IEEE P802.11
Wireless LANs

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| LB266 CR on CID 12318 ESS Report Element |
| Date: 2022.07.29 |
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Abstract

This submission contains proposed comment resolutions to comments on P802.11be D2.0.

CID 12318 is resolved.

Revisions:

- Rev 0: Initial version of the document.

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| --- | --- | --- | --- | --- | --- | --- |
| CID | Commenter | Clause Number | Page.Line | Comment | Proposed Change | Resolution |
| 12318 | Guogang Huang | 9.4.2.256 |  | please clarify the usage of ESS Report element for an AP MLD | As in comment | REVISEDAgreed in principle. The counterparts of both Planned ESS and Edge of ESS subfields are added within the ESS Report element.Instructions to the editor:Please make the changes to the spec as shown in 11/22-1225r0 |

Discussion:

*(Page 1714)The Planned ESS subfield indicates whether the BSS is part of an ESS that is planned with several BSSs in an overlapping configuration.*

*(Page 2904)If the AP transmits an ESS Report element, it shall set the Planned ESS subfield in the ESS Information field to 1 if it is part of an ESS that is planned with several BSSs in overlapping configuration, whereby an associated STA may adjust its BSS transition algorithms accordingly. Otherwise, it shall set the Planned ESS subfield to 0.*

Based on the above description of the Planned ESS subfield, each AP affiliated with an AP MLD shall set the Planned ESS subfield of the ESS Report element to 1 to assist the legacy STA’s roaming. But for the non-AP MLD, it cannot know whether the associated AP MLD is part of an ESS that is planned with several BSSs or AP MLDs in overlapping configuration. In other words, the non-AP MLD cannot know whether these is candidate BSS(s) or AP MLD(s) to be transitioned. Hence, we need to define a new field, i.e. Planned ESS For MLDs to assist the non-AP MLD’s roaming. Similarly, a new field, i.e. Edge Of ESS For MLDs field is added to indicate whether the current AP MLD is at the edge of the ESS.

In the following, I will give two examples to explain the setting of these subfields. In scenario 1, since there is no neighboring AP or AP MLD, the Planned ESS For MLDs subfield is set to 0. But for a legacy STA, since it can initiate a BSS transition between affiliated AP 1 and affiliated AP 2, the Planned ESS subfield is set to 1.



Scenario 1: Single AP MLD

In scenario 2, since a non-AP MLD can initiate a BSS transition among AP MLD 1, AP MLD 2 and AP 3, the Planned ESS For MLDs subfield is set to 1.



Scenario 2 Multiple APs or AP MLDs belonging to the same ESS

***TGbe editor: Modify the following subclause as follows:***

* ESS Report element(11ax)

The format of the ESS Report element is shown in Figure 9-894 (ESS Report element format(11ax)).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  | Element ID | Length | Element ID Extension | ESS Information | Extended ESS Information |
| Octets: | 1 | 1 | 1 | 1 | 1 |
| * ESS Report element format(11ax)
 |

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

The format of the ESS Information field is defined in Figure 9-895 (ESS Information field format(11ax)).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Planned ESS | Edge Of ESS | Recommended BSS Transition RSSI Threshold Within ESS |
| Bits: | 1 | 1 | 6 |

**Figure 9-895 ESS Information field format(11ax)**

The Planned ESS subfield indicates whether the BSS is part of an ESS that is planned with several BSSs in an overlapping configuration. This subfield is set to 1 to indicate that the ESS is deployed to ensure blanket coverage over the Extended Service Area (ESA). Otherwise, this subfield is set to 0 and the Edge Of ESS and Recommended BSS Transition RSSI Threshold Within ESS subfields are reserved.

The Edge Of ESS subfield indicates whether the BSS is at the edge of the ESS. This subfield is set to 1 to indicate the BSS is at the edge of the ESS. Otherwise, this subfield is set to 0.

The Recommended BSS Transition RSSI Threshold Within ESS subfield indicates the RSSI below which an associated STA is recommended to initiate BSS transition to a neighbor BSS belonging to the ESS.

The resolution for the Recommended BSS Transition RSSI Threshold Within ESS subfield is 1 dB. The encoding is defined in Table 9-373 (Recommended BSS Transition RSSI Threshold Within ESS subfield encoding(11ax)).

|  |
| --- |
| * Recommended BSS Transition RSSI Threshold Within ESS subfield encoding(11ax)
 |
| Value | Description |
| 0–62 | –100 dBm to –38 dBm |
| 63 | No recommendation |

The format of the Extended ESS Information field is defined in Figure 9-xxx (Extended ESS Information field format(11ax)).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Planned ESS For MLDs | Edge Of ESS For MLDs | Reserved |
| Bits: | 1 | 1 | 6 |

**Figure 9-xxx Extended ESS Information field format**

The Planned ESS For MLDs subfield indicates whether the AP MLD is part of an ESS that is planned with several BSSs or AP MLDs in an overlapping configuration. This subfield is set to 1 to indicate that the AP MLD is part of an ESS that is deployed to ensure blanket coverage over the ESA. Otherwise, this subfield is set to 0 and the Edge Of ESS For MLDs subfield is reserved.

The Edge Of ESS For MLDs subfield indicates whether the AP MLD is at the edge of the ESS. This subfield is set to 1 to indicate the AP MLD is at the edge of the ESS. Otherwise, this subfield is set to 0.

The use of the ESS Report element is described in 11.21.7.5 (Planned ESS(11ax)) and 35.3.25.1 (Planned ESS for MLDs).

11.21.7.5 Planned ESS(11ax)

The AP may transmit an ESS Report element (see 9.4.2.256 (ESS Report element(11ax))) to indicate whether it is in a planned ESS, to assist associated STAs’ roaming. If it indicates that it is in a planned ESS, it indicates whether it is at the physical edge of the ESS and can provide a recommendation on the RSSI level to consider for BSS transition.

If the AP transmits an ESS Report element, it shall set the Planned ESS subfield in the ESS Information field to 1 if it is part of an ESS that is planned with several BSSs in overlapping configuration, whereby an associated STA may adjust its BSS transition algorithms accordingly. Otherwise, it shall set the Planned ESS subfield to 0.

If the Planned ESS subfield is 1, then the AP shall set the Edge Of ESS subfield in the ESS Information field of the ESS Report element to 1 if the AP’s BSS is at the edge of an ESS (e.g., exit of a building). Otherwise, it shall set the Edge Of ESS subfield to 0.

NOTE 1—A non-AP STA could then prepare for more aggressive roaming, or the device in which the non-AP STA is located could then prepare for switching to a different system. However, how the non-AP STA uses the edge of ESS information is implementation specific and beyond the scope of this standard.

If the Planned ESS subfield is 1, then the AP shall set the Recommended BSS Transition RSSI Threshold Within ESS subfield in the ESS Information field of the ESS Report element to indicate the beacon RSSI below which an associated STA should initiate a BSS transition. Otherwise, it shall set the Recommended BSS Transition RSSI Threshold Within ESS subfield to 0.

NOTE 2—A non-AP STA could then use the Recommended BSS Transition RSSI Threshold Within ESS subfield to modify when it starts scanning for a new BSS. However, how the non-AP STA adjusts its BSS transition algorithms is implementation specific and beyond the scope of this standard.

The value of the Edge Of ESS subfield and the Recommended BSS Transition RSSI Threshold Within ESS subfield may be changed by the AP if conditions in the ESS change. An AP shall not change the value of the Planned ESS subfield over the lifetime of the BSS.

TGbe editor:Add the following subclause as follows:

35.3.25.1 Planned ESS for MLDs

An AP affiliated with an AP MLD may transmit an ESS Report element (see 9.4.2.256 (ESS Report element)) to assist associated non-MLD STAs and non-AP MLDs' roaming.

If an AP MLD operates with only one affiliated AP, the Planned ESS For MLDs and Edge Of ESS For MLDs subfields are respectively set to the same values of Planned ESS and Edge Of ESS subfields. If an AP MLD operates with more than one affiliated AP and transmits an ESS Report element through each affiliated AP, then the Planned ESS subfield in the ESS Information field is set to 1.

If the AP MLD is part of an ESS that is planned with several BSSs or AP MLD in overlapping configuration, the Planned ESS For MLDs subfield in the ESS Information field is set to 1, whereby an associated non-AP MLD may adjust its BSS transition algorithms accordingly. Otherwise, the Planned ESS For MLDs subfield is set to 0.

If the Planned ESS For MLDs subfield is 1, then the AP MLD shall set the Edge Of ESS For MLDs subfield to 1 if the AP MLD is at the edge of an ESS. Otherwise, it shall set the Edge Of ESS For MLDs subfield to 0.

If the Planned ESS For MLDs is set to 1, a non-AP MLD could then use the Recommended BSS Transition RSSI Threshold Within ESS subfield and prepare for roaming. If the Planned ESS For MLDs is set to 0, then a non-AP MLD could prepare for switching to a different system.

The value of the Edge Of ESS For MLDs subfield may be changed by the AP MLD if conditions in the ESS change. An AP MLD shall not change the value of the Planned ESS For MLDs subfield over the lifetime of the AP MLD.