IEEE P802.11
Wireless LANs

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| Comment Resolutions on WUR Mode element – Part 3 |
| Date: 2018-12-10 |
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Abstract

This submission proposes resolutions for multiple comments related to TGba D1.0 with the following CIDs:

* 17 CIDs: 11, 51, 66, 118, 119, 120, 447, 448, 461, 537, 538, 726, 728, 776, 1182, 1183, 1245

R0: Original text

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

***Editing instructions formatted like this are intended to be copied into the TGba 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.***

# WUR Mode Element

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 11 | 28.17 | 9.4.2.273 | In Table 9-318b the WUR Mode Response Status Definition when value is set equal to 2 the preferred duty cycle period to too large. "too large" is ambiguous, define a threshold or range |  | Rejected.The criteria is dependent on the current status and/or performance of the WUR AP. It would be implementation issue and the TGba specificiation doesn’t have to define a threshold, range or criteria.  |
| 51 | 53.55 | 31.6.1 | An Ack frame from the WUR AP is called out in the WUR Mode setup clause. The Ack frame needs to be defined. |  | Rejected.“A successful frame exchange” includes ACK frame transmission and this wording is already being used in the IEEE 802.11 baseline spec. |
| 66 | 30.06 | 9.4.2.273 | Please tie the encoding to the Action Type field values rather than who transmits the frame. I.e., suggest not having WUR Parameters from AP and from non-AP STA. Also suggest that the fields are shown in a figure rather than a table (comment applies to all these three tables 318c, d, and e). | As in comment. | Revised.The Table 31-2 has been added to better explain encoding of Action Type field in D1.1. TGba editor, no further changes are needed |
| 118 | 54.01 | 31.6.1 | Not certain what the same infrastructure BSS means is in this context. Please clarify.Also please ensrue that the WUR mode negotiaiton is clearly specified as possible with Assoc Request etc. I.e., in the table don't call out WUR Mode Setup frames only, but rather use terms such as WUR request, WUR response, etc. | As in comment. | Revised.Agreed in priciple.The sentence shall be modifed for clarification. On the other hand, the Table 31-2 has been added to better explain WUR mode negotiation in D1.1TGba editor to make the changes shown in 11-18/2107r0 |
| 119 | 54.07 | 31.6.1 | This Table can be improved. Suggestions: "AP STA" is an "AP". First row: WUR request, WUR response, WUR Mode Status, etc. And add the definitions of WUR request, WUR response in a note at the end of the table. | As in comment. | Accepted.TGba editor to make the changes shown in 11-18/2107r0 |
| 120 | 54.07 | 31.6.1 | Does the STA need to wait for the WUR Mode Suspend Response from the AP prior to suspending its WUR mode? Isn't the Ack sent back to the WUR Suspend Request a sufficient confirmation? | As in comment. | Rejected.The STA has to wait for the WUR Mode Suspend response frame to obtain the WUR parameters from the AP before entering WUR Mode Suspend.  |
| 447 | 28.64 | 9.4.2.273 | WUR AP shall suggest preferred WUR parameters when they set its WUR Mode response status to 2. | Define the procedure and modify the frame format. | Rejected.A STA can revise the WUR Duty Cycle Period without the preferred WUR parameters from WUR AP after the request has been denied. How to revise the WUR Duty Cycle Period at STA side is implementation and optimization issue.  |
| 448 | 29.17 | 9.4.2.273 | If specific preferred WUR parameters can be delivered, the reason shall be returned to original text. | Modify the reason "the preferred duty cycle period is too large" to "the suggested WUR parameters are not acceptable." if an AP can transmit prefered WUR parameters. | Rejected.A STA can revise the WUR Duty Cycle Period without the preferred WUR parameters from WUR AP after the request has been denied. How to revise the WUR Duty Cycle Period at STA side is implementation and optimization issue. |
| 461 | 54.09 | 31.6.1  | Use of the term "WUR AP STA" in columns 1 to 3 descriptions. | Replace "WUR AP STA" with "WUR AP". | Accepted.It is a duplicate one of CID 119. TGba editor to make the changes shown in 11-18/2107r0 |
| 537 | 54.41 | 31.6.1 | Both "WUR mode" and "WUR Mode" are used in D1.0. It is better to unify both terms to a single term "WUR Mode". | as per comment | Rejected.As resolved by CID 614 in D1.1, TG members have agreed to change "WUR Mode" to "WUR mode" except where followed by "element", "Setup", "Response", "Teardown" or preceded by "Enter". |
| 538 | 54.57 | 31.6.1 | "WUR Mode setup frame" should be changed to "WUR Mode Setup frame" | as per comment | Revised. The typo has been changed in D1.1TGba editor, no further changes are needed. |
| 726 | 54.07 | 31.6.1 | In the table "Table 31-1--WUR Mode setup frame exchange", the occurances of "WUR AP STA" should be replaced to "WUR AP". | As shown in the comment. | Accepted.It is a duplicate one of CID 119. TGba editor to make the changes shown in 11-18/2107r0 |
| 728 | 55.03 | 31.6.1 | Typo: replace "the ACK frame" to "the Ack frame" | As shown in the comment. | Accepted.TGba editor to make the changes shown in 11-18/2107r0 |
| 776 | 28.35 | 9.4.2.273 | "WUR Mode" What does it mean? For example what is expected when a non-AP STA sends "Enter WUR Mode Request"? And what is the expected response from the AP? | Need to define "WUR Mode". | Revised.WUR Mode has been defined in D1.1TGba editor, no further changes are needed. |
| 1182 | 53.58 | 31.6.1 | Only one sentence shown here under 31.6 is very much general covering WUR (not for WUR power management procedure). Add more general description corresponding to this clause. | as in comment | Revised.TG editor has made subcaluse 31.6.1 General and added more sentences in D1.1 TGba editor, no further changes are needed. |
| 1183 | 54.41 | 31.6.1 | In NOTE, WUR mode -> WUR Mode | as in comment | Rejected.As resolved by CID 614 in D1.1, TG members have agreed to change "WUR Mode" to "WUR mode" except where followed by "element", "Setup", "Response", "Teardown" or preceded by "Enter". |
| 1245 | 55.10 | 31.6.1 | WUR Mode Teardown frame may be faked by a malicious attacker to terminate the WUR mode of a STA. In this situation, the WUR Mode Teardown frame should be transmitted as a Protected Management frame, which the current draft allows. However, the current draft only requires an ACK frame as a repsonse to the WUR Mode Teardown frame to complete the tear down transaction. The ACK frame can be faked by the attacker after the attacker had interferred with (thus blocked) the reception of the WUR Mode Teardown frame. In this situation, the STA or the AP, who initiates the tear-down, considers that the tear-down transaction is complete while the other end isn't aware of the tear-down transaction. Then, the statuses in the STA and the AP will not match. | Define a WUR Mode Teardown Confirmation frame, which can be integrity-protected, as the final response to a WUR Mode Teardown frame when the WUR Mode Teardown frame is integrity-protected. | Rejected.WUR Mode Teardown frame is transmitted on PCR, and PCR has defined own protection. Protection for frame on PCR is out of scope.  |

31.6 WUR power management procedure

31.6.2 WUR Mode Setup

**TGba Editor: Modify the first paragraph as follows [118]:**

To use the WUR service, a WUR non-AP STA uses the PCR component to exchange WUR Mode Setup frame with its associated WUR AP and the detail is defined in Table 31-1 (WUR Mode Setup frame exchange - Request and Response) and Table 31-2 (WUR Mode Setup/Teardown frame transmission).

**TGba Editor: Modify the Table 31-1 as follows [119, 461, 726]:**

Table 31-1—WUR Mode Setup frame exchange -Request and Response

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| --- | --- | --- | --- |
| **Request frame: Action Type field within a WUR Mode Setup frame transmitted from a WUR non-AP STA to a WUR AP** | **Response frame: Action Type field within a WUR Mode Setup frame transmitted from a WUR AP to a WUR non- AP STA** | **Response frame: WUR Mode Response Status field within a WUR Mode Setup frame transmitted from a WUR AP to a WUR non- AP STA** | **Status after the****completion of the****exchange** |
| Enter WUR ModeRequest | Enter WUR ModeResponse | Accept | The WUR non-AP STA enters WUR Mode. |
| Enter WUR ModeSuspend Request | Enter WUR ModeSuspend Response | Accept | The WUR non-AP STA enters WUR Mode Suspend |
| Enter WUR ModeRequest | Enter WUR ModeResponse | Denied | WUR power management service is not provided by the WUR AP to the WUR non-AP STA at this time |
| Enter WUR ModeSuspend Request | Enter WUR ModeSuspend Response | Denied | WUR power management service is not provided by the WUR AP to the WUR non-AP STA at this time |

**TGba Editor: Modify the 5th paragraph as follows [728]:**

After a WUR non-AP STA has negotiated WUR power management service with a WUR AP, the WUR AP may update the WUR parameters with the WUR non-AP STA in WUR mode or WUR mode suspend by using the PCR component to initiate and complete a successful frame exchange, which includes an unsolicited WUR Mode Setup frame with the Action Type in WUR Mode element set to “Enter WUR Mode Response” or “Enter WUR Mode Suspend Response” from the WUR AP and an ACK frame from the WUR non-AP STA. The WUR non-AP STA that sent the ACK frame in response to the unsolicited WUR Mode Setup frame shall update the WUR parameters to the parameters included in the received WUR Mode Setup frame. The WUR non-AP STA may teardown WUR operation as described below if the WUR non-AP STA doesn’t intend to use the parameters.