IEEE P802.11
Wireless LANs

|  |
| --- |
| Comment resolutions on CID 4850 and CID8153 on TWT |
| Date: 2017-05-09 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Jarkko Kneckt | Apple Inc.  | Cupertino, CA |  | jkneckt@apple.com |
|  |  |  |  |  |

Abstract

The submission provides comment resolutions to CID4850 and CID8153.

Comments:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P** | **L** | **Comment** | **Proposed Change** | **Resolution** |
| **8153** | **Michael Montemurro** | **183** | **25** | **The overall procedure shown in Figure 27-5 is not really described very well. Its not clear to the reader.** | **Add an explanation in the paragraphe that introduces Figure 27-5** | **Revised –****Agree in principle with the comment. Proposed resolution is to expand the paragraph to explain the concepts illustrated in the figure.** **TGax editor to make the changes shown in 11-17/0735r0 under all headings that include CID 8153.** |
| **4850** | **Alfred Asterjadhi** | **184** | **36** | **"The TWT scheduling STA should schedule delivery of DL BUs during unannounced TWT SPs." is too vague. Cant the AP schedule DL BUs delivery when the STA has declared to be in awake state?** | **As in comment.** | **Revised –****Agree in principle with the comment. Proposed resolution is to clarify this aspect.****TGax editor to make the changes shown in 11-17/0735r0 under all headings that include CID 4850.** |

## Discussion:

**CID 8153. The figure is changed and the description of the operation in the figure is added.**

**CID 4850. The comment asks to clarify which STAs are scheduled during the broadcast TWT.**

**The TWT is targeted to power save for the streaming applications. These applications send traffic periodically and the interval between service periods may be short, 20 – 60 ms, to minimize the transmission delay and jitter of the transmitted data. This means multiple TWT SPs during a Beacon interval.**

**The TWT SPs are independent and the operation during the previous TWT SP does not affect to operation of the following SPs. An AP should serve the STA in every TWT SP to which the STA has joined.**

**If a transmission failure in previous TWT SP cancels AP operation in the following TWT SP, the transmission delays may increase, because some service periods for data exchange are cancelled, or the STA may need to trasnsmit additional frames through EDCA which increases non-AP STA power consumption and congestion in the channel.**

## Proposed normative text:

* Broadcast TWT operation

**27.7.3.1 General**

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 8153. Change the figure 27­-5 to only have a single TWT SP during which the data is transmitted to the STAs as explained above. Delete Unannounced TWT SP and move DL MU PPDU and BA transmission within the announced TWT SP. Delete third doze states of the STA1 and STA2.***

|  |
| --- |
| An example of broadcast TWT operation is shown in Figure 27–8(Example of Broadcast TWT operation), where the AP is the TWT scheduling AP and STA 1 and STA 2 are the TWT scheduled STAs. The TWT scheduling AP includes a broadcast TWT element in the Beacon frame that indicates a broadcast TWT at or after which the AP intends to send Trigger frames, or DL BUs to the TWT scheduled STAs. STA 1 and STA 2 wake to receive the Beacon determine the broadcast TWT. During the trigger-enabled TWT SP the AP sends a Trigger frame to which STA  1 and STA 2 indicate that they are awake during the TWT SP. STA 1 indicates that it is awake by sending a PS-Poll and STA 2 indicates that it is awake by sending a QoS Null frame in response to the Trigger frame STA 1 and STA 2 receive their DL BUs in a subsequent exchange with the AP and go to doze state outside of this TWT SP. *(#8153)* |

* Rules for TWT scheduling AP

The TWT scheduling AP should schedule delivery of DL BUs during unannounced TWT SPs for TWT scheduled STAs that have joined to the TWT SP *(#4850)*.

**References:**