IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB266 CR for various CIDs | | | | |
| Date: 2022-09-30 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Ming Gan | Huawei  Huawei |  |  | ming.gan@huawei.com |
| Jason Yuchen Guo |  |  |  |
| Yunbo Li | Huawei |  |  |  |
| Guogang Huang | Huawei |  |  |  |
| Yiqing Li | Huawei |  |  |  |
| Mengyao Ma | Huawei |  |  |  |
| Hongjia Su | Huawei |  |  |  |
| Michanel Montemurro | Huawei |  |  |  |
| Stephen McCann | Huawei |  |  |  |
| Edward Au | Huawei |  |  |  |
| Osama Aboul-Magd | Huawei |  |  |  |

Abstract

This submission proposes resolutions of comments received from TGbe comment collection LB266 based on TGbe D2.2.

11131 11132 11133 12897 12930 13096 ~~13873~~ 12898 13128 13586 13129 11849 14040 (13 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.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 11131 | Various | 0.00 | Many instances of "any" read badly: overused / abused. Sometimes a better solution is a/an/each/etc. Other times, the number of an associated noun reads badly. | Try "neither an Ack frame nor a Data frame of subtype +CF-Ack." at P120L22. Try "all variants" at P138L53-L56 (x2). Try "Successful association enables an MLD to exchange Class 3 frames on all setup links" at P313L32. Try "or the non-AP MLD if an MSDU was received from the STA or an affiliated STA of the non-AP MLD within this period." at P322L37. "When an AP MLD receives an ARP request from a STA associated with an affiliated AP, or from one associated non-AP MLD via an affiliated AP, or from the DS, ..." at P330L63. Try "An SCS Response frame transmitted by a non-EHT STA does not contain an SCS Descriptor List field." at P332L18. At P347L4, "any" in "An AP MLD's SME creates an IGTKSA for any of its links when it establishes or changes the IGTK with all non-AP STAs that operate on the link and are affiliated with the non-AP MLDs to which it has a valid PTKSA." is surely wrong and probably needs to be "each" or "all". | Accepted- |
| 11132 | Various | 0.00 | Many instances of "any" read badly: overused / abused. Sometimes a better solution is a/an/each/etc. Other times, the number of an associated noun reads badly. | At P400L46, "any PPDU ... the PPDU carries" reads badly, and "a PPDU ... the PPDU carries" would make more sense, but the second CS bullet is vague if we are talking about one or more than one PPDUs here. Ditto P400L56. Try "any punctured 20 MHz subchannels" at P404L6. Try "a non-AP MLD" at P405L31. Try "NOTE 1--The MLD MAC address of an MLD might be the same as the MAC address of one affiliated STA or different from the MAC address of each affiliated STA." at P413L25. Try "If the Probe Request variant Multi-Link element in the Multi-Link probe request does not include any per-STA profiles" at P415L37. Ditto P416L5, P416L11. Try "if any of the following conditions" at P421L48. Try "with the peer MLD on any setup link" at P423L53. Try "at any time" at P425L53. Try "NOTE--The MAC address of each new co-hosted AP is assumed ..." at P425L58. Ditto P425L60. Try "The AP MLD shall announce the removal of an affiliated AP through a Reconfiguration Multi-Link element" at P426L4. Try "Individually addressed Management frames and Control frames may be sent on any of the enabled links between the corresponding STA and AP of the non-AP MLD and AP MLD both in DL and UL." at P427L37. Ditto use "any of the enabled links" or perhaps "any enabled link" at P427L65. Try "then at least one of the non-AP STAs affiliated with the non-AP MLD" at P430L64. Ditto P431L7. Try "for each MPDU" at P432L59. Ditto P433L1. | Accepted- |
| 11133 | Various | 0.00 | Many instances of "any" read badly: overused / abused. Sometimes a better solution is a/an/each/etc. Other times, the number of an associated noun reads badly. | Try "regardless of activity" at P453L36. Try "until at least one frame" at P454L45. Try "A STA that has a nonzero MediumSyncDelay timer shall not transmit a PPDU using the OBSS PD-based spatial reuse operation." at P460L32. Try "a TXOP" at P460L49. Try "If there are one or more r-TWT agreemenst set up" at P511L59. Try "of an MPDU" at P512L14. Ditto "any" to "an" or "a" at P517L37, P517L49, P533L19 | Accepted- |
| 12897 |  | 0.00 | Thre are 300+ references to the cumbersome phrase "TID-to-link mapping"; suggest to define and use an acronym. This acronym would help with all MLME primitives for example (and more). | Proposed acronym is TLM. Some discussions have used T2LM, which is informal and hacky. | Revised-  Agree with the comment in principle, add an acronym TTLM for TID to link mapping. Apply the changes marked as #12897 in this document.  To TGbe Editor, please change "TID-to-link mapping" to “TTLM” through the draft, except if the TID-to-link mapping is used as part of the name of an element, field, and subfield. |
| 12930 |  | 0.00 | (1) The "More Data" mechanism is broken; a BU with a given TID can end up never being polled (based on More Data) because of the "at least one" rule on the receive (polling) side. Since BU's TID is not known to the non-AP MLD detecting the More Data field, the MLD must use a set of its STAs (not "at least one STA") that collectively cover any TID the indicated buffered BU may have. (2) Stylistically, the TID-to-link normative text is repeated over and over; one particulatly annoying repetition: "as specified by the most recent DL TID-to-link mapping" -- we've defined once that new mapping replaces the old mapping, and there is only one mapping. The other one - separate sentences for "default" mapping and "non-default" mapping where behavior is exactly teh same. Paragraph re-write here addresses these issues. (3) Other improvements (polling STAs are not follwing teh procedures in 11.2.3.7 (and 8) as these sections define a set of rules for different cases; they follow the rules in those sections etc.) | Replace the last two paragraphs of 35.3.7.1.6 with a single paragraph and multiple NOTEs (note: The phrase "sownlink individually addressed MPDU" is used in baseline):  "After a STA affiliated with a non-AP MLD receives a DL individually addressed MPDU with the More Data subfield set to 1, each STA in a group of STAs (defined below) affiliated with the non-AP MLD, shall transmit a PS-Poll frame, or a trigger frame if the STA is using U-APSD, to retrieve BU(s), following the rules in 11.2.3.7 (Receive operation for STAs in PS mode) and 11.2.3.8 (Receive operation using APSD).  The group of affiliated STAs participating in retrieving the indicated BU shall operate on a set of links that collectively allow the BU to be transmitted subject to the TID-to-link mapping in effect.  NOTE 1--For example, consider a multi-link association with 3 links (links 0-3, respectively coresponding to affiiated STAs 0-3) and the following DL TID-to link mapping: Link 0: TIDs 0-3, Link 1: TIDs 0-2, Link 2: TIDs 3-7. Receiving a DL individually addressed MPDU with More Data subfield set to 1 indicates a BU with a TID 0-3 (unknown to receiver); examples of STAs that can collectively attempt to retrieve the indicated BU: {STA 0}, {STA 1, STA 2}. NOTE 2--With default TID-to-link mapping the group of affiliated STAs in the above paragraph can be as small as any of the affiliated STAs." | Revised-  Agree with the comment partially, including (2) and (3). For (1), since there is Multi-Link Traffic Indication element advertised in Beacon frame, any non-AP STA affiliated with the non-AP MLD that operates on the link(s) indicated as 1 in the Per-Link Traffic Indication Bitmap subfield of Multi-Link Traffic Indication element should issue a PS-Poll frame, or a U-APSD trigger frame, to retrieve DL buffered BUs.   Apply the changes marked as #12930 in this document. |
| 13096 |  | 0.00 | (1) The "More Data" mechanism is broken; a BU with a given TID can end up never being polled (based on More Data) because of the "at least one" rule on the receive (polling) side. Since BU's TID is not known to the non-AP MLD detecting the More Data field, the MLD must use a set of its STAs (not "at least one STA") that collectively cover any TID the indicated buffered BU may have. (2) Stylistically, the TID-to-link normative text is repeated over and over; one particulatly annoying repetition: "as specified by the most recent DL TID-to-link mapping" -- we've defined once that new mapping replaces the old mapping, and there is only one mapping. The other one - separate sentences for "default" mapping and "non-default" mapping where behavior is exactly teh same. Paragraph re-write here addresses these issues. (3) Other improvements (polling STAs are not follwing teh procedures in 11.2.3.7 (and 8) as these sections define a set of rules for different cases; they follow the rules in those sections etc.) | Replace the last two paragraphs of 35.3.7.1.6 with a single paragraph and multiple NOTEs (note: The phrase "sownlink individually addressed MPDU" is used in baseline):  "After a STA affiliated with a non-AP MLD receives a DL individually addressed MPDU with the More Data subfield set to 1, each STA in a group of STAs (defined below) affiliated with the non-AP MLD, shall transmit a PS-Poll frame, or a trigger frame if the STA is using U-APSD, to retrieve BU(s), following the rules in 11.2.3.7 (Receive operation for STAs in PS mode) and 11.2.3.8 (Receive operation using APSD).  The group of affiliated STAs participating in retrieving the indicated BU shall operate on a set of links that collectively allow the BU to be transmitted subject to the TID-to-link mapping in effect.  NOTE 1--For example, consider a multi-link association with 3 links (links 0-3, respectively coresponding to affiiated STAs 0-3) and the following DL TID-to link mapping: Link 0: TIDs 0-3, Link 1: TIDs 0-2, Link 2: TIDs 3-7. Receiving a DL individually addressed MPDU with More Data subfield set to 1 indicates a BU with a TID 0-3 (unknown to receiver); examples of STAs that can collectively attempt to retrieve the indicated BU: {STA 0}, {STA 1, STA 2}. NOTE 2--With default TID-to-link mapping the group of affiliated STAs in the above paragraph can be as small as any of the affiliated STAs." | Revised-  Agree with the comment partially, including (2) and (3). For (1), since there is Multi-Link Traffic Indication element advertised in Beacon frame, any non-AP STA affiliated with the non-AP MLD that operates on the link(s) indicated as 1 in the Per-Link Traffic Indication Bitmap subfield of Multi-Link Traffic Indication element should issue a PS-Poll frame, or a U-APSD trigger frame, to retrieve DL buffered BUs.   Apply the changes marked as #13906 in this document. |
| 12898 | 6.3.132 | 104.60 | Shorten the TID-to-link mapping MLME primitive names as folows,  "MLME-TIDTOLINKMAPPING" --> "MLME-TLM" "MLME-TIDTOLINKMAPPINGTEARDOWN" --> "MLME-TLMTEARDOWN" | As in comment; "MLME-TLMSETUP" can also be considered for "MLME-TLM" but less preferred (e.g., see MLME-BTM".) | Revised-  Agree with the comment in principle. Apply the changes marked as #12898 in this document.  To TGbe Editor, please change "TIDTOLINKMAPPING" to “TTLM” through the draft. |
| 13128 | 10.25.7 | 300.10 | The concept of a "PBAC capable MLD" is not defined (and it suffers from RAS syndrome as the C stands for "capable") | Delete the two references to "PBAC capable MLD" and instead require that all or none of the STAs of an MLD shall be PBAC | Revised-  Agree with the comment in principle. Apply the changes marked as #13128 in this document. |
| 13586 | 10.28.5 | 300.41 | "...but should be selected in a manner that minimizes the probability of a frame associated with one dialog being incorrectly associated with another dialog." Please clarify that this can be MLD level. E.g., but should be selected in a manner that minimizes the probability of a frame associated with one dialog being incorrectly associated with another dialog btween two STAs or between two MLDs. | As in the comment. | Accepted- |
| 13129 | 10.29.4 | 300.56 | "it might transmit Data frame" -- missing article | Change to "it might transmit a Data frame" | Accepted- |
| 11849 | 10.29.4 | 301.02 | this can't be an or but rather an exception. Replace ", or if the RD responder is affiliated with an MLD, of any TID that is mapped to that link" with: "unless the RD responder is affiliated with an MLD in which case the RD responder may transmit Data frames of any TID that is mapped to that link". | As in comment. | Accepted- |
| 14040 |  | 517.48 | Figure |  | Rejected-  The commenter failed to identfy the technical issue especially since the content of the commenter is almost empty. Encourage the commenter to submit the correct comment in next Working Group letter ballot. |

**Discussion:** None.

***TGbe editor: Please modify the subclause as follows***

3.4 Abbreviations and acronyms

Insert the following acronym definitions (maintaining alphabetical order):

TTLM TID-to-link mapping (#12897)

6.3.132.4 MLME-TTLM (#12898).indication

**10.25.7 Protected block ack agreement**

***Change the first paragraph as follows:***

A STA indicates support for protected block ack by setting the MFPC subfield in the RSN Capabilities field to 1 (see 9.4.2.24.4 (RSN capabilities)) and the PBAC subfield in the Extended RSN Capabilities field to 1 (see 9.4.2.241 (RSN Extension element (RSNXE))). Such a STA is a PBAC STA; otherwise, the STA is a non-PBAC STA. A block ack agreement that is successfully negotiated between two PBAC STAs or between two MLDs with affiliated PBAC STAs PBAC STAs is a protected block ack agreement. A block ack agreement that is suc-cessfully negotiated between two STAs when either or both of the STAs is not a PBAC STA is a block ack agreement that is not a protected block ack agreement. A block ack agreement that is successfully negotiated between two MLDs with at least one STA affiliated with an MLD that is not a PBAC STA all is a block ack agreement that is not a protected block ack agreement. (#13128)

**10.28 MAC frame processing**

**10.28.5 Operation of the Dialog Token field**

***Change as follows:***

A dialog token is an integer value that assists a STA or an MLD in grouping Management frames sent or received at different times as part of the same dialog. The algorithm by which the integer value for the dialog is selected is implementation specific, but should be selected in a manner that minimizes the probability of a frame associated with one dialog being incorrectly associated with another dialog between two STAs or two MLDs. (#13586)

**10.29 Reverse direction protocol**

**10.29.4 Rules for RD responder**

***Insert the following NOTE after the seventh paragraph (“If an AC Constraint subfield is equal to 1 in the last frame ...”):***

NOTE—If the RD responder is affiliated with an MLD and operates with a nondefault TID-to-link mapping (see 35.3.7.1 (TID-to-link mapping)), it might transmit a (#13129) Data frame of the AC only if at least one of the corresponding TIDs are mapped to that link in the direction of the RD responder to the RD initiator.

***Change the eighth paragraph as follows:***

For a BlockAckReq or BlockAck frame, the AC is determined by examining the TID field. For a Management frame, the AC is AC\_VO. The RD initiator shall not transmit a +HTC or DMG MPDU with the RDG/More PPDU subfield set to 1 from which the AC cannot be determined. If the AC Constraint subfield is equal to 0, the RD responder may transmit Data frames of any TID unless the RD responder is affiliated with an MLD in which case the RD responder may transmit Data frames of any TID that is mapped to that link (see 35.3.7.1(TID-to-link mapping)). (#11849)

**35.3.7.1.6 Use of More Data subfield by an MLD**

…

When a non-AP STA that is in PS mode and that is affiliated with a non-AP MLD operating with default mapping (see 35.3.7.1.2 (Default mapping mode)) or operating with a negotiated non-default TID-to-link mapping (see 35.3.7.1.3 (Negotiation of TID-to-link mapping)) that maps all TIDs to the same link set receives an individually addressed MPDU from its associated AP affiliated with the associated AP MLD with the More Data subfield set to 1, then at least one of any non-AP STA affiliated with the non-AP MLD may send PS-Poll frames or UAPSD trigger frames (if the STA is using U-APSD and all ACs are delivery enabled), if needed, to retrieve buffered BUs buffered at the AP MLD, following the procedure defined in 11.2.3.7 (Receive operation for STAs in PS mode) and 11.2.3.8 (Receive operation using APSD). (#12930, 13096)

When a non-AP STA that is in PS mode and that is affiliated with a non-AP MLD operating with a negotiated non-default TID-to-link mapping (see 35.3.7.1.3 (Negotiation of TID-to-link mapping)) that does not map all TIDs to the same link set receives an individually addressed MPDU from its associated AP with the More Data subfield set to 1 on a link (receiving link), then at least one of any non-AP STA affiliated with the non-AP MLD that is operating on the link (receiving link) or another link to which any of the TIDs that is mapped to the link (receiving link) is also mapped may send PS-Poll frames or UAPSD trigger frames (if the STA is using U-APSD and all ACs are delivery enabled), if needed, with any TID that is mapped to this operating link to retrieve the buffered BUs buffered at the AP MLD, following the procedure defined in 11.2.3.7 (Receive operation for STAs in PS mode) and 11.2.3.8 (Receive operation using APSD). (#12930, 13096)