### IEEE P802.11Wireless LANs

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| 11ba D6.0 Comment Resolution for WUR Beacon |
| Date: 2020-04-20 |
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Abstract

This submission proposes resolutions for comments of TGba Draft D6.0 with the following CIDs:

7037, 7043, 7077, 7078, 7079, 7119

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Editorial revision

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 D6.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGba D6.0 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** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 7037 | 178.40 | C.3 | The WUR mechanism assumes that the WUR Beacon preiod is longer than that of the 802.11 Beacon, however this is not stated within the draft. At minimum a default value should be assigned to the dot11WURBeacon MIB parameter. | Add the following line to the dot11WURBeacon definition:"DEFVAL { 10000 }"The value should be greater than that of the 802.11 Beacon | Revised – There is no default value of dot11BeaconPeriod. As a result, a default value of dot11WURBeaconPeriod can not be described. The choice of WUR Beacon period to be longer than 802.11 Beacon period is discussed in several slides, but the group agrees that this is implementation specific choice based on various criteria. We simply add the following note in page 110 line 11 of 29.6.2.“NOTE –The method to determine the value of dot11WURBeaconPeriod is implementation specific and might be chosen based on the considerations of overhead, timing correction requirement, and required transmission frequency for a WUR non-AP STA to check the activity of a WUR AP. TGba editor to make the changes shown in 11-20/0636r1 under all headings that include CID 7037. |
| 7043 | 110.4 | 29.6.2 | The dot11WURBeaconPeriod needs to be longer than the dot11BeaconPeriod in order to minimize use of the channel for low bitrate signal overhead. | Add a note that dot11WURBeaconPeriod should be 10x or more larger than dot11BeaconPeriod. | Revised – We note that WUR Beacon serves two purposes: correcting timing drift and informing WUR non-AP STA that they are still in range. If reducing overhead is required, then WUR Beacon can be chosen to a suitable value based on the requirement of timing correction. These decisions are implementation specific. We simply add the following note in page 110 line 11 of 29.6.2.“NOTE –The method to determine the value of dot11WURBeaconPeriod is implementation specific and might be chosen based on the considerations of overhead, timing correction requirement, and required transmission frequency for a WUR non-AP STA to check the activity of a WUR AP. TGba editor to make the changes shown in 11-20/0636r1 under all headings that include CID 7043. |
| 7077 | 109.39 | 29.6.1 | A WUR non-AP STA does not expect to receive all WUR beacon frames. The WUR non-AP STA expect its associated WUR AP to transmit WUR Beacon frames every dot11WURBeaconPeriod. The WUR non-AP STA would only expect to receive WUR beacon frames when its WUR radio is awake. Therefore this general statement should focus on what is know to be the required behavior and note what it can be used for. | Replace: "A WUR non-AP STA that is in WUR mode expects to receive WUR Beacon frames every dot11WURBeaconPeriod and expects to receive WUR Beacon frames within WUR duty cycle service periods negotiated with the WUR AP if the WUR AP has accepted to transmit keep-alive WUR frames (see 29.8.2 (WUR mode setup)."With: "A WUR AP will attempt to transmit WUR Beacon frames every dot11WURBeaconPeriod (see 29.6.2 WRU Beacon Frame generation) and a WUR non-AP STA may these transmitted frames to maintain synchronization with the WUR AP. A WUR AP will also transmit WUR Beacon frames within WUR duty cycle service periods where the WUR non-AP STA is scheduled to be in WUR awake state if the WUR AP has accepted to transmit keep-alive WUR frames (see 29.8.2 (WUR mode setup)." | Rejected – We note that “expect to receive Beacon frame” has been used in the baseline. See the following texts in 11.1.3.1 General.*“STAs expect to receive Beacon frames at a nominal rate.”* |
| 7078 | 109.49 | 29.6.1 | Align text with definitions proposed by this commenter. | Replace: "If a WUR non-AP STA, which is in WUR mode and doze state (see 11.2.1 (General)), does not receive WUR Beacon frames for a time period, the WUR non-AP STA should perform WUR scanning (see 29.12 (WUR discovery)) or transition to awake state (see 11.2.1 (General)). The methods by which the WUR non-AP STA determines the exact value of the time period are implementation specific and out of scope of this standard."With: "If a WUR non-AP STA is in WUR power save mode and does not receive WUR Beacon frames for a time period, the WUR non-AP STA should perform WUR scanning (see 29.12 (WUR discovery)) or leave the WUR power save mode and transition to awake state (see 11.2.1 (General)). The methods by which the WUR non-AP STA determines the exact value of the time period are implementation specific and out of scope of this standard." | Rejected – We reject this comment because this comment does not identify a technical issue. Further, the commenter proposes to use WUR powr save mode, which is not defined in the spec. |
| 7079 | 109.56 | 29.6.1 | This note does not address all the reasons a non-AP STA may no longer receive WUR Beacons from its associated WUR AP, the STA may have moved out of the BSS, the AP may have stopped transmitting, something in the environment may be blocking or interfering with the AP transmissions. But whatever the reason the key point is that if the WUR Beacons are no longer received, it is unlikely that the STA will be receiving any WRU PPDUs from the AP and hence should attempt to find out if it is still associated with the AP. Continuing to listen for a signal which will never come is not a good use of STA power. But, this is really implementation and there are no requirements or recommendations in the specification as to how long "a long period of time" is. So this note is not useful and should be deleted. | Delete the note: "NOTE—If a WUR non-AP STA does not perform any action while not receiving WUR Beacon frames for a long period of time, the WUR non-AP STA might not discover that it is already out of range of the WUR AP sending the WUR Beacon frames." | Revised – This note is added to explain why a WUR non-AP STA needs to do WUR Scanning or transition to awake state. We revise “for a long period of time” with “for a time period”.TGba editor to make the changes shown in 11-20/0636r1 under all headings that include CID 7079. |
| 7119 | 109.45 | 29.6.1 | The note on what to do if the non-AP STA doesn't receive any beacons for a while due to possible roaming out of range is unclear. Reword to remove the double negative "does not perform any action while not recieving x" into a positive. | Change"NOTE—If a WUR non-AP STA does not perform any action while not receiving WUR Beacon frames for a long period of time, the WUR non-AP STA might not discover that it is already out of range of the WUR AP sending the WUR Beacon frames."to"If a WUR non-AP STA in WUR duty cycle mode does not receive WUR Beacon frames for multiple duty cycles, the WUR non-AP STA may need to exit WUR mode and doze state to verify that it is still in range of the WUR AP or perform BSS-transition to another AP." | Revised – The action for WUR non-AP STA to perform while not receiving WUR Beacons is described right before the note as shown below. *If a WUR non-AP STA, which is in WUR mode and doze state (see 11.2.1 (General)), does not receiveWUR Beacon frames for a time period, the WUR non-AP STA should perform WUR scanning (see 29.12(WUR discovery)) or transition to awake state (see 11.2.1 (General)). The methods by which the WUR nonAP STA determines the exact value of the time period are implementation specific and out of scope of thisstandard.*This note is added to explain why a WUR non-AP STA needs to do WUR Scanning or transition to awake state. We revise “for a long period of time” with “for a time period” to align with the description.TGba editor to make the changes shown in 11-20/0636r1 under all headings that include CID 7119. |

**Discussion:** *None.*

***TGba editor: Change* 29.6.2 WUR Beacon frame generation *as follows (track change on):***

**29.6.2 WUR Beacon frame generation**

A WUR AP shall define the timing for the WUR operations by transmitting WUR Beacon frames according to dot11WURBeaconPeriod and the Offset Of TWBTT subfield of the WUR Operation element that the WUR AP transmits. This defines a series of target WUR beacon transmission times exactly dot11WURBeaconPeriod Tus apart. Additionally, the WUR AP may transmit WUR Beacon frames as keep-alive WUR frames during WUR duty cycle service periods negotiated with a WUR non-AP STA (see 29.8.3 (WUR power management operation for a WUR AP)).

NOTE –The method to determine the value of dot11WURBeaconPeriod is implementation specific and might be chosen based on the considerations of overhead, timing correction requirement, and required transmission frequency for a WUR non-AP STA to check the activity of a WUR AP.(#7037, #7043)

***TGba editor: Change 29.6 Synchronization using WUR Beacon frame as follows (track change on):***

**29.6 Synchronization using WUR Beacon frame**

**29.6.1 General**

If a WUR non-AP STA, which is in WUR mode and doze state (see 11.2.1 (General)), does not receive WUR Beacon frames for a time period, the WUR non-AP STA should perform WUR scanning (see 29.12 (WUR discovery)) or transition to awake state (see 11.2.1 (General)). The methods by which the WUR nonAP STA determines the exact value of the time period are implementation specific and out of scope of this standard.

NOTE—If a WUR non-AP STA does not perform any action while not receiving WUR Beacon frames for a time period, the WUR non-AP STA might not discover that it is already out of range of the WUR AP sending the WUR Beacon frames.(#7079, #7119)