IEEE P802.11
Wireless LANs

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| Comment resolutions for 27.7.3.4 |
| Date: 2018-03-01 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D2.0 with the following CIDs:

* 11849, 11850, 11852, 12095, 12305, 12528, 12529, 12530, 12246, 12531, 13040,
* 13791 (11 CIDs)

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** |
| 11849 | Guoqing Li | 282.47 | As stated in line 20 on the same page, all other fields in TWT element are reserved and thus there is no nominal TWT Wake duration and thus there is no adjustedminimumTWTWakeDuration, then how does the STA get this value that's specified in line 47? | Clarify | Revised –Agree in principle with the comment. Proposed resolution clarifies that the Nominal Minimum TWT Wake Duration field is not reserved. TGax editor to make the changes shown in 11-18/0373r0 under all headings that include CID 11849. |
| 11850 | Guoqing Li | 282.47 | What is the purpsose of staying awake for adjustedminimumTWTWakeDuration? If there is multicast traffic to receive or the STA has traffic to send and want to stay awake after this period of time, does it need to send PS-poll to indicaste to the AP that the STA is in awake state? | Clarify | Rejected –The STA needs to stay awake to receive the Beacon at the negotiated TBTT. The adjustedminimumTWTwakeduration gives a timeout duration after which the sta is free to go to doze state, hence not required to stay awake indefinitely in case the AP failed to transmit the beacon in time or the beacon failed. Nothing changes from the STA’s perspective in terms of sending ps-poll to declare its wake state or to stay awake after DTIM beacons (if successfully received) to receive group addressed BUs.  |
| 11852 | Guoqing Li | 282.07 | When STA negotiates a TBTT, does it need to wake up for DTIM Beacon to receive multicast? | Clarify | Rejected –The STA is expected to follow whichever multicast delivery procedure it has negotiated with the AP (DTIM, FMS, etc). No changes are needed for this comment. |
| 12095 | Jinsoo Ahn | 282.27 | TWT scheduling AP may respond with TWT element with Alternate TWT in the TWT Command field, as described in Table 27-5 | Change 'either Accept TWT or Reject TWT' to 'Accept TWT, Alternate TWT, or Reject TWT' | Accepted |
| 12305 | Laurent Cariou | 282.07 | Negotiation of wake TBTT and wake interval was designed when the concept of grouping with TWT ID was not in place. Now that broadcast TWT has evolved, this mechanism does not seem to be needed any more, unless there is a need that I missed. | Clarify how to use this mechanism or remove it. | Rejected –The procedure helps the STA to negotiate the TBTT, and the periodicity at which it plans to wake and is orthogonal to the improvements that were added to broadcast TWT operation. These two functionalities are complementary of each other.  |
| 12528 | Liwen Chu | 282.46 | ontradict with all other fields are reserved. | Fix the issue mentioned in comment. | Revised –Agree in principle with the comment. Proposed resolution clarifies that the Nominal Minimum TWT Wake Duration field is not reserved. TGax editor to make the changes shown in 11-18/0373r0 under all headings that include CID 12528. |
| 12529 | Liwen Chu | 282.50 | add an indication field or use reject commend to do the teardown. | As in comment | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change. TGax editor to make the changes shown in 11-18/0373r0 under all headings that include CID 12529. |
| 12530 | Liwen Chu | 283.01 | The table should clarify the difference between Demand and Suggest TWT. | As in comment | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change. TGax editor to make the changes shown in 11-18/0373r0 under all headings that include CID 12530. |
| 12246 | kaiying Lv | 283.20 | It is better to differentiate the use of Demand TWT and Suggest TWT. Otherwise just use Demand TWT or Suggest TWT. | Please clarify it | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change by clarifying the difference between the two. TGax editor to make the changes shown in 11-18/0373r0 under all headings that include CID 12246. |
| 13040 | Matthew Fischer | 282.52 | There is no TBTT Wake Negotiation bit in the TWT Teardown frame, but there is a statement saying that this bit should be set to tear down a previously successfully negotiated TBTT Wake Negotiation - the text says: "by setting the Wake TBTT Negotiation subfield to 1 in the TWT Teardown frame." | Add a TBTT Wake Negotiation bit to the TWT Teardown frame | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change. TGax editor to make the changes shown in 11-18/0373r0 under all headings that include CID 13040. |
| 13791 | Yanjun Sun | 282.08 | The procedure and purpose of Wake TBTT TWT is quite different from Broadcast TWT. Therefore, Wake TBTT should be in a section of its own (not under Broadcast TWT). | Move the contents under 27.7.3.4 to a section of its own (e.g., 27.7.4 and increment section number of subsequent sections). | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change. TGax editor to make the changes shown in 11-18/0373r0 under all headings that include CID 13791. |

**Discussion: *None.***

**TGax Editor: *Change the heading of this subclause as follows (#CID 13791):***

27.7.6 Negotiation of wake TBTT and wake(#8154) interval *(#13791)*

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 12528, 11849, 12095):***

A TWT scheduled STA that intends to operate in power save mode (see 11.2.2.2 (STA Power Management modes)) may transmit a TWT request frame to the TWT scheduling AP(#6919) that identifies the wake TBTT of the first Beacon frame and the wake interval between subsequent Beacon frames it intends to receive. The TWT request frame shall contain:

* The Negotiation Type subfield equal to 1 and the TWT Command field to Suggest TWT or Demand TWT,*(#AA)*
* The requested first wake TBTT in the Target Wake Time field(#8125)
* The requested wake interval(#8154) between consecutive TBTTs in the TWT Wake Interval Mantissa and TWT Wake Interval Exponent fields
* The requested TBTT wake duration in the Nominal Minimum TWT Wake Duration field*(#12528, 11849)*
* All other fields in the TWT element are reserved

A TWT scheduling AP(#6919) that receives a TWT request frame from a STA whose value of the Negotiation Type subfield is 1*(#AA)* (#5671) shall respond with a TWT response frame that contains either Accept TWT, Alternate TWT, *(#12095)* or Reject TWT in the TWT Command field and, in the case of an Accept TWT, it shall also contain:

* The Negotiation Type subfield equal to 1*(#AA)*
* The allocated first wake TBTT in the Target Wake Time field
* The allocated wake interval(#8154) between consecutive TBTTs in the TWT Wake Interval Mantissa and TWT Wake Interval Exponent fields
* The allocated TBTT wake duration in the Nominal Minimum TWT Wake Duration field*(#12528, 11849)*
* All other fields in the TWT element are reserved

After successfully completing the negotiation, the TWT scheduled STA may go to doze state until its TSF matches the next negotiated wake TBTT provided that the STA is in power save mode, and no other condition requires the STA to remain awake. The TWT scheduled STA shall be in the awake state to listen to Beacon frames transmitted at negotiated wake TBTTs and shall operate as described in 27.7.3.3 (Rules for TWT scheduled STA).

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 12528, 11849):***

After receiving the Beacon frame at or after TBTT, the TWT scheduled STA may go to doze state until the next wake TBTT if no other condition requires the STA to remain awake. The TWT scheduled STA may go to doze state after AdjustedMinimumTBTTWakeDuration*(#12528, 11849)* time has elapsed from the TBTT start time if no Beacon frame is received.(#3076)

Either STA that is a party to an established wake TBTT agreement can tear down the wake TBTT agreement by following the tear down procedure described in 10.43.8 (TWT Teardown) (#9981)(#3240) and by setting the Wake TBTT Negotiation subfield to 1 in the TWT Teardown frame.

Table 27ab (Wake TBTT Negotiation Exchanges) summarizes the interactions between devices that negotiate a Wake TBTT agreement.(#4767)(#4846)

**TGax Editor: *Change the table below of this subclause as follows (#CID 12530, 12246):***

|  |
| --- |
| * Wake TBTT negotiation exchanges
 |
| Initiating frame | Response frame |  |
| TWT Setup Command field value within a TWT Setup frame transmitted from a first STA to a second STA, Negotiation Type*(#AA)* set to 1 | TWT Setup Command field value within a TWT Setup frame transmitted from the second STA to the first STA Negotiation Type*(#AA)* set to 1 | Condition after the completion of the exchange |
| Request TWT | Accept TWT or Alternate TWT or Dictate TWT or Reject TWT or no response | This exchange is not allowed. |
| Demand TWT or Suggest TWT | Accept TWT | A Wake TBTT agreement has been created with the Wake TBTT parameters indicated in the initiating frame. |
| Demand TWT or Suggest TWT | Reject TWT | No Wake TBTT agreement has been created. |
| Demand TWT or Suggest TWT | Alternate TWT | No Wake TBTT agreement has been created. The responder is offering an alternative set of parameters vs. those indicated in the initiating frame. The TWT scheduled STA can send a new request with any set of Wake TBTT parameters and the responder might create a Wake TBTT agreement using those parameters.The TWT scheduled STA is unlikely to send a new request if the TWT Setup Command is Demand TWT and is very likely to send a new request if the TWT Setup Command is Suggest TWT.*(#12530, 12246)* |
| Reject TWT | None | An existing Wake TBTT agreement between the initiator and the responder has been terminated. |

9.6.24.9 TWT Teardown frame format

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 13040, 12529):***

The TWT Flow field contains the TWT Flow Identifier/Broadcast TWT ID field, Negotiation Type field, and 1 reserved bit as shown in Figure 9-870 (TWT Flow field format(11ah) when Negotiation Type subfield is equal to 0 or 1) and Figure 9-870a(TWT Flow field format when Negotiation Type subfield is 3):*(#13040, 12529)*

**TGax Editor: *Insert “Negotiation Type” as B5-B6 of the TWT Flow field in Figure 9-870 (TWT Flow field format) and replace the Figure title with “TWT Flow field when Negotiation Type subfield is 0 or 1(#CID 13040, 12529).***

**TGax Editor: *Insert a new figure as shown below(#CID 13040, 12529):***

|  |  |  |  |
| --- | --- | --- | --- |
|  | B0 B4 | B5 B6 | B7 |
|  | Broadcast TWT ID | Negotiation Type | Reserved |
| Bits: | 5 | 2 | 1 |
| Figure 9-870a -- TWT Flow field format when Negotiation Type subfield is 3 |

The TWT Flow Identifier/Broadcast TWT ID field contains the TWT Flow Identifier when the Negotiation Type field is 0 or 1 and contains the Broadcast TWT ID field when the Negotiation Type field is 3. The TWT Flow Identifier field and the Broadcast TWT ID field are defined in 9.4.2.198 (TWT element(11ah)). *(#13040, 12529)*

The TWT Flow Identifier field of a TWT Teardown frame is set to the value of the TWT Flow Identifier field of the TWT element in the frame that successfully concluded the setup of the TWT that is the subject of the teardown request. The Broadcast TWT ID field of a TWT Teardown frame is set to the value of the Broadcast TWT identifier of the broadcast TWT schedule that is subject of the teardown request.*(#13040, 12529)*

**TGax Editor: *Insert the paragraph below at the end of this subclause (#CID 13040, 12529):***

The Negotiation Type field indicates the type of negotiation that is subject to the teardown request and is set as defined in Table 9-262j1. An S1G STA sets the Negotiation Type field to 0.*(#13040, 12529)*

**27.7.2 Individual TWT agreements**

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 13040, 12529):***

An HE STA that successfully sets up an individual TWT agreement and operates in PS mode may listen to Beacon frames, but is exempt from the requirements for receiving Beacon frames as defined in 11.2.2.1 (General).

An HE STA may tear down an individual TWT agreement by sending a TWT Teardown frame with the Negotiation Type field set to 0. *(#13040, 12529)*

**27.7.3.3 Rules for TWT scheduled STA**

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 13040, 12529):***

A TWT scheduled STA may terminate membership in a broadcast TWT by transmitting a frame to its associated AP that contains a TWT element with the Negotiation Type field set to 3 and the TWT command field set to Reject TWT or by transmitting a TWT Teardown frame that has the Negotiation Type set to 3. *(#13040, 12529)*

**27.7.3.4 Negotiation of wake TBTT and wake interval**

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 13040, 12529):***

Either STA that is a party to an established wake TBTT agreement can tear down the wake TBTT agreement by following the tear down procedure described in 10.43.8 (TWT Teardown) and by setting the Negotiation Type subfield to 1 in the TWT Teardown frame. *(#13040, 12529)*