IEEE P802.11  
Wireless LANs

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| Clarification on 6 GHz discovery bits in NR IE | | | | |
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Abstract

This submission provides clarification on the intended use of the *Member Of ESS With 2.4/5 GHz Colocated AP* and *Colocated With 6 GHz AP* subfields in the BSSID Information field of the Neighbor Report element.

**Revisions:**

* Rev 0: Initial version of the document.

***TGbe editor: Baseline for this document is REVme D7.0***

**Discussion:**

IEEE 802.11ax-2021 standard added subfields to the BSSID Information field of Neighbor Report element to aid the discovery of a 6 GHz AP and/or to provide the properties of a reported 6 GHz AP.

* The *Colocated AP* subfield indicates if a reported AP is collocated with the reporting AP.
  + This field is useful when a lower band (i.e., operating on 5 or 2.4 GHz) AP reports a colocated 6 GHz AP.
* The *Member Of ESS With 2.4/5 GHz Colocated AP* subfield applies only for a 6 GHz AP that is not a standalone 6 GHz AP (i.e., has collocated AP(s) operating on either 2.4 GHz or 5 GHz or both) and belongs to the same ESS as other 6 GHz AP that are operating on the same channel, have dot11MemberOfColocated6GHzESSOptionActivated equal to true and have collocated AP(s) on lower band(s).
  + This field is useful in letting a non-AP STA know that it can discover 6 GHz APs that are in its range and that belong to the same ESS via out of band discovery on 2.4/5GHz.
* The *Colocated With 6 GHz AP* subfield indicates that the reported AP is colocated with a 6 GHz AP and that the 6 GHz AP can be discovered via out of band discovery mechanism by querying the reported AP.
  + This field is useful in letting a non-AP STA know that the reported 5/2.4 GHz AP is colocated with a 6 GHz AP that the 6 GHz AP can be discovered by receiving mgmt. frames from the reported AP.

The description for some of these fields (esp. the Member of ESS…) is hard to parse and could lead to interop issues. Note, a minor issue was observed in the field. This contribution provides clarity on how to set the bit fields (and valid combinations) by providing an example showcasing various scenarios.

**Summary of changes:**

* Added clarification that the *Colocated With 6 GHz AP* subfield is invalid if a reported AP is a 6 GHz AP (out-of-band discovery does not apply).
* Added a missing comma to the description for *Member Of ESS With 2.4/5 GHz Colocated AP* subfield (see description of the same field in RNR IE and clause 11.53).
  + A comma is missing before the “*have dot11MemberOfColocated6GHzESSOptionActivated equal to true*” which is another condition that applies to the 6 GHz APs that belong to the same ESS. Without the comma, it appears to apply to the non-AP STA. Suggest adding a comma – consistent with text in RNR and 11.53.
* Added a figure and short description to clause 11.53 to provide clarity on how to set the values for the three subfields in discussion.
* **Neighbor Report element**

***TGm editor: Please update the following paragraphs in this subclause as shown below (paragraph on Colocated AP subfield does not have any changes and is included for reference purposes only):***

The Colocated AP subfield is set to 1 to indicate that the AP reported in this Neighbor Report element is in the same colocated AP set as the AP sending the Neighbor Report element.

…

The Member Of ESS With 2.4/5 GHz Colocated AP subfield is set to 1 if the reported AP is part of an ESS where all the APs in the ESS are operating in the same band as the reported AP (irrespective of the operating channel in that band) and are on the same channel and in the range of a STA receiving this frame, have dot11MemberOfColocated6GHzESSOptionActivated equal to true and also have a corresponding AP operating in the 2.4 GHz or 5 GHz bands that is in the same colocated AP set as that AP. It is set to 0 otherwise or if the reporting AP does not have that information. It is reserved if the reported AP is operating in the 2.4 GHz or 5 GHz bands.

NOTE—This subfield indicates that the reported AP is part of an ESS that has no 6 GHz-only APs that might be detected by a STA receiving this frame. This means that all APs operating in the 6 GHz band that are part of that ESS that might be detected by a STA receiving this frame can be discovered in the 2.4 GHz and/or 5 GHz bands.

…

The Colocated With 6 GHz AP subfield is set to 1 to indicate that the AP reported by the Neighbor Report element is in the same colocated AP set as a 6 GHz AP and that the 6 GHz AP can be discovered by receiving Management frames (as described in 26.17.2.3 (Scanning in the 6 GHz band) and 11.53 (Out-of-band discovery of a 6 GHz BSS)) sent by the reported AP. It is set to 0 otherwise. The subfield is ignored if the reported AP is operating in the 6 GHz band.

* **Out-of-band discovery of a 6 GHz BSS**

***TGm editor: Please add the following paragraph and figure at the end of this subclause as shown below:***

An AP may provide information to aid the out-of-band discovery of a 6 GHz AP by appropriately setting the Colocated AP, Member Of ESS With 2.4/5 GHz Colocated AP and Colocated With 6 GHz subfields in the BSSID Information field of a Neighbor Report element that it transmits. Figure 11-103a (Example showing information in Neighbor Report element for out-of-band discovery of 6 GHz APs) shows the values that an AP shall set for these subfields if the AP were to report other APs. The example depicts an AP operating on 5 GHz band that is colocated with a 6 GHz AP and a 2.4 GHz AP. The 6 GHz AP belongs to the same ESS as a neighboring 6 GHz AP that is also operating on the same 6 GHz channel. The neighboring 6 GHz AP has colocated 2.4 and 5 GHz APs.

NOTE 6 – APs in a colocated AP set operate from the same physical device.



Figure 11-103a – Example showing information in Neighbor Report element for out-of-band discovery of 6 GHz APs