IEEE P802.11  
Wireless LANs

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| LB215 TWT CIDs proposed resolutions | | | | |
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Abstract

This document proposes resolutions to TGah LB215 CIDs related to TWT. Where a proposed resolution includes proposed changes, those changes are referenced to TGah draft 5.1.

**REVISION NOTES:**

R0: initial

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

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

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

**CID LIST:**

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| --- | --- | --- | --- | --- | --- | --- |
| 8036 | Stephens, Adrian | 300.56 | 9.44.5 | "When dot11TWTGroupingSupport is true, the AP shall only assign a TWT group ID to a TWT requesting STA when the TWT Grouping Support subfield is equal to 1" -- "shall only" is ambiguous | Replace cited text with: "When dot11TWTGroupingSupport is true, the AP may assign a TWT group ID to a TWT requesting STA only when the TWT Grouping Support subfield is equal to 1 | Revised – TGah editor shall change “shall only” to “may” – note that later text includes the restrictive “when” with an accompanying conditional clause. Note also that the resolution of some other CID (not sure which one) caused this change to already be implmeneted in D5.1 before the resolution of this comment. |
| 8093 | Stephens, Adrian | 113.27 |  | " If the Response Requested subfield is 0, the recipient does not transmit a TWT Information frame in response to the receipt of the frame.If the Response Requested subfield is 1, the recipient transmits a TWT Information frame in response to the receipt of the frame." --- this is describing behaviour. | Reword the text to express what the encoding of the field is, not behaviour at the receiver. | Revised – Tgah editor shall change “If the Response Requested subfield is 0, the recipient does not transmit a TWT Information frame in response to the receipt of the frame. If the Response Requested subfield is 1, the recipient transmits a TWT Information frame in response to the receipt of the frame” to “The Response Requested subfield is set to 0 to request the recipient to not transmit a TWT Information frame in response to the receipt of the frame. The Response Requested subfield is set to 1 to request the recipient to transmit a TWT Information frame in response to the receipt of the frame” |
| 8099 | Stephens, Adrian | 127.50 |  | What good is octet index 2 doing in Table 8-142b? | Remove octet index 2 rows at cited location.  Ditto Tables 8-142c and 8-142d. | Reject – the cited tables contain an octet with reserved fields so that the format of the classifier mask fields of the classifiers 7, 8 and 9 match the format of the classifier mask field for classifier 6 to reduce the amount of variation in the classifiers. The frames in which these fields appear are transmitted only for setup of classifier operation and the tradeoff between saving a single byte for a rarely transmitted frame and providing consistent formatting was decided by the group in favor of consistency. |
| 8116 | Stephens, Adrian | 152.62 |  | "A TWT responding STA setsthe 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)." -- way too many words. | Replace with "Otherwise, set to 0". | Accept |
| 8121 | Stephens, Adrian | 165.17 |  | "NOTE--Transmissions need to comply with the channelization for the regulatory domain of operation."  We invariable end up deleting such statements in the revision. Basically you are saying "don't do illegal stuff". But the purpose of the standard is to ensure interoperability, not to keep dumb manufacturers out of gaol. | Delete cited note.  Make same change at 186.12 | Accept |
| 8309 | Wang, Xiaofei | 149.37 | 8.4.2.196 | It is stated in L30 "Demand TWT", that "TWT requesting STA includes a set of TWT parameters such that if the requested target wake time value and/or other TWT parameters cannot be accommodated, then the TWT setup will be rejected". However, in the same table, there are other valid response to Demand TWT than Accept TWT or Reject TWT, e.g., TWT Group, Alternative TWT and Dictate TWT, as indicated by "Descriptions when transmitted by a TWT Responding STA". These descriptions seem to be contradictory to each other. | remove "or demanded" in the 4th column for TWT command values 3 (TWT Grouping), 5 (Alternate TWT), and 6 (Dictate TWT) or change the responses for demanded TWT for Demand TWT. | Revised – TGah editor shall change “then the TWT setup will be rejected” to “then the TWT setup will not be accepted” within table 8-248i TWT Setup command field values in the row that contains the value 2 for the TWT Command Setup field column and in the column that is labeled as Description when transmitted by a TWT requesting STA. |
| 8310 | Wang, Xiaofei | 151.22 | 8.4.2.196 | A STA could transmit multiple TWT requests for multiple TWT flows. However, the most recently received TWT response with zero-offset ( a prior response) may be of a different group ID x than the group ID y of the TWT response without zero-offset (currently received response). In this case, STA should not use the zero-offset of group ID x as the zero-offset for group ID y. | Change the sentence "The receipt of a TWT response with a TWT Group Assignment field with no Zero Offset of the Group subfield implies that the Zero Offset of the Group subfield value for that TWT is the same as the Zero Offset of the Group subfield value for the most recently received Zero Offset of the Group subfield from the TWT Responding STA." into "The receipt of a TWT response with a TWT Group Assignment field with no Zero Offset of the Group subfield implies that the Zero Offset of the Group subfield value for that TWT is the same as the Zero Offset of the Group subfield value for the most recently received Zero Offset of the Group subfield for the same TWT group ID from the TWT Responding STA." | Accept |
| 8311 | Wang, Xiaofei | 299.59 | 9.44.3 | If TWT responding STA sends the Next TWT value via STACK/BAT/TACK as described in L28~L39, then "the TWT responding STA shall queue for transmission a TWT Information frame that contains a nonzero Next TWT value..." requirement is not necessary. | change the requirement to optional if BAT/TACK/STACK are sent to respond to a PPDU containing TWT information frame | Reject – the existing text already covers the cases suggested. First, if, in response to the receipt of the frame soliciting a response that contains a Next TWT value, the responding STA happens to send a BAT or TACK or STACK, then in that case, the condition that follows is immediately satisfied, that is: “If a TWT requesting STA has transmitted a frame soliciting a response that contains a Next TWT value and the STA is in a Power Save mode, the STA shall remain in the awake state following the transmission until it receives a response from the TWT responding STA that contains a nonzero Next TWT value.” In the case when a TWT information frame is sent with the Request subfield set to 1, then while it is possible to respond to that frame with a BAT or TACK or STACK, it is unclear if the requirement to respond with a TWT Information frame should be eliminated, as the management layer interface does not generally currently support the conveyance of BAT, TACK, STACK information to the MLME which sent the original request. The redundancy is not harmful and preserves the request/response exchange between the peer MLME entities. |
| 8312 | Wang, Xiaofei | 150.13 | 8.4.2.196 | Please clarify whether an AP can request a announced TWT. If not, then It should be made clear that If TWT requesting STA is an AP, then it cannot request an announced TWT. | add "A TWT requesting STA which is an AP shall set the value of the Flow Type subfield to 1" at the end of the paragraph. | Reject – the group has always allowed for the possibility that an AP can be a requesting STA and can also use the power save features described for a requesting STA. While it might be common that an AP is not power limited, there might be situations for which an AP would prefer to pretend that it is asleep. |
| 8451 | Wang, Xiaofei | 296.62 | 9.44.1 | The sentence "A non-AP STA shall not transmit a frame containing a TWT element to the AP with which it is associated and from which it received a group addressed frame with the TWT Request field equal to 1 as a response to the reception of that frame." is confusing and should be reworded. | Change "A non-AP STA shall not transmit a frame containing a TWT element to the AP with which it is associated and from which it received a group addressed frame with the TWT Request field equal to 1 as a response to the reception of that frame." into "A non-AP STA shall not transmit a frame containing a TWT element as a response to a group addressed frame with the TWT Request field equal to 1 that is transmitted by its associated AP." | Accept |
| 8454 | Wang, Xiaofei | 297.28 | 9.44.1 | Is it mandatory or optional for the TWT Requesting AP to operate in power saving state? If it is not mandatory, the text should be made more clear. | change "operates in power saving" into "may operate in power saving" | Accept |
| 8455 | Wang, Xiaofei | 298.04 | 9.44.2 | It is unclear what the phrase "in addition, TWT requesting STAs might need TWT start times delivered in response frames." means, please clarify whether this means that the TWT start times for future TWT sessions can be piggybacked with ack. | Please clarify the meaning and reword the sentence to make the intent clear. | Revise – Tgah editor shall change “This subclause contains rules for TWT acknowledgements that allow both objectives to be satisfied at once.” To “This subclause contains rules for TWT acknowledgements that allow both objectives to be satisfied at once by requiring specific responses to be transmitted in specific circumstances and by specifying the use of frames that provide both ACK and Next TWT information.” |
| 8456 | Wang, Xiaofei | 298.11 | 9.44.2 | The way that 11ah has modified the definition of VHT single MPDU is very confusing, since VHT normatively means it is in the 5GHz band. It would be much better to provide a definition for S1G single MPDU and use that definition in the text. | Provide a definition for S1G single MPDU and change "VHT single MPDU" to "S1G single MPDU" to clarify the text | Revise – TGah editor shall change all instances of “VHT single MPDU” and “S1G single MPDU” to “SMPDU” – see CIDs 8029 and 8487 which dictate the same change – commenter to note that the S1G single MPDU and the VHT single MPDU are in fact, identical from the MAC point of view, but differ in the PPDU format. With the change indicated here, the new term SMPDU will refer to the common MAC format and depending on the TXVECTOR parmaters, the frame will be sent in either VHT or S1G PPDU format. |
| 8466 | Asterjadhi, Alfred | 302.50 | 9.44.6 | (NDP) PS-Poll frames are not sent as a response to the NDP Paging frame (i.e., cannot be sent after SIFS. Specify that they are sent using EDCA within the specified minimumTWTwake duration. Same for the immediately following item. | Replace ", after SIFS" with "within Nominal Minimum TWT Awake Duration, using EDCA" Idem in the immediately following item insert "within Nominal Minimum TWT Awake Duration, using EDCA" a the end of the sentence. | Revise – Tgah editor to execute changes shown in 11-16/0063r0 found under all headings that include CID 8466 which effectively allow EDCA or SIFS. |
| 8467 | Asterjadhi, Alfred | 301.33 | 9.44.6 | 9.20a is referenced as the subclause where it is described how the AP assigns the partial AIDs to the non-AP STAs. However 9.20a seems to describe only for the mapping of one of the partial AIDs while 9.44 indicates a plurality of these indicators. | Add a reference to the subclause that describes how the assignment of multiple partial AIDs is done. | Revise – Tgah editor to execute changes shown in 11-16/0063r0 found under all headings that include CID 8467 which effectively indicate in subclause 9.20a that a STA selects any one of the AIDs assigned to a STA when calculating the partial AID value. |
| 8483 | Asterjadhi, Alfred | 297.05 | 9.44.1 | PS-Poll frame... it can also be an NDP PS-Poll frame. | Add NDP PS-Poll case | Revise – Tgah editor to changen “if no PS-Poll frame or U-APSD trigger frame has been transmitted” to “if no PS-Poll frame, NDP PS-Poll frame or U-APSD trigger frame has been transmitted” |
| 8484 | Asterjadhi, Alfred | 297.34 | 9.44.1 | "A TWT responding STA should include a Pentapartial Timestamp field or a Tetrapartial Timestamp field or a Timestamp field in at least one frame transmitted to a TWT requesting STA during a TWT SP for that STA."  The frame can be also an S1G Beacon frame. | Add this missing case (perhaps clarifying that this frame is sent when more than one TWT requesters (non-TIM) wake up in the TWT SP. | Reject – the case is not missing. An S1G Beacon fits the existing description because it includes a Timestamp field. Also, there are no restrictions necessary as suggested by the commenter. A TWT responding STA could send an S1G beacon or it could send multiple unicast frames in the case of multiple TWT requesting STAs and in the single TWT requesting STA, the TWT responding STA could also send an S1G beacon instead of a unicast frame. This is an implementation choice. |
| 8485 | Asterjadhi, Alfred | 297.03 | 9.44.1 | "the TWT requesting STA shall be in the awake state following each TWT start time associated with each TWT agreement for at least the AdjustedMinimumTWTWakeDuration time associated with that TWT agreement even if no PS-Poll frame or U-APSD trigger frame has been transmitted by the STA."  The STA can certainly go to sleep if a frame with EOSP = 1 is sent even before the TWT SP ends. | Clarify that baseline PS switching mode still applies within the TWT SP. | Revise – Tgah editor to execute changes shown in 11-16/0063r0 found under all headings that include CID 8485 which effectively agree with the commenter but also apply the change to another location that needed it. |

**Discussion:**

None.

**Proposed changes**

***TGah editor: the baseline text for these changes is Draft P802.11ah\_D5.1.pdf***

**CID 8466**

**9.44.6 NDP Paging Setup**

***TGah editor: change the nth paragraph and (n+1)th paragraph of 9.44.6 NDP Paging Setup as shown:***

If the NDP Paging requester STA is a non-AP STA, it shall send a (NDP) PS-Poll frame or uplink trigger frame addressed to the NDP Paging responder, after either SIFS or using EDCA within Nominal Minimum TWT Awake Duration.

If the NDP Paging requester STA is an AP, it shall send an NDP CTS frame to self with the duration field equal to zero after either SIFS or using EDCA within Nominal Minimum TWT Awake Duration.

**CID 8467**

**9.20a Group ID, partial AID, Uplink Indication and COLOR in S1G PPDUs**

***TGah editor: change the third paragraph of 9.20a Group ID, partial AID, Uplink Indication and COLOR in S1G PPDUs as shown:***

A STA transmitting an S1G SU PPDU carrying one or more individually addressed MPDUs or an S1G NDP intended for a single recipient shall select any one of the AIDs assigned to the recipient and then set the TXVECTOR parameter PARTIAL\_AID as shown in Table 9-9a (Settings for the TXVECTOR parameter PARTIAL\_AID for NDP frames) and Table 9-9b (Settings for the TXVECTOR parameter PARTIAL\_AID for non-1 MHz PPDUs and non-NDP frames).

**CID 8485**

**9.44.1 TWT overview**

***TGah editor: change the thirteenth paragraph of 9.44.1 TWT overview as shown:***

If the NDP Paging field was not present in the TWT response corresponding to a TWT agreement, the TWT requesting STA shall be in the awake state following each TWT start time associated with each TWT agreement for the duration of the AdjustedMinimumTWTWakeDuration time associated with that TWT agreement even if no (NDP) PS-Poll frame or U-APSD trigger frame has been transmitted by the STA or until it has received an EOSP field equal to 1 from the TWT responding STA, whichever occurs first. If the Implicit bit is equal to 1 in the TWT response for a TWT agreement, the TWT associated with that TWT agreement is an implicit TWT and the TWT SP associated with that TWT is an implicit TWT SP. A TWT SP that is not an implicit TWT is an explicit TWT SP. If the NDP Paging field was present in the TWT response, the TWTrequesting STA shall follow the operational rules defined in 9.44.6 (NDP Paging Setup).

**9.44.4 Implicit TWT operation**

***TGah editor: change the third paragraph of 9.44.4 Implicit TWT operation as shown:***

A TWT requesting STA awake for an implicit TWT SP may transition to the doze state after AdjustedMinimumTWTWakeDuration time has elapsed from the TWT SP start time as identified by the TWT requesting STA or after receiving an EOSP field equal to 1 from the TWT responding STA, whichever occurs first.

**References:**