IEEE P802.11
Wireless LANs

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| CR for CID 3017 |
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Abstract

This submission proposes resolutions for the CID 3017.The baseline for this comment resolution document is 802.11be Draft 1.0.

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| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 3017 | 9.4.2.295b.2 | 74 | 45 | A MLD MAC Address should always be part of the ML element, given that the MLD should have an identifier for MLD descriptions. | will submit a contribution for resolution | Revised: agree in principle with the comment. The text has been changed that MLD MAC Address is always included in the Basic Variant of the ML element. TGbe editor: Please incorporate changes contained in 11-21/569r1. |

**Discussion:**

An AP affiliated with an AP MLD should always include the MLD MAC Address in the Basic Variant of the ML element since each AP MLD needs an identifier for the BSSDescriptionList obtained from beacons and Probe Responses.

An non-AP STA affiliated with a non-AP MLD should always include the MLD MAC Address in the Basic Variant of the ML element when establishing ML association with an AP MLD.

Instead of specifying individual cases in which the MLD MAC Address shall be included in the Basic Variant of the ML element, it is more concise or clearer to make MLD MAC Address mandatory in the Common Info in the Basic Variant of the ML element.

***TGbe Editor: Please modify Clause 9.4.2.295b.2 as follows.***

**9.4.2.295b.2 Basic variant Multi-Link element**

The Basic variant Multi-link element is used to carry information of an MLD and its affiliated STAs during multi-link discovery (see 35.3.4.4 (Multi-Link element usage rules in the context of discovery)) and multi- link setup (see 35.3.5.4 (Usage and rules of Basic variant Multi-Link element in the context of multi-link setup)).

(#3247)The format of the Presence Bitmap subfield of the Basic variant Multi-Link element is defined in [Figure 9-788eh (Presence Bitmap subfield of the Basic variant Multi-Link element for-](#bookmark93) [mat(#3247)(#1773)(#2603)(#1078)(#1475)(#2981))](#bookmark93).

 B0 B1 B2 B3 B4 B5 B11

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Link ID Info Present | BSSParameters Change Count Present | Medium Synchronization Delay Information Present | EMLCapabilities Present | MLDCapabilities Present | Reserved |

Bits: 1 1 1 1 1 7

**Figure 9-788eh—Presence Bitmap subfield of the Basic variant Multi-Link element for- mat(#3247)(#1773)(#2603)(#1078)(#1475)(#2981)**

The Link ID Info Present subfield is set to 1 if the Link ID Info subfield is present in the Common Info field. Otherwise, the Link ID Info Present subfield is set to 0.

(#1068)The BSS Parameters Change Count Present subfield is set to 1 if the BSS Parameters Change Count subfield is present in the Common Info field. Otherwise, the BSS Parameters Change Count Present subfield is set to 0.

The Medium Synchronization Delay Information Present subfield is set to1 in the Medium Synchronization Delay Information subfield is present in the Common Info field. Otherwise, the Medium Synchronization Delay Information Present subfield is set to 0.

(#1773)(#2603)The EML Capabilities Present subfield is set to 1 if the EML Capabilities field is present in the Common Info field. Otherwise, the EML Capabilities Present subfield is set to 0.

(#1078)(#1475)(#2981)The MLD Capabilities Present subfield is set to 1 if the MLD Capabilities subfield is present in the Common Info field. Otherwise, the MLD Capabilities Present subfield is set to 0.

The format of the Common Info field of the Basic variant Multi-Link element is defined in [Figure 9-788ei](#bookmark94) [(Common Info field of the Basic variant Multi-Link element for-](#bookmark94) [mat(#1068)(#2139)(#2159)(#2161)(#3018)(#1773)(#2603))](#bookmark94).

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

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

**Figure 9-788ei—Common Info field of the Basic variant Multi-Link element for- mat(#1068)(#2139)(#2159)(#2161)(#3018)(#1773)(#2603)**

### Editor’s Note: In Figure 9-788el, the maximum number of octets of the EML Capabilities field is 3 rather than 2.

The content of the MLD MAC Address subfield in the Common Info field is defined in

35.3.5.4 (Usage and rules of Basic variant Multi-Link element in the context of multi-link setup) and

35.3.4.4 (Multi-Link element usage rules in the context of discovery).

***TGbe Editor: Please modify Clause 35.3.4.4 and 35.3.5.4 as follows (802.11be Draft 1.0)***

## Multi-Link element usage rules in the context of discovery

(#3016)(#1005)(#1896)(#1155)(#1414)(#2581)(#3367)(#3359)(#2859)(#2241)(#2295)An AP affiliated

with an AP MLD shall include, in a Beacon frame or a Probe Response frame, which is not an ML probe response, only the Common Info field of the Basic variant Multi-Link element as defined in 9.4.2.295b (Multi-Link element) unless conditions in [35.3.9 (General procedures)](#bookmark23) are satisfied.

The Common Info field of the Basic variant Multi-Link element carried in the Beacon frame or Probe Response frame shall

* include the MLD MAC address subfield for the AP MLD with which the AP is affiliated
* include the Link ID Info subfield for the AP by setting the Link ID Info Present subfield of the Multi- Link Control field of the Basic variant Multi-Link element to 1
* (#1068)include the BSS Parameters Change Count subfield for the AP by setting the BSS Parameters Change Count Present subfield of the Multi-Link Control field of the Basic variant Multi-Link element to 1.

(#2583)(#3360)A Probe Request frame that is not an ML probe request shall not include a Multi-Link element of any type.

(#2581)(#3367)A Probe Request frame that is an ML probe request shall not include a Basic variant Multi- Link element.

(#2581)(#3367)A Probe Request frame that is an ML probe request shall include a Probe Request variant Multi-Link element.

(#2494)An AP of an AP MLD shall have a unique link ID that shall not change during the lifetime of the AP MLD. The Link ID field in the per-STA profile corresponding to this AP in the Multi-Link element corresponding to this AP MLD shall be set to the unique link ID value of this AP.

## Usage and rules of Basic variant Multi-Link element in the context of multi-link setup

A non-AP MLD may initiate a multi-link setup with an AP MLD to (#2478)set up more than one link with a subset of APs that are affiliated with the AP MLD. When a non-AP MLD initiates a multi-link setup with an AP MLD, a non-AP STA that is affiliated with the non-AP MLD shall transmit an (Re)Association Request frame on the link it is operating on. An AP that is affiliated with the AP MLD and that received the (Re)Association Request frame shall transmit an (Re)Association Response frame.

The non-AP STA shall include a Basic variant Multi-Link element in the (Re)Association Request frame it transmits.

The Basic variant Multi-Link element carried in the (Re)Association Request frame shall include the Common Info field and the Link Info field.

The Common Info field of the Basic variant Multi-Link element carried in the (Re)Association Request frame shall

* include the MLD MAC address subfield for the non-AP MLD with which the non-AP STA is affiliated 1
* not include the Link ID Info subfield by setting the Link ID Info Present subfield of the Multi-Link Control field of the Basic variant Multi-Link element to 0
* (#1068)not include the BSS Parameters Change Count subfield by setting the BSS Parameters Change Count Present subfield of the Multi-Link Control field of the Basic variant Multi-Link element to 0.

The Link Info field of the Basic variant Multi-Link element carried in the (Re)Association Request frame shall include one or more Per-STA Profile subelement(s), each of which contains the complete information (such as capabilities) of a non-AP STA affiliated with the non-AP MLD and corresponding to a link that is requested for multi-link setup and shall set the Complete Profile subfield of the Multi-Link Control field of the Basic variant Multi-Link element to 1.

(#1035)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 setup with the AP MLD is set to the link ID of an AP MLD that is operating on that link. The link ID is obtained during discovery.

The AP shall include a Basic variant Multi-Link element in (Re)Association Response frame that it transmits.

The Basic variant Multi-Link element carried in the (Re)Association Response frame shall include Common Info field and Link Info field.

The Common Info field of the Basic variant Multi-Link element carried in the (Re)Association Response frame shall

* include the MLD MAC address subfield for the AP MLD with which the AP is affiliated
* include the Link ID Info subfield for the AP by setting the Link ID Info Present subfield of the Multi- Link Control field of the Basic variant Multi-Link element to 1
* (#1068)include the BSS Parameters Change Count subfield for the AP by setting the BSS Parameters Change Count Present subfield of the Multi-Link Control field of the Basic variant Multi-Link element to 1.

The Link Info field of the Basic variant Multi-Link element carried in the (Re)Association Response frame shall include one or more Per-STA Profile subelement(s), each of which contains the complete information (such as capabilities and operational parameters) of an AP affiliated with the AP MLD and corresponding to a link that is accepted by the AP MLD and requested by the non-AP MLD and shall set the Complete Profile subfield of the Multi-Link Control field of the Basic variant Multi-Link element to 1.

(#1035)The Link ID subfield of the STA Control field of the Per-STA Profile subelement for the corresponding AP that accepts a link requested by an STA of non-AP MLD with a non-AP MLD is set to the link ID of the AP of the AP MLD that is operating on that link.

Each Per-STA Profile subelement included in the Basic variant Multi-Link element carried in the (Re)Association Request frame and the (Re)Association Response frame shall not include another Basic variant Multi-Link element.

(#2044)A STA affiliated with an MLD shall include a Basic variant Multi-Link element containing the MLD MAC address of the MLD with which the STA is affiliated in the Authentication frame that it transmits.

(#2044)A STA, which is affiliated with an MLD, may select and manage its operating parameters independently from the other STA(s) affiliated with the same MLD, unless specified otherwise.