**IEEE P802.11
Wireless LANs**

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| CR for CIDs on TID-to-Link Mapping Part 2 |
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Abstract

This submission proposes resolutions for multiple comments related to TGbe D1.0 with the following CIDs (46 CIDs):

* 7851, 6406, 5249, 4661, 6355, 5609, 4109, 4660, 5193, 5215, 6284, 5246, 5216, 6285, 7589, 8191, 5078, 5145, 6982, 7590, 5610, 5158, 5955, 6951, 8190, 6286, 6527, 6952, 5079, 6761, 7332, 6953, 5247, 6402, 6362, 6955, 5248, 6954, 6363, 7412, 7817, 8192, 8193, 4824, 7410, 7411

Revisions:

* Rev 0: Initial version of the document.

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 subsequent TGbe Draft. This introduction is 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 802.11 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** |
| --- | --- | --- | --- | --- | --- |
| 7851 | 35.3.6.1.3 | 0.00 | If the negotiation is not successful, it shall clearly indicate that the existing TID-to-Link mapping shall be remained. | Please add a rule for this case |  |
| 6406 | 35.3.6.1.3 | 258.22 | The text should clarify that despite rejection of the proposed TID-to-link mapping (Re)Association may still be successful. Moreover the STA should have the ability during setup to indicate/signal that if the requested TID-to-link is not accepted, (Re)Association is rejected as well. | as in comment |  |
| 5249 | 35.3.6.1.3 | 258.59 | To update TID-to-link mapping, based on current design, we have to perform tear-down and re-setup procedure. However, we can simply update TID-to-link mapping by sending a request frame including udpated information or an additional explicit indication without tear-down. | As in the comment, we need to design the simple update method without tear-down |  |
| 4661 | 35.3.6.1.3 | 258.62 | Tid2link mapping is a pairwise negotiaiton, which is not scalable if there are hundreds of clients per AP (espeically if the hundreds of clients appear at once) | AP needs to be able to include a must-be-accepted AP-defined tid2link mapping, e.g. in Beacon/Probe Resp and/or (Re)Assoc Response frames. |  |
| 6355 | 35.3.6.1.3 | 258.62 | It is not clear how AP would schedule UL transmission when TID to link mapping is enabled. The BSR sent to the AP does not have TID per link information and the AP can't know which links need to be triggered to benefit from all the links mapped to specific traffic | The AP should be able to know BSR per TID to be able to decide which link to trigger. Define per TID BSR |  |
| 5609 | 35.3.6.1.3 | 259.01 | Statements describe interpretation of TID-to-link Mapping Negotiation Supported subfield values of 0 and 2, but not 1 | Add description of meaning of other non-zero values of TID-to-link Mapping Negotiation Supported subfield. |  |
| 4109 | 35.3.6.1.3 | 259.07 | What is "in a multi-link (re)setup procedure ..."? | Replace "In" with "During" |  |
| 4660 | 35.3.6.1.3 | 259.11 | From 20/1841 and general intuition, MLO is worthless under light load and worse than no-MLO under high load. Therefore MLO needs to be selectively enabled according to load, where the AP MLD is the best judge of the current operating scenario. The STA, given its coex challenges, needs to express its needs and have them accounted for but fundamentally this requires the AP to have final say in the tid2link mapping negotiation. | Give the AP final say in the tid2link mapping negotiation. Make negotiaiton of tid2link mapping mandatory. |  |
| 5193 | 35.3.6.1.3 | 259.17 | For the TID-to-link mapping negotiation, there are two manners to indicate whether the TID-to-link mapping is accepted or not. One is through a Status Code field. The other is through whether the TID-to-link Mapping element is included within the Response frame. I suggest to reserve only one manner. | Option 1. Put the Status Code field into the TID-to-link Mapping elementOption 2. Remove the Status Code field from the TID-To-Link Mapping Response frame. No TID-to-link Mapping element is included within the TID-To-Link Mapping Response frame when the TID-To-Link Mapping negotiation is accepted; One or two TID-to-link Mapping elements are included with the TID-To-Link Mapping Response frame when the TID-To-Link Mapping negotiation is rejected |  |
| 5215 | 35.3.6.1.3 | 259.17 | Very confusing text. Please clarify the text under what condition(s) that the TID-to-link Mapping IE shall not be included in (Re)Association Response frame. | Re-phrase the text to make it understanble |  |
| 6284 | 35.3.6.1.3 | 259.17 | The first bullet does not make sense since TID-to-link mapping and association are two different negotiations. It is not reasonable to bond them together. | please address this issue |  |
| 5246 | 35.3.6.1.3 | 259.18 | For the condition "only if .... all links on which at least one TID,..", should we consider to accept all links? E.g., TID 1 is requested on link 2 &3, but the AP MLD didn't accept the link 3 for ML setup while link 2 is OK. In this case, the requested TID-to-link mapping may be acceptable since MSDUs with TID 1 can be transmitted on link 2. | As in the comment, please clarify the condition |  |
| 5216 | 35.3.6.1.3 | 259.22 | What is the procedure for non-AP MLD to reject the suggested "preferred TID-to-link mapping" from AP MLD? | Please add text for the case that non-AP STA rejects the suggested TID-to-link mapping from the AP MLD |  |
| 6285 | 35.3.6.1.3 | 259.22 | If this is rejection for TID-to-link mapping, is there any related status code of this rejection? | as in the comment |  |
| 7589 | 35.3.6.1.3 | 259.22 | If rejecting either one of the proposed TID-to-link mappings, all the preferred TID-to-link mappings including the acceptable ones should be provided, as the rejection cannot tell which TID-to-link mapping is accepted and which one is not. | As in comment. |  |
| 8191 | 35.3.6.1.3 | 259.22 | "it shall indicate rejection of the proposed TID-to-link mapping by including in the (Re)Association Response frame the TID-to-link Mapping element that suggests a preferred TID-to-link mapping". The AP MLD also can set the Status Code to <ANA> (DENIED\_TID\_TO\_LINK\_MAPPING) without any suggestion of preferred TID-to-link mapping | as in comment |  |
| 5078 | 35.3.6.1.3 | 259.24 | After an AP MLD indicates rejection of the proposed TID-to-Link mapping by including the TID-to-link mapping element containing a suggested mapping in the (Re)Association Response frame, there is no normative behavior defined for the action that the non-AP MLD takes. | Add normative text stating that the non-AP MLD shall accept the preferred TID-to-Link mapping specified in the (Re)Association frame. |  |
| 5145 | 35.3.6.1.3 | 259.27 | An AP MLD may have good overall knowledge of traffic and channel status. Therefore, when a non-AP MLD does not request TID-to-link mapping in the Association Request frame, it would be beneficial to allow an AP MLD to request TID-to-link mapping in the Association Response frame.In the current spec, an AP MLD can initiate TID-to-link mapping negotiation only using a separate TID-To-Link Mapping Request frame. | Define the AP initiated TID-to-link mapping negotiation from the Association Response frame. |  |
| 6982 | 35.3.6.1.3 | 259.32 | If an Initiating MLD can transmit Request frames with a rejected mapping (by the Responding MLD) without any restrictions, the Initiating MLD may try to request the rejected mapping again and again.It is obvious that an Initiating MLD shall not transmit Request frame with a rejected mapping by the Responding MLD until TBD time point(or TBD duration). Please add the restriction(s) for the negotiation procedure. | A restriction should be added to prevent repeated negotiation failures. |  |
| 7590 | 35.3.6.1.3 | 259.32 | One or two TID-to-mappings can be requested in a TID-to-link Mapping Request frame. So, the response to accept or reject the request should be applicable when there are two TID-to-mappings like in the Association procedure, i.e., accept when all the requests are accepted, and reject if one the requests is not acceptable while suggesting preferred mappings. | As in comment. |  |
| 5610 | 35.3.6.1.3 | 259.46 | Description of TID-to-Link mapping negotiation does not specify how a requesting MLD should respond to a Mapping Response frame with a Status Code of <ANA> (PREFERRED\_TID\_TO\_LINK\_MAPPING\_SUGGESTED. Behavior is inferred in text on line 56, but is not explicit. | Add text or note indicating that after receiving response with status code other than SUCCESS, requesting MLD may initiate a new negotiation. |  |
| 5158 | 35.3.6.1.3 | 259.49 | The unsolicited TID to Link mapping response is missing. This covers the case of load balancing. Please add text to cover the case. (Use unsolicted TWT response protocol as an example - 26.8) | As in the comment |  |
| 5955 | 35.3.6.1.3 | 259.49 | That An MLD(MLD1) suggests a preferred TID-to-link mapping to a peer MLD(MLD2) is unclear. For exmple if MLD2 initiates a new TID-to-link mapping which is different from the preferred TID-to-link mapping whether MLD1 would reject the request, or MLD1 still considers the the request. The unclear specification would reduce the efficiency of the TID-to-link mapping negotiation. | Suggest to further specify the types of unsolicited TID-to-link Mapping Response for preferred TID-to-link mapping, for exmple for the Dictate TID-to-link Mapping Response if an MLD initiates a new TID-to-link mapping which is different from the preferred TID-to-link mapping in Dictate TID-to-link Mapping Response the peer MLD would reject the request. |  |
| 6951 | 35.3.6.1.3 | 259.49 | Need to clarify the following:1. What is the suggested(preffered) link of a TID in case that the TID is missing in the TID-to-link mapping element in an unsolicited TID-to-link Mapping Response frame?2. Suggested link(s) of a TID shall be a setup link(s) of the two MLD | As in the comment |  |
| 8190 | 35.3.6.1.3 | 259.51 | "An MLD shall not send an unsolicited TID-to-link Mapping Response frame that includes the TID-to-link Mapping element and sets the Status Code to 0 (SUCCESS)", An MLD also shall not set Status Code to <ANA> (DENIED\_TID\_TO\_LINK\_MAPPING) | changes to: An MLD shall not send an unsolicited TID-to-link Mapping Response frame that includes the TID-to-link Mapping element and sets the Status Code to a value other than<ANA> (DENIED\_TID\_TO\_LINK\_MAPPING) |  |
| 6286 | 35.3.6.1.3 | 259.57 | "In addtion, an AP MLD...", this sentence is not exact, an AP MLD does not only need to consider the traffic flow affiliated with the non-AP MLD, but also need to consider the traffic flow of other associated non-AP MLD | as in the comment |  |
| 6527 | 35.3.6.1.3 | 259.59 | Even if an MLD may suggest a preferred TID-to-link mapping, this is relatively static. It may appear constraints that are transient. There shall be provided a way to suspend temporarily or favorise a link among a set of enabled links. | A BSR shall inform the AP scheduler of an amount of data with regards to a given link.Typically, a BSR with a Link indication and a 0 data amount can be considered as suspended until further BSR advertizement.This temporary information is useful for subsequent UL scheduling over the appropriate link as expected by the reporting MLD. |  |
| 6952 | 35.3.6.1.3 | 259.60 | It is missing what an AP need to do when it was figured out a non-AP MLD has constraints. | Clarify AP's operation after the AP figures out constraints of the non-AP STA. |  |
| 5079 | 35.3.6.1.3 | 259.63 | The non-AP MLD needs to accept the TID-to-Link mapping the AP includes in the TID-to-Link mapping element sent in the (Re)Association Response so that SLAs for throughput, latency, jitter given to the non-AP MLD can be guaranteed. | Change "A multi-link multi-radio (MLMR) non-AP MLD should accept a TID-to-link mapping initiated by its associated AP MLD." to "A non-AP MLD shall accept a TID-to-link mapping initiated by its associated AP MLD." |  |
| 6761 | 35.3.6.1.3 | 259.63 | In case of MLMR non-AP MLD, as the mapping initiated by its associated AP MLD should be accepted, is it mandatory that the non-AP MLD send a response to the request? | In that case, the AP MLD may use directly an unsollicited response frame with status code 0 |  |
| 7332 | 35.3.6.1.3 | 259.63 | MLMR is not defined | please add the MLMR in the acronyme list if you intend to reuse it, otherwise remove the "(MLMR)" . |  |
| 6953 | 35.3.6.1.3 | 260.01 | If an MLD fails to receive Teardown frame successfully, two MLD may maintain different TID-to-Link mapping each other.An MLD should transit to default TID-to-link mapping mode after it has received acknowledgement(for the teardown frame) from the peer MLD. | As in the comment |  |
| 5247 | 35.3.6.1.3 | 260.03 | If a setup link was disabled before teardown, the link will be also enabled again after teardown? Since the default mapping makes all setup links all enabled links. | Please clarify the comment. The STA intends to keep disabled, it is good not to be enabled again although it is default mapping |  |
| 6402 | ﻿35.3.6.1.3 | 260.06 | Several editorial mistakes in the paragraph | Rephrase as "If an MLD has successfully negotiated the TID-to-link mapping with a peer MLD, both the MLD and the peer MLD shall update uplink and/or downlink TID-to-link mapping information according to the negotiated TID-to-link mapping. In case TID-to-link mapping of a specific TID is missing in the negotiation, the most recent TID-to-link mapping of this TID remains unchanged and valid." |  |
| 6362 | 35.3.6.1.3 | 260.07 | "the" in "negotiated the TID-to-link mapping" is extra. Please change as below."... peer MLD shall update an uplink and/or downlink TID-to-link mapping information according to the negotiated TID-to-link mapping. " | as in comment |  |
| 6955 | 35.3.6.1.3 | 260.09 | A set of setup links may be changed after the Reassociation or Reconfiguration procedure is completed.So, it is recommended to clarify impact of the setup link set change on TID-to-link mapping. | Please clarify mapped TID set to a newly added link. And, clarify what is a mapped link set of a specific TID if a setup link that the specific TID mapped to only. |  |
| 5248 | 35.3.6.1.3 | 260.11 | NOTE 2 is not clear. Default mapping applies to all TIDs | Please clarify NOTE 2 as in the comment |  |
| 6954 | 35.3.6.1.3 | 260.11 | There is no definition for default mapping of a TID.(What we have is default mode of TID-to-link mapping) | Please clarify Default mapping mode of a TID.-Mapped to all (setup) links |  |
| 6363 | 35.3.6.1.3 | 260.15 | "n" in "Link Mapping Of TID field" is missed. Please fix as below."... mapping in which the bit position i of the Link Mapping Of TID n field in the TID-to-link Mapping element is ..." | as in comment |  |
| 7412 | 35.3.6.1.3 | 260.16 | "n" is missing between "the Link Mapping Of TID" and "field" | change to "the Link Mapping Of TID n field" |  |
| 7817 | 35.3.6.1.3 | 260.16 | It should be "...of the Link Mapping of TID field n in the TID-to-link Mapping element..." | As commented. |  |
| 8192 | 35.3.6.1.3 | 260.16 | "Link Mapping Of TID field", word "n" is missing before the word "field" | changes to: Link Mapping Of TID n field |  |
| 8193 | 35.3.6.1.3 | 260.16 | "the Link Mapping Of TID field in the TID-to-link Mapping element", not specify the TID-to-Link Mapping element is carried in which frame. | Clarify that the TID-to-link Mapping element is in TID-to-link Mapping Request frame or Association Request frame. |  |
| 4824 | 35.3.6.1.3 | 260.17 | Whats the range of "n" and "I" here ? | Clarify |  |
| 7410 | 35.3.6.1.3 | 260.23 | If STA MLD want to make a disable link to enable link after association, how to handle to switch the state of the link(s). | It is needed to clarify the process. |  |
| 7411 | 35.3.6.1.3 | 260.23 | STA MLD wants to update(or change/re-mapping) the negotiated TID-to-link mapping after setup. In current procedure, we have to perform teardown and request again. It is better to design another simple method to request an update to AP MLD. (e.g., expliict indication of update) without the teardown. | As in comment |  |