IEEE P802.11  
Wireless LANs

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Doze Transition Signaling | | | | | | Date: 2017-08-22 | | | | | | Author(s): | | | | | | Name | Affiliation | Address | Phone | email | | Matthew Fischer | Broadcom |  |  | [Matthew.fischer@broadcom.com](mailto:Matthew.fischer@broadcom.com) | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

Abstract

Proposed language to create a mechanism to signal PS State change using A-control Control subfield CAS.

The proposed changes address CID 15757 of LB233 on TGax D3.0.

Changes are referenced to TGax D3.1.

**REVISION NOTES:**

**R0**:

initial

**R1**:

27.7.5 – slight modification to the wording of the TWT SP termination condition to make it match the style of the other conditions

**R2**:

Change several editor instruction references to TGax D3.0 to TGax D3.1

**END OF REVISION NOTES**

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.***

**CIDs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 15757 | Jarkko Knecht | 27.7.4 | 326.20 | The TWT Information frame is a management frame which handling/reception/parsing the content in the receiving STA takes time. A STA may transmit a TWT Information frame to teminate an ongoing TWT SP. For the receiving device the processing time of the TWT Information frame may be too long for immediate TWT SP termination. The immediate SP termination would be better to do through EOSP or more data bits which handling time is much shorter. | Please change that EOSP (or PM) bit controls the termination of the currently ongoing TWT SP and the TWT Information frame controls the future TWT SPs, i.e. whether the STA be available at future TWT SP. Please allow a STA to terminate the ongoing SP without a transmission of the TWT Information frame. | Revise - TGax editor to make changes as shown in 11-18/1432r1 that are marked with CID 15757 which create a new bit in the CAS Control to signal a transition to Doze state. TWT information behavior is unaltered, and still may be used in the original context as another method for TWT SP termination in addition to the requested use of indicating suspend and resume. |

**Discussion:**

**Proposed Changes to TGax D3.1:**

**9.4.2.27 Extended Capabilities element**

***TGax editor: within TGax D3.1, add another row to Table 9-135 – Extended Capabilities field as shown:***

**Table 9-153—Extended Capabilities field**

|  |  |  |
| --- | --- | --- |
| **Bit** | **Information** | **Notes** |
| 77 | TWT Requester Support | A STA sets the TWT Requester Support field to 1 when dot11TWTOptionActivated is true, dot11HEOptionImplemented is true and TWT requester functionality is supported. Otherwise, the STA sets the TWT Requester Support field to 0. See 10.43 (Target wake time (TWT)). |
| 78 | TWT Responder Support | A STA sets the TWT Responder Support field to 1 when dot11TWTOptionActivated is true, dot11HEOptionImplemented is true and TWT responder functionality is supported. Otherwise, the STA sets the TWT Responder Support field to 0. See 10.43 (Target wake time (TWT)). |
| 79 | OBSS Narrow Bandwidth RU In OFDMA Tolerance Support | An AP STA sets the OBSS Narrow Bandwidth RU In OFDMA Toler-ance Support field to 1 if dot11OBSSNarrowBWRUinOFDMAToler-ated is true, and sets it to 0 otherwise.  A non-AP STA sets the OBSS Narrow Bandwidth RU In OFDMA Tolerance Support field to 0. |
| <ANA> | Doze Transition Signalling Support | An HE STA sets the Doze Transition Signalling Support field to 1 if dot11DozeTransitionSignalingActivated is true and sets it to 0 otherwise. **(#15757)** |

**9.2.4.6a.7 CAS Control**

***TGax editor: within TGax D3.1, in Figure 9-15j – Control Information subfield for CAS Control, change bit B3 from reserved to Doze as shown:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 B7 |
|  | AC Constraint | RDG/More PPDU | SR PPDU | Doze | Reserved |
| Bits: | 1 | 1 | 1 | 1 | 4 |

**Figure 9-15j—Control Information subfield for CAS Control (#15757)**

***TGax editor: within TGax D3.1, in an appropriate location within 9.2.4.6a.7 CAS Control, insert the following paragraph:***

The Doze subfield is set to 1 to indicate that the STA transmitting the frame containing this subfield will enter the Doze state following the receipt of the acknowledgement for the frame. No information is conveyed to the recipient when the Doze subfield has the value of 0. **(#15757)**

***TGax editor: within TGax D3.1, insert the following editing instruction and new subclause:***

***Insert a new subclause at the end of 11.2.3.19:***

**11.2.3.19a Doze Transition Signaling (#15757)**

An HE STA with dot11DozeTransitionSignalingActivated equal to true supports Doze Transition signalling using the A-Control CAS Control subfield and shall set the Doze Transition Signaling Support subfield to 1 in transmitted Extended Capability elements and is called a DTS STA.

A DTS STA may set the Doze subfield to 1 in CAS Control fields transmitted to a STA from which it has received an Extended Capability element with the value 1 in the Doze Transition Signaling Support subfield, provided that no condition requires the STA to not transition to Doze state.

A DTS STA that transmits a value of 1 in the Doze subfield of a CAS Control field may transition to Doze state immediately following the receipt of the acknowledgement of the frame that contained the CAS Control field.

**27.7.5 Power save operation during TWT SPs**

***TGax editor: within TGax D3.1, in subclause 27.7.5 Power save operation during TWT SPs, modify the text as shown:***

A TWT requesting STA or a TWT scheduled STA shall classify any of the following events as a TWT SP termination event:

1) The successful exchange of a TWT Information frame with the TWT responding STA or the TWT scheduling AP (see 27.7.4 (Use of TWT Information frames)).

2) The transmission by the TWT requesting STA or TWT scheduled STA of an acknowledgment in response to an individually addressed QoS Data or QoS Null frame sent by the TWT responding STA or TWT scheduling AP, respectively, that had the EOSP subfield equal to 1.

3) The transmission by the TWT requesting STA or TWT scheduled STA of an acknowledgment in response to an individually addressed frame that is neither a QoS Data frame nor a QoS Null frame, sent by the TWT responding STA or TWT scheduling AP, respectively, with the More Data field equal to 0.

4) The reception of an individually addressed or broadcast QoS Data or QoS Null frame sent by the TWT responding STA or TWT scheduling AP, that does not solicit an immediate response and with the EOSP subfield equal to 1.

5) The reception of an individually addressed frame that is neither a QoS Data frame nor a QoS Null frame, sent by the TWT responding STA or TWT scheduling AP, that does not solicit an immediate response and with the More Data field equal to 0.

6) The reception of a Trigger frame sent by the TWT responding STA or TWT scheduling AP that has the More TF field equal to 0 and is not intended for the TWT requesting STA or TWT scheduled STA provided that the TWT requesting STA or TWT scheduled STA is either awake for an announced trigger-enabled TWT SP but did not transmit an indication that it is in the awake state to the TWT responding STA or TWT scheduling AP or is awake for an unannounced trigger-enabled TWT SP.

7) The successful acknowledgement from the TWT scheduling STA or the TWT responding STA of the reception of a frame transmitted by the TWT scheduled STA or the TWT requesting STA, respectively, that contains a CAS Control field with the Doze subfield set to 1. **(#15757)**

**TGax Editor: *Add a new MIB variable in C.3 MIB Detail within the dot11StationConfigEntry group as shown:***

**C.3 MIB Detail**

dot11DozeTransitionSignalingActivated OBJECT-TYPE **(#15757)**

SYNTAX TruthValue

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This is a capability variable. Its value is determined by device capabilities.

This attribute, when true, indicates that the STA implementation is capable of signalling a transition to the Doze state through the A-Control CAS Control subfield and capable of interpreting the signalling of a transition to Doze state using the same subfield. The capability is disabled, otherwise."

DEFVAL { false }

::= { dot11StationConfigEntry <XX>}

**End of proposed changes.**