xIEEE P802.11
Wireless LANs

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| LB271 – CR for misc CIDs |
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Abstract

Spec text proposal for resolution of following CIDs for LB271 on 11be D3.0:

15173 15174 16345

15698, 18001, 18235

17628, 18299 18236, 18237 17837

15674 15970 15971 17793

17886 15519 15972 16186 16187 16377 16378

16275 17332

17333 15053 15404 16484: capability

18128 18275 16485 17239: mode 3

17296 18132 17361 17887 18150

17529 16452 15013 17541

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 15173 |   | 0.00 | "Probe Response frame that is not a multi-link probe response" appears 16 times in the spec. However, the usage of "Probe Response frame that is not a multi-link probe response" is hard to interpret wheat is examined on the air. It should simply be "Probe Response frame that does not have Basic Multi-link element with complete profile". The above descirption is the only thing that we can examine on the air. | Change "Probe Response frame that is not a multi-link probe response" to "Probe Response frame that does not have Basic Multi-link element with complete profile" for the 16 instances in the spec. All the instances can be found by searcing "Probe Response frame that is not a " using pdf viewer. |  Reject – the suggestion is interesting. However, there are issues with the suggested change. The rule to define a ML Probe Response is more complicated than that as a regular Probe Response will include a Basic ML element, that has no per-STA profile, except for some cases. If we include the definition instead of mentioning ML Probe Response, the sentence will be more complicated than what it is right now. Therefore suggest to keep current formulation. |
| 15174 |   | 0.00 | "Probe Request frame that is not a multi-link probe request " appears 6 times in the spec. However, the usage of "Probe Request frame that is not a multi-link probe request" is hard to interpret wheat is examined on the air. It should simply be "Probe Request frame that does not have Probe Request Multi-link element". The above descirption is the only thing that we can examine on the air. | Change "Probe Request frame that is not a multi-link probe request" to "Probe Request frame that does not have Probe Request Multi-link element" for the 6 instances in the spec. All the instances can be found by searcing "Probe Request frame that is not a " using pdf viewer. |  Reject – in this case, the definition of a Probe Request that is not a ML probe request is easier and could be replaced, but following resolution CID15173, better to keep same description for a Probe Request that is not a ML probe request and for a Probe Response that is not an ML probe response.Therefore suggest to keep current language. |
| 16345 | 35.10.2 | 623.06 | Update the text with EHT SU Transmission | Replace the text "if the PPDU is an EHT MU PPDU addressed to a single STA" with "in case of EHT SU transmission". |  Revised – agree with the commenter. Apply the changes marked as #16345 in this document. |
| 15698 | 35.3.11 | 531.41 | The baseline restricts STAs from transmitting until they receive an enabling signal (such as a Beacon frame) from the AP on the new channel. However, non-AP MLD can perceive the completion of a channel switch based on information acquired through a link other than the one where the channel switch was performed. Therefore, 11be should allow non-AP MLDs to transmit on link 1 if they perceive the completion of a channel switch on link 1 through a frame received on link 2. (May help with non-AP MLD power saving) | Please allow non-AP MLDs to perform transmissions when they confirm the completion of a channel switch on a specific link through another link. Furthermore, the AP MLD can notify the completion of a channel switch on a specific link by sending unsolicited Probe Response frames to other links. | REVISEDThis CID is discussed on May 12, 2023, but no straw poll is conducted yet. Please ignore "REVISED" - it is just for the sole purpose of showing that this CID has a pending resolution. |
| 17628 | 35.3.11 | 533.15 | It is hard for an AP to switch to a DFS channel without disrupting assoc clients because of the long CAC. Option 1) Quiet element on serving channel during CAC then CSA/ECSA with short MCST after DFS channel is proven to be clear. If first/second/third/... DFS channels checked holds radar then multiple Quiet intervals before CSA/ECSA. CSA/ECSA is only used when new DFS channel is known.Option 2) AP sends CSA/ECSA up front. But if checked channel has radar, clients are left hanging; AP now has to check a new channel and somehow report that new channel (if & when the check is successful) to the clients, perhaps via other APs in the AP MLD. But the language here seems to prohibit that: "the Channel Switch Announcement element and the Extended Channel Switch Announcement element shall not be included in the per-STA profile of the affected AP in the Beacon and Probe Response frames" | 1) Add explanation for these two options. 2) In the second option, if the RNR can help point to the planned new channel, then describe that. Otherwise, remove the restriction at P533L16 | Reject - This CID is discussed on May 12, 2023. No consensus on the proposal. |
| 17837 | 35.3.11 | 534.48 | what does the dash line mean in Figure 35-18? Same comment for Figure 35-19. | remove the dash line if it is not necessary. | Revised – The dash line is meant to meant that Beacon frames are transmitted after but are not shown in the figure. Replace the dash with Beacon frames. This has already been done based on changes in document 23/0790r2 with CID15539. No further changes are needed. Apply the changes marked as #15539 in document 23/790r2. |
| 18001 | 35.3.11 | 531.52 | Channel Switch Wrapper element is missing from the list | Add the element to be consistent with the text in 35.15.3 | REVISEDThis CID is discussed on May 12, 2023, but no straw poll is conducted yet. Please ignore "REVISED" - it is just for the sole purpose of showing that this CID has a pending resolution. |
| 18235 | 35.3.11 | 531.60 | add channel switch wrapper element in the list of elements that can be included in basic ML element in beacon or probe response frame for a reported link in case of reported link puncturing pattern change | as in comment | REVISEDThis CID is discussed on May 12, 2023, but no straw poll is conducted yet. Please ignore "REVISED" - it is just for the sole purpose of showing that this CID has a pending resolution. |
| 18236 | 35.3.11 | 534.19 | After the last beacon on the current channel of the reported link, the reporting link advertises Max Chanel Switch Time element for the affected link. However, the value of this field is dependent on the time of channel access on the reporting link and it is dynamic based on medium contention. This affects the generation of MIC for the protected beacon frame on the reporting linkThe above bahaviors of changing field values/MIC based on channel access time is not desirable. | The value of Max Channel Switch time after the affected AP 's last beacon on the current channel and before the 1st Beacon on the new channel, and/or the values of channel switch count/quiet count/DTIM count should be the same as the values carried in the most recent beacon on the reporting link. The reference point of max channel switch time/count should be based on the most recent TBTT of the reporting link (TBTT at the beginning of the current BI). This enables reporting link transmitter to keep same field values for a BI duration independent of channel access.Change P533L14 to "After the estimated channel switch time, ...The value carried in the Switch Time field indicates the estimated time delta between the most recent TBTT of the reporting link (TBTT at the beginning of the current BI), and the expected time of the first Beacon frame in the new channel on the reported link, or the estimated time delta between the most recent TBTT of the reporting link and the expected time that non-primary link BSS resumes operation in the new channel, expressed in TUs"Change P246L60 to "After the last beacon is transmitted on the reported link, the Switch Time field indicates the estimated time delta between the most recent TBTT of the reporting link (TBTT at the beginning of the current BI) and the expected time of the first Beacon in the new channel on the reported link, , or the estimated time delta between the most recent TBTT of the reporting link and the expected time that non-primary link BSS resumes operation in the new channel, expressed in TUs" | Reject - This CID is discussed on May 12, 2023. No sufficient support for this proposal.  |
| 18237 | 35.3.11 | 534.56 | From Fig 35-18, the quiet count value seems depend on the channel access time of the association response frame, For example, if the frame is sent on link 2 before the last link 1 TBTT before quiet duration, then Quiet count=1. If the frame is delayed due to channel access and is sent after the last link 1 TBTT before quiet duration, then Quiet time needs to be changed to 128.The above bahaviors of changing field values based on channel access time is not desirable. | The of channel switch count/quiet count/DTIM count should be the same as the values carried in the most recent beacon on the reporting link. The reference point of the count should be based on the most recent TBTT of the reporting link (TBTT at the beginning of the current BI). This enables reporting link transmitter to keep same field values for a BI duration independent of channel access.Add in 35.3.11 "The value of channel switch count, quiet count or DTIM count advertised by the reporting link for an affected/reported link, is the value that is in effect on the affected/reported link at the most recent TBTT of the reporting link (TBTT at the beginning of the current BI)."Change Fig 35-18 to have (Re)Association Response frame having the same count value as the beacon prior on the reporting link. | Reject -This CID is discussed on May 12, 2023. No sufficient support for this proposal. |
| 18299 | 35.3.11 | 533.23 | Does "a second channel switch" change the target operating class/channel? If yes, then the (Extended) Channel Switch Announcement element shall be included. If not, then "The value carried in the Switch Time field indicates the adjusted estimated time of the first Beacon frame in the new channel" is good enough. Please clarify the second channel switch. | As in comment. | Reject -This CID is discussed on May 12, 2023. No consensus on the proposal. |
| 17886 | 35.3.23 | 584.55 | "NOTE--An AP MLD can use this protocol to recommend a non-AP MLD to do (re)association with the same AP MLDwith a different set of links, or to initiate a TID-to-link mapping change if that would match the recommendation." This seems to be a normative requirement | Make the cited statement normative. |   |
| 15674 | 35.3.4.1 | 490.01 | The D3.0 only has requirement of max value for the TBTT offset (<=254 TUs)between differerent APs with the same AP MLD. And there is no requirement/note to illustrate the minimum value for the TBTT offset between APs with the same AP MLD.Assume that two APs in same AP MLD have very close TBTT, and there are two STAs which are in doze state while only STA one link0 listens the Beacon. While one STA0 on link0 firstly receives Beacon on link0, and the Beacon on link0 indicates there is buffererd (groupcast) frames on link1, there is possibility that the remaining time for STA MLD to wake up STA1 on link1 is not large enough, as the AP1 on link1 may already send the buffered groupcast frames due to the close TBTT offset between AP0 and AP1 | Add a requirement or at least add a note to illustrate this issue caused by close TBTT offset.For example, a note as below may be added in the same paragragh,"Note - the TBTT offset between two APs affiliated with the same AP MLD should not be two small, as the small TBTT offset may cause the associated STAs have not enough time to wake up if only one STA is listening Beacon on one link" | Reject – there is no apparent need for such requirement. The example mentioned by the commenter does not seem strong enough for the following reason. Groupcast frames are sent only at DTIM and more importantly on all the links of the AP MLD, which makes it easy for the non-AP MLD to get the groupcast frames even in the scenario described by the commenter. |
| 15970 | 35.3.4.1 | 491.37 | The AP MLD 2 may have an AP which is operating on the same channel as the reporting AP but it is a nontransmitted BSSID. In that case also RNR should include APs of the AP MLD 2. So, do we really need the 2nd condition to be true? | Clarify the behavior when 2nd condition may not be true as explained in the comment. |  Reject – the condition illustrated in the comment is captured in the immediately preceeding paragraph. |
| 15971 | 35.3.4.1 | 491.40 | Is it correct understanding that RNR advertises collocated APs from another MLD only if these are part of the same multiple BSSID set and if so why? Add text or a Note to clarify if co-located APs of another MLD are not part of same multiple BSSID set as reporting AP then whether these are advertised in the RNR or not? | Clarify requirement as per comment. |  Reject – the conditions to report APs in RNR is clarified in the list of conditions. Outside of these conditions, there is no requirements. It is true that the conditions are elaborate and complicated, but that’s unfortunatly what the group converged on, and attempts in previous rounds to simplify this paragraph or even remove this paragraph didn’t reach sufficient consensus. |
| 17793 | 35.3.4.1 | 491.47 | Need to clarify whether RNR carried in the Beacon frame of a transmitted BSSID includes or does not include the nontransmitted BSSIDs in the TBTT Information fields. Description in this paragraph indicates that all affiliated APs of AP MLD 2 are reported in the RNR which will also include the nontransmitted BSSID itself if AP MLD 2 was MLD corresponding to a nontransmitted BSSID. | Clarify RNR related behavior as per the comment. |  Reject – the nontransmitted BSSID case is not covered by this paragraph but with the previous paragraph. |
| 15519 | 35.3.4.2 | 492.46 | The sentence is confusing. What is the AP MLD that corresponds to the nontransmitted BSSID? | Change to:If either the Address 1 field or the Address 3 field of the multi-link probe request is set to the MAC address of the AP that is affiliated with the targeted AP MLD and that corresponds to a nontransmitted BSSID, then the AP MLD ID subfield shall not be present in the Probe Request Multi-Link element of the multi-link probe request. | Revised – agree with the commenter. Apply the changes marked as #15519 in this document. |
| 15972 | 35.3.4.2 | 492.46 | Clarify why is AP MLD ID subfield not present in the ML probe request sent for to a nontransmitted BSSID? Similarly why AP MLD ID subfield is needed when ML probe request is sent for the responding AP as described in next para line 53? | Add Note to clarify why AP MLD ID is included in one case and not in the other. | Reject - This CID is discussed on March 16, 2023, but no consensus was reached for this CID. |
| 16186 | 35.3.4.5 | 495.56 | The receiver of Probe Request frame that is not an multi-link probe request should be EHT AP, otherwise, it may confuse the legacy AP. | Please add the correct receiver at the end of this sentence | Reject – for this reason, the normative statement allows not to include some elements but does not mandate to not include those. Based on offline check with implementers, the key elements that can cause confusion are mandated to be included. Transmitter needs to be aware that there may be confusion in some cases with legacy APs. There is a clear normative statement on EHT APs to not be confused if the elements are not included. |
| 16187 | 35.3.4.5 | 495.56 | a typo | Change "an" to "a" |  Accept |
| 16377 | 35.3.4.5 | 495.57 | This should be "format" not "rules". Clause 9 gives formats, not behaviors. | Change "it shalll follow the rules" to "it shall follow the format" at 495.57, 496.3, |  Revised - mention format and rules to include the elements. Also clarify that there are exception for EHT STAs in 9.3.3.9 regarding the inclusion of the elements. Apply the changes marked as #16377 in this document. |
| 16378 | 35.3.4.5 | 496.10 | "disregard the normative requirements" is unclear in this context. | Giben that 9.3.3.9 describes the format for a probe request frame, describe specifically which format of the frame can be ignored, or describe the content of this frame in a separate table in 9.3.3.9. (also in the paragraph at 495.64) |  Revised – modify table 9.3.3.9 to mention exception for EHT STAs. This way, normative requirement for inclusion or not of the elements are described in 35.3.4.5 without the need to mention to disregard rules in 9.3.3.9. Apply the changes marked as #16378 in this document |
| 16275 | 35.3.7 | 513.21 | For Multi-link load balancing, information of other links such as link utilization, number of STAs, link availability should be indicated in A-Control field. | as in the comment. | Reject - This CID is discussed on April 12, 2023, but no sufficient support was received on the proposal. |
| 17332 | 35.3.7 | 513.30 | How about control frames? Do they follow the map? E.g., can I send a BAR with TID 0 in a link that is only enabled for other TIDs? | As in comment. |  Revised – Agree with the commenter. Create an exception for BAR. Apply the changes marked as #17332 in this document. |
| 17333 | 35.3.7 | 513.37 | Capability at a STA does not depend on the capability of the AP. Rephrase to say that a non-AP MLD (that supports more than one link) shall support TID to link mapping, | As in comment. | REVISEDThis CID is discussed on May 31, 2023 with 23/0588r5. The straw poll result on proposed resolution (Option 1) was 16 Yes, 19 No, 24 Abstain.Therefore revert to original resolution. Rephrase the sentence and clarify the capability for the non-AP MLD independently from the AP MLD’s capability.Apply the changes marked as #17333 in this document |
| 15053 | 35.3.7.1.1 | 513.26 | A non-AP MLD that performs multi-link (re)setup on at least two links with an AP MLD that sets the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element to a nonzero value shall support TID-to-link mapping negotiation with the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element it transmits to at least 1.According to annex b EHTM10.14, TID-to-Link Mapping is optional. Here it is mandatory to non-AP MLD. Please clarify. | as the comment | REVISEDThis CID is discussed on May 31, 2023 with 23/0588r5. The straw poll result on proposed resolution (Option 1) was 16 Yes, 19 No, 24 Abstain.Therefore revert to original resolution. Rephrase the sentence and clarify the capability for the non-AP MLD independently from the AP MLD’s capability.Apply the changes marked as #17333 in this document |
| 15404 | 35.3.7.1.1 | 513.33 | The requirement regarding non-AP MLDs and TID-to-Link mapping seems to be written backwards, making it confusing. Given the conditions in the requirement, it is saying that non-AP MLDs that do not support TID-to-Link mapping must not attempt to set up multiple links with AP MLDs that support TID-to-Link mapping. | Rephrase as "A non-AP MLD that does not support TID-to-link mapping negotiation with the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element it transmits to at least 1 shall not perform multi-link (re)setup on more than one link with an AP MLD that sets the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element to a nonzero value." | REVISEDThis CID is discussed on May 31, 2023 with 23/0588r5. The straw poll result on proposed resolution (Option 1) was 16 Yes, 19 No, 24 Abstain.Therefore revert to original resolution. Rephrase the sentence and clarify the capability for the non-AP MLD independently from the AP MLD’s capability.Apply the changes marked as #15404 in this document |
| 16484 | 35.3.7.1.1 | 513.33 | The current (very long) sentence is unclear with the requirement for the non-AP MLD to support the TID-To-Link mapping:" A non-AP MLD that performs multi-link (re)setup on at least two links with an AP MLD that sets the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element to a nonzero value shall support TID-to-link mapping negotiation with the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element it transmits to at least 1". Please revise as suggested. | Consider revising the sentence as follows:" A non-AP MLD that performs multi-link (re)setup on at least two links with an AP MLD that sets the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element to a nonzero value, shall support TID-to-link mapping negotiation \*by setting\* the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element it transmits to \*a value of 1, at least\*." | REVISEDThis CID is discussed on May 31, 2023 with 23/0588r5. The straw poll result on proposed resolution (Option 1) was 16 Yes, 19 No, 24 Abstain.Therefore revert to original resolution. Rephrase the sentence and clarify the capability for the non-AP MLD independently from the AP MLD’s capability.Apply the changes marked as #16484 in this document |
| 16485 | 35.3.7.1.1 | 513.38 | Please delete the following sentence, as the dot11EHTBaseLineFeaturesImplementedOnly MIB variable is removed: "An MLD with dot11EHTBaseLineFeaturesImplementedOnly equal to true shall not set the TID-To-Link Mapping Negotiation Support subfield of MLD Capabilities field of the Basic Multi-Link element to 3" | As in comment | Revised – keep the sentence but remove the dot11EHTBaseLineFeaturesImplementedOnly condition. Apply the changes marked as#16485 in this document. |
| 17239 | 35.3.7.1.1 | 513.43 | Editor's Note needs to be addressed | See comment | Revised – keep the sentence but remove the dot11EHTBaseLineFeaturesImplementedOnly condition. Apply the changes marked as#17239 in this document. |
| 17296 | 35.3.7.1.1 | 513.23 | Do wireless functionalities mentioned here include transmitting of class 1 and 2 management frames and frames mentioned in the previous paragraph? Are they allowed to transmit? | Please clarify | REVISEDThis CID is discussed on April 12, 2023. Following offline discussion, it is suggested to modify the corresponding paragraph to mention suspension of operation between the AP and STA. Apply the changes marked as #17296 in this document |
| 18128 | 35.3.7.1.1 | 513.40 | The MIB dot11EHTBaseLineFeaturesImplementedOnly has been deleted from the spec. | Replace the sentence to be consistent with the resolution for CID 10213 (and as it appeared in D2.3): "An MLD shall not set the TID-To-Link Mapping Negotiation Support subfield of MLD Capabilities field of the Basic Multi-Link element to 3." Also, remove the EDITOR's NOTE | Revised – keep the sentence but remove the dot11EHTBaseLineFeaturesImplementedOnly condition. Apply the changes marked as#18128 in this document. |
| 18132 | 35.3.7.1.1 | 515.01 | The 2nd bullet (P514L52) of paragraph on P514L47 already covers the cases (except MMPDU) covered in P515L1. | Delete the paragraph starting L1 of P515, along with both the bullets, the unless clause, and the two NOTEs that follow. Update the 2nd bullet of paragraph on P514L47 to cover the MMPDU case. | Reject – this paragraph defines the requirement on the AP side when the STA is in active mode and is not covered by the other paragraph. |
| 18275 | 35.3.7.1.1 | 513.39 | "An MLD with dot11EHTBaseLineFeaturesImplementedOnly equal to true shall not set the TID-To-Link Mapping Negotiation Support subfield of MLD Capabilities field of the Basic Multi-Link element to 3."Remove this sentence as dot11EHTBaseLineFeaturesImplementedOnly was removed. | Remove this sentence as dot11EHTBaseLineFeaturesImplementedOnly was removed. | Revised – keep the sentence but remove the dot11EHTBaseLineFeaturesImplementedOnly condition. Apply the changes marked as#18275 in this document. |
| 17361 | 35.3.7.1.6 | 518.43 | How does the STA know from which TID the pending BUs are so that it can send the PS-Poll in the link that is mapped to that TID? | As in comment. | Reject - This CID is discussed on April 12, 2023, but no consensus was reached on the topic. |
| 17887 | 35.3.7.2 | 522.20 | It is not clear why a separate figure is needed to explain PS behavior for single-radio non-AP MLD. PS behavior is covered elsewhere in the draft as well (such as 11.2 and 35.3.12). It would be good to consolidate all such rules in one place. The only additional aspect described in this subclause is the one on Line 62. Also Line 62 should be converted to a normative requirement. | As in comment |  Reject – there are multiple subclauses in the draft whose intent is to clarify a particular behavior, and don’t include normative requirements. This is helpful for describing and explaining possible behaviors allowed by the set of 11be rules. |
| 18150 | 35.3.7.2 | 522.19 | Clause 35.3.12 (MLO power-save) already covers most of the content covered in this clause. | Delete the clause and add a sentence in 35.3.12.1 to say that at any given time a single radio non-AP MLD can indicate PM=0 for at most one link. |  Reject – there are multiple subclauses in the draft whose intent is to clarify a particular behavior, and don’t include normative requirements. This is helpful for describing and explaining possible behaviors allowed by the set of 11be rules. |
| 17529 | 9.2.4.5.1 | 222.25 | As expressed, we have conditions for all STAs using APSD and no STAs using APSD, but no conditions if APSD is used on some links but not other links (kixed usage). This is badly written but works if APSD is an MLD level protocol but that doesn't seem to be the case, since P517L41 and P537L43 imply APSD is a per-link agreement not a per-MLD agreement. Or, this is incomplete if APSD is a per-link agreement | a) Define clearly in clause 35 if APSD is per link or per MLD agreement, b) if per link, then extend this to account for the mixed usage case, c) if at MLD level, then rewrite for MLD not "all STAs affiliated ..." | REVISEDThis CID is discussed on May 12, 2023 with 23/0792r2, but no straw poll is conducted yet.This CID is discussed on May 11, 2023 with 23/0792r1, but no straw poll is conducted yet.Please ignore "REVISED" - it is just for the sole purpose of showing that this CID has a pending resolution. |
| 16452 | 9.4.2.170.2 | 241.10 | Definition of All Updates Included is the correct definition. However, there has been changes that are incorrect in 35.3.10 that redefine wrongly that field. Please change 35.3.10 to reflect the correct definition. | as in comment | REVISEDThis CID is discussed on May 12, 2023 with 23/0792r2, but no straw poll is conducted yet.This CID is discussed on May 11, 2023 with 23/0792r1, but no straw poll is conducted yet.Please ignore "REVISED" - it is just for the sole purpose of showing that this CID has a pending resolution. |
| 15013 | 9.4.2.217 | 0.00 | CSA and Max Channel Switch Time element in CSA may be used to signal a change in the channel which is not both a BSS operating channel frequency and bandwidth change. | add clarification to the spec that CSA and Max Channel Switch Time element in CSA can also be used to signal other changes in the channel (eg puncturing).The 'current' channel and 'new' channel may be the same in case of puncturing. | Revised – agree with the commenter. Nothing prevents this to be true in baseline CSA/eCSA mechanisms. Add a note in 35.15.3 to remind that this is a possible configuration. Apply the changes marked as #15013 in this document. |
| 17541 | 9.4.2.36 | 230.54 | <Last assigned +1/2/3> is vague | Option 1) Assign these subelement IDs (e.g., ask the ANA for an assignment). Option 2) (preferred) update fig 9-1005 in 9.4.3 to include the optional Element ID Extension field as shown in Fig 9-193 then simplify all this so EHT Capabilities subelement == EHT Capabilities element, EHT Operation subelement == EHT Operation element, Basic ML subelement == Basic ML element. | Revised - As per the 802.11be editor, the subelement IDs of the neighbor report are recently under ANA control and the editor has successfully requested from the Working Group Editor the values of these subelement IDs, which are now shown in Draft 3.2 of IEEE P802.11be. |

1. **Introduction**
2. **Proposed spec text**

**35.10.2 OBSS PD-based spatial reuse operation**

Tgbe editor: Modify the following paragraph as follows(#16345):

An EHT STA follows the rules defined in 26.10.2.2 (General operation with non-SRG OBSS PD level) and 26.10.2.3 (General operation with SRG OBSS PD level) and the following rules:

— The PHY-CCARESET.request primitive shall be issued at the end of the PPDU in case of an EHT SU transmission with the RXVECTOR parameter SPATIAL\_REUSE that indicates SR\_DELAYED.

**35.3.4.5 Probe Request frame content for a non-AP EHT STA**

Tgbe editor: Modify the following paragraphs as follows(#16378, #16377):

An EHT AP shall follow the rules defined in 11.1.4.3.4 (Criteria for sending a response) when receiving a Probe Request frame addressed to it even if the frame does not contain some of the elements described in Table 9-66 (Probe Request frame body) when the soliciting non-AP STA follows the rules described in this subclause.

If a non-AP EHT STA is sending a Probe Request frame that is not (#16187)a multi-link probe request:

— it shall follow the format and conditions defined in 9.3.3.9 (Probe Request frame format) regarding the inclusion of the SSID element, the Supported Rates and BSS Membership Selectors field, the Request element, the Extended Supported Rates and BSS Membership Selectors element, the DSSS Parameter Set element, the SSID List element, the Extended Request element, the FILS Request Parameters element, the Short SSID List element, Vendor Specific elements, and the Known BSSID element,

— it may omit other elements listed in 9.3.3.9 (Probe Request frame format).

If a non-AP EHT STA is sending an multi-link probe request:

— it shall follow the format and conditions defined in 9.3.3.9 (Probe Request frame format) regarding the inclusion of the SSID element, the Supported Rates and BSS Membership Selectors field, the Extended Supported Rates and BSS Membership Selectors element, and the DSSS Parameter Set element,

— it shall follow the rules defined in 35.3.4.2 (Use of multi-link probe request and response) regarding the inclusion of the Request element, the Extended Request element, and the Probe Request MultiLink element,

— it shall not include the other elements listed in 9.3.3.9 (Probe Request frame format).

* Probe Request frame format

Tgbe editor: Modify the Table 9-66 (Probe Request frame body) as follows(#16378, #16377):

|  |
| --- |
| * Probe Request frame body
 |
| Order | Information | Notes |
| 1 | SSID | If dot11MeshActivated is true, the SSID element is the wildcard value as described in 9.4.2.2 (SSID element).  |
| 2 | Supported Rates and BSS Membership Selectors | (#1659)If dot11S1GOptionImplemented or dot11DMGOptionImplemented is true, this element ought not be present unless one or more BSS membership selectors (see 11.1.4.6 (Operation of Supported Rates and BSS Membership Selectors element and Extended Supported Rates and BSS Membership Selectors element) are indicated.(#24)  |
| 3 | Request | The Request element is optionally present(#1533). |
| 4 | Extended Supported Rates and BSS Membership Selectors | (#3086)The Extended Supported Rates and BSS Membership Selectors element is present if the number of supported rates and BSS membership selectors(#1470) together exceed eight; it is optional otherwise. (#1659)If dot11S1GOptionImplemented or dot11DMGOptionImplemented is true, this element ought not be present unless there are more than 8 BSS membership selectors (see 11.1.4.6 (Operation of Supported Rates and BSS Membership Selectors element and Extended Supported Rates and BSS Membership Selectors element) indicated.(#24) |
| 5 | DSSS Parameter Set | The element is optionally present.The DSSS Parameter Set element is present within Probe Request frames generated by STAs using Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM -applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY -specification), or Clause 18 (Extended Rate PHY (ERP) specification) PHYs if dot11RadioMeasurementActivated is true.The DSSS Parameter Set element is present within Probe Request frames generated by STAs using a Clause 19 (High Throughput (HT) PHY specification(#2297)) PHY in the 2.4 GHz band if dot11RadioMeasurementActivated is true.The DSSS Parameter Set element is optionally present within Probe Request frames generated by STAs using Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM -applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY -specification), or Clause 18 (Extended Rate PHY (ERP) specification) PHYs if dot11RadioMeasurementActivated is false.The DSSS Parameter Set element is optionally present within Probe Request frames generated by STAs using a Clause 19 (High Throughput (HT) PHY specification(#2297)) PHY in the 2.4 GHz band if dot11RadioMeasurementActivated is false. |
| 6 | Supported Operating Classes | The Supported Operating Classes element is present if dot11ExtendedChannelSwitchActivated or dot11OperatingClassesRequired is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)).The Supported Operating Classes element is optionally present if dot11TVHTOptionImplemented is true. |
| 7 | HT Capabilities | The HT Capabilities element is present when dot11HighThroughputOptionImplemented is true and the STA is not a STA 6G.(11ax), except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)). |
| 8 | 20/40 BSS Coexistence | The 20/40 BSS Coexistence element is optionally present when dot112040BSSCoexistenceManagementSupport is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)). |
| 9 | Extended Capabilities | The Extended Capabilities element is present if any of the fields in this element are nonzero, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)). |
| 10 | SSID List | The SSID List element is optionally present if dot11SSIDListActivated is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)). |
| 11 | Channel Usage | The Channel Usage element is optionally present if dot11ChannelUsageActivated is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)). |
| 12 | Interworking | The Interworking element is present if dot11InterworkingServiceActivated is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)). |
| 13 | Mesh ID | The Mesh ID element is present if dot11MeshActivated is true.  |
| 14 | Multi-band | The Multi-band element is optionally present if dot11MultibandImplemented is true. |
| 15 | DMG Capabilities | The DMG Capabilities element is present if dot11DMGOptionImplemented is true.  |
| 16 | Multiple MAC Sublayers | The Multiple MAC Sublayers element is present if dot11MultipleMACActivated is true. |
| 17 | VHT Capabilities | The VHT Capabilities element is present when dot11VHTOptionImplemented is true and the STA is not a STA 6G.(11ax), except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)) |
| 18 | Estimated Service Parameters Inbound | The Estimated Service Parameters Inbound element is optionally present if dot11EstimatedServiceParametersInboundOptionImplemented is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)). |
| 19 | Extended Request | (#1532)One or more Extended Request elements are optionally present (if more than one Extended Request element is present the Requested Element ID fields differ)(#1533). |
| 20 | FILS Request Parameters | The FILS Request Parameters element is optionally present if dot11FILSActivated is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)); otherwise not present. |
| 21 | AP-CSN  | The AP-CSN element is optionally present if dot11FILSActivated is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)); otherwise not present. |
| 22 | Change Sequence | The Change Sequence element is optionally present if dot11S1GOptionImplemented is true; otherwise not present. |
| 23 | S1G Relay Discovery | The S1G Relay Discovery element is optionally present if dot11RelayDiscoveryOptionImplemented is true; otherwise not present. |
| 24 | PV1 Probe Response Option | The PV1 Probe Response Option element is optionally present if dot11PV1ProbeResponseOptionImplemented is true; otherwise not present. |
| 25 | S1G Capabilities | The S1G Capabilities element is present if dot11S1GOptionImplemented is true; otherwise not present. |
| 26 | EL Operation | The EL Operation element is present if dot11S1GELOperationActivated is true. |
| 27 | MAD | The MAD element is optionally present if dot11S1GOptionImplemented is true; otherwise not present. |
| 28 | Vendor Specific Request | The Vendor Specific Request element is optionally present. |
| 29 | CDMG Capabilities | The CDMG Capabilities element is present if dot11CDMGOptionImplemented is true; otherwise not present. |
| 30 | Cluster Probe | The Cluster Probe element is optionally present if dot11ClusteringActivated is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)); otherwise not present. |
| 31 | CMMG Capabilities | The CMMG Capabilities element is present when dot11CMMGOptionImplemented is true; otherwise not present. |
| 32 | Estimated Services Parameters Outbound | The Estimated Service Parameters Outbound element is optionally present if dot11EstimatedServiceParametersOutboundOptionImplemented is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)).  |
| 33 | Supplemental Class 2 Capabilities | The Supplemental Class 2 Capabilities element is present when dot11Class2CapabilitiesOptionImplemented is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)); otherwise not present. |
| 34(11ax) | HE Capabilities | The HE Capabilities element is present if dot11HEOptionImplemented is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)); otherwise, it is not present. |
| 35(11ax) | Known BSSID | The Known BSSID element is optionally present if dot11MultiBSSIDImplemented is true. |
| 36(11ax) | HE 6 GHz Band Capabilities | The HE 6 GHz Band Capabilities element is present if dot11HEOptionImplemented and dot11HE6GOptionImplemented are true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)). |
| 37(11ax) | Short SSID List | The Short SSID List element is optionally present if dot11ShortSSIDListImplemented is true; otherwise, it is not present. |
| 38(11ax) | TWT Constraint Parameters | The TWT Constraint Parameters element is optionally present if dot11TWTOptionActivated is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)); otherwise, it is not present. |
| 39(11ay) | EDMG Capabilities | The EDMG Capabilities element is present if dot11EDMGOptionImplemented is true. |
| 40(11ay) | Unsolicited Block Ack Extension | The Unsolicited Block Ack Extension element is optionally present if dot11UnsolicitedBAActivated is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)), and is absent otherwise. |
| 41(11ba) | WUR Capabilities | The WUR Capabilities element is present when dot11WUROptionImplemented is true, except if the STA is an EHT STA (see 35.3.4.5 (Probe Request frame content for a non-AP EHT STA)); otherwise it is not present. |
| Last | Vendor Specific | One or more Vendor Specific elements are optionally present. These elements follow all other elements. |

**35.15.3 Channel switching methods for an EHT BSS**

Tgbe editor: Modify the following paragraph in subclause 35.15.3 Channel switching methods for an EHT BSS as follows (#15013):

An EHT STA follows the rules defined in 11.38.4 (Channel switching methods for a VHT BSS) and theadditional rules defined in this subclause.

NOTE – The BSS operating channel, the primary channel and the operating class can be the same between the new channel and the current channel.

Do you agree with the following resolution (#1) for (#18128, #18275, #16485, #17239)?

An MLD (#18128, #18275, #16485, #17239)shall not set the TID-To-Link Mapping Negotiation Support subfield of MLD Capabilities field of the Basic Multi-Link element to 3.

(#18128, #18275, #16485, #17239)

* + - * 1. **General**

Tgbe editor: Modify the following paragraph in subclause 35.3.7.1.1 General as follows (#17296):

A STA affiliated with an MLD that operates on a link disabled by an advertised TID-to-link mapping (see [35.3.7.1.7 (Advertised TID-to-link mapping in Beacon and Probe Response frames)](#bookmark55)) shall suspend operation between the STA and the AP(#17296) on that link until the link is enabled.

Tgbe editor: Modify the following paragraph in subclause 35.3.7.1.1 General as follows (#17332):

* Individually addressed Management frames, QoS Null frames, and Control frames may be sent on any enabled links between the corresponding non-AP MLD and AP MLD both in DL and UL(#17332), except that a BlockAckReq frame requesting TID(s) that are not mapped to a link shall not be transmitted on the link by the corresponding non-AP STA affiliated with the non-AP MLD and by the corresponding AP affiliated with the AP MLD.

Tgbe editor: Modify the following paragraph in subclause 35.3.7.1.1 General as follows (#17333 #15053 #15404 #16484):

An AP MLD and a non-AP MLD may support TID-to-link mapping negotiation. A non-AP MLD that does not support TID-to-link mapping negotiation with the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element it transmits set to at least 1 shall not perform multi-link (re)setup on more than one link with an AP MLD that sets the TID-To-Link Mapping Negotiation Support subfield of the MLD Capabilities field of the Basic Multi-Link element to a nonzero value.

* + - 1. **Use of multi-link probe request and response**

Tgbe editor: Modify the following paragraph in subclause 35.3.4.2 Use of multi-link probe request and response as follows (#15519):

If either the Address 1 field or the Address 3 field of the multi-link probe request is set to the MAC address of the AP (#15519)that is affiliated with (#15519)a targeted AP MLD (#15519)and that corresponds to (#16782)a nontransmitted BSSID, then the AP MLD ID subfield shall not be present in the Probe Request Multi-Link element of the multi-link probe request(#15519).

**35.3.23 BSS transition management for MLDs**

Tgbe editor: Modify the following paragraph in subclause 35.3.23 BSS transition management for MLDs (#17886):

An AP MLD may use the BSS transition management protocol to recommend a non-AP MLD to use a different set of links with the same AP MLD by sending a BSS transition Management Request frame that includes a Neighbor Report element for one of the recommended APs affiliated with the AP MLD that includes a Basic Multi-Link element with a Per-STA Profile subfield for each of the other recommended affiliated APs. When receiving such request, a non-AP MLD that intends to follow the recommendation may do one of the following:

* follow BSS transition management protocol and (re)associate with the same AP MLD with the recommended set of links,
* initiate a TID-to-link mapping negotiation with the AP MLD to map all TIDs only to the set of recommended links, if both the non-AP MLD and AP MLD support TID-to-link mapping negotiation (see 35.3.7.2.3 (Negotiation of TTLM)),
* request ML reconfiguration to its ML setup so that the non-AP MLD setup links after ML reconfiguration correspond to the set of recommended links, if both the non-AP MLD and AP MLD support ML reconfiguration (see 35.3.6.4 (ML reconfiguration to the ML setup)).