IEEE P802.11
Wireless LANs

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| CC36 CR on CID 4296 ESS Report Element |
| Date: 2022.01.25 |
| Author(s): |
| Name | Company | Address | Phone | email |
| Guogang Huang | Huawei Technologies | F3-6-A124, Huawei Base, Bantian, Longgang, Shenzhen, Guangdong, China, 518129 |  | huangguogang1@huawei.com |
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Abstract

This submission contains proposed comment resolutions to comments on P802.11be D1.5.

CID 4296 is resolved.

Revisions:

- Rev 0: Initial version of the document.

- Rev 1-2: Modify subclause 35.3.24.1 based on received comments

- Rev 3: Accommodate the text considering an AP MLD may operate with one or more affiliated APs, which is approved in doc. 21/2009r7

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| CID | Commenter | Page.Line | Clause Number | Comment | Proposed Change | Resolution |
| 4296 | Alfred Asterjadhi |  | 9.4.2.256 | Any updates to ESS Report element for 11be? Align with concept of MLD APs for example (references relative to TGax D8.0) | As in comment | REVISEDAgreed in principle. The counterparts of both Planned ESS subfield and Edge of ESS subfield are added within the ESS Information field.Instructions to the editor:Please make the changes to the spec as shown in 11/21-1931r4 |

Discussion:

Since all APs affiliated with the same AP MLD have the same SSID and belong to the same ESS, the existing Planned ESS subfield and Edge Of ESS subfield cannot be used to assist the roaming for the non-AP MLD. Because the Planned ESS subfield shall be always set to 1 for the legacy STA if the AP MLD has more than one affiliated AP.

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 Of ESS For MLDs subfield is set to 0. But for a legacy STA, since it can initiate a BSS transition between AP 1 and AP 2, the Planned Of 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 Of ESS For MLDs subfield is set to 1.



Scenario 2 with non-co-located multiple APs or AP MLDs belonging to the same ESS

When there is at least one affiliated AP that sets the Edge Of ESS subfield to 1, then the Edge of ESS For MLDs shall be set to 1, which can be expressed as the following formula:

The value of Edge Of ESS For MLDs subfield = the value of the Edge Of ESS subfield of affiliated AP 1∨ the value of the Edge Of ESS subfield of affiliated AP 2∨…∨the value of the Edge Of ESS subfield of affiliated AP n

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 |
| Octets: | 1 | 1 | 1 | 2 |
| * 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 | Planned ESS For MLDs | Edge Of ESS For MLDs | Reserved |
| Bits: | 1 | 1 | 6 | 1 | 1 | 6 |
| * 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)).

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

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).

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 indicate whether or not the corresponding AP MLD is in a planned ESS, to assist associated non-MLD STAs and non-AP MLDs' roaming.

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 equal to 1, then the AP affiliated with the AP MLD sets the Edge Of ESS For MLDs subfield in the ESS Information field of the ESS Report element to 1 if the associated AP MLD is at the edge of an ESS. Otherwise, it sets the Edge Of ESS For MLDs subfield to 0.

For a non-AP MLD which has more than one link with the associated AP MLD, when the beacon RSSI of a link is below the Recommended BSS Transition RSSI Threshold Within ESS subfield in the ESS Information field of the ESS Report element, then it should not use that link for transmission. When the beacon RSSIs of all setup links are below the Recommended BSS Transition RSSI Threshold Within ESS subfield in the ESS Information field of the ESS Report element, respectively, then it should initiate a BSS transition if the Planned ESS For MLDs subfield is equal to 1. Otherwise, it shall not initiate a BSS transition if the Planned ESS For MLDs subfield is equal to 0.

For a non-AP MLD which has only one link with the associated AP MLD, when the beacon RSSI is below the Recommended BSS Transition RSSI Threshold Within ESS subfield in the ESS Information field of the ESS Report element, then it shall initiate a BSS transition if the Planned ESS For MLDs subfield is equal to 1. Otherwise, it shall not initiate a BSS transition if the Planned ESS For MLDs subfield is equal to 0.

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.

NOTE—If an AP MLD has only one affiliated AP, then both the Planned ESS For MLDs subfield and the Edge Of ESS For MLDs shall set to the same values as the Planned ESS subfield and the Edge Of ESS For MLDs, respectively.