IEEE P802.11
Wireless LANs

|  |
| --- |
| LB271 CR for TWT Information Frame for RTWT |
| Date: 2022-04-25 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Ming Gan | HuaweiHuawei |  |  | ming.gan@huawei.com |
| Jason Yuchen Guo |  |  |  |
| Yunbo Li | Huawei |  |  |  |
| Guogang Huang | Huawei |  |  |  |
| Yiqing Li | Huawei |  |  |  |
| Mengyao Ma | Huawei |  |  |  |
| Hongjia Su | Huawei |  |  |  |
| Michanel Montemurro | Huawei |  |  |  |
| Stephen McCann | Huawei |  |  |  |
| Edward Au | Huawei |  |  |  |
| Osama Aboul-Magd | Huawei |  |  |  |

Abstract

This submission proposes resolutions of comments received from TGbe comment collection LB271 based on TGbe D3.0.

15710 17846 16200 17839 (3 CIDs)

Revisions:

* Rev 0: Initial version of the document.
1. **Introduction**

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 TGbe Draft. The introduction and the explanation of the proposed changes are not part of the adopted material.

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

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 15710 | 35.3.24.2 | 586.23 | For r-TWT operation, the r-TWT scheduled STA should have the flexibility to set the Next TWT value in the TWT Information frame as needed. It may be any positive value; not necessarily from the available set of TWT values. This would help any change in the traffic pattern without negotiating a new r-TWT schedule with the r-TWT scheduling AP. | Please provide text to enable Flexible r-TWT as illustrated in the comment. | Revised-Agree with the comment in principle. Flexible r-TWT is added. Apply the changes marked as #15710 in this document. |
| 17846 | 35.3.24.2 | 586.29 | RTWT is desiged for low latency traffic, while a non-RTWT broadcast TWT may mainly for power save. Considering the different use cases, it is better to distiguish RTWT from non-RTWT. | when a MLD intend to suspend broadcast TWTs, the spec should provide a way to identify all TWT, all TWT except R-TWTs, or all R-TWTs. | Revised-Agree with the comment in principle. Use of TWT Information frames for R-TWT is added. Apply the changes marked as #17846 in this document. |
| 16200 | 35.3.24.2 | 586.23 | According to current 802.11 specification, while the TWT Information frame can be used for suspending and resuming all the broadcast TWT schedules followed by a broadcast TWT scheduled STA, the TWT Information frame cannot be used for suspending or resuming broadcast TWT SPs on a per-schedule basis. In 802.11be, with the inclusion of restricted TWT schedule, which is a variant of broadcast TWT schedule, it would be important to better manage the broadcast TWT schedules/restricted TWT schedules and hence, a mechanism is needed to suspend and resume particular broadcast/restricted TWT schedules while maintaining the others. | Please add procedures and mechanisms to enable suspension/resumption of TWT schedules on a per-schedule basis. | Revised-Agree with the comment in principle. Use of TWT Information frames for R-TWT is added. Apply the changes marked as #16200 in this document. |
| 17839 | 35.3.24.3 | 586.29 | RTWT is desiged for low latency traffic, while a non-RTWT broadcast TWT may mainly for power save. Considering the different use cases, it is better to distiguish RTWT from non-RTWT. | when a MLD intend to suspend broadcast TWTs, the spec should provide a way to identify all TWT, all TWT except R-TWTs, or all R-TWTs. | Revised-Agree with the comment in principle. Use of TWT Information frames for R-TWT is added. Apply the changes marked as #17839 in this document.  |

**Discussion:** None.

***TGbe editor: please modify the following subclause 9.4.1.60 (TWT Information field) : (#17846, 16200, 17839)***

**9.4.1.60 TWT Information field**

The TWT Information field is present in the TWT Information frame (see 9.6.24.12 (TWT Information frame format)). The TWT Information field format is shown in Figure 9-189 (TWT Information field format).

|  |
| --- |
| B0 B2 B3 B4 B5 B6 B7 B8 Bn |
|  | TWT FlowIdentifier/All TWT Type | ResponseRequested | Next TWTRequest | Next TWTSubfield Size | All TWT | Next TWT |
| Bits: 3 1 1 2 1 0,32,48, or 64 |
| Figure 9-189—TWT Information field format  |

The TWT Flow Identifier subfield is present when the All TWT subfield is set to 0 and contains the TWT flow identifier for which TWT information is requested or being provided.

The All TWT Type subfield is present when the All TWT subfield is set to 1 and is encoded as defined in Table 9-xxx ( All TWT Type subfield encoding)

Table 9-xxx All TWT Type subfield encoding

|  |  |
| --- | --- |
| Values | Descriptions |
| 0 | The TWT Information frame reschedules all TWTs as defined in 26.8.4 (Use of TWT Information frames) |
| 1 | The TWT Information frame reschedules all TWTs except R-TWTs as defined in 26.8.4 (Use of TWT Information frames) |
| 2 | The TWT Information frame reschedules all R-TWTs as defined in 35.8.7 (TWT Information frame exchange for R-TWT) |
| 3-7 | Reserved |

The Response Requested subfield indicates whether the transmitter of the frame containing the TWT Information field is requesting a TWT Information frame to be transmitted in response to this frame. The Response Requested subfield is set to 0 to request the recipient to not transmit a TWT Information frame in response to the frame. The Response Requested subfield is set to 1 to request the recipient to transmit a TWT Information frame in response to the frame.

The Next TWT Request subfield is set to 1 to indicate that the TWT Information frame is a request for the delivery of a TWT Information frame containing a nonzero length Next TWT field. Otherwise, it is set to 0.

The Next TWT Subfield Size subfield describes the size of the Next TWT subfield according to Table 9-112

(Next TWT Subfield Size subfield encoding).

The All TWT subfield is set to 1 by an HE STA to indicate that the TWT Information frame reschedules all TWTsas defined in 26.8.4 (Use of TWT Information frames). Otherwise, it is set to 0.

The All TWT subfield is set to 1 by an EHT STA to indicate that the TWT Information frame reschedules all TWTs, all TWTs except R-TWTs, or all R-TWTs as indicated by the All TWT Type subfield and defined in 26.8.4 (Use of TWT Information frames) and 35.8.6. (TWT Information frame exchange for R-TWT). Otherwise, it is set to 0.

***TGbe editor: please add the following new subclause 35.8.6（R-TWT schedule suspension and resumption）except for the last paragraph: (#17846, 16200, 17839)***

**35.8.7. TWT Information frame exchange for R-TWT**

An R-TWT scheduling AP may transmit a TWT Information frame to an R-TWT scheduled STA to suspend and/or resume existing R-TWT schedules if the R-TWT scheduled STA has set the TWT Information Frame Disabled field to 0 in the TWT element sent when joining the R-TWT schedule. An R-TWT scheduled STA may transmit a TWT Information frame to an R-TWT scheduling AP to suspend and/or resume existing R-TWT schedules if the R-TWT scheduling AP has set the TWT Information Frame Disabled field to 0 in the broadcast TWT element it transmits.

An R-TWT sheducled STA that receives a TWT Information frame that contains an All TWT subfield equal to 1 and an All TWT Type subfield equal to 0 shall follow the rules defined in 26.8.4.3 (TWT Information frame exchange for broadcast TWT).

An R-TWT sheducled STA that receives a TWT Information frame that contains an All TWT subfield equal to 1 and an All TWT Type subfield equal to 1 shall follow the rules defined in 26.8.4.3 (TWT Information frame exchange for broadcast TWT), except that the broadcast TWT schedules does not include the R-TWT schedules.

An R-TWT sheducled STA that receives a TWT Information frame that contains an All TWT subfield equal to 1 and an All TWT Type subfield equal to 2 shall follow the rules defined in 26.8.4.3 (TWT Information frame exchange for broadcast TWT), except that the broadcast TWT schedules only include the R-TWT schedules.

An R-TWT scheduled STA that receives an acknowledgment in response to a TWT Information frame transmitted by the STA that contains an All TWT subfield equal to 1, an All TWT Type subfield equal to 0 shall follow the rules defined in 26.8.4.3 (TWT Information frame exchange for broadcast TWT).

An R-TWT scheduled STA that receives an acknowledgment in response to a TWT Information frame transmitted by the STA that contains an All TWT subfield equal to 1, an All TWT Type subfield equal to 1 shall follow the rules defined in 26.8.4.3 (TWT Information frame exchange for broadcast TWT), except that the broadcast TWT schedules does not include the R-TWT schedules.

A R-TWT scheduled STA that receives an acknowledgment in response to a TWT Information frame transmitted by the STA that contains an All TWT subfield equal to 1, an All TWT Type subfield equal to 2 shall follow the rules defined in 26.8.4.3 (TWT Information frame exchange for broadcast TWT), except that the broadcast TWT schedules only include the R-TWT schedules.

***TGbe editor: please add the following the following paragraph:(#15710)***

The Next TWT subfield carried in a TWT Information frame sent by an R-TWT scheduling AP or an R-TWT scheduled STA may contain any nonzero value.