IEEE P802.11
Wireless LANs

|  |
| --- |
| **TGbe CC36 Comment Resolutions****for Subclause 35.3.5.4 – Part 2 (Single-link Setup)** |
| **Date:** 2021-09-23 |

|  |
| --- |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Insun Jang | LG Electronics | 19, Yangjae-daero 11gil, Seocho-gu, Seoul 137-130, Korea |  | Insun.jang@lge.com |
| Namyeong Kim |  | namyeong.kim@lge.com |
| Sunhee Baek |  | sunhee.baek@lge.com |
| Jinsoo Choi |  | js.choi@lge.com |
| Gaurang Naik | Qualcomm Inc. |  |  |  |
| Po-Kai Huang | Intel Corporation |  |  |  |
| Rojan Chitrakar | Panasonic |  |  |  |
| Arik Klein | Huawei |  |  |  |
| Jarkko Kneckt | Apple |  |  |  |
| Payam Torab | Facebook |  |  |  |

Abstract

This submission proposes resolutions for multiple comments on TGbe D1.0 regarding the usage and rules of Multi-Link element in the context of mulit-link setup with the following CIDs (3 **CIDs**):

* 5275, 6642, 8338

Revisions:

- Rev 0: Initial version of the document.

- Rev 1: The baseline texts are modified based on 1221r1 and 1421r1 and and changed some texts based on offline feedback, esepcially for the presence for the fields of Common Info field.

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 1.1. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe Draft 1.1 (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.***

**- List of CIDs**

- 5275, 6642, 8338

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 5275 | Insun Jang | 35.3.5.4 | 256.33 | Single-link setup cases between MLDs should be considered, e.g., non-AP MLD requests one link or AP MLD accepts one link only | As in the comment, single-link setup case should be considered | RevisedAgree in principle with the commenter. A case of single-link setup could be considered as Multi-link setup (by including ML IE), e.g., Requesting one link only (on a non-AP MLD) due to some reasonsThe revised text provides the rules for ML IE by considering the case.**TGbe editor, please make changes as shown in doc 11-21/1222r1 tagged as CID 5275.** |
| 6642 | Pooya Monajemi | 35.3.5.4 | 256.37 | AP MLD may only accept the link on which the request was sent. Text is not clear about how this case is handled. | Clarify if in this case an ML element is not included (or if it is included with zero STA profiles). | RevisedAgree in principle with the commenter. A case of single-link setup could be considered as Multi-link setup (by including ML IE), e.g., Requesting one link only (on a non-AP MLD) due to some reasonsThe revised text provides the rules for ML IE by considering the case.**TGbe editor, Please incorporate the changes as shown in 21/1222r1 under CID 5275.** |
| 8338 | Zhiqiang Han | 35.3.5.4 | 257.13 | There is a special case. non-AP STA wants to initiate a multi-link setup but the AP can only setup one link. In this case, AP will not include the Basic variant Multi-Link element. The spec shall cover this case. | Please clarify it | RevisedAgree in principle with the commenter. A case of single-link setup could be considered as Multi-link setup (by including ML IE), e.g., Requesting one link only (on a non-AP MLD) due to some reasonsThe revised text provides the rules for ML IE by considering the case.**TGbe editor, Please incorporate the changes as shown in 21/1222r1 under CID 5275.** |

**Discussion:**

**Single-link setup between a non-AP MLD and an AP MLD can happen during multi-link (ML) setup as follows.**

**A non-AP MLD should determine whether it performs the legacy Association (not including ML IE) or the ML setup (including ML IE)**

A non-AP MLD may want to request association with only one link, because:

- It is not able to operate on other links. For instance, the non-AP MLD radio may not be capable to operate in bands where other links are available or other links may have interference from other radios (BT, 5G NR, UWB,…)

- It may want to use ML functions (we’ve defined) since it already implements them.

This way, the non-AP MLD is the best to start on one link and (if needed) then may add more links, e.g., through reconfiguration procedure.

**Proposed spec text:**

***TGbe editor: Please modify the subclause 35.3.5.4 (Usage and Rules of Multi-Link element in the context of multi-link (re)setup) as follows:***

***TGbe editor: Please note that the baseline of this subclause 35.3.5.4 is 1221r1 and 1421r1.***

35.3.5.4. Usage and Rules of Multi-Link element in the context of multi-link (re)setup

A non-AP MLD may initiate a multi-link setup with an AP MLD to (re)set up (#5275) one or more link(s) with a set of APs that are affiliated with the AP MLD. When a non-AP MLD initiates a multi-link (re)setup with an AP MLD, a STA that is affiliated with the non-AP MLD shall transmit an (Re)Association Request frame on the link that it desires to use as part of the multi-link (re)setup. An AP that is affiliated with that AP MLD shall transmit an (Re)Association Response frame on the link on which it received the (Re)Association Request frame.

A STA affiliated with a non-AP MLD that initiates a multi-link (re)setup with an AP MLD shall include a Basic variant Multi-Link element in an (Re)Association Request frame that it transmits.

(#5275)The Basic variant Multi-Link element carried in the (Re)Association Request frame shall include the Common Info field. If a non-AP MLD requests one or more link(s) in addition to the link on which the (Re)Association Request frame is transmitted for multi-link (re)setup, the Basic variant Multi-Link element carried in the (Re)Association Request frame shall include the Link Info field. Otherwise, the Basic variant Multi-Link element carried in the (Re)Association Request frame shall not include the Link Info field.

(#5275)NOTE – A Basic variant Multi-Link element without the Link Info field carried in an (Re)Association Request frame indicates that the transmitting non-AP MLD is requesting to set up only the link on which the (Re)Association Request frame is being transmitted.

(#5275) subfield, may include

(#5275)

(#5275)For each link requested in addition to the link on which the (Re)Association Request frame is transmitted, the Link Info field of the Basic variant Multi-Link element carried in the (Re)Association Request frame shall contain the corresponding Per-STA Profile subelement(s). For each Per-STA Profile subelement included in the Link Info field, the Complete Profile subfield of the STA Control field shall be set to 1 (see 35.3.2.2 (Advertisement of complete or partial per-link information)).

The Link ID subfield of the STA Control field of the Per-STA Profile subelement for the corresponding non-AP STA that requests a link for multi-link (re)setup with the AP MLD is set to the link ID of the AP affiliated with the AP MLD that is operating on that link. The link ID is obtained during multi-link discovery (see 35.3.4 (Discovery of an AP MLD)).

The AP that is affiliated with the AP MLD and that responds to an (Re)Association Request frame which carries a Basic variant Multi-Link element shall include a Basic variant Multi-Link element in the (Re)Association Response frame that it transmits.

(#5275)The Basic variant Multi-Link element carried in the (Re)Association Response frame shall include the Common Info field. If a non-AP MLD requests one or more link(s) in addition to the link on which the (Re)Association Request frame is transmitted for multi-link (re)setup, the Basic variant Multi-Link element carried in the (Re)Association Response frame shall include the Link Info field. Otherwise, the Basic variant Multi-Link element carried in the (Re)Association Response frame shall not include the Link Info field.

(#5275), and may include the EML Capabilities and the Medium Synchronization Delay Information subfields

(#5275)

(#5275)For each link requested in addition to the link on which the (Re)Association Request frame is transmitted, the Link Info field of the Basic variant Multi-Link element carried in the (Re)Association Response frame shall contain the corresponding Per-STA Profile subelement(s). For each Per-STA Profile subelement included in the Link Info field, the Complete Profile subfield of the STA Control field shall be set to 1 (see 35.3.2.2 (Advertisement of complete or partial per-link information)) and the Status Code field included in the STA Profile subfield of the Per-STA Profile subelement shall indicate SUCCESS if the link is accepted or the failure cause if the link is not accepted. The Status Code field in the (Re)Association Response frame body shall indicate, as defined in 9.4.1.9 (Status Code field), whether the link on which the (Re)Association Request frame is received is accepted or not.

Do you support to accept the resolution in 11-21/1222r1 for the following CIDs?

- 5275, 6642, 8338