IEEE P802.11
Wireless LANs

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| LB 266 CR for EMLSR Misc. |
| Date: 2022-10-25 |
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Abstract

This submission proposes resolutions for following 3 CID received for TGbe LB266

: 10038, 10777, 12812

Revision History:

* Rev 0: Initial version of the document
* Rev 1: Remove non-quarantine CID
* Rev 2: Changes respond to TTT’s comments
* Rev 3: Changes respond to offline discussion

***TGbe editor: The baseline for this document is 11be D2.0***

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).***

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| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **Pg/Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 10038 | Morteza Mehrnoush | 35.3.17 | 461.58 | What is the EMLSR behavior if all EMLSR STAs of the non-AP MLD except one goes to power save (doze state)? As there is only one link remaining in EMLSR mode, it should follow the single-link single-radio procedure. Add explanation to cover this case. | as in comment | **Revised**Agree in principle with the comment.Add a capability bit to indicate the non-AP MLD supporting no initial control frame when only one link of EMLSR links is in awake state so that the AP MLD can begin the frame exchange without the initial control frame in such case.**TGbe editor, please make changes as shown in this document tagged 10038** |
| 10777 | Chien-Fang Hsu | 35.3.17 | 461.58 | When there exists only one EMLSR link in awake state and others are on in doze state, the initial control frame to initialize DL traffic is redundant. To increase efficiency in this scenario, the specs should allow AP to omit initial control frame to intialize DL transmission. | Add rules allowing the AP to intialize DL transmission without initial control frame when only one EMLSR link is in awake state and others are in doze states. | **Revised**Agree in principle with the comment.Add a capability bit to indicate the non-AP MLD supporting no initial control frame when only one link of EMLSR links is in awake state so that the AP MLD can begin the frame exchange without the initial control frame in such case.**TGbe editor, please make changes as shown in this document tagged 10777** |
| 12812 | Laurent Cariou | 35.3.17 | 463.60 | When a non-AP MLD is in EMLSR mode and when only one STA that is operating on one of the EMLSR links is in awake state and the other STAs operating on the EMLSR links affiliated with the same non-AP MLD are in doze state, the non-AP MLD doesn't need to wait for the EMLSR Transition Delay time to switch to the listening operation. | Please add an exception as follows: "When there is only one STA in awake state operation on the EMLSR links, the non-AP MLD switches back to the listening operation after the end of the frame exchanges for both an AP initiated and a STA initiated cases without waiting for the EMLSR Transition Delay time." | **Revised**Agree in principle with the comment.Add a capability bit to indicate the non-AP MLD supporting no transition delay when only one link of EMLSR links is in awake state so that the AP MLD can consider that the non-AP MLD does not need transition delay in such case.**TGbe editor, please make changes as shown in this document tagged 12812** |

***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.***

**No Discussion:**

### 9.4.2.312.2.2 Common Info field of the Basic Multi-Link element

TGbe editor: please modify ***the following figures of subclause 9.4.2.312.2.2 in TGbe D2.0*** ***:***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Common Info Length | MLD MACAddress | Link ID Info | BSSParameters Change Count | Medium Synchronization Delay Information | EMLCapabilities | MLDCapabilities and Operations | MLD ID |

Octets: 1 6 0 or 1 0 or 1 0 or 2 0 or 3 0 or 2 0 or 1

 **Figure 9-1002h—Common Info field of the Basic Multi-Link element format** *(#12812, 10777, 10038)*

B0 B1 B3 B4 B6 B7 B8 B10 B11 B14 B15 B16 B17 B23

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EMLSRSupport | EMLSRPadding Delay | EMLSRTransition Delay | EMLMRSupport | EMLMRDelay | Transition Timeout | No Initial Control Frame Required | No EMLSR Transition Delay Required  | Reserved |

Bits: 1 3 3 1 3 4 1 1 7

 **Figure 9-1002k—EML Capabilities subfield format** *(#12812, 10777, 10038)*

TGbe editor: ***add the following paragraphs of subclause 9.4.2.312.2.2 after Table 9-401h(Encoding of the Transition Timeout subfield) in TGbe D2.0 :***

(#12812, 10777, 10038)The No Initial Control Frame Required subfield is set to 1 to indicate support thatthe initial control frame is not required when there is only one affiliated non-AP STA in awake state operating on the EMLSR links or there is only one EMLSR link remaining; otherwise, the No Initial Control Frame Required subfield is set to 0. The No Initial Control Frame Required subfield is reserved when transmitted by an AP affiliated with an AP MLD.

(#12812, 10777, 10038)The No EMLSR Transition Delay Required subfield is set to 1 to indicate support that the EMLSR Transition Delay is not required when switching back to the listening operation and when there is only one affiliated non-AP STA in awake state operating on the EMLSR links or there is only one EMLSR link remaining; otherwise, the No EMLSR Transition Delay Required subfield is set to 0. The No EMLSR Transition Delay Required subfield is reserved when transmitted by an AP affiliated with an AP MLD.

### 35.3.17 Enhanced multi-link single radio operation

***TGbe Editor to make the following changes in the paragraph in P463L25 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:***

An AP affiliated with the AP MLD that initiates frame exchanges with the non-AP MLD on one of

the EMLSR links shall begin the frame exchanges by transmitting the initial Control frame to the

non-AP MLD with the limitations specified below (#12812, 10777, 10038)except when there is only one affiliated non-AP STA in awake state operating on the EMLSR links or there is only one affiliated non-AP STA operating on the only remaining enabled EMLSR link, and the No Initial Control Frame Required subfield of the EML Capabilities  subfield  in  the  Common  Info  field  of  the  Basic  Multi-Link  element is set to 1 by the non-AP MLD, the corresponding AP affiliated with the AP MLD may begin the frame exchange with the non-AP STA without transmitting the initial Control frame.

***TGbe Editor to make the following changes in the paragraph in P463L47 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:***

(#12812, 10777, 10038) If an AP affiliated with the AP MLD begins the frame exchanges by transmitting the initial Control frame, after receiving the initial Control frame of frame exchanges and transmitting an immediate response frame as a response to the initial Control frame, a STA affiliated with the non-AP MLD that was listening on the corresponding link shall be able to transmit or receive frames on the link in which the initial Control frame was received and shall not transmit or receive on the other EMLSR link(s) until the end of the frame exchanges, ….

***TGbe Editor to add the paragraph below after the paragraph in P463L47-L58 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:***

(#12812, 10777, 10038) — If there is only one affiliated non-AP STA in awake state operating on the EMLSR links or there is only one affiliated non-AP STA operating on the only remaining enabled EMLSR link, and the No Initial Control Frame Required subfield of the EML Capabilities  subfield  in  the  Common  Info  field  of  the  Basic  Multi-Link  element is set to 1 by the non-AP MLD, the affiliated non-AP STA subject to its spatial stream capabilities, and operation mode shall be capable of receiving a PPDU that is sent using more than one spatial stream on the link.

***TGbe Editor to make the following changes in the paragraph in P463L59 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:***

The non-AP MLD shall be switched back to the listening operation on the EMLSR links after the time indicated in the EMLSR Transition Delay subfield of the EML Capabilities subfield in the Common Info field of the Basic Multi-Link element if any of the following conditions is met and this is defined as the end of the frame exchanges (#12812, 10777, 10038)except when there is only one affiliated non-AP STA in awake state operating on the EMLSR links or there is only one affiliated non-AP STA operating on the only remaining enabled EMLSR link, and the No EMLSR Transition Delay Required subfield of the EML Capabilities  subfield  in  the  Common  Info  field  of  the  Basic  Multi-Link  element is set to 1 by the non-AP MLD, the non-AP MLD shall be switched back to the listening operation if any of the following conditions is met without waiting for the time indicated in the EMLSR Transition Delay subfield :

 ***TGbe Editor to make the following changes in the paragraph in P464L39 in Subclause 35.3.17 (Enhanced multi-link single radio operation) in TGbe D2.0:***

— When a STA of the non-AP MLD initiates a TXOP the following applies:

• The non-AP MLD shall switch back to the listening operation on the EMLSR links after the time duration indicated in the EMLSR Transition Delay subfield after the end of the TXOP (#12812, 10777, 10038)except when there is only one affiliated non-AP STA in awake state operating on the EMLSR links or there is only one affiliated non-AP STA operating on the only remaining enabled EMLSR link, and the No EMLSR Transition Delay Required subfield of the EML Capabilities  subfield  in  the  Common  Info  field  of  the  Basic  Multi-Link  element is set to 1 by the non-AP MLD, the non-AP MLD shall be switched back to the listening operation without waiting for the time duration indicated in the EMLSR Transition Delay subfield.