### IEEE P802.11Wireless LANs

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| 11ba D4.0 MAC Comment Resolution for WUR Wake-up Operation |
| Date: 2019-10-28 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Po-Kai Huang | Intel Corporation | 2200 Mission College Blvd, Santa Clara, CA 950542200  |  | po-kai.huang@intel.com |
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Abstract

This submission proposes resolutions for comments of TGba Draft D4.0 with the following CIDs:

4050, 4083, 4132

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Revision based on discussion in the teleconference call. Defer 4050

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 TGba D4.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGba D4.0 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

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| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4050 | Joseph Levy | 122.3 | 29.9.3 | The STA must not be in the WUR mode if it is to follow existing operations, as a STA in the WUR mode can only receive WUR PPDUs. | Replace: "A WUR non-AP STA that receives a WUR Wake-up frame addressed to it with an indication of individually addressed BU(s) (see 29.9.1 (General)) shall follow existing operation, which is any PS operation the associated WUR AP and the WUR non-AP STA has agreed to use (e.g., baseline PM change, U-APSD, TWT, etc.), to retrieve individually addressed BU(s) and follow the wake up timing information (e.g., the next service period) that is provided along with the agreed PS operation. In this case, the WUR non-AP STA may be in the doze state (see 11.2.1 (General)) until the time indicated by the wake up timing information (e.g., the next service period) that is provided along with the agreed PS operation."With: "A WUR non-AP STA that receives a WUR Wake-up frame addressed to it with an indication of individually addressed BU(s) (see 29.9.1 (General)) shall leave WUR mode and follow existing operation, which is any PS operation the associated WUR non-AP STA and the WUR AP has agreed to use (e.g., baseline PM change, U-APSD, TWT, etc.), to retrieve individually addressed BU(s) and follow the wake up timing information (e.g., the next service period) that is provided along with the agreed PS operation. In this case, the WUR non-AP STA may be in the doze state (see 11.2.1 (General)) until the time indicated by the wake up timing information (e.g., the next service period) that is provided along with the agreed PS operation. If the WUR non-AP STA and the WUR AP are not in PS mode, the WUR non-AP STA shall leave the WUR mode and be in the active mode." | Rejected – WUR mode is a negotiation status to maintain negotiatied WUR parameter. Leaving WUR mode means that WUR parameters are not maintained.  |
| 4083 | Robert Stacey | 119.21 | 29.9 | There appear to be three wake-up operations: Using the WUR Short Wake-up frame, using the FL WUR Wake-up frame and using the VL WUR Wake-up frame. Describe under a unifying framework to make the distinctions clear. For the AP, it seems to be mandatory that it support FL WUR Wake-up operation, so that would be the most basic form of operation. The other two (VL WUR wake-up and short wake-up) seem to be optional. | Move 29.13 into 29.9 (say as 29.9.4). Expand the 29.9.1 to introduce the short version and describe its relationship to the other two. | Revised – Agree in principle with the commenter. We move 29.13 to 29.9.1a and revise the description in 29.1. TGba editor to make the changes shown in 11-19/1794r1 under all headings that include CID 4083. |
| 4132 | Yonggang Fang | 122.4 | 29.9.3 | In the clause 29.9.2 WUR AP operation, it indicates"After a WUR AP sends a WUR Wake-up frame with the ID field equal to a WUR ID that identifies a WUR non-AP STA, the WUR AP waits for a timeout interval that is larger than the transition delay indicated by the WUR non-AP STA in the WUR Capabilities elements:--If the WUR AP receives any transmission from the WUR non-AP STA within the timeout interval, then the WUR Wake-up frame transmission is successful.--Otherwise, the WUR Wake-up frame transmission fails, and the WUR AP may retransmit the WUR Wake-up frame to the WUR non-AP STA."However, in the clause 29.9.3 WUR non-AP STA operation, there is no corresponding description for the WUR STA to transmit any PPDU within the timeout interval. Please add this missing description for WUR non-AP STA. | As indicated in the comment | Rejected – We explain that the requirement to send a frame is covered by the existing power save protocol. For example, sending frame to change PM bit, sending PS-Poll, or sending U-APSD trigger. *“A WUR non-AP STA that receives a WUR Wake-up frame addressed to it with an indication of individuallyaddressed BU(s) (see 29.9.1 (General)) shall follow existing operation, which is any PS operation the associated WUR AP and the WUR non-AP STA has agreed to use (e.g., baseline PM change, U-APSD, TWT,etc.), to retrieve individually addressed BU(s) and follow the wake up timing information (e.g., the next service period) that is provided along with the agreed PS operation.”*When a power save protocol does not require transmission of a frame, we have the follow sentence for AP to trigger a response.*“A WUR AP that sends a WUR Wake-up frame to the WUR non-AP STA(s) may send a frame (for example,a Trigger frame) to solicit response frames from one or more WUR non-AP STAs that support the receptionof the frame.”* |

**Discussion:** *None.*

***TGba editor: Change 29.9 Wake-up operation as follows (track change on):***

* Wake-up operation
* General

A WUR AP may send a WUR Wake-up frame or a WUR Short Wake-up frame (see 29.9.1a WUR Short Wake-up frame operation)(#4083) to an associated WUR non-AP STA as described in 29.9 (Wake-up operation) to notify the WUR non-AP STA that the WUR AP intends to have operation with the WUR non-AP STA as described in 29.9.2 (WUR AP operation) and 29.9.3 (WUR non-AP STA operation).

A WUR AP shall not send a WUR Wake-up frame with HDR to associated WUR non-AP STA(s) that does not support HDR as indicated by the 20 MHz WUR PPDU with HDR Support subfield in the WUR Capabilities element sent by the WUR non-AP STA(s).

If the WUR AP and the WUR non-AP STA support traffic filtering service (TFS) as specified in 11.22.12 (TFS Procedures), then the WUR AP and the WUR non-AP STA may reuse existing traffic filter sets to control the WUR Wake-up frame transmission as described in 29.9.2 (WUR AP operation).

The WUR AP may transmit a WUR Wake-up frame to an associated WUR non-AP STA to indicate that individually addressed BU(s) are available for the non-AP STA. The WUR Wake-up frame shall satisfy any of the conditions below:

* The ID field of the WUR Wake-up frame contains a WUR ID that identifies the WUR non-AP STA.
* If the WUR Wake-up frame is FL WUR Wake-up frame, the ID field of the WUR Wake-up frame contains a WUR group ID that identifies a group of WUR non-AP STAs that include the WUR non-AP STA.
* If the WUR Wake-up frame is VL WUR Wake-up frame, the ID field of the WUR Wake-up frame contains a WUR group ID that identifies a group of WUR non-AP STAs that include the WUR non-AP STAs, and one of the identifiers in the Frame Body field identifies the WUR non-AP STA (see 9.10.3.2 (WUR Wake-up frame format)).

The WUR AP may transmit a WUR Short Wake-up frame to an associated WUR non-AP STA to indicate that individually addressed BU(s) are available for the non-AP STA.(#4083)

The WUR AP may transmit a broadcast addressed WUR Wake-up frame (see 29.5.3 (Transmitter ID) and 29.5.6 (Nontransmitter ID)) with the Group Addressed BU subfield of the Miscellaneous subfield equal to 1 to indicate that group addressed BU(s) of the WUR AP (see 11.2.3.4 (TIM types)) are available for all the associated WUR non-AP STA(s).

The WUR AP may transmit a broadcast addressed WUR Wake-up frame (see 29.5.3 (Transmitter ID) and 29.5.6 (Nontransmitter ID)) to associated WUR non-AP STA(s) to indicate that a critical update to the BSS parameters of the WUR AP has occurred for the associated WUR non-AP STA (see 29.9.2 (WUR AP operation)). The critical update is indicated in the Counter subfield of the Type Dependent Control field.(#3379)

***TGba editor: Change 29.13 WUR Short Wake-up frame operation to 29.9.1a WUR Short Wake-up frame operation(#4083)***