802.11be D0.2 Draft Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Spec Text for ML Element – Common Format and Types | | | | |
| Date: 2020-11-07 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Rojan Chitrakar | Panasonic |  |  | Rojan.chitrakar@sg.panasonic.com |
| Abhishek Patil | Qualcomm |  |  |  |
| Laurent Cariou | Intel |  |  |  |
| Han Zhiqiang | ZTE |  |  |  |

Abstract

This submission contains spec text to be incorporated in P802.11be D0.2 related to these motions:

**6.2.2 ML element structure**

A common Multi-link element is defined in R1 to carry information for various multi-link operations. The element carrying a Type field is used for differentiating various formats of the element.

[Motion 137, #SP245, [3] and [159]]

In R1, the Type field is carried as the first subfield in the Multi-link Control field of the Multi-link element.

[Motion 137, #SP246, [3] and [159]]

The following two entries for the Type field in the Multi-Link element is defined in R1:

1. Basic

* NOTE – It is the Multi-Link element as used in D0.1.

1. ML probe request

* NOTE – It is used for soliciting MLD probe response.

NOTE – Other Types are TBD.

[Motion 137, #SP267, [3] and [160]]

Revision History:

* Rev 0: Initial version of the document
* Rev 1: Modifications based on offiline feedbacks:
  + Renamed ML Element variants as: 1) Basic variant ML Element 2) Probe Request variant ML Element
  + Added short description for each variant of ML element
  + Added Option 2 (with TBDs) for the content of the Probe Request variant ML element
* Rev 2: Modifications based on online feedbacks (in blue):
  + Changed TBD field of ML-Control field to Reserved
  + Removed Option 1 (except Link Info field) for the content of the Probe Request variant ML element as the group indicated majority preference for Option 2.
* Rev 3: Modifications based on feedback from Edward (editorial) and Ming (size of Type field)

***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).***

***TGbe Editor: Editing instructions preceded by “TGbe Editor” are instructions to the TGbe editor to modify or insert 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.***

**Straw Poll: Which option do you support for the size of the Type subfield?**

**Option 1: 4 bits**

**Option 2: TBD**

**Abstain**

**Straw Poll: Do you support to incorporate the proposed draft text in document 11-20/1835r3 (with Type subfield size option1/2) to the next revision of TGbe Draft?**

**Yes/No/Abstain**

9.4.2 Elements

**9.4.2.247b Multi-Link element** [Motion 137, #SP245, #SP246, #SP267]

**TGbe Editor: *Instruction: Modify the subclause as the following:***

**9.4.2.247b.1 General**

The format of the Multi-Link element is defined in Figure 9-788b (Multi-Link element format). The frames carrying this element and usage of this element are described in 35.3.2 (Container for multi-link information).



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | Multi-Link Control | Common Info | Link Info |
| Octets: | 1 | 1 | 1 | 2 | variable | variable |
| * Multi-Link element format | | | | | | | |

The Element ID, Length and Element ID Extension fields are defined in 9.4.2.1 (General).

The format of the Multi-Link Control field is defined in Figure 9-788c (Multi-Link Control field).

Type subfield size Option 1 (Note to editor: this sentence is not part of spec text):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B0 B3 | | B4 | B5 B15 |
|  | Type | | MLD MAC Address Present | Reserved |
| Bits: | 4 | | 1 | 11 |
|  | | * Multi-Link Control field | | |

The Type subfield is defined in Table xxx (Type subfield encoding) and is used to differentiate the various variants of the Multi-Link element. Different variants of the Multi-Link element are used for different multi-link operations.

|  |  |  |
| --- | --- | --- |
| Table xxx - Type subfield encoding | | |
| Type subfield value | Multi-Link element variant name |
| 0 | Basic |
| 1 | Probe Request |
| 2 - 15 | Reserved |

End of Type subfield size Option 1 (Note to editor: this sentence is not part of spec text)

Type subfield size Option 2 (Note to editor: this sentence is not part of spec text):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | B0 TBD | | TBD | TBD B15 |
|  | Type | | MLD MAC Address Present | Reserved |
| Bits: | TBD | | 1 | TBD |
|  | | * Multi-Link Control field | | |

The Type subfield is defined in Table xxx (Type subfield encoding) and is used to differentiate the various variants of the Multi-Link element. Different variants of the Multi-Link element are used for different multi-link operations.

|  |  |  |
| --- | --- | --- |
| Table xxx - Type subfield encoding | | |
| Type subfield value | Multi-Link element variant name |
| 0 | Basic |
| 1 | Probe Request |
| TBD | Reserved |

End of Type subfield size Option 2 (Note to editor: this sentence is not part of spec text)

The MLD MAC Address Present subfield is set to 1 if the MLD MAC Address field is present in the Common Info field. Otherwise the subfield is set to 0.

The Common Info field carries information that are common to all the links and is optionally present based on the value of the Type subfield (see 9.4.2.247b.2 (Basic variant Multi-Link element) to 9.4.2.247b.3 (Probe Request variant Multi-Link element)).

The Link Info field carries information specific to the links and is optionally present based on the value of the Type subfield (see 9.4.2.247b.2 (Basic variant Multi-Link element) to 9.4.2.247b.3 (Probe Request variant Multi-Link element)).

**9.4.2.247b.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 35.3.4.3 (Multi-link element usage rules in the context of discovery)) and Multi-Link Setup (see 35.3.5.4 (Usage and rules of Multi-link element in the context of multi-link setup)).

The format of the Common Info field of the Basic variant Multi-Link element is defined in Figure 9-xxxx (Common Info field of the Basic variant Multi-Link element).

|  |  |  |
| --- | --- | --- |
|  | MLD MAC Address | TBD |
| Octets: | 0 or 6 | TBD |
| Figure 9-xxxx - Common Info field of the Basic variant Multi-Link element | | |

thefield in the Common Info field

The format of the Link Info field of the Basic variant Multi-Link element is defined in Figure 9-xxxx (Link Info field of the Basic variant Multi-Link element).

|  |  |  |
| --- | --- | --- |
|  | Optional Subelements | |
| Octets: | Variable | |
| Figure 9-xxxx - Link Info field of the Basic variant Multi-Link element | |

The Optional Subelements field contains zero or more subelements. The subelement format and ordering of subelements are defined in 9.4.3 (Subelements).

The Subelement ID field values for the defined subelements are shown in Table 9-322b (Optional subelement IDs for Basic variant Multi-Link element).

|  |  |  |
| --- | --- | --- |
| * Optional subelement IDs for Basic variant Multi-Link element | | |
| Subelement ID | Name | Extensible |
| 0 | Pre-STA Profile | Yes |
| 1–220 | Reserved |  |
| 221 | Vendor Specific | Vendor defined |
| 222–255 | Reserved |  |

Each Per-STA Profile subelement starts with Per-STA Control field followed by variable number of fields and elements as defined in 35.3.2 (Container for multi-link information).

The format of the Per-STA Control field is defined in Figure 9-788d (Per-STA Control field format).

|  |  |  |
| --- | --- | --- |
|  | B0 B3 | B4 TBD |
|  | Link ID | Reserved |
| Bits: | 4 | TBD |
| * Per-STA Control field format | | |

The Link ID subfield specifies a value that uniquely identifies the link where the reported STA is operating on.

Other subfields are TBD.

The Vendor Specific subelements have the same format as their corresponding elements (see 9.4.2.25 (Vendor Specific element)). Zero or more Vendor Specific subelements are included in the list of optional subelements.

**9.4.2.247b.3 Probe Request variant Multi-Link element**

The Probe Request variant Multi-Link element is used to request an AP to provide information of other APs affiliated with the same AP MLD as the AP. The inclusion of a Probe Request variant Multi-Link element in a Probe Request frame identifies it as an MLD probe request.

The subfields of the Multi-Link Control field of the Probe Request variant Multi-Link element except the Type subfield are TBD.

The presence and format of the Common Info field in the Probe Request variant Multi-Link element are TBD.

The format of the Link Info field of the Probe Request variant Multi-Link element is defined in Figure 9-xxxx (Link Info field of the Probe Request variant Multi-Link element).

|  |  |  |
| --- | --- | --- |
|  | Per-STA Profile Subelements | |
| Octets: | Variable | |
| Figure 9-xxxx - Link Info field of the Probe Request variant Multi-Link element | |

The Per-STA Profile Subelements field contains zero or more Per-STA Profile subelements as defined in 9.4.2.247b.2 (Basic variant Multi-Link element). Each Per-STA Profile subelement starts with a Per-STA Control field as defined in 9.4.2.247b.2 (Basic variant Multi-Link element). Presence of other fields and/or elements is TBD.

**TGbe Editor: *Instruction: Replace all occurance of “Multi-Link element” in 11be\_D0.1 with “Basic variant Multi-Link element” except in 9.4.2.247b (Multi-Link element)*** [Motion 137, #SP267]

**End of Proposed Text**