IEEE P802.11
Wireless LANs

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| CC36 resolution to CIDs 5956 5957 for TID-to-Link Mapping |
| Date: 2021-12-05 |
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Abstract

This submission proposes resolutions for the following CIDs for TGbe CC36:

5956,5957

Revisions:

* Rev 0: Initial version of the document
* Rev 1: add option 2 of the resolution according to the discussion in the 11be MAC call

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbe Draft. This introduction is not part of the adopted material.

***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.***

***TGbe editor: The baseline for this document is 11be D1.4.***

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Pg/Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 5956 | Liuming Lu | 162.01 | Currently specified TID-To-Link Mapping Response frame contains a field of status code, which only includes DENIED\_TID\_TO\_LINK\_MAPPING and SUCCESS for the response to the request. If the response MLD rejects the TID-TO-LINK mapping request sended by the request MLD only the status code of DENIED\_TID\_TO\_LINK\_MAPPING can be used, and the request MLD is still unable to know what TID-to-link mapping can be potentially accepted by the response MLD. The limited types of TID-To-Link Mapping Response and status codes would reduce the efficiency of the TID-to-link mapping negotiation | Suggest to further specify the types of TID-to-link Mapping Response and extend the specification of the field of status codes to increase the efficiency of the TID-to-link mapping negotiation | RevisedAgreed it is necessary to extend the definition of the status codes of the TID-To-Link Mapping Response in order to increase the efficiency of TID-To-Link Mapping negotiation.TGbe editor to make the changes shown in 11-21/2031r0 under all headings that include CID 5956. |
| 5957 | Liuming Lu | 161.10 | Currently specified TID-To-Link Mapping Request frame is too simple to be convenient for the TID-to-link mapping negotiation.For example, the request MLD wants to suggest TID-to-link mapping parameters in the request but it still can potentially accept other TID-to-link mapping parameters if the suggested TID-to-link mapping parameters are not satisfied, and currently specified TID-To-Link Mapping Request frame cannnot be used in this case. | Suggest to further specify the types of TID-to-link Mapping request to increase the efficiency of the TID-to-link mapping negotiation | RevisedAgreed it is necessary to specify the type of the TID-To-Link Mapping Request to increase the efficiency of TID-To-Link Mapping negotiation.TGbe editor to make the changes shown in 11-21/2031r0 under all headings that include CID 5957. |

**Discussion:**

For the currently specified TID-to-link mapping negotiation, if a responding MLD cannot accept the TID-to-link mapping requested by an initiating MLD, the responding MLD doesn’t know wether the requested TID-to-link mapping is only acceptable to the initiating MLD for the negotiation. And if the requested TID-to-link mapping is only acceptable to the initiating MLD for the negotiation, no any other TID-to-link mapping needs to be suggested by the responding MLD.

Furthermore, if a responding MLD suggests a preferred TID-to-link mapping to an initiating MLD which cannot accept it, the initiating MLD doesn’t know wheter any other TID-to-link mapping is acceptable to the responding MLD. If no any TID-to-link mapping other than the suggested TID-To-Link mapping is acceptable to the responding MLD for the negotiation, no further TID-to-link mapping request needs to be sent by the initiating MLD.

This document proposes to specify the the Negotiation Type subfield of the TID-To-Link Mapping element in order to increase the efficiency of TID-To-Link Mapping negotiation.

**Proposed Text Change:**

**Option 1:**

**9.4.1.9 Status Code field**

## *Insert the following news rows to* [*Table 9-78 (Status codes)*](#bookmark70) *while maintaining the numerical order and updating the reserved range (#CID 5956):*

**Table 9-78—Status codes**

|  |  |  |
| --- | --- | --- |
| **Status code** | **Name** | **Meaning** |
| 130 | DENIED\_STA\_AFFILIAT- ED\_WITH\_MLD\_WITH\_EXIST- ING\_MLD\_ASSOCIATION | Association denied because the requesting STA is affili- ated with a non-AP MLD that is associated with the AP MLD. |
| 131 | NSEP\_DENIED\_UNAUTHORIZED | (#1008)NSEP priority access denied because the non-AP MLD or non-AP EHT STA is not authorized to use the service. |
| 132 | NSEP\_DENIED\_OTHER\_REASON | NSEP priority access denied due to reason outside the scope of this standard. |
| 133 | DENIED\_TID\_TO\_LINK\_MAPPING | Request denied because the requested TID-to-link map- ping is unacceptable. |
| 134 | PREFERRED\_TID\_TO\_LINK\_MAP- PING\_SUGGESTED | Preferred TID-to-link mapping suggested. |
| <A NA> | DICTATE\_TID\_TO\_LINK\_MAPPING | Only Acceptable TID-to-link mapping to be requested.  |
| (#4006)<A NA> | DENIED\_EHT\_NOT\_SUPPORTED | Association denied because the requesting STA does not support EHT features. |

**35.3.6.1.3 Negotiation of TID-to-link mapping**

**TGbe Editor: *Change paragraphs below of this subclause as follows (#CID 5956):***

After receiving the individually addressed TID-to-link Mapping Request frame, the responding MLD shall send an individually addressed TID-to-link Mapping Response frame to the initiating MLD according to the following rules:

—If the responding MLD accepts the requested TID-to-link mapping in the TID-to-link Mapping element in the received TID-to-link Mapping Request frame, it shall set to 0 (SUCCESS) the Status Code in the TID-to-link Mapping Response frame.

—Otherwise, the responding MLD shall indicate rejection of the proposed TID-to-link mapping by setting to either 133 (DENIED\_TID\_TO\_LINK\_MAPPING) or 134 (PREFERRED\_TID\_TO\_LINK\_MAPPING\_SUGGESTED) or <ANA> (DICTATE\_TID\_TO\_LINK\_MAPPING) the Status Code in the TID-to-link Mapping Response frame. The responding MLD may suggest a preferred TID-to-link mapping by setting 134 (PREFERRED\_TID\_TO\_LINK\_MAPPING\_SUGGESTED) the Status Code in the TID-to-link Mapping Response frame and including the TID-to-link Mapping element in the TID-to-link Mapping Response frame. The responding MLD may suggest a dictated TID-to-link mapping by setting <ANA> (DICTATE\_TID\_TO\_LINK\_MAPPING) the Status Code in the TID-to-link Mapping Response frame and including the TID-to-link Mapping element in the TID-to-link Mapping Response frame.

An MLD may suggest a preferred TID-to-link mapping to a peer MLD by sending an unsolicited TID-to-link Mapping Response frame that includes the TID-to-link Mapping element and sets the Status Code to 134 (PREFERRED\_TID\_TO\_LINK\_MAPPING\_SUGGESTED). And an MLD may suggest a dictated TID-to-link mapping to a peer MLD by sending an unsolicited TID-to-link Mapping Response frame that includes the TID-to-link Mapping element and sets the Status Code to <ANA> (DICTATE\_TID\_TO\_LINK\_MAPPING). 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).

**9.6.35.2 TID-To-Link Mapping Request frame format**

**TGbe Editor: *Change the table below of this subclause as follows (#CID 5957):***

**Table 9-623e—****TID-To-Link Mapping Request frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 1 | Category |
| 2 | EHT Action |
| 3 | Dialog Token |
| 4 | Request Type |
| 5 | TID-To-Link Mapping (see [9.4.2.314 (TID-To-Link Mapping](#bookmark159) [element)](#bookmark159)) |

The Category field is defined in 9.4.1.11 (Action field).

The EHT Action field is defined in 9.6.34.1 (EHT Action field).

The Dialog Token field is a value chosen by the STA sending the TID-To-Link Mapping Request frame to identify the request/response transaction.

**TGbe Editor: *Add the paragraph and table below to this subclause as follows (#CID 5957):***

The Request Type field values indicate the type of TID-To-Link Mapping Request. The use of the Request Type field for the negotiation of TID-to-link mapping is described, as shown in Table 9-xxx.

**Table 9-xxx—Request Type field values**

|  |  |
| --- | --- |
| **Request Type field values** | **Description** |
| 0 | An initiating MLD requests to negotiate a new TID-to-link mapping and specifies a suggested TID-to-link Mapping. If the suggested TID-to-link Mapping is not accommodated by the responding MLD, then the other TID-to-link mapping is recommended to be suggested. |
| 1 | An initiating MLD requests to negotiate a new TID-to-link mapping and specifies a demanded TID-to-link Mapping. If the demanded TID-to-link Mapping is not accommodated by the responding MLD, then no other TID-to-link mapping needs to be suggested. |

The TID-To-Link Mapping field contains one or two TID-To-Link Mapping elements as specified in 9.4.2.314 (TID-To-Link Mapping element). When it contains two TID-To-Link Mapping elements, the Direction subfield in one of the TID-To-Link Mapping elements is set to 0 (Downlink) and the Direction subfield in the other of the TID-To-Link Mapping elements is set to 1 (Uplink).

**Option 2：**

**9.4.2.314** **TID-To-Link Mapping element**

**TGbe Editor: *Update the Figure below to this subclause as follows (#CID 5956, #CID 5957):***

B0 B1 B2 B3 B4 B7 B8 B15

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Direction | Default Link Mapping | Negotiation Type | Reserved | Link Mapping Presence Indicator (Optional) |

Bits: 2 1 1 4 0 or 8

**Figure 9-1002af—TID-To-Link Control field format**

**TGbe Editor: *Add the paragraph and table below to this subclause as follows (#CID 5956, #CID 5957):***

The Negotiation Type subfield indicates the type of the TID-to-link mapping negotiation, which is described in Table 9-xxx.

**Table 9-xxx—Encoding of the Negotiation Type subfield**

|  |  |
| --- | --- |
| **Negotiation Type subfield value** | **Description** |
| 0 | 1. If this TID-To-Link Mapping element is carried in a TID-To-Link Mapping Request frame, the following applies:

this TID-To-Link Mapping element specifies a non-demand TID-to-link Mapping to be request. If the TID-to-link Mapping is not accommodated by the responding MLD, then an alternative TID-to-link mapping may be recommended to be suggested.1. Otherwise, if this TID-To-Link Mapping element is carried in a TID-To-Link Mapping Response frame, the following applies:

this TID-To-Link Mapping element specifies a non-dictate TID-to-link Mapping to be suggested. If the initiating MLD transmits a new TID-To-Link Mapping request with another TID-To-Link Mapping, then the TID-To-Link Mapping request might be accepted by the responding MLD. |
| 1 | 1. If this TID-To-Link Mapping element is carried in a TID-To-Link Mapping Request frame, the following applies:

this TID-To-Link Mapping element specifies a demanded TID-to-link Mapping to be request. If the demanded TID-to-link Mapping is not accommodated by the responding MLD, then the initiating MLD will reject the new TID-to-link mapping.1. Otherwise, if this TID-To-Link Mapping element is carried in a TID-To-Link Mapping Response frame, the following applies:

this TID-To-Link Mapping element specifies a dictate TID-to-link Mapping to be suggested. Only if the initiating MLD transmits a new TID-To-Link Mapping request with the dictate TID-to-link Mapping, then the TID-To-Link Mapping request is likely to be accepted by the responding MLD. |

The Link Mapping Presence Indicator subfield indicates whether the Link Mapping Of TID *n* field is present in the TID-To-Link Mapping element (#4023)(i.e., it identifies the TID(s) for which the mapping is pro-vided in the element). A value of 1 in bit position *n* of the Link Mapping Presence Indicator subfield indi-cates that the Link Mapping Of TID *n* field is present in the TID-To-Link Mapping element. Otherwise, the Link Mapping Of TID *n* field is not present in the TID-To-Link Mapping element. When the Default Link Mapping subfield is set to 1, this subfield is (#7707)not present.

**35.3.7.1.3 Negotiation of TID-to-link mapping**

**TGbe Editor: *Update the paragraphs below to this subclause as follows (#CID 5956, #CID 5957):***

After receiving the (Re)Association Request frame containing the TID-To-Link Mapping element, the AP MLD shall reply to the (Re)Association Request frame according to 11.3.5.3 (AP, AP MLD, or PCP association receipt procedures), 11.3.5.5 (AP, AP MLD, or PCP reassociation receipt procedures), and 35.3.5 [(Multi-link (re)setup)](#bookmark20), with the following additional rules:

* + - * The AP MLD can accept the requested TID-to-link mapping in the TID-to-link Mapping element in the received (Re)Association Request frame only if it accepts the multi-link (re)setup for all links on which at least one TID is requested to be mapped. In this case, it shall not include in the (Re)Association Response frame the TID-to-link Mapping element.
			* Otherwise, if the TID-to-link Mapping element in the (Re)Association Request Request frame carries the Negotiation Type subfield set to 0 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.
			* Otherwise, if the TID-to-link Mapping element in the (Re)Association Request Request frame carries the Negotiation Type subfield set to 1 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 with the Link Mapping Presence Indicator subfield set to all zero that does not suggest any preferred TID-to- link mapping.

After the multi-link (re)setup is successful, to negotiate a new TID-to-link mapping, an initiating MLD with dot11TIDtoLinkMappingActivated equal to true shall send an individually addressed TID-to-link Mapping Request frame to a responding MLD that has indicated support of TID-to-link mapping negotiation.

After receiving the individually addressed TID-to-link Mapping Request frame, the responding MLD shall send an individually addressed TID-to-link Mapping Response frame to the initiating MLD according to the following rules:

* + - * If the responding MLD accepts the requested TID-to-link mapping in the TID-to-link Mapping element in the received TID-to-link Mapping Request frame, it shall set to 0 (SUCCESS) the Status Code in the TID-to-link Mapping Response frame.
			* Otherwise, the responding MLD shall indicate rejection of the proposed TID-to-link mapping by setting to either 133 (DENIED\_TID\_TO\_LINK\_MAPPING) or 134 (PREFERRED\_TID\_TO\_LINK\_MAPPING\_SUGGESTED) the Status Code in the TID-to-link Mapping Response frame. The responding MLD may suggest a preferred TID-to-link mapping by setting 134 (PREFERRED\_TID\_TO\_LINK\_MAPPING\_SUGGESTED) the Status Code in the TID-to-link Mapping Response frame and including the TID-to-link Mapping element in the TID-to- link Mapping Response frame if the TID-to-link Mapping element in the received TID-to-link Mapping Request frame carries the Negotiation Type subfield set to 0. And the responding MLD should not suggest a preferred TID-to-link mapping by setting 134 (PREFERRED\_TID\_TO\_LINK\_MAPPING\_SUGGESTED) the Status Code in the TID-to-link Mapping Response frame and including the TID-to-link Mapping element in the TID-to- link Mapping Response frame if the TID-to-link Mapping element in the received TID-to-link Mapping Request frame carries the Negotiation Type subfield set to 1.

An MLD may suggest a preferred TID-to-link mapping to a peer MLD by sending an unsolicited TID-to- link Mapping Response frame that includes the TID-to-link Mapping element and sets the Status Code to 134 (PREFERRED\_TID\_TO\_LINK\_MAPPING\_SUGGESTED). 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).

If indicated by a peer MLD, an MLD should take into account the preferred TID-to-link mapping when it initiates a new TID-to-link mapping. In addition, an AP MLD should take into account the traffic flow(s) affiliated with the non-AP MLD and the capabilities and constraints (if any) of the non-AP MLD. If the TID-to-link Mapping element with the preferred TID-to-link mapping indicated by a peer MLD carries the Negotiation Type subfield set to 1 an MLD should not initiate a new TID-to-link mapping with a TID-to-link Mapping element which indicates the TID-To-Link Mapping other than the preferred TID-to-link mapping.