA transmits.[13143]
* The AID12 subfield is 0, the STA supports the UL OFDMA-based random access procedure (see 27.5.5 (UL OFDMA-based random access (UORA))) and the Trigger frame is sent by the AP with which the STA is associated with or by the AP corresponding to the transmitted BSSID if STA is associated with a nontransmitted BSSID and has indicated support for receiving Control frames with TA set to the transmitted BSSID by setting the Rx Control Frame To MultiBSS subfield to 1 in the HE Capabilities element that the STA transmits.[13143]
* **CTS response to MU-RTS**

***TGax Editor: Please make the following changes to the 1st bullet in the 1st paragraph in this section (11ax D2.0 P226L64):***

If an HE STA receives an MU-RTS Trigger frame(#9481), the HE STA shall commence the transmission of a CTS frame response at the SIFS time boundary after the end of a received PPDU when all the following conditions are met:

* The MU-RTS Trigger frame(#9481) has one of the User Info fields addressed to the STA. The User Info field is addressed to a STA if the AID12 subfield is equal to the 12 LSBs of the(#9476) AID of the STA and the MU-RTS Trigger frame is sent by the AP with which the STA is associated with or by the AP corresponding to the transmitted BSSID if STA is associated with a nontransmitted BSSID and has indicated support for receiving Control frames with TA set to the transmitted BSSID by setting the Rx Control Frame To MultiBSS subfield to 1 in the HE Capabilities element that the STA transmits.(#7569)[13143]
* The UL MU CS condition indicates that the medium is idle (see 27.5.3.5 (UL MU CS mechanism)).
* The RU Allocation subfield in the User Info field addressed to the STA indicates primary 20 MHz channel, primary 40 MHz channel, primary 80 MHz channel,160 MHz channel, or 80+80 MHz channel.
* UL OFDMA-based random access (UORA)
* General

***TGax Editor: Please update the 8th paragraph in section 27.5.5.1 (11ax D2.0 P257L65):***

[12222]A non-AP HE STA shall obtain OCWmin and OCWmax from the most recently received UORA Parameter Set element (see 9.4.2.239 (UL OFDMA-based Random Access (UORA) Parameter Set element)) carried in the Management frames transmitted by its associated AP. A non-AP HE 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.

* Broadcast TWT operation
* General

***TGax Editor: Please add the following two paragraphs after the 5th paragraph in this section (11ax D2.0 P274L37):***

[11339]An HE BSS belonging to a Multiple BSSID set (see 11.11.14 (Multiple BSSID set)) may advertise TWT element carried in the Management frames transmitted by the transmitted BSSID. An HE AP may include the TWT element in a Nontransmitted BSSID profile carried in the Multiple BSSID element (see 9.4.2.46 (Multiple BSSID element)) to provide different TWT parameter values for STAs associated with that nontransmitted BSSID.

[11339]A non-AP HE STA shall obtain TWT parameter values from the most recently received TWT element carried in the Management frames of its associated AP. A non-AP HE STA with dot11MultiBSSIDActivated set to true and associated with a nontransmitting BSSID shall inherit the TWT parameter values from the TWT element when advertised by the transmitted BSSID if the element is not carried in the Nontransmitted BSSID Profile for that BSSID.

* Individual TWT agreements

***TGax Editor: Please make the following changes to this section (11ax D2.0 P273L37):***

NOTE–A Trigger frame is intended for a TWT requesting STA if it is sent by the AP to which the STA is associated and the frame contains the 12 LSBs of the STA’s AID in any of its User Info fields. The Trigger frame can have multiple recipients, each of which is identified by the presence of the 12 LSBs of the recipient’s AID in any of its User Info fields (see 27.5.3 (UL MU operation)), and can have in the TA field the MAC address of the AP or the[11036, 13780] transmitted BSSID under the conditions defined in 27.5.3.2.3 (Allowed settings of the Trigger frame fields and UMRS Control field).

* PS operation during TWT SPs

***TGax Editor: Please make the following changes to this section (11ax D2.0 P286L43):***

NOTE 2—A Trigger frame, sent by the TWT scheduling AP, is defined as intended for the TWT scheduled STA when the Trigger frame contains the AID of the STA in one of its Per User Info fields (see 27.5.3 (UL MU operation)), and can have in the TA field the MAC address of [11036, 13794]the AP or the transmitted BSSID under the conditions defined in 27.5.3.2.3 (Allowed settings of the Trigger frame fields and UMRS Control field). Otherwise, the Trigger frame is not intended for the STA. If the Trigger frame contains one or more random access RUs for which the STA can gain access according to 27.5.5 (UL OFDMA-based random access (UORA)) then the STA can follow the rules defined in 27.14.2 (Power save with UORA) to determine an early TWT SP termination event.

* Power management
* Intra-PPDU power save for non-AP HE STAs

***TGax Editor: Please make the following additions to the 4th bullet in the 3rd paragraph of section 27.14.1 (11ax D2.0 P331L64):***

* The PPDU is a VHT PPDU where the RXVECTOR parameter PARTIAL\_AID is the BSSID[39:47] of the BSS with which the STA is associated [12175]or the BSSID of any BSS that is a member of the same multiple BSSID set as the BSS of which the STA is a member and the RXVECTOR parameter GROUP\_ID is 0.
* Autonomous reporting of BSS color collision

***TGax Editor: Please make the following changes to the note below the 1st paragraph in this section (11ax D2.0 P322L36):***

NOTE—All BSSs that are members of a multiple BSSID set use the same BSS color (see 27.11.4 (BSS\_COLOR)). Therefore, a non-AP STA is required to filter such BSSs while determining if there is a BSS color collision.[13012]