IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resolution for CIDs assigned to Abhi – SA Ballot recirc (D6.0) | | | | |
| Date: June 17, 2024 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Abhishek Patil | Qualcomm Technologies Inc. |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi |  |  |  |
| Gaurang Naik |  |  |  |

Abstract

This submission proposes resolutions for following CIDs received for TGbe D6.0 (SA ballot recirc):

23101 23127 23128 23034 23086 23007

**Revisions:**

* Rev 0: Initial version of the document.
* Rev 1: Added resolution for CID 23007 and couple of bugfixes.
* Rev 2: Changes made while the document was presented during TGbe call on 6/19/24.
  + CID 23007 is deferred.

***TGbe editor: Baseline for this document is 11be D6.0 and REVme D5.0***

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

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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Category** | **Clause** | **Page.line** | **Comment** | **Proposed Change** | **Resolution** |
| 23101 | Benjamin Rolfe | T | AA.3 | 1034.24 | Another pesky "may" in an informative clause. In this case I think the sentence isn't adding much. | Delete sentence. | **Revised**  The cited sentence is required as it clarifies that APs affiliated with an AP MLD can be a mix of TxBSSID or a nonTxBSSID. To address the comment, the proposed resolution is to replace the ‘may’ with a ‘can’. Also, fixes ‘within the same AP MLD’ with ‘affiliated with the same AP MLD’.  **TGbe Editor: Please replace ‘may’ with ‘can’ and ‘Further, APs within’ with ‘Furthermore, APs affiliated with’ in the cited sentence.** |
| 23127 | Benjamin Rolfe | T | 3.2 | 63.05 | "as defined in" is (clearly) introducing a normative requirement. Which does not belong in clause 3. | Delete definition from clause 3. | **Revised**  Agree in principle. The ‘as defined’ doesn’t feel appropriate in the definition of the term in clause 3.2.  **TGbe Editor: Please replace ‘as defined’ with ‘as described’.** |
| 23128 | Benjamin Rolfe | T | 3.2 | 62.64 | "as defined in" is (clearly) introducing a normative requirement. Which does not belong in clause 3. | Delete definition from clause 3. | **Revised**  Agree in principle. The ‘as defined’ doesn’t feel appropriate in the definition of the term in clause 3.2.  **TGbe Editor: Please replace ‘as defined’ with ‘as described’.** |
| 23034 | Joseph Levy | E | 9.4.2.321.2.4 | 292.37 | It is preferred to state what the condition of a requirement is, prior to stating the requirement. | Replace: "The subfields are as defined in 9.4.2.5 (TIM element) if the reported AP does not correspond to a nontransmitted BSSID or as defined in 9.4.2.72 (Multiple BSSIDIndex element) if the reported AP corresponds to a nontransmitted BSSID." With: "If the reported AP does not correspond to a nontransmitted BSS the subfields are as defined in 9.4.2.5 (TIM element). IF the reported AP corresponds to a nontransmited BSSID the subfields are as defined in 9.4.2.72 (Multiple BSSIDIndex element)." | **Revised**  Agree with the comment and accept the proposed resolution with the following changes: replace ‘IF’ with ‘If’ and replace ‘Multiple BSSIDIndex element’ with ‘Multiple BSSID-Index element’.  **TGbe Editor: Please apply the changes proposed by the comment with fixes as shown above.** |
| 23086 | Abhishek Patil | T | 35.3.20 | 607.15 | The note 3 and note 4 on pg 607 describe the behavior at an AP and need to be expressed as normative text. | Delete 'NOTE 3 -', adjust the font size to normative text, replace 'carries' in the first (line 19) and third (line 28) bullet as 'shall carry', and replace 'can' in the second bullet (line 24) to 'may'. Delete 'NOTE 4 -', adjust the font size to normative text, and replace 'selects' to 'shall select' (line 35). | **Accepted** |
| 23007 | Binita Gupta | T | 9.4.2.321.2.3 | 256.34 | The rules for when the Extended ﻿MLD Capabilities And Operations subfield is included in the Common Info field in a Basic ML element is missing in this clause. NOTE 4 on P539L47 indicates that the rule is covered in ﻿9.4.2.321.2.3, however this clause does not define the rule. | Add rule for when the Extended ﻿MLD Capabilities And Operations subfield is included in the Common Info field in a Basic ML element. This should be the same rule as for including the MLD Capabilities And Operations subfield in the Basic ML element. | **Revised**  Agree in principle with the comment. Added rules explaining when the presence indicator for Ex MLD Cap/Op is set to 1. As part of the resolution, also removed duplication for MLD Cap/Op presence indication and consolidated the rules to one place.  **TGbe Editor: Please make changes as shown in this doc tagged as 23007.** |

---- Start of changes for 23007 ------

**9.4.2.321.2.2 Presence Bitmap subfield of the Multi-Link Control field in a Basic Multi-Link element**

***TGbe editor: Please update the following paragraph in this subclause as shown below:***

The Medium Synchronization Delay Information Present subfield is set to 1 if the Medium Synchronization Delay Information subfield is present in the Common Info field. Otherwise, the Medium Synchronization Delay Information Present subfield is set to 0. The Medium Synchronization Delay Information Present subfield is set to 0 when the Basic Multi-Link element is transmitted by a non-AP STA affiliated with a non-AP MLD.

***TGbe editor: Please update the following paragraphs in this subclause as shown below:***

The MLD Capabilities And Operations Present subfield is set to 1 if the MLD Capabilities And Operations subfield is present in the Common Info field. Otherwise, the MLD Capabilities And Operations Present subfield is set to 0. The MLD Capabilities And Operations Present subfield is set to 1 when the Basic Multi-Link element is carried in Beacon, Probe Response, (Re)Association Request, and (Re)Association Response frames. The MLD Capabilities And Operations Present subfield is set to 0 when Basic Multi-Link element is included in other frames.

The AP MLD ID Present subfield is set to 1 if the AP MLD ID field is present in the Common Info field. Otherwise, the AP MLD ID Present subfield is set to 0. The AP MLD ID Present subfield is set to 0 when the Basic Multi-Link element is transmitted by a non-AP STA affiliated with a non-AP MLD. The AP MLD ID Present subfield is set to 0 when the Basic Multi-Link element is carried in a Beacon frame, an (Re)Association Response frame, an Authentication frame, or a Probe Response frame that is not a multi-link probe response.

The Extended MLD Capabilities And Operations Present subfield is set to 1 if the Extended MLD Capabilities And Operations subfield is present in the Common Info field of the Basic Multi-Link element. Otherwise, the Extended MLD Capabilities And Operations Present subfield is set to 0. The Extended MLD Capabilities And Operations Present subfield is set to 1 when the Basic Multi-Link element is carried in Beacon, Probe Response, (Re)Association Request, and (Re)Association Response frames and at least one of the following conditions is satisfied by the MLD with whom the transmitting STA is affiliated:

* dot11OperationParameterUpdateImplemented is true.
* dot11NSTRStatusUpdateImplemented is true.
* dot11EHTEMLSREnablementOnOneLinkImplemented is true.
* dot11EHTBTMMLDRecommendationForMultipleAPsImplemented is true.
* The frame is a Beacon, or a broadcast Probe Response frame and the value carried in the Recommended Max Simultaneous Links subfield is nonzero.

**Common Info field of the Basic Multi-Link element**

***TGbe editor: Please update the following paragraph in this subclause as shown below:***

When the Basic Multi-Link element is included in a frame sent by an AP, the condition for the presence of the Medium Synchronization Delay Information subfield in the Common Info field is defined in 35.3.16.8 (Medium access recovery procedure). The format of the Medium Synchronization Delay Information subfield is defined in [Figure 9-1072i (Medium Synchronization Delay Information subfield format)](#_bookmark210).

***TGbe editor: Please update the following paragraph in this subclause as shown below:***

The AP MLD ID subfield indicates the identifier of the AP MLD whose MLD information is carried in the Basic Multi-Link element. The condition for the presence of the AP MLD ID subfield in a multi-link probe response is defined in 35.3.4.2 (Use of multi-link probe request and response).

* + - 1. **MLD capability and operation signaling**

***TGbe editor: Please delete the following paragraphs in this subclause as shown below:***

---- End of changes for 23007 ------

**Bugfixes**

Bug 1: The conditions for setting the Critical Update Flag subfield in clause 9.4.1.4 were updated to include changes due to T2LM or ML Reconfig procedures. However, the corresponding changes were not propagated to clause 9.4.2.70. The condition to set the Critical Update Flag subfield of the Nontransmitted BSSID Capability And Status field to 1 need to match those described in 9.4.1.4. In addition, the editorial instructions in 9.4.2.70 needs to be updated to match baseline (REVme D5.0). Furthermore, the instructions to baseline editor to update the field name are missing.

Proposed fix: The text in 9.4.2.70 is updated to point to the normative text in 35.3.10 that describes the conditions to set the Critical Update Flag subfield for an AP correspond to the nonTxBSSID. Other editorial changes to align with baseline text and provide instructions to the baseline editor.

***Change the title of the subclause 9.4.2.70 as follows:***

**9.4.2.70 Nontransmitted BSSID Capability And Status element**

***TGbe editor: Change the field name of “Nontransmitted BSSID Capability” to “Nontransmitted BSSID Capability And Status”***

***TGbe editor: Please update the contents of this subclause as shown below:***

***Insert the following NOTEs after the fifth paragraph (“The Nontransmitted BSSID Capability And Status field has the same format as...”):***

NOTE 1—The Critical Update Flag subfield of the Nontransmitted BSSID Capability And Status field is reserved if the frame carrying the element is transmitted by an AP that is not affiliated with an AP MLD. An AP affiliated with an AP MLD and corresponding to a nontransmitted BSSID sets the Critical Update Flag subfield to 1 in the Beacon and Probe Response frame(s) until and including the next DTIM beacon of the nontransmitted BSSID based on the conditions described in 35.3.10 (BSS parameter critical update procedure).

NOTE 2—The Nontransmitted BSSIDs Critical Update Flag subfield of the Nontransmitted BSSID Capability And Status field is reserved.

Bug 2: The text for Critical Update Flag subfield in 9.4.1.4 is a duplicate for the rules in 35.3.10.

Proposed fix: The text is updated to point to clause 35.3.10.

* + - 1. **Capability Information And Status Indication field**

***TGbe editor: Please update the following paragraph and the following NOTE in this subclause as shown below:***

An AP affiliated with an AP MLD sets the Critical Update Flag subfield to 1 in the Beacon and Probe Response frame(s) until and including its next DTIM beacon based on the conditions described in 35.3.10 (BSS parameter critical update procedure).

Bug 3: The reference to the T2LM section on AP add/remove on a global basis needs to be fixed. In addition, the field name within NonTxBSSID Cap And Status element needs to be fixed.

Proposed fix: Fixed the section reference and the field name.

**35.3.10 BSS parameter critical update procedure**

***TGbe editor: Please update the following bullets in the 1st and 2nd paragraphs in this subclause as shown below:***

* set the Critical Update Flag subfield of the Capability Information And Status Indication field to 1 in Beacon and Probe Response frames until and including the next DTIM beacon on the link on which the reporting AP is operating if at least one of the following conditions is met:
  + There is a change to a value carried in the BSS Parameters Change Count subfield of the MLD Parameters field in the Reduced Neighbor Report element for any AP affiliated with the same AP MLD as the reporting AP or a value carried in the BSS Parameters Change Count subfield in the Common Info field of the Basic Multi-Link element.
  + A new affiliated AP is added to the AP MLD with which the reporting AP is affiliated following the procedure defined in 35.3.6.2 (Adding affiliated AP(s)).
  + A Reconfiguration Multi-Link element is included or modified by adding a new Per-STA Profile subelement by the reporting AP affiliated with an AP MLD, following the procedure defined in 35.3.6.3 (Removing affiliated AP(s)).
  + An AP affiliated with the same AP MLD as the reporting AP becomes disabled or enabled through a new advertised TTLM defined in 35.3.7.2.4 (Advertised TTLM in Beacon and Probe Response frames).

Otherwise, set the Critical Update Flag subfield of the Capability Information And Status Indication field to 0.

* set the Critical Update Flag subfield of the Nontransmitted BSSID Capability Information And Status Indication field in the Nontransmitted BSSID Capability And Status element (for that nontransmitted BSSID) to 1 in Beacon and Probe Response frames until and including the next DTIM beacon of the nontransmitted BSSID if at least one of the following conditions is met:
  + There is a change to a value carried in the BSS Parameters Change Count subfield of the MLD Parameters field in the Reduced Neighbor Report element for any AP affiliated with the same AP MLD as the AP corresponding to the nontransmitted BSSID or a value carried in the BSS Parameters Change Count subfield corresponding to the nontransmitted BSSID in the Common Info field of the Basic Multi-Link element.
  + A new affiliated AP is added to the AP MLD with which the nontransmitted BSSID is affiliated following the procedure defined in 35.3.6.2 (Adding affiliated AP(s)).
  + A Reconfiguration Multi-Link element is included or modified by adding a new Per-STA Profile subelement by the reporting AP in the Nontransmitted BSSID Profile corresponding to the non- transmitted BSSID affiliated with an AP MLD, following the procedure defined in 35.3.6.3 (Removing affiliated AP(s)).
  + An AP affiliated with the AP MLD with which the nontransmitted BSSID is affiliated becomes disabled or enabled through a new advertised TTLM defined in 35.3.7.2.4 (Advertised TTLM in Beacon and Probe Response frames).

Otherwise, set the Critical Update Flag subfield of the Nontransmitted BSSID Capability Information And Status Indication field to 0.