IEEE P802.11  
Wireless LANs

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| 11be Spec text for addressing the TBDs of eMLSR | | | | |
| Date: 2021-02-19 | | | | |
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Abstract

We propose the draft text related to eMLSR TBD to help the creation of TGbe draft D0.4. The proposed changes will also resolve CIDs 1582, 1704 and 2339 of Draft P802.11be\_D0.3.pdf

The discussion related to the proposed texts can be found in doc [11-20/1889r1](https://mentor.ieee.org/802.11/dcn/20/11-20-1889-00-00be-mla-clarifications-for-emlsr.pptx)

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| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 1582 | Duncan Ho | 35.3.14 | 145 | The BSRP Trigger frame is supported mandatorily for 802.11ax so its support should continue for 802.11be | Remove Note 1 | Revised  Reception of MU-RTS Trigger and BSRP Trigger frame is already mandatory as per 11ax requirements (on top of which EHT is built) and as per normative behavior below. Besides, MU-RTS Trigger addresses the DL data delivery and BSRP Trigger (plus Basic Trigger see discussion below as well) addresses UL data delivery. In 11ax a STA can disable both reception of both these frames if it sends an UL MU Disable bit set to 1 to the STA. However, in the case of eMLSR that would lead to eMLSR operation not being possible. Propose to specify that a non-AP MLD does not set the UL MU Disable bit to 1 if it is in eMLSR mode.  To simplify things we propose to remove Note 2. Basic Trigger frame variant can be sent by the AP after an initial MU-RTS/BSRP Trigger exchange.  TGbe editor to make the changes shown in  <https://mentor.ieee.org/802.11/dcn/02/11-21-0160-00-00be-mac-pdt-emlsr-tbds.docx>  Note to editor: Same resolution for CIDs 1582, 1704 and 2339 |
| 1704 | GEORGE CHERIAN | 35.3.14 | 145 | "NOTE 1--Mandatory or optional support for the non-AP MLD of reception of MU-RTS and BSRP Trigger frames is TBD."  Remove the note. | As in the comment | Revised  Reception of MU-RTS Trigger and BSRP Trigger frame is already mandatory as per 11ax requirements (on top of which EHT is built) and as per normative behavior below. Besides, MU-RTS Trigger addresses the DL data delivery and BSRP Trigger (plus Basic Trigger see discussion below as well) addresses UL data delivery. In 11ax a STA can disable both reception of both these frames if it sends an UL MU Disable bit set to 1 to the STA. However, in the case of eMLSR that would lead to eMLSR operation not being possible. Propose to specify that a non-AP MLD does not set the UL MU Disable bit to 1 if it is in eMLSR mode.  To simplify things we propose to remove Note 2. Basic Trigger frame variant can be sent by the AP after an initial MU-RTS/BSRP Trigger exchange.  TGbe editor to make the changes shown in  <https://mentor.ieee.org/802.11/dcn/02/11-21-0160-00-00be-mac-pdt-emlsr-tbds.docx>  Note to editor: Same resolution for CIDs 1582, 1704 and 2339 |
| 2339 | Minyoung Park | 35.3.14 | 145 | In a MU scenario, MU-RTS alone has limitation to enable the EMLSR operation since the AP MLD doesn't know which STA responded with a CTS and the AP MLD may end up transmitting data to a STA that didn't respond with a CTS and result in a packet drop. The BSRP doesn't have this problem. Each STA that received the BSRP with its AID responds with BSR and the AP knows which STA is available to receive data. Therefore, both MU-RTS and BSRP need to be supported by the non-AP MLD as mandatory. | Remove NOTE 1 and make both MU-RTS and BSRP mandatory for the non-AP MLD. | Revised  Reception of MU-RTS Trigger and BSRP Trigger frame is already mandatory as per 11ax requirements (on top of which EHT is built) and as per normative behavior below. Besides, MU-RTS Trigger addresses the DL data delivery and BSRP Trigger (plus Basic Trigger see discussion below as well) addresses UL data delivery. In 11ax a STA can disable both reception of both these frames if it sends an UL MU Disable bit set to 1 to the STA. However, in the case of eMLSR that would lead to eMLSR operation not being possible. Propose to specify that a non-AP MLD does not set the UL MU Disable bit to 1 if it is in eMLSR mode.  To simplify things we propose to remove Note 2. Basic Trigger frame variant can be sent by the AP after an initial MU-RTS/BSRP Trigger exchange.  TGbe editor to make the changes shown in  <https://mentor.ieee.org/802.11/dcn/02/11-21-0160-00-00be-mac-pdt-emlsr-tbds.docx>  Note to editor: Same resolution for CIDs 1582, 1704 and 2339 |

# Discussion

**Discussion 1:** Reception of MU-RTS Trigger and BSRP Trigger frame is already mandatory as per 11ax requirements (on top of which EHT is built) and as per normative behavior below. Besides, MU-RTS Trigger addresses the DL data delivery and BSRP Trigger (plus Basic Trigger see discussion below as well) addresses UL data delivery. In 11ax a STA can disable both reception of both these frames if it sends an UL MU Disable bit set to 1 to the STA. However, in the case of eMLSR that would lead to eMLSR operation not being possible. Propose to specify that a non-AP MLD does not set the UL MU Disable bit to 1 if it is in eMLSR mode.

**Discussion 2:** To simplify things we propose to remove Note 2. Basic Trigger frame variant can be sent by the AP after an initial MU-RTS/BSRP Trigger exchange.

Revisions:

* Rev 0: Initial version of the document.

**Proposed spec text:**

The baseline for this text is 802.11be D0.3.

***TGbe editor: Please change paragraphs below as follows:***

### 35.3.14 Enhanced multi-link single radio operation

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51 A non-AP MLD may operate in the EMLSR mode on the enabled links between the non-AP MLD and its

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53 associated AP MLD.

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#### **55** Editor’s Note: Per the authors of 20/1291r12, the name of the EMLSR mode is TBD.

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57 An MLD with dot11EHTEMLSROptionImplemented equal to true shall set the EMLSR mode subfield of

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1. the Common Info field of the Basic variant Multi-Link element to 1; otherwise, the MLD shall set the
2. EMLSR mode subfield to 0.

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1. When a non-AP MLD is operating in the EMLSR mode with an AP MLD supporting the EMLSR mode the
2. following applies:

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* 1. — The non-AP MLD shall be able to listen on the enabled links, by having its affiliated STA(s)
  2. corresponding to those links in the awake state. The listening operation includes CCA and receiving
  3. the initial Control frame of a frame exchange sequence that is initiated by an AP MLD.

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1. — The initial Control frame of a frame exchange sequence shall be sent in the OFDM PPDU or non-HT
2. duplicate PPDU format using a rate of 6 Mbps, 12 Mbps, or 24 Mbps.
3. — The initial Control frame shall be an MU-RTS Trigger frame or a BSRP Trigger frame.

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1. Reception of MU-RTS and BSRP Trigger frames is mandatory for a non-AP MLD that is in the EMLSR mode (i.e., none of the STAs affiliated with the non-AP MLD send a frame containing the OM Control field with the UL MU Disable subfield set to 1 (see 9.2.4.6a.2 OM Control)). The number of spatial streams for the response to the BSRP Trigger frame shall be limited to one. [see Discussion 1 above]

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1. [see Discussion 2 above]— The non-AP MLD shall indicate the delay time needed by the non-AP MLD in the EMLSR Delay
2. field in the Common Info field of the Basic variant Multi-Link element. The value in the EMLSR
3. Delay field indicates the MAC padding duration of the Padding field of the initial Control field. The
4. EMLSR Delay field is 3 bits and set to 0 for 0 µs, set to 1 for 32 µs, set to 2 for 64 µs, set to 3 for
5. 128 µs, set to 4 for 256 µs, and the values 5 to 7 are reserved.

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1. — The AP MLD shall initiate a frame exchange sequence with the non-AP MLD on one of the enabled
2. links by transmitting an initial Control frame to the non-AP MLD with the limitations specified
3. above.

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1. — After receiving the initial Control frame of a frame exchange sequence, the non-AP MLD shall be
2. able to transmit or receive frames on the link in which the initial Control frame was received and
3. shall not transmit or receive on the other link(s) until the end of the frame exchange sequence, and
4. subject to its spatial stream capabilities, operation mode, and link switch delay, the non-AP MLD

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1. shall be capable of receiving a PPDU that is sent using more than one spatial stream a SIFS after the
2. end of its response frame transmission solicited by the initial Control frame. During the frame
3. exchange sequence, the AP MLD shall not transmit frames to the non-AP MLD on the other link(s).
4. The non-AP MLD switches back to the listening operation on the enabled links immediately after the
5. end of the frame exchange sequence.

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**Straw Poll: Do you support to incorporate the proposed draft text in this document 11-21/0xxxxr0 to the TGbe Draft 0.4?**

**Result: Yes/No/Abstain**