IEEE P802.11
Wireless LANs

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| Comment resolutions for miscellaneous CIDs part 2 |
| Date: 2018-09-01 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D3.0 with the following CIDs (14 CIDs):

* 15015, 15016, 15026, 15027, 15213, 15214, 15668, 15696, 16461, 16585,
* 17143, 16148, 16313, 16646

Revisions:

* Rev 0: Initial version of the document.

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** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 15015 | Abhishek Patil | 111.12 | In Table 9-30, for the row corresponding to TWT, the first two paragraph under the Notes column seem to contradict each other. The first para says "is present" while the second says "is optionally present". Same comment applies to Table 9-32 (section 9.3.3.9) | Change the first two paragraph as follows:"The TWT element is present if dot11TWTOptionActivated is true and the TWT element is present in the Association Request frame that elicited this Association Response frame.The TWT element is optionally present if dot11HEOptionImplemented and dot11TWTOptionActivated are both 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." | Revised –Agree with the comment. Proposed changes are incorporated in the proposed resolution. TGax editor to make the changes shown in 11-18/1698r0 under all headings that include CID 15015. |
| 15016 | Abhishek Patil | 114.39 | Negotiation Type = 2 covers broadcast mgmt frame case while = 3 covers individually addressed case. Since this is a broadcast probe response frame, Negotiation Type = 3 doesn't apply. Therefore Broadcast field = 1 doesn't apply here. Same comment for FILS Discovery frame Pg 181 ln 60 | Replace the "Broadcast field of the TWT element is 1." to "Negotiation Type field of the TWT element is 2." | Revised –Agree with the comment. Proposed changes are incorporated in the proposed resolution. TGax editor to make the changes shown in 11-18/1698r0 under all headings that include CID 15016. |
| 15026 | Abhishek Patil | 141.56 | Since the TWT Parameter set for Broadcast TWT and Individual TWT are now defined to be independent, the subfields in the Request Type field need not be overload. | Define a variant of Request Type field for Broadcast TWT (i.e., when Negotiation Type = 2 or 3) with the field names and feature descriptions that only apply to B-TWT (e.g., see Fig 9-740b and Fig 9-52h). Also, remove the overloaded spec text - e.g., Implicit field and its description doesn't apply to B-TWT (see pg 144 line 30). Update other sections accordingly. | Revised –Agree with the comment. Similar comments that were addressed in the September F2F meeting lead to comment resolutions that are inline with these proposed changes. The proposed resolution is the same as for those CIDs.**Note to editor: These changes are already present in D3.2. As such no further changes are needed for this CID.** TGax editor to make the changes shown in 11-18/1465r1 under all headings that include CID 15025. |
| 15027 | Abhishek Patil | 141.60 | RAW mechanism doesn't apply to HE STAs. TWT Schedule STA sets the TWT Protection field to 0. A TWT Scheduling AP sets the field to 1 if it enables NAV protection. Is there a need to have such explicit signaling? AP can enable NAV protection anytime it wants. | TWT Protection field doesn't apply to broadcast TWT and can be set to reserved for broadcast TWT. | Revised –Agree in principle with the comment. Protected TWT field is not present in broadcast TWT, as per D3.2, as such these protection mechanisms do not apply to this case. TGax editor to make the changes shown in 11-18/1698r0 under all headings that include CID 15027. |
| 15213 | Amelia Andersdotter | 111.00 | This paragraph makes it ambiguous what the criteria are for the TWT element to be present, especially when read together with the immediately proceding paragraph that starts at line 12. It's a list of three alternatives, but it's not clear how the alternatives are grouped (is the element optionally present if either of the three alternatives are true, or should the alternatives be grouped so that "the first two alternatives are true, or the last alternative is true"? What happens if all three are true? Etc) | A possible solution is to change the paragraph to read: "The TWT element is optionally present if the TWT Requester Support field in the HE Capabilities element in the Association Request frame that elicited the Association Response frame is 1."This should be sufficiently clear, given that the presence of the TWT element is not optional if the two other alternatives in this paragraph are true (by the immediately proceeding paragraph). | Revised –Agree with the comment. Proposed resolution removes the ambiguity using similar language to the proposed change. TGax editor to make the changes shown in 11-18/1698r0 under all headings that include CID 15213. |
| 15214 | Amelia Andersdotter | 113.16 | This paragraph makes it ambiguous what the criteria are for the TWT element to be present, especially when read together with the immediately proceding paragraph that starts at line 12. It's a list of three alternatives, but it's not clear how the alternatives are grouped (is the element optionally present if either of the three alternatives are true, or should the alternatives be grouped so that "the first two alternatives are true, or the last alternative is true"? What happens if all three are true? Etc) | A possible solution is to change the paragraph to read: "The TWT element is optionally present if the TWT Requester Support field in the HE Capabilities element in the Association Request frame that elicited the Association Response frame is 1."This should be sufficiently clear, given that the presence of the TWT element is not optional if the two other alternatives in this paragraph are true (by the immediately proceeding paragraph). | Revised –Agree with the comment. Proposed resolution removes the ambiguity using similar language to the proposed change. TGax editor to make the changes shown in 11-18/1698r0 under all headings that include CID 15214. |
| 15668 | Huizhao Wang | 370.27 | Allowing HE BSS and VHT BSS operate with different bandwidth capabilities to accommondate different operating environments, business needs and flexibilities | Change the text to:"A STA transmitting a VHT Capabilities element and HE Capabilities element should set the Supported Channel Width Set subfield of the VHT Capabilities element to a value that indicates the same channel width capability as the channel width capability indicated in the HE Capabilities element, except when the STA is a 20 MHz-only non-AP HE STA in which case the Supported Channel Width Set subfield of the VHT Capabilities elementis reserved.' | **BEING ADDRESSED BY HUIZHAO?**Rejected –The comment fails to identify a technical issue. BW support is independent of the amendment supported by the STA. |
| 15696 | Huizhao Wang | 331.18 | Remove 20MHz-only restriction from HE Subchannel Selective Transmission Operation | Change following text:Line 18: "non-primary 20MHz subchannel" to "non-primary subchannel"Line 26: remove "20MHz-only"Line 50: change "to a non-AP STA" to "to a 20MHz-only non-AP STA" | Revised –Agree in principle with the comment. The proposed resolution is to clarify that any STA can negotiate residing in a 20 MHz subchannel, independent of its capabilities. This CID was solved along with CID 15914 and others in document 11-18/1468r1 where the operation was generalized to include 20 MHz operating STAs. This CID was deferred since there were suggestions to enable the operation to be extensible to larget BWs, which in turn had objections to other members. The raised concerns were the added complexity to the protocol, the scheduler at the AP and the limited benefit of enabling these multiple modes. Hence, the proposed resolution for this CID is the same as the one that was in 11-18/1468r1, which is inline with the original mode that was defined in 11a, i.e., having only one bit to be set to 1.**Note to editor: These changes are already present in D3.2. As such no further changes are needed for this CID.** TGax editor to make the changes shown in 11-18/1468r1 under all headings that include CID 15914. |
| 16461 | Ming Gan | 147.45 | Is there any condition for a TWT scheduled STA to set the TWT Protection subfield to 0? i.e., "if TWT protection is not requested for thecorresponding TWT(s)." as a TWT requesting STA. Otherwise, the TWT Protection subfield is reserved for a TWT scheduled STA. | As in comment | Revised –Agree in principle with the comment. Protected TWT field is not present in broadcast TWT, as per D3.2, as such these protection mechanisms do not apply to this case. TGax editor to make the changes shown in 11-18/1698r0 under all headings that include CID 16461. |
| 16585 | Peter Loc | 318.00 | In the example of Broadcast TWT operation, it is not clear that how STA1 and STA2 would know where to transmit their PS\_Poll and QoS Null Frame in the UL, given that the HE AP transmits a Basic Trigger frame to a broadcast address. Also, there could be a number of STAs that have woken up due to the Broadcast TWT carried in the Beacon and collision may occur. This example can be misleading. | Add a statement somewhere in the example that STA1 and STA2 are two of the STAs that happen to select unused RUs to successfully transmit indications to the AP that they are awake. | Rejected –A broadcast Trigger frame contains User Info fields, each of which contains the AID12 of the STA that is to send the HE TB PPDU in response to it. In this example the AP can either allocate random RUs, or include 2 User Info fields, each addressed to one of the two STAs. The example as specified allows for both cases. |
| 17143 | Zhou Lan | 331.14 | There is no technical reason to limit 20MHz only device to have the capability to operate on the seconeary channel. Enhance the spec to allow other type of device to have this capability | as in the comment | Revised –Agree in principle with the comment. The proposed resolution is to clarify that any STA can negotiate residing in a 20 MHz subchannel, independent of its capabilities. This CID was solved along with CID 15914 and others in document 11-18/1468r1 where the operation was generalized to include 20 MHz operating STAs. This CID was deferred since there were suggestions to enable the operation to be extensible to larget BWs, which in turn had objections to other members. The raised concerns were the added complexity to the protocol, the scheduler at the AP and the limited benefit of enabling these multiple modes. Hence, the proposed resolution for this CID is the same as the one that was in 11-18/1468r1, which is inline with the original mode that was defined in 11a, i.e., having only one bit to be set to 1.**Note to editor: These changes are already present in D3.2. As such no further changes are needed for this CID.** TGax editor to make the changes shown in 11-18/1468r1 under all headings that include CID 15914. |
| 16148 | Mark RISON |  | The MU Beamformer subfield has no associated behaviour. The resolution to CID 12673 states that "For less then 4SS, support of MU-MIMO is optional for AP." -- this is true but beside the point. There needs to be some kind of shall/should/may behaviour associated with the subfield (i.e. what does another STA do based on the setting of this subfield), or it serves no purpose | Delete the subfield from 9.4.2.237.3 (figure and table) and from 27.6.2 (last sentence first bullet, and second bullet) | Rejected –The normative behavior for the MU beamformer, which is defined in the third paragraph of 27.6.2:*“An MU beamformer is an HE AP that sets the MU beamformer subfield in the HE PHY Capabilities Information field in the HE Capabilities element it transmits to 1.*”is provided in multiple following paragraphs in 27.6.2. Quoting an example paragraph for ease of review:*“An MU beamformer may solicit full bandwidth MU feedback from an MU beamformee in an HE TB sounding sequence. An MU beamformer may solicit partial bandwidth MU feedback from an MU beamformee in an HE TB sounding sequence if the MU beamformee indicates support by setting the Triggered MU Beamforming Partial BW Feedback subfield to 1.”* |
| 16313 | Mark RISON |  | The changes to allow for fake STA Info fields in TB sounding are the wrong fix to the problem of being about to use TB sounding with a single STA. Instead, make the choice between TB sounding and non-TB sounding dependent only on whether the NDPA is broadcast or unicast | Make the changes indicated in 18/0737 | Revised –Similar comments were addressed in the last F2F. Proposed resolution is the same as for those CIDs that were approved in the September F2F meeting as per 11-18/1502r2. Quoting:“*Existing implementations use both methods for distinguishing between TB and non-TB sounding. It would be prudent to keep the definition as is. Changes fix the requirement on setting the AID in the STA info field to accommodate a mesh STA, AP or IBSS member recipient (these don’t have AIDs).*”**Note to editor: These changes are already present in D3.2. As such no further changes are needed for this CID.** TGax editor to make the changes shown in 11-18/1502r2 under all headings that include CID 16673. |
| 16646 | Robert Stacey | 94.01 | TB sounding sequence is adequately distinguished from non-TB sounding sequence using the RA field alone (individually addressed vs broadcast). Additionally using the number of STA Info fields to distinguish the sequences just complicates things. HE TB sounding can involve 1 or more STAs (NOT 2 or more). HE non-TB sounding only a one STA. | Chage "The Duration, RA, and TA fields are set as in a VHT NDP Announcement frame." to "The Duration and TA fields are set as in a VHT NDP Announcement frame."Change "An HE NDP Announcement frame contains at most 1 STA Info field per STA." to "The HE NDP Announcement frame contains one or more STA Info fields each addressed to a different STA. If the HE NDP Announcement frame contains one STA Info field, then the RA field is set either to the MAC address of the STA identified by the AID11 subfield in the STA Info field or to the broadcast address. If the HE NDP Announcement frame contains more than one STA Info field, the RA field is set to the broadcast address." | Revised –Similar comments were addressed in the last F2F. Proposed resolution is the same as for those CIDs that were approved in the September F2F meeting as per 11-18/1502r2. Quoting:“*Existing implementations use both methods for distinguishing between TB and non-TB sounding. It would be prudent to keep the definition as is. Changes fix the requirement on setting the AID in the STA info field to accommodate a mesh STA, AP or IBSS member recipient (these don’t have AIDs).*”**Note to editor: These changes are already present in D3.2. As such no further changes are needed for this CID.** TGax editor to make the changes shown in 11-18/1502r2 under all headings that include CID 16673. |

**Discussion: *None.***

* Association Response frame format

**TGax Editor: *Change the row below of this table as follows (CID #15015, 15213):***

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| --- |
| * Association Response frame body
 |
| **Order** | **Information** | **Notes** |
| 38 | TWT | The TWT element is present if dot11TWTOptionActivated is true and the TWT element is present in the Association Request frame that elicited the(#15212) Association Response frame.The TWT element is optionally present if dot11TWTOptionActivated is true and 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.*(#15015, 15213)*Otherwise, the TWT element is not present.If the TWT element is present in the Association Request frame that solicits the Association Response frame but the TWT element is not present in the Association Response frame then the STA can transmit another TWT request frame after association. |

* Reassociation Response frame format

**TGax Editor: *Change the row below of this table as follows (CID #15015, 15214):***

|  |
| --- |
| * Reassociation Response frame body
 |
| **Order** | **Information** | **Notes** |
| 42 | TWT | The TWT element is present if dot11TWTOptionActivated is true and the TWT element is present in the Reassociation Request frame that elicited this Reassociation Response frame.The TWT element is optionally present if dot11TWTOptionActivated is true and dot11HEOptionImplemented is true, and the TWT Requester Support field in the HE Capabilities in the Reassociation Request frame that elicited this Reassociation Response frame is 1.*(#15015, 15214)*Otherwise, the TWT element is not present.If the TWT element is present in the Reassociation Request frame that solicits the Reassociation Response frame but the TWT element is not present in the Reassociation Response frame then the STA can transmit another TWT request frame after association. |

* Probe Response frame format

**TGax Editor: *Change the row below of this table as follows (CID #15016):***

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| --- |
| * Probe Response frame body
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| **Order** | Information | Notes |
| 95 | TWT | The TWT element is optionally present within broadcast Probe Response frames when dot11TWTOptionActivated, dot11HEOptionImplemented and dot11FILSOmitReplicateProbeResponses are true; otherwise it is not present. If the TWT element is present, then the Negotiation Type field of the TWT element is 2.*(#15016)* |

* TWT element

**TGax Editor: *Change the paragraphs below as follows (#CID15027, 16461):***

*(#15027, 16461)*~~When transmitted by a TWT responding STA that is an AP, the TWT Protection subfield indicates whether the TWT SP(s) identified in the TWT element will be protected. A TWT responding STA sets the TWT Protection subfield to 1 to indicate that the TWT SP(s) corresponding to the TWT flow identifier(s) of the TWT element will be protected by allocating RAW(s) that restrict access to the medium during the TWT SP(s) for that (those) TWT(s). A TWT responding STA sets the TWT Protection subfield to 0 to indicate that the TWT SP(s) identified in the TWT element might not be protected from TIM STAs by allocating RAW(s).~~

A TWT responding STA or TWT scheduling AP sets the TWT Protection subfield to 1 to indicate that the TWT SP(s) corresponding to the TWT flow identifier(s) of the TWT element will be protected by:

* Allocating RAW(s) that restrict access to the medium during the TWT SP(s) for the TWTs where the TWT responding STA is an S1G STA.
* Enabling NAV protection during the TWT SP(s) for the TWTs where the TWT responding STA is an HE STA.(#15032)

 A TWT responding STA sets the TWT Protection subfield to 0 to indicate that the TWT SP(s) identified in the TWT element might not be protected.*(#15027, 16461)*

**27.7.3.2 Rules for TWT scheduling AP**

**TGax Editor: *Change the paragraph below in this subclause as follows (#CID 15027, 16461):***

*(#15027, 16461)*