IEEE P802.11
Wireless LANs

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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.

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| **CID** | **Commenter** | **Clause**  | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 8197 | Yunbo Li | 35.3.14.4 | 275.42 | The buffered data of a TID can be transmitted through multiple links that mapping to this TID. Base on the different architecture (e.g. co-chip or not) in implementation, some non-AP MLD can scheduled the bufffered data to any links within SIFS period after it received Trigger frame on that link while other non-AP MLD can not. The spec needs to provide this information to AP MLD, so AP MLD could understand which links can be used to transmit UL data frame for a non-AP MLD through TB PPDU. | suggest non-AP MLD to report its capability of buffer data to associated AP MLD, e.g. the buffered data can be trasnmitted through TB PPDU only on the reporting link or can be transmitted on any mapped links. | RevisedAgree in principle, the Buffer Sharing Support capability indication is introduced in MLD Capabilities subfield.TGbe editor to make the changes shown in doc 21/1808r0 |

***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).***

Discussion:

Based on the group discussion, how to manage the buffered data in MLD is an implementation issue. The delay of transfering buffered data from one link to another, will be different depending on the architecture of an MLD in an implementation. E.g. if the multiple links of an MLD are designed to be co-chip, the delay of transfering buffered data between the different links can be negligible. But when an MLD is not a co-chip design, the MLD may suffer from a large delay (>> SIFS).

When considering UL transmissions using EDCA, we could leave the above capability implementation. For the design that is not a co-chip, the MLD can first transfer buffered data to the intended link, and then do the channel contention and data transmission. It doesn’t matter how large the transfer delay between the links is.

But when considering TB PPDU transmission, the situation will be totally different. A non-AP STA that is affiliated with a non-AP MLD can not expect when it will receive a Basic Trigger frame from its associated AP. So if the non-AP MLD is not a co-chip design, and the data is buffered at MLD or on another link, it will have problems to transfer data to this link within a SIFS time. To solve this problem, we suggest that a non-AP MLD report its capability of buffered data to its associated AP MLD.

For a non-AP MLD that can share the buffered data among multiple links, the associated AP MLD can solicate UL data using a Basic Trigger frame on any link at any time. For a non-AP MLD that can not share the buffered data among multiple links, the associated AP MLD can only solicate UL data using a Basic Trigger frame on the link that BSR is received on.

1. **Proposed spec text**

***TGbe editor: modify paragraphes in subclause after 9.4.2.312.2 (Basic Multi-Link element) as below:***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B3 | B4 | B5 B6 | B7 B11 | B12 | B13 | B14 B15 |
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| --- |
| Maximum Number Of Simultaneous Links |

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| --- |
| SRS Support |

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| --- |
| TID-To-Link Mapping Negotiation Supported |

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|  |
| --- |
| Frequency Separation For STR |

 | AAR Support | Buffer Sharing Support |

|  |
| --- |
| Reserved |

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| Bits: | 4 | 1 | 2 | 5 | 1 | 1 | 2 |

**Figure 9-1002i—MLD Capabilities subfield format**

**Table 9-401h—Subfields of the MLD Capabilities field**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| Maximum Number Of Simultaneous Links | (#4365)Indicates the maximum number of STAs affiliated with the MLD that support simultaneous transmission or reception of frames on the respective links. | (#5746)Set to the maximum number of affiliated STAs in the non-AP MLD that support simultaneous transmission or reception of frames minus 1. (#4365)For an AP MLD, set to the number of affiliated APs minus 1(#4014)See 35.3.15.2 (Multi-link device capability signaling(#4752)(#4116)). |
| SRS Support | Indicates support for the reception of a frame that carries an SRS Control sub-field. | (#6016)For an AP MLD: Set to 1 to indicate that an AP MLD, with which the AP is affiliated, is capable of receiving a frame with an SRS Control subfield. Set to 0 otherwise.(#4266)(#8284)(#6017)For a non-AP MLD: Set to 1 to indicate that a non-AP MLD, with which the non-AP EHT STA is affiliated, is capable of generating frames with an SRS Control subfield. Set to 0 otherwise.(#4014)See 35.3.15.5 (PPDU end time alignment). |
| TID-To-Link Map-ping Negotiation Sup-ported | Indicates support for TID-to-link mapping negotiation. | Set to 0 if dot11TIDtoLinkMappingActivated is false.Set to 1 if dot11TIDtoLinkMappingActivated is true and the MLD supports the mapping of each TID to the same or different link set.Set to 2 if dot11TIDtoLinkMappingActivated is true and the MLD supports the mapping of all TIDs to the same link set.The value 3 is reserved.(See 35.3.6.1.3 (Negotiation of TID-to-link mapping)) |
| Frequency Separation For STR | Indicates the minimum frequency gap between any two links that is recommended by the non-AP MLD for STR operation. The frequency gap is specified as the difference between the nearest frequency edges of the two links. | (#7040)For a non-AP MLD: Set to 0 to indicate that no frequency sepa-ration information is provided. Set to a nonzero value *n* to indicate that the STR frequency gap is (n-1) ╳ 80 MHz.(#7040)For an AP MLD: Reserved.(#4014)See 35.3.15.2 (Multi-link device capability signaling(#4752)(#4116)). |
| AAR Support(#6605) | An AP MLD indicates support for receiving a frame with an AAR Con-trol subfield(#6605)(#6021) | (#6605)(#6021)If the +HTC-HE Support sub-field is 1: Set to 1 if the AP MLD supports the AAR Control subfield functionality. Set to 0 otherwise.Reserved for non-AP MLD or if the +HTC-HE Support subfield is 0.See 35.3.15.7.2 (AP assisted medium synchro-nization recovery procedure). |
| Buffer Sharing Support | A non-AP MLD indicates support for sharing buffered data among different links. | Set to 1 if the non-AP MLD supports sharing buffered data among its affiliated links. Set to 0 otherwise.Reserved for an AP MLD.See 35.3.15.2 (Multi-link device capa-bility signaling). |

***TGbe editor: add below paragraphes at the end of subclause 35.3.15.2 (Multi-link device capability signaling):***

**35.3.15.2 Multi-link device capability signaling**

A non-AP MLD shall set the Buffer Sharing Support subfield to 1 in the Multi-Link element included in a (Re) Association Request frame if it can transmit buffered data in a TB PPDU in response to a Basic Trigger frame received on any link that mapped to the TID the buffered data belongs to. Otherwise, the non-AP MLD shall set the Buffer Sharing Support subfield to 0.

If an AP MLD has received a Basic Multi-Link element from a non-AP MLD with the Buffer Sharing Support subfield set to 1 in a (Re) Association Request frame, any AP affiliated with the AP MLD, on a link that maps to a TID, can send a Basic Trigger frame to solicit the buffered data for this TID.

If an AP MLD has received a Basic Multi-Link element from a non-AP MLD with the Buffer Sharing Support subfield set to 0 in a (Re) Association Request frame, then only the affiliated AP on the link that the buffer report for a TID is received, can send a Basic Trigger frame to solicit the buffered data for this TID.

***End of change***