IEEE P802.11
Wireless LANs

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| Comment Resolutions on WUR Mode element – Part 4 |
| Date: 2018-12-17 |
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Abstract

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

* 11 CIDs: 121, 122, 449, 567, 570, 633, 727, 888, 1028, 1243, 1244

R0: Original text

R1: Revised by offline discussion

R2: Revised typos

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** |
| --- | --- | --- | --- | --- | --- |
| 121 | 54.45 | 31.6.1 | There are different confirmation STATUSes for denied defined. Please provide the expected behavior from AP and STA in all (2?) cases. Also add that a WUR STA that successfully negotiates WUR mode shall operate as defined in 31.6.2 and 31.6.3. | As in comment. | Revised.STA behavior after the request has been denied is implementation issue. TGba spec doens’t have to describe detail behavior each denied case. The last sentence is reasonable. We need normative spec for a STA that finished WUR mode setup. TGba editor to make the changes shown in 11-18/2143r2 |
| 122 | 54.45 | 31.6.1 | As mentioned in another comment. All these Action frames (and MGMT frames that carry the WUR Mode element) should be clearly stated as being individually addressed and that solicit an Ack frame in return from the intended recipient. Please generalize this paragraph. The comment applies to the other paragraphs in this subclause that bear similarities to this one. | As in comment. | Revised.Agreed in priciple. Action frame exchange should be individually addressed. TGba editor to make the changes shown in 11-18/2143r2 |
| 449 | 30.01 | 9.4.2.273 | The subfileds of WUR parameters field from WUR AP are usless unless WUR Mode Response Status value is 0. | Make sure that the table 9-318c is used when the WUR Mode Response Status value is 0. In other cases (denial cases), a WUR AP needs to utilizes the subfields format presented in the table 9-318e. | Revised. Agreed in priciple. Table 9-318c and Table 9-318e may not be present in some cases. These cases shall be decribed. TGba editor to make the changes shown in 11-18/2143r2 |
| 567 | 30.06 | 9.4.2.273 | Table 9-318c and 9-318e may not be present for all wur action types. E.g. Enter WUR mode, Enter WUR Suspend, or action types is response and response status is denied | adds a sentence to say 'WUR Parameters field is not present in WUR mode element when Action type is either Enter WUR mode Suspend Request, Enter WUR mode Suspend Response, Enter WUR mode, Enter WUR Mode Suspend,, or when WUR Mode Response Status subfield indicates denied" | Revised. Agreed in priciple. Table 9-318c and Table 9-318e may not be present in some cases. These cases shall be decribed. TGba editor to make the changes shown in 11-18/2143r2 |
| 570 | 54.34 | 31.6.1 | It is not clear what exactly is the status after Enter WUR Mode Suspend Request is denied. Are all previously negotiated parameters forgotten/discarded by the AP? | Add non-AP STA behavior when receives denied response after Enter WUR Mode Suspend Request | Rejected.Enter WUR Mode Suspend Request is used by the STA to switch from non WUR mode (normal PCR mode) to WUR mode suspend. So there are not previously negotiated parameters.If the STA wants to switch from WUR mode to WUR mode suspend, it shall use Enter WUR mode. And Enter WUR mode doesn’t need response frame. It is described in subclause 31.6.2 and Table 31-1 and 31-2.  |
| 633 | 28.30 | 9.4.2.273 | The WUR Mode Element appears to contain more fields than are necessary, yielding WUR action frames that are longer than necessary. The WUR Action frames contain a WUR Action Field (defined in 9.6.32.1) with 254 reserved values. Yet the WUR Mode Element has an "Action Type" field that appears redundant. In the case of action types of the form "xxx Response" the WUR Parameter Control field and WUR Parameters are sent even when the WUR Mode Response Status is a denial, which is a case where those parameters are unnecessary. | Remove the "Action Type" field from the WUR Mode Element and replace the "WUR Mode Setup" action in 9.6.32.1 with actions corresponding to each of the non-reserved action types. Change the contents of the WUR Mode Element such that the WUR Mode Response Status is only present on "action types" (now Actions) that include "... Response". Change the contents of the WUR Mode Element such that the WUR Parameter Control and WUR Parameters not required in WUR Action responses when the WUR Mode Response Status is any type of denial. (Also, although not part of my "must be satisfied", the only current use of the WUR Parameter Control field is to indicate the presence of the Group ID list, so that field could be moved into the parameter set, allowing it to only be present in the parameters sent by the AP.) | Rejected.The current structure that is defining one WUR Mode element is following the TWT style in the baseline. So, additional explanations were added while retaining the current structure. TGba editor to make the changes shown in 11-18/2143r2 |
| 727 | 54.50 | 31.6.1 | The following sentence is too long and combines two actions (WUR Mode to WUR Suspend and WUR Suspend to WUR Mode transitions), which makes hard to read: "After a WUR non-AP STA has negotiated WUR service with a WUR AP, the WUR non-AP STA may switch from WUR Mode to WUR Mode Suspend or switch from WUR Mode Suspend to WUR Mode by using the PCR component to initiate and complete a successful frame exchange, which includes a WUR Mode Setup frame with Action Type field of the carrying WUR Mode element set to "Enter WUR Mode Suspend" or "Enter WUR Mode" from the WUR non-AP STA and an Ack frame from the WUR AP."Please replace with the following:"After a WUR non-AP STA has negotiated WUR service with a WUR AP, the WUR non-AP STA may switch from WUR Mode to WUR Mode Suspend by initiating and completing a successful frame exchange, which includes a WUR Mode Setup frame with Action Type field of the carrying WUR Mode element set to "Enter WUR Mode Suspend".After a WUR non-AP STA has negotiated WUR service with a WUR AP, the WUR non-AP STA may switch from WUR Mode Suspend to WUR Mode by initiating and completing a successful frame exchange, which includes a WUR Mode Setup frame with Action Type field of the carrying WUR Mode element set to "Enter WUR Mode". " | As shown in the comment. | Revised.Agreed in priciple.The sentence is divided into two sentences.The first sentence explains WUR mode to WUR mode suspend. The second sentence explains the opposite case.TGba editor to make the changes shown in 11-18/2143r2 |
| 888 | 54.58 | 31.6.1 | It is not clear what successful completion of the frame exchange means here: "...status that the STA shall adopt upon successful completion of the frame exchange." Does receipt of the response frame alone indicate successful completion? If the intention is the receipt of a response frame with the Status field set to Accept, it should be clarified as such. | Clarify what successful completion of the frame exchange means. | Revised.Even though “successful completionof the frame exchange” is already widely being used in the IEEE 802.11 baseline, it needs to be clarified.Add note that a frame exchange is considered successful if the STA transmitngg the frame receives the Ack frame sent in responseTGba editor to make the changes shown in 11-18/2143r2 |
| 1028 | 54.50 | 31.6.1 | "After a WUR non-AP STA has negotiated WUR service with a WUR AP, ..." Is it when the WUR Mode setup frame exchange ends with success? Clarify. | As in comment. | Revised.Agreed in principle.It should be clearly described what the negotiation between the STA and AP means.TGba editor to make the changes shown in 11-18/2143r2 |
| 1243 | 54.28 | 31.6.1 | What is the status of STA if the STA was at the WUR Mode Suspend state and its Enter WUR Mode Request (e.g., for modifying a WUR parameter) was denied? Still no WUR service, or the original WUR service is valid? | Please clarify. | Revised. If the STA is at the WUR mode suspend, the STA cannot transmit action frame with “Enter WUR Mode Request” type. If the STA wants to modify WUR parameters, it shall tear down WUR mode suspend, and then request WUR mode or WUR mode suspend. Only WUR Mode Setup frame with the Action Type set to “Enter WUR Mode Resposne” or “Enter WUR Mode Suspend Response” can be used to modify WUR parameters. That is decribed in the text but it will be better added to the table. Table 31-2 and texts are modifed for clarification.TGba editor to make the changes shown in 11-18/2143r2 |
| 1244 | 54.34 | 31.6.1 | What is the status of STA if the STA was at the WUR Mode state and its Enter WUR Mode Suspend Request (e.g., for modifying a WUR parameter) was denied? Still no WUR service, or the original WUR service is valid? | Please clarify. | Revised. If the STA is at the WUR mode, the STA cannot transmit action frame with “Enter WUR Mode Suspend Request” type. If the STA wants to modify WUR parameters, it shall tear down WUR mode, and then request WUR mode or WUR mode suspend. Only WUR Mode Setup frame with the Action Type set to “Enter WUR Mode Resposne” or “Enter WUR Mode Suspend Response” can be used to modify WUR parameters. That is decribed in the text but it will be better added to the table. Table 31-2 and texts are modifed for clarification.TGba editor to make the changes shown in 11-18/2143r2 |

**9.4.2.275 WUR Mode element**

**TGba Editor: Modify the 5th paragraph as follows [449, 567, 633]:**

The WUR Parameters Control field indicates the configuration of the following WUR Parameters field. The format of the WUR Parameter Control field when the Action Type field is set to “Enter WUR Mode Response” or “Enter WUR Mode Suspend Response” and WUR Mode Response Status field is set to “Accept”is shown in Figure 9-751b (WUR Parameters Control field format).

**TGba Editor: Modify the 7th paragraph as follows [449, 567,633]:**

The subfields of the WUR Parameters field sent from a WUR AP when the Action Type is “Enter WUR Mode Response” or “Enter WUR Mode Suspend Response” and WUR Mode Response Status field is set to “Accept” are defined in 9-751i (WUR Parameters field format from WUR AP) and Table 9-318d (Subfields of WUR Parameters field from WUR AP). Otherwise, this subfield from a WUR AP is reserved.

**TGba Editor: Modify the 14th paragraph as follows [449, 567,633]:**

The subfields of the WUR Parameters field sent from a WUR non-AP STA when the Action Type is “Enter WUR Mode Request” or “Enter WUR Mode Suspend Request” are defined in 9-751k (WUR Parameters field format from WUR non-AP STA) and Table 9-318f (Subfields of the WUR Parameters field from WUR non-AP STA). Otherwise, this subfield from a WUR non-AP STA is reserved.

31.6 WUR power management procedure

31.6.2 WUR Mode Setup

**TGba Editor: Modify Table 31-2 as follows[1243, 1244]:**

Table 31-2—WUR Mode Setup/Teardown frame transmission

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| --- | --- | --- |
| **Frame type (and Action Type field value) transmitted from a WUR non-AP STA to a WUR AP**  | **Frame type transmitted from a WUR AP to a WUR non-AP STA** | **Status after the****completion of the****exchange** |
| WUR Mode Setup frame(Action Type = Enter WUR Mode) | - | The WUR non-AP STA enters WUR mode from WUR mode suspend |
| WUR Mode Setup frame(Action Type = Enter WUR Mode Suspend) | - | The WUR non-AP STA enters WUR mode suspend from WUR mode  |
|  | WUR Mode Setup frame(Action Type = Enter WUR Mode Response) | The WUR non-AP STA that is in WUR mode updates the WUR parameters |
|  | WUR Mode Setup frame(Action Type = Enter WUR Mode Suspend Response) | The WUR non-AP STA that is in WUR mode suspend updates the WUR parameters |
| WUR Mode Teardown frame | - | The WUR non-AP STA that is in WUR mode or WUR mode suspend tears down WUR power management service  |
|  | WUR Mode Teardown frame | The WUR non-AP STA that is in WUR mode or WUR mode suspend tears down WUR power management service |

**TGba Editor: Add this paragraph before 3rd paragraph as follows [1028]:**

If the WUR AP accepts the request for WUR mode setup with the WUR Parameters field in the WUR Mode Setup frame, the WUR Mode Response Status field in the corresponding WUR Mode element is set to “Accept”. If the WUR non-AP STA receives the WUR Mode element which containing WUR Mode Response Status field set to “Accept” succussfully, WUR power management service is negotiated between the WUR non-AP STA and the WUR AP with WUR parameters which are indicated in the WUR Mode elements.

**TGba Editor: Modify the 4th paragraph as follows [122, 727]:**

After a WUR non-AP STA has negotiated WUR power management service with a WUR AP, the WUR non-AP STA may switch from WUR mode to WUR mode suspend by using the PCR component to initiate and complete a successful frame exchange, which includes a WUR Mode Setup frame with Action Type field of the carrying WUR Mode element set to “Enter WUR Mode Suspend” from the WUR non-AP STA and an Ack frame from the WUR AP.

**TGba Editor: Add following paragraph after 4th paragraph [122, 727]:**

After a WUR non-AP STA has negotiated WUR power management service with a WUR AP, the WUR non-AP STA may switch from WUR mode suspend to WUR mode by using the PCR component to initiate and complete a successful frame exchange, which includes a WUR Mode Setup frame with Action Type field of the carrying WUR Mode element set to “Enter WUR Mode” from the WUR non-AP STA and an Ack frame from the WUR AP.

**TGba Editor: Modify the 6th paragraph as follows [122, 1243, 1244]:**

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 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” from the WUR AP and an Ack frame from the WUR non-AP STA.

**TGba Editor: Add following two paragraphs after 6th paragraph [122, 1243, 1244]:**

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 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 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.

**TGba Editor: Add following two paragraphes after the last paragraph in this subclause [121, 888]:**

A WUR STA that successfully finishes WUR mode setup shall operate as defined in 31.6.3 and 31.6.4.

Note: A frame exchange is considered successful if the STA transmiting the frame receives the Ack frame sent in response.