### IEEE P802.11 Wireless LANs

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| 11be D2.0 CR for duplication transmission over ML for low latency traffic |
| Date: 2022-08-21 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Xiangxin Gu | Unisoc | 2288 Zuchongzhi Road, Shanghai, China |  | Xiangxin.Gu@unisoc.com |
| Yingqiao Quan | Unisoc |  |  | Yingqiao.Quan@unisoc.com |
| Yongjiang Yi | SPRD |  |  | John.Yi@unisoc.com |
| Lei Zhou | H3C |  |  | zhou.leih@h3c.com |
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Abstract

This submission proposes resolutions for the following CIDs:

10083

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Simplify the name of the subfields.
* Rev 2: Add a figure to assist description in discussion part.

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 D2.2 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe D2.2 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** | **Commenter** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 10083 | Xiangxin Gu | 35.3 | 404.50 | Duplication transmission of MPDUs over ML is a good supplementary tool to achieve low latency for LST. It is allowed. But abuse of it will impact the BSSs. Please define applicable rules. | As in the comment | **Revised:**Agree with the commenter in principle.Propose to exploit duplication transmission over multi-link for latency sensitive data coming a period before the Restricted TWT SP and not delivered during the preceding Restricted TWT SP. The period and the maximum number of copies of an MPDU being transmitted concurrently over the Multi-Link are specified in the Restricted TWT Parameter Set field.Tgbe editor: please implement changes as shown in this doc tagged as 10083 |

**Discussion:**

Discussion can be found in the following PPT.



The following figure shows which MPDUs can be transmitted with duplication transmission over Multi-Link.



**End of discussion**

**Propose:**

***Change*** [***Figure 9-766 (Broadcast TWT Parameter Set field format)***](#bookmark124) ***as follows:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Request Type | Target Wake Time | Nominal Minimum TWT Wake Duration | TWT Wake Interval Mantissa | Broadcast TWT Info | Restricted TWT Traffic Info (optional) |

Octets: 2 2 1 2 2 0 or 4

**Figure 9-766—Broadcast TWT Parameter Set field format (10083)**

***Change*** [***Figure 9-770a (Restricted TWT Traffic Info field format)***](#bookmark124) ***as follows:***

|  |  |  |  |
| --- | --- | --- | --- |
| Traffic Info Control | Restricted TWT DL TID Bitmap | Restricted TWT UL TID Bitmap | TO to r-TWT SP for DT |

Octets: 1 1 1 1

**Figure 9-770a—Restricted TWT Traffic Info field format (10083)**

***Change*** [***Figure 9-770b (Traffic Info Control field format)***](#bookmark124) ***as follows:***

 B0 B1 B2 B5 B6 B7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | DL TID Bitmap Valid | UL TID Bitmap Valid | Max Num of DT over ML | Reserved |
| Bits: | 1 | 1 | 4 | 2 |

**Figure 9-770b—Traffic Info Control field format (10083)**

***Add the following paragraph at the end of subclause 9.4.2.199 TWT element as follows:***

(10083) The value of the Max Num of DT over ML subfield indicates if duplication transmission over Multi-Link is permitted and if the TO to r-TWT SP for DT subfield has valid information. When the value of the Max Num of DT over ML subfield is greater than 0, duplication transmission over Multi-Link for latency sensitive traffic is permitted and the maximum number of copies of an MPDU being transmitted concurrently over Multi-Link is the value+1. An MPDU containing an MSDU coming a period before the Restricted TWT SP and not delivered during the preceding Restricted TWT SP can be transmitted with duplication transmission over Multi-Link. The period is specified by the value of the TO to r-TWT SP for DT subfield in milliseconds. When the value of the Max Num of DT over ML subfield is set to 0, duplication transmission over Multi-Link is not permitted, and the TO to r-TWT SP for DT subfield is reserved.

***Insert the following paragraph after 8th paragraph of subclause 35.8.2.2 The setup procedure as follows:***

(10083) If a STA affiliated with a non-AP MLD intends to request duplication transmission over Multi-Link for the corresponding latency sensitive traffic in r-TWT membership establishment, the STA shall indicate maximum number of copies of an MPDU being transmitted concurrently over Multi-Link and the duration coming the latency sensitive traffic MSDU contained by the MPDU through the Max Num of DT subfield and the TO to r-TWT SP for DT subfield accordingly in the Restricted TWT Traffic Info field.

(10083) The r-TWT scheduling AP shall indicate if duplication transmission over Multi-Link is allowed and the maximum number of copies of an MPDU being transmitted concurrently over Multi-Link through the Max Num of DT over ML subfield in the Restricted TWT Traffic Info field. If duplication transmission over ML is permitted, the TO to r-TWT SP for DT subfield in the Restricted TWT Traffic Info field shall be set.

***Add the following paragraph at the end of subclause 35.9.5 Traffic delivery as follows:***

(10083) If the Max Num of DT over ML subfield in the Restricted TWT Traffic Info field is greater than 0, for a latency sensitive traffic MSDU coming a period before the Restricted TWT SP and not delivered during the preceding Restricted TWT SP, the non-AP MLD affiliated with the r-TWT scheduled STA may transmit the MPDU containing the MSDU with duplication transmission over Multi-Link. The period is specified by the value of the TO to r-TWT SP for DT subfield in milliseconds. The maximum number of copies of the MPDU being transmitted concurrently over Multi-Link is specified by the Max Num of DT subfield.