IEEE P802.11
Wireless LANs

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| MLO: Multiple BSSID Procedure |
| Date: 2020-08-20 |
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Abstract

We propose the draft specification skeleton for MLD to help the creation of TGbe draft D0.1.

Revisions:

* Rev 0: Initial version of the document.

The texts is prepared for the following motions.

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| --- | --- | --- | --- | --- | --- |
| MAC | MLO-Multi-BSSID Operation | Abhishek Patil | Laurent Cariou, Liwen Chu, Jarkko Kneckt, Insun Jang,VIGER Pascal, Pooya Monajemi, Rojan Chitrakar Xin Zuo, James Yee, Ming Gan, Liuming Lu | R1 | Motion 112, #SP34Motion 112, #SP35Motion 112, #SP36Motion 112, #SP50 |

An AP of an AP MLD can correspond to a transmitted BSSID or a nontransmitted BSSID in a multiple BSSID set on a link.

[Motion 112, #SP34, [13] and [149]]

APs belonging to the same multiple BSSID set cannot be part of the same AP MLD.

* Note: APs within a multiple BSSID set are, by definition, operating on the same channel.

[Motion 112, #SP35, [13] and [149]]

APs belonging to the same co-hosted BSSID set cannot be part of the same AP MLD.

* Note: APs within a co-hosted BSSID set are, by definition, operating on the same channel.

[Motion 112, #SP36, [13] and [149]]

802.11be supports that each AP of an AP MLD is independently configured to operate as transmitted or nontransmitted BSSID of a multiple BSSID set or as an AP of a co-hosted BSSID set or not part of either a multiple BSSID set or co-hosted BSSID set.

[Motion 112, #SP50, [13] and [150]]

**Proposed spec text:**

The baseline for this text is 802.11ax 6.1 + approved CRs doc 11-20/315r6.

* Multiple BSSID procedure
* General

***TGbe editor: Please add the following paragraph after the third paragraph in this subclause as shown below:***

An AP with dot11MultiBSSIDImplemented equal to true shall set the Co-Hosted BSS subfield in HE Operation element that it transmits to 0.

APs belonging to the same multiple BSSID set shall not be part of the same AP MLD.

* Co-hosted BSSID set

***TGbe editor: Please add the following paragraph as the second paragraph in this subclause as shown below:***

HE BSSs that are not part of a multiple BSSID set (i.e., dot11MultiBSSIDImplemented is false) but share the same operating class, channel and antenna connectors belong to a co-hosted BSSID set.

APs belonging to the same co-hosted BSSID set shall not be part of the same AP MLD.

33. Extreme High Throughput (EHT) MAC specification

**33.x Multi-link operation**

**33.x.1 General**

***TGbe editor: Please add the following paragraph at an appropriate location in this subclause as shown below:***

Each AP of an AP MLD shall be independently configured to operate as a transmitted or nontransmitted BSSID of a multiple BSSID set, or as an AP belonging to a co-hosted BSSID set, or as a standalone AP that is not part of either a multiple BSSID set or co-hosted BSSID set. Annex AA provides example configurations.

**Annex AA**

(Informative)

**Multiple BSSID configuration examples**

**AA.1 Introduction**

***TGbe editor: Please modified the contents of subclause AA.1 as shown below:***

This annex provides examples showing the relationship between profile periodicity (indicated by the Profile Periodicity field in the Multiple BSSID Configuration element) and the DTIM interval (DTIM Period field in the Multiple BSSID-Index element) for a multiple BSSID set as described in 11.1.3.8.3 (Discovery of a nontransmitted BSSID profile).

This annex also provides examples illustrating the relationship between multiple BSSID set and multi-link operation.

***TGbe editor: Please update the title of subclause AA.2 as shown below:***

**AA.2 Examples illustrating the relationship between profile periodicity and DTIM Interval**

***TGbe editor: Please move the following content from subclause AA.1 as the 1st paragraph of AA.2 shown below:***

***TGbe editor: Please add a new subclause AA.3 as shown below:***

**AA.3 Example illustrating the relationship between multi-link operation and multiple BSSID set**

Each AP of an AP MLD can correspond to a transmitted or a nontransmitted BSSID in a multiple BSSID set, or to an AP belonging to a co-hosted BSSID set, or to an AP that is not part of either a multiple BSSID set or a co-hosted BSSID set.

The first example illustrates the case where APs on each link belong to a multiple BSSID set. By definition, since APs affiliated with an AP MLD have the same properties (such as security), APs in a multiple BSSID set on a link are not part of the same AP MLD. Figure AA6 (Example of APs from Multiple BSSID set on all links in a multi-link setup) shows an example where APs affiliated with an MLD belong to a multiple BSSID set on their respective link. Further, APs within the same MLD may correspond to a transmitted or nontransmitted BSSID.

Figure AA6 (Example of APs from Multiple BSSID set on all links in a multi-link setup) illustrates that APs corresponding to BSSID-x and BSSID-y are part of the multiple BSSID set on link 1 and belong to different MLDs (MLD 1 and MLD 3 respectively). On link 1, AP-y, affiliated with MLD 3, corresponds to the transmitted BSSID for the multiple BSSID set on link 1. On link 2, there are three APs that are part of the same multiple BSSID set and each belongs to a different MLD. AP-q, affiliated with MLD 2, corresponds to the transmitted BSSID for the multiple BSSID set on link 2. On link 3, there are three APs which are part of the same multiple BSSID set and two of the APs belongs to two different MLDs. AP-a, affiliated with MLD 1, corresponds to the transmitted BSSID for the multiple BSSID set on link 3. AP-c is a not affiliated with any MLD.



**Figure AA6 – Example of APs from Multiple BSSID set on all links in a multi-link setup**

The second example illustrates the case where APs affiliated with an MLD belong to a mix of multiple BSSID set and a co-hosted BSSID set or is a standalone AP. By definition, since APs affiliated with an AP MLD have same properties (such as security), APs in a co-hosted BSSID set on a link are not part of the same AP MLD. Figure AA7 (Example of mix of multiple BSSID set, co-hosted set and standalone AP in a multi-link setup) shows an example where APs affiliated with an MLD belong to a mix of multiple BSSID set, co-hosted set or is a standalone AP on their respective link.

As seen from Figure AA7 (Example of mix of multiple BSSID set, co-hosted set and standalone AP in a multi-link setup), APs corresponding to BSSID-x, BSSID-z and BSSID-y are part of the multiple BSSID set on link 1 and belong to different MLDs (MLD 1, MLD 2 and MLD 3 respectively). On link 1, AP-y, affiliated with MLD 3, corresponds to the transmitted BSSID for the multiple BSSID set on link 1. The three APs on link belong to the same co-hosted BSSID set and each is affiliated with a different MLD. On link 3, there is a single standalone AP (AP-b) which is affiliated with MLD 2.



**Figure AA7 – Example of mix of multiple BSSID set, co-hosted set and standalone AP in a multi-link setup**

***TGbe editor: doc 11-20/1285 and 11-20/1286 provide the Visio files for Figures AA6 and AA7 respectively***