IEEE P802.11  
Wireless LANs

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| Comment Resolutions on WUR Capability element – Part 2 | | | | |
| Date: 2019-01-14 | | | | |
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Abstract

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

* 10 CIDs: 69, 70, 166, 368, 514, 879, 1016, 1101, 1230, 1231

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.***

# Capability Element

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 69 | 32.59 | 9.4.2.274 | Suggest renaming some of these fields as follows: Minimum PCR Wake Transition Time, VL WUR Frame Support, HDR Support, WUR SST Support. | As in comment. | Rejected. Current naming is enough to indicate the each contents. |
| 70 | 33.09 | 9.4.2.274 | These fields seem useless from WUR AP side. Make them useful so that the STA knows if the WUR AP implements certain features that the STA is interested in. It can help the STA decide whether to associate with an AP rather than another. Remove "Reserved for a WUR AP" and tailor descriptions to cover both non-AP and AP sides | As in comment (Up to line 65). | Revised.  Agreed in principle.  TGba spec defines optional features for WUR AP. However there is not field or frame to indicate it. Following optional features can help the STA decide whether to associate with an AP.  Supportability of transmission for   * 40 MHz WUR PPDU and 80 MHz WUR PPDU * VL WUR frame * Protected WUR frame * WUR discovery frame * WUR vendor specific frame   Group ID support  TGba editor to make the changes shown in 11-19/0047r0 |
| 166 | 32.47 | 9.4.2.274 | Why using 1 bit to indicate support of both 4.9 and 5GHz band? | Either remover 4.9GHz or have separated bit for 5 and 4.9GHz band | Rejected.  Even though 4.9 GHz and 5 GHz indication is merged into one field, a AP can determine whether or not the STA support 4.9 GHz band through PCR. |
| 368 | 32.65 | 9.4.2.274 | Since most of the capabilities are completely different for WUR AP and WUR STA split the Capabilities Information field format into two: WUR AP Capabilities Information field format and WUR STA Capabilities Information field format. This will make the diagram and text more straightforward and lead to more efficient use of bits in the protocol. | Split the Capabilities Information field format into two: WUR AP Capabilities Information field format and WUR STA Capabilities Information field format. This then removes the many "Reserved for a WUR AP" notes in the encoding table. Additional editorial cleanup will be needed | Revised.  It is duplicated with CID 70  TGba editor to make the changes shown in 11-19/0047r0 |
| 514 | 23.46 | 9.3.3 | The WUR Capabilities element does not contain any capability parameters for AP. The WUR Capabilities element should be optional present in Beacon frame, Association Response frame, Reassociation Response frame and Probe Response frame. | as per comment | Rejected.  As resolved in CID 70 and 368, Capabilities field for AP side is revised and shall be transmitted through Beacon frame, Association Response frame, Reassociation Response frame and Probe Response frame. |
| 879 | 33.48 | 9.4.2.274 | Does the capability "20 MHz WUR PPDU with HDR support" excludes reception of 40 MHz and 80 MHz WUR PPDUs with one or more WUR frames using HDR? For a WUR non-AP STA reception of WUR frames using HDR should be transparent to the bandwidth of the WUR PPDU. | clarify whether the capability "20 MHz WUR PPDU with HDR support" excludes reception of 40 MHz and 80 MHz WUR PPDUs with one or more WUR frames using HDR? If this capability is also applicable to 40 MHz and 80 MHz WUR PPDUs, change the capability to "WUR PPDU with HDR support" and remove 20 MHz from both the definition and encoding columns. | Rejected.  Following subclause 4.3.15a, a WUR STA cannot receive 40 MHz and 80 MHz WUR PPDU.  So it is obvious that the capability “20 MHz WUR PPDU with HDR support”excludes reception of 40 MHz and 80 MHz WUR PPDU. |
| 1016 | 32.29 | 9.4.2.274 | How the Supported Bands field value is used should be described in clause 32. The WUR operating band of a WUR non-AP STA should be the same with its associated AP in principle. This is because the WUR should meet the same range requirement as the PCR. This field should be used to additionally inform the AP that the STA can support bands other than the band where its PCR operates and connected to the AP when the AP operates in multi-band. | As in comment. | Rejected.  It is totally an implementation issue that AP will decide which channel for WUR operation.  TGba spec doesn’t define any WUR channel selection criteria except that WUR shall operate in non-DFS channel. PCR and WUR can operate in different band even though their range can be different. This is case is not excluded from the TGba spec. |
| 1101 | 32.48 | 9.4.2.274 | Please clarify whether there is a reason to name the HDR support as "20 MHz WUR PPDU with HDR support". I believe that it is possible for a WUR STA to receive a PPDU with wider bandwidth, so it is redundant to state 20 MHz WUR PPDU in this case | rename "20 MHz WUR PPDU with HDR Support" subfield to "HDR support" | Rejected.  It is duplicated with CID 879.  Following subclause 4.3.15a, a WUR STA cannot receive 40 MHz and 80 MHz WUR PPDU.  So it is obvious that the capability “20 MHz WUR PPDU with HDR support”excludes reception of 40 MHz and 80 MHz WUR PPDU. |
| 1230 | 32.25 | 9.4.2.274 | Why "For WUR AP, the Supported Bands field is reserved."? An AP may be capable of transmitting WUR frames in both bands. Shouldn't the AP advertsie such capability so that the STA may use the information to decide on a perferred band to associate with the BSS/ESS? | Delete "For WUR AP, the Supported Bands field is reserved.". And in the next paragraph, change "WUR non-AP STA" to "WUR AP STAs and WUR non-AP STAs". | Rejected.  WUR channel information is more appropriate than supported band information of AP for a STA to determine a AP. |
| 1231 | 32.35 | 9.4.2.274 | The encoding of Supported Bands field is not efficient. The WUR band information can be considered as a part of the WUR Capabilities inforamtion, therefore be merged with the WUR Capabilites Information field. | Combine the WUR Bands field with the WUR Capabilties Information field into one field. | Rejected.  Supported Bands and WUR Bands are technically different. Supported Bands info only carries capability of STA.  However, WUR Bands info indicates current operating channel for WUR and is determined by AP |

**9.4.2.273 WUR Capabilities element**

**TGba Editor: Modify of Figure 9-751c as follows [70, 368]:**



**Figure 9-751c—WUR Capabilities Information field format**

**TGba Editor: Modify of Table 9-318f as follows [70, 368]:**

**Table 9-318f—Subfields of the WUR Capabilities Information field**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| PCR Transition Delay | Indicates the maximum  time that the STA requires  to transition its PCR component  from doze state to  awake state. | The indicated value is equal to 256\*(value of the field plus 1) μs.  Reserved for a WUR AP. |
| Nonzero Length Frame Body Support | Indicates support for the nonzero length Frame Body field in a WUR frame. | For a WUR non-AP STA:  Set to 1 to indicate support for the reception of nonzero length Frame Body field in a WUR frame. Set to 0 otherwise.  For a WUR AP:  Set to 1 to indicate support for the transmission of nonzero length Frame Body field in a WUR frame. Set to 0 otherwise. |
| Group IDs Support | Indicates Group IDs support. | For a WUR non-AP STA:  Set to 0 to indicate no support for group IDs. Set to 1 to indicate support for 16 group IDs. Set to 2 to indicate support for 32 group IDs. Set to 3 to indicate support for 64 group IDs.  For a WUR AP:  Set to 0 to indicate no support for group IDs.  Set to 1 to indicate support for group IDs. |
| Protection Support | Indicate support for the protected WUR frame. | For a WUR non-AP STA:  Set to 1 to indicate support for the reception of protected WUR frame. Set to 0 otherwise.  For a WUR AP:  Set to 1 to indicate support for the transmission of protected WUR frame. Set to 0 otherwise. |
| WUR Vendor Specific Frame Support | Indicate support for the of WUR Vendor Specific frame. | For a WUR non-AP STA:  Set to 1 to indicate support for the reception of WUR Vendor Specific frame. Set to 0 otherwise.  For a WUR AP:  Set to 1 to indicate support for the transmission of WUR Vendor Specific frame. Set to 0 otherwise. |
| 20 MHz WUR PPDU with HDR Support | Indicate support for the reception of 20 MHz WUR PPDU with HDR. | Set to 1 to indicate support for the reception of 20 MHz WUR PPDU with HDR. Set to 0 otherwise.  Reserved for a WUR AP. |
| Wide Band WUR PPDU Support | Indicate support for the transmission of 40 MHz WUR PPDU and/or 80 MHz WUR PPDU. | Set to 0 to indicate no support for the transmission of 40 MHz WUR PPDU and 80 MHz WUR PPDU.  Set to 1 to indicate support for transmission of 40 MHz WUR PPDU  Set to 2 to indicate support for transmission of 40 MHz WUR PPDU and 80 MHz WUR PPDU.  Reserved for a WUR non-AP STA. |
| WUR Channel Switching Support | Indicates whether the WUR channel switching capability for receiving WUR Beacon and WUR Wake-up frames that are transmitted in different channels is enabled or disabled (see 31.9 (WUR FDMA operation)). | Set to 0 if the WUR channel switching capability is supported.  Set to 1 if the WUR channel switching capability is not supported. |