IEEE P802.11
Wireless LANs

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| LB266 CR for subclause 35.3.10 |
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Abstract

This submission proposes resolutions of comments received from TGbe comment collection LB266 based on TGbe D2.0.

13473 12829 13788 11777 13470 12879 13366 13912 10415 13789 11432 10730 13915 13463 13352 10641 10643 13913 11433 12806 11434 10122 13469 13205 13472 10642 11435 11436 13367 13914 (30 CIDs)

Revisions:

* Rev 0: Initial version of the document.
1. **Introduction**

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. The introduction and the explanation of the proposed changes are not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe Draft (i.e. they are instructions to the 802.11be editor on how to merge the text with the baseline documents).***

***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.***

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Submission** |
| 13473 | 35.3.10 | 433.37 | The description of "when a critical update occurs to the operational parameters for that AP as defined in11.2.3.15 (TIM Broadcast)" is not correct. Not all critical update needs to update of BSS Parameters Change Count. | update the text to fix the issue. | Rejected-The comment failed to identify a technical issue. It is the baseline to update the BPCC if a critical update occurs to the operational parameters for that AP such that the STA can obtain the update info through the Beacon or Probe Response frame. This was discussed and is accepted by the task group. |
| 12829 | 35.3.10 | 433.42 | Would be good to have a discussion in the group whether it would be useful to have BSS load change considered as critical update or not. | Define it if the outcome of the discussion is that we should consider it as critical update. Otherwise, leave it as is. | Rejected-The value of BSS load dynamically changes. It is hard to consider it as critical update. |
| 13788 | 35.3.10 | 433.45 | Association Response only needs to carry the BPCC for the links that are requested or accepted for the corresponding non-AP MLD, it does not need to carry the BPCC for all affiliated AP | Use separate description for Association Response | Revised-Agree with the comment in principle. Apply the changes marked as #13788 in this document. |
| 11777 | 35.3.10 | 433.49 | I know it is used in baseline in several places but what is really a "critical update"? What makes an update critical | as in comment | Rejected-The comment failed to identify a technical issue and just asked a question. To answer the commenter's question, a critical update is defined in11.2.3.15 (TIM Broadcast), that is "The following eventsabout the operational parameters of the APshall classify as a critical update:...".. |
| 13470 | 35.3.10 | 433.49 | The description of "when a critical update occurs to the operational parameters for that AP as defined in11.2.3.15 (TIM Broadcast)" is not correct. Not all critical update needs to update of BSS Parameters Change Count. | update the text to fix the issue. | Rejected-The comment failed to identify the technical issue. It is the baseline to update the BPCC if a critical update occurs to the operational parameters for that AP such that the STA can obtain the update info through the Beacon or Probe Response frame. |
| 12879 | 35.3.10 | 433.62 | A period is missing at the end of the third bullet. | Please add a period at the end of the third bullet. | Accepted- |
| 13366 | 35.3.10 | 434.01 | The BSS Parameter Change Count should be optional for single link AP MLD | update the text according to the comment. | Rejected-An AP MLD is capable of at least two APs. Even if it is single link AP MLD, one or more links could be added later. So the BSS Parameters Change Count is still needed. |
| 13912 | 35.3.10 | 434.06 | change "up to and including" to "until and including " | change "up to and including" to "until and including " | Accepted- |
| 10415 | 35.3.10 | 434.14 | "set the All Updates Included subfield 'to 1' in the MLD Parameters subfield in the TBTT Information field of the Reduced Neighbor Report element corresponding to the reported AP"the sentence is incomplete and has been revised via adding 'to 1'.To keep consistent with the last paragraphï¼Œ the sentence 'Otherwise set All Updates Included subfield to 0.'should be added at the end of this paragraph | as the comment | Revised-Agree with the comment in principle. Apply the changes marked as #10415 in this document. |
| 13789 | 35.3.10 | 434.14 | set the All Updates Included subfield to 1. Missing "to 1" after "All Updates Included subfield" | As in the comment | Revised-Agree with the comment in principle. Apply the changes marked as #13789 in this document. |
| 11432 | 35.3.10 | 434.15 | It is not specified what value to set the All Updates Included subfield to. Same comment for P434L60. | Revise as '... set the All Updates Included subfield \*to 1\* in the MLD Parameters subfield ...'. Also, add the following at the end 'Otherwise, set the All Updates Included subfield to 0.' | Revised-Agree with the comment in principle. Apply the changes marked as #11432 in this document. |
| 10730 | 35.3.10 | 434.14 | Not consistent with the rules defined in 35.3.4.4 (Multi-Link element usage rules in the context of discovery). Which elements are applied to All Includes Updates? This paragraph is saying "critical update that generated a change to the value carried in the BSS Parameters Change Count subfield". Basically, BPCC change happens when a critical update occurs to the operational parameters for that AP as defined in11.2.3.15 (TIM Broadcast), but that rule is currently limited to elements listed in 35.3.11 (Multi-link procedures forchannel switching, extended channel switching, and channel quieting) to be inlcuded in Beacon. Need to clarify. (At least we need NOTE) | As in the comment | Revised-Agree with the comment in principle. Apply the changes marked as #10730 in this document. |
| 13915 | 35.3.10 | 434.62 | add a note, the updated elements only means CSA, eCSA, quiet, and quiet channel elements | clarify "the update elements" and update the text | Revised-Agree with the comment in principle. Apply the changes marked as #13915 in this document. |
| 13463 | 9.4.2.170.2 | 204.52 | Add the text to clarify that the critical update of channel switch, quiet period is not related to All Updates Included. | As in comment | Revised – This is actually contrary. A channel switch, quiet period inclusion is a critical update that will result in an increment of the BSS parameters count and the inclusion of the the corresponding updates. As long as the updates are included, the All Updates Included field is set to 1. More clarification is added. Apply the changes marked as #13463 in this document. |
| 13352 | 35.3.4.4 | 417.42 | This is a wrong statement since an AP can carry the ciritical update other than channel switch,quiet element.This is indicated by All Updates Included field. | Change the text per the comment. | Revised – This is actually contrary. A channel switch, quiet period inclusion is a critical update that will result in an increment of the BSS parameters count and the inclusion of the corresponding updates. As long as the updates are included, the All Updates Included field is set to 1. More clarification is added to subclause 35.3.10. Apply the changes marked as #13463 in this document. |
| 10641 | 35.3.10 | 434.15 | How long is the All Updates Included subfield set to 1? The setting of this subfield must be tied to the CUF flag for that AP and the BPCC of the reported AP. If CUF = 1 for the transmitting AP and BPCC for a reported AP that belongs to the same AP MLD as the reporting AP increments, then the All Updates Included flag is set to 1 for the reported AP. | As in comment | Revised-Incorporate the changes under CID 10556 of the document 22/1097r2.Note to the commenter: The comment was addressed by DCN 22/1097r2 with the resolution of CID 10556.Note to TGbe editor: there is no further change on the text for this CID. |
| 10643 | 35.3.10 | 434.63 | How long is the All Updates Included subfield set to 1? The setting of this subfield must be tied to the CUF flag for the AP corresponding to the nonTxBSSID and the BPCC of the reported AP. If CUF = 1 for the nonTxBSSID AP (carried in nonTxBSSID profile) and BPCC for a reported AP that belongs to the same AP MLD as the nonTxBSSID increments, then the All Updates Included flag is set to 1 for the reported AP. | As in comment | Revised-Incorporate the changes under CID 10556 of the document 22/1097r2.Note to the commenter: The comment was addressed by DCN 22/1097r2 with the resolution of CID 10556.Note to TGbe editor: there is no further change on the text for this CID. |
| 13913 | 35.3.10 | 434.16 | change "up to and including" to "until and including " | change "up to and including" to "until and including " | Accepted- |
| 11433 | 35.3.10 | 434.22 | Removal of an AP must be a critical update, i.e., addition of the Reconfig ML element in the Beacon must be listed in 11.2.3.15 as a critical update. Directly setting the CUF to 1 can create problems if the non-AP MLD misses the Beacon frame(s) that had the CUF set to 1. Same comment for addition of the AP. Also, the same comment for nontransmitted BSSID case (P435L13). | As in comment | Rejected-The info on removal of an AP is carried in the Reconfiguration ML element and could be advertised by Beacon frames on each link. The STA could parse a Beacon frame to obtain that info. In this case, the retrieving crtical update mechanism by comparing the local counter with the received one is not needed. Regarding the missing issue, it is a general one and also applies to other mechanisms, like obtaining the CSA, eCSA through the crosslink info. The probability of this missing issue, however, is quite low since at least one STA affiliated with non-AP MLD will receive a DTIM Beacon. |
| 12806 | 35.3.10 | 434.22 | There is an issue when an AP is removed. We currently use directly the critical update flag in this case, and not the BSS parameters update. If there is a change in BSS parameters update together with the inclusion of the ML reconfig element, the STA can miss it. Also, if the STA misses the beacon on which there was a critical update flag, it can not determine if there had been a critical update. Everything can be easily solved if we increment BSS parameters update in this case (link remove), as we do for any other update for a particular AP affiliated with an AP MLD. | Add a new condition for critical update in 11.2.3.15, which will be as follows: Inclusion of a Reconfiguration Multi-Link element by an AP affiliated with an AP MLD that will be removed following procedure defined in 35.3.6.2.2 (Removing affiliated APs) | Rejected-The info on removal of an AP is carried in theReconfiguration ML element and could be advertised by Beacon frames on each link. The STA could parse a Beacon frame to obtain that info. In this case, the retrieving crtical update mechanism by comparing the local counter with the received one is not needed. Regarding the missing issue, it is a general one and also applies to other mechanisms, like obtaining the CSA, eCSA through the crosslink info. The probability of this missing issue, however, is quite low since at least one STA affiliated with non-AP MLD will receive DTIM Beacon. |
| 11434 | 35.3.10 | 434.33 | Remove the hyphen in 'non-transmitted' | As in comment | Accepted- |
| 10122 | 35.3.10 | 434.37 | change it to "shall be increamented(modulo 256) by 1" | as the comments. | Accepted-Note to TGbe editor: please add "by 1" after "incremented " on page 215 line 48 of the TGbe draft 2.0. |
| 13469 | 35.3.10 | 433.49 | "modulo 256" for BSS Parameters Change Count is not correct. | Change it to modulo 255 | Revised-Agree with the comment in pinciple. The value 255 is excluded. Incorporate the changes under CID 10555 in the document 22/1097r2.Note to the commenter: This was addressed by the resolution of CID 10555 in DCN 22/1097r2.Note to the TGbe editor: there is no further change on the text for this CID. |
| 13205 | 35.3.10 | 434.37 | Replace "modulo 256" for BSS Parameters Change Count to "modulo 255" | as in comment | Revised-Agree with the comment in principle. The value 255 is excluded. Incorporate the changes under CID 10555 in the document 22/1097r2.Note to the commenter: This was addressed by the resolution of CID 10555 in DCN 22/1097r2.Note to the TGbe editor: there is no further change on the text for this CID. |
| 13472 | 35.3.10 | 434.37 | "modulo 256" for BSS Parameters Change Count is not correct. | Change it to modulo 255 | Revised-Agree with the comment in pinciple. The value 255 is excluded.Incorporate the changes under CID 10555 in the document 22/1097r2.Note to the commenter: This was addressed by the resolution of CID 10555 in DCN 22/1097r2.Note to the TGbe editor: there is no further change on the text for this CID. |
| 10642 | 35.3.10 | 434.44 | Split into two bullets - one for ML probe and other for non-ML probe.For ML probe, the Basic ML IE is in the core frame | As in comment | Revised-Agree with the comment in principle. Apply the changes marked as #10642 in this document  |
| 11435 | 35.3.10 | 434.44 | The location of the BSS Parameters Change Count subfield in the Common Info field depends on the frame. In ML probe response, it may be carried outside the MBSSID element, which is not captured in this bullet point. Please add another bullet point to clarify. | As in comment | Revised-Agree with the comment in principle. Apply the changes marked as #11435 in this document.  |
| 11436 | 35.3.10 | 434.49 | The Critical Update Flag of the Capability Info field in the Nontransmitted BSSID Capability element is set to 1 (along with incrementing the BPCC of the affected AP) when the the critical update affects the BSS through inheritance also. Please add a note to specify this. | As in comment | Rejected-The commenter consideted a scenario that a critical event is inherited by the AP MLD that including nontransmitted BSSID from transmitted BSSID. This is true. However, the value of the critical update flag depends on whether there is a change to the value of the BPCC field or not. The value of BPCC will be increased even for some inherited critical updates. |
| 13367 | 35.3.10 | 434.49 | The Critical Update Flag for non-transmitted BSSID is not useful since the flag and the Critical Update Flag and the elements that carry BSS Parameters Change Count are in same element or in the middle of the frame.Another observation is that Nontransmitted BSSIDs Critical Update Flag is used for similar purpose. | Delete Critical Update Flag for non-transmitted BSSID from the draft. | Rejected-The Critical Update Flag for one nontransmitted BSSID is for one AP MLD and can provide an early indication of whether the receiver needs to parse the Basic Mulit-Link element carried in nontransmitted BSSID profile of the multiple BSSID element.On the other hand, theNontransmitted BSSIDs Critical Update Flag is for more than one AP MLD. Its value depends on all Critical Update Flags for one nontransmitted BSSID. |
| 13914 | 35.3.10 | 434.52 | change "up to and including" to "until and including" | change "up to and including" to "until and including " | Accepted- |

**Discussion:** None.

***TGbe editor: Please modify the subclause 35.3.10 BSS parameter critical update procedure as follows***

**35.3.10 BSS parameter critical update procedure**

If an AP affiliated with an AP MLD is not in a multiple BSSID set or corresponds to a transmitted BSSID in a multiple BSSID set, the AP shall

—include in Beacon and Probe Response frames it transmits a BSS Parameters Change Count subfield for each of all APs affiliated with the same AP MLD as the AP; include in a (Re)Association Response frame it transmits a BSS Parameters Change Count subfield for each of all APs that are requested for (re)setup in the received (Re)Association Request frame. (#13788)

•The BSS Parameters Change Count subfield value for each AP is initialized to 0, and shall be incremented (modulo 256 excluding the value 255) by 1 (#10122) when a critical update occurs to the operational parameters for that AP as defined in 11.2.3.15 (TIM Broadcast).

•In Beacon and Probe Response frames, the BSS Parameters Change Count subfield for each of the other AP(s) affiliated with the AP MLD shall be carried in the MLD Parameters subfield in the TBTT Information field of the Reduced Neighbor Report element corresponding to that AP where each of the other AP(s) is identified by the Link ID subfield of the MLD Parameters sub-field.

•In the (Re)Association Response frame, the BSS Parameters Change Count subfield for each of the other AP(s) affiliated with the AP MLD shall be carried in the STA Info subfield in the Per-STA Profile subelement of Basic Multi-link element corresponding to that AP where each of the other AP(s) is identified by the Link ID subfield of the STA Control field of the Per-STA Profile subelement.(#12879)

•The BSS Parameters Change Count subfield for the AP shall be carried in the Common Info field of the Basic Multi-Link element where the AP is identified by the Link ID subfield of the Com-mon Info field.

—set the Critical Update Flag subfield of the Capability Information field to 1 in Beacon and Probe Response frames until and including (#13912) the next DTIM Beacon frame on the link on which the AP is operating if 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 or a value carried in the BSS Parameters Change Count subfield in the Common Info field of the Basic Multi-Link element. Otherwise set the Critical Update Flag subfield of the Capability Information field to 0.

—For each reported AP affiliated with the same AP MLD as the AP, set the All Updates Included subfield to 1 in the MLD Parameters subfield in the TBTT Information field of the Reduced Neighbor Report element corresponding to the reported AP if the updated elements that correspond to the latest critical update that generated a change to the value carried in the BSS Parameters Change Count subfield for the reported AP are included in the frame carrying the Reduced Neighbor Report element and these update elements belong to five elements as described in 35.3.11 (Multi-link procedures for channel switching, extended channel switching, and channel quieting) (#10730, 13915, 13463, 13352), and until the updated elements are no longer included or until the BSS Parameters Change Count subfield is incremented, and set to 0 otherwise (#10415, 13789, 11432).

The Critical Update Flag subfield of the Capability Information field in Beacon and Probe Response frames shall also be set to 1 if a new affiliated AP is added to the AP MLD with which the reporting AP is affiliated following the procedure defined in 35.3.6.2.1 (Adding new affiliated APs) or if a Reconfiguration Multi-Link element is included by the reporting AP affiliated with an AP MLD, following the procedure defined in 35.3.6.2.2 (Removing affiliated APs).

If an AP affiliated with an AP MLD is a nontransmitted BSSID in a multiple BSSID set, then the AP that corresponds to the transmitted BSSID in the same multiple BSSID set shall

—include in Beacon and Probe Response frames it transmits a BSS Parameters Change Count subfield for each of all APs affiliated with the same AP MLD as the AP corresponding to the nontransmitted (#11434) BSSID

•The BSS Parameters Change Count subfield value for each AP is initialized to 0, and shall be incremented (modulo 256 excluding the value 255) by 1 (#10122) when a critical update occurs to the operational parameters for that AP as defined in 11.2.3.15 (TIM Broadcast).

•The BSS Parameters Change Count subfield for each of the other AP(s) affiliated with the AP MLD shall be carried in the MLD Parameters subfield in the TBTT Information field of the Reduced Neighbor Report element corresponding to that AP where each of the other AP(s) is identified by the Link ID subfield of the MLD Parameters subfield.

•The BSS Parameters Change Count subfield for the nontransmitted BSSID shall be carried in the Common Info field in the Basic Multi-Link element carried in Nontransmitted BSSID Profile subelement of the Multiple BSSID element where the AP is identified by the Link ID subfield of the Common Info field in the Basic Multi-Link element in a Probe Response frame that is not a Multi-Link probe response. (#10642, 11435)

•The BSS Parameters Change Count subfield for the nontransmitted BSSID shall be carried in the Common Info field in the Basic Multi-Link element outside the Multiple BSSID element where the AP is identified by the Link ID subfield of the Common Info field in the Basic Multi-Link element in a Multi-Link probe response. (#10642, 11435)

—set the Critical Update Flag subfield of the Capability Information field in the Nontransmitted BSSID Capability element (for that nontransmitted BSSID) to 1 in Beacon and Probe Response frames until and including (#13914) the next DTIM Beacon frame of the nontransmitted BSSID if 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 in the Common Info field of the Basic Multi-Link element in the Nontransmitted BSSID Profile corresponding to the nontransmitted BSSID. Otherwise set the Critical Update Flag subfield of the Capability Information field to 0.

—For each reported AP affiliated with the same AP MLD as the AP corresponding to the nontransmitted BSSID, set the All Updates Included subfield to 1 in the MLD Parameters subfield in the TBTT Information field of the Reduced Neighbor Report element corresponding to the reported AP if all the updated elements that correspond to the latest critical update that generated a change to the value carried in the BSS Parameters Change Count subfield for the reported AP are included in the frame carrying the Reduced Neighbor Report element and these update elements belong to five elements as described in 35.3.11 (Multi-link procedures for channel switching, extended channel switching, and channel quieting) (#10730, 13915, 13463, 13352), and until the updated elements are no longer included or until the BSS Parameters Change Count subfield is incremented, and set to 0 otherwise.

—Set the Nontransmitted BSSIDs Critical Update Flag subfield of the Capability Information field to 1 in a Beacon frame and a Probe Response frame it transmits if the Critical Update Flag subfield of the Nontransmitted BSSID Capability field is set to 1 in at least one nontransmitted BSSID profile in the Multiple BSSID element in the same frame. Otherwise, set the Nontransmitted BSSIDs Critical Update Flag subfield to 0. The flag is set to 1 until and including the later of the DTIM Beacon frame amongst the nontransmitted BSSIDs having the Critical Update Flag subfield of the Nontransmitted BSSID Capability field is set to 1.