IEEE P802.11
Wireless LANs

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| D2.0 FA definitions CIDs |
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Abstract

This submission proposes resolution of comments related to definitions for frame anonymization (FA). Thse changes impact the following sections of TGbi:

* 3.2 (Definitions specific to IEEE 802.11)
* 10.71.2.5 (OTA MAC address collision avoidance)

We propose draft specification text for TGbi draft D2.1.

Resolved CIDs (4): 2056, 2376, 2377, 2385

Revisions:

* Rev 00: Initial version of the document.

**Background**

These are changes for definitions related to frame anonymization (FA)

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 2056 | 3.2 | 26.05 | Which are the FA parameters? Is FA parameters including the AID? | Add definition of FA parameters.If AID is an FA parameter, we need to specify in 10.71.2.5 that the OTA MACaddress collision avoidance (10.71.2.5) mechanism does not apply to the AIDlist. | **Revised****Instructions to the editor:** Please makes the changes as shown under CID 2056 in this document. |
| 2376 | 3.2 | 26.21 | "individually addressed" is no longer acccurate. OPN can be present in group addresed frames. | Remove "individually addressed" |  **Agreed** |
| 2377 | 3.2 | 26.27 | "individually addressed" is no longer acccurate. OSN can be present in group addresed frames. | Remove "individually addressed" |  **Agreed** |
| 2385 | 10.71.1 | 93.65 | The term "FA parameters" is used in various places within 10.71.2, but there is no clear description of "FA parameters". It would be useful to include a description in 10.71.1. (Alternatively, consider including the description in "{Proposed change" as a formal definition in 3.2) | Immediately following p93 line 65, add the below text in normal style (i.e., not in a list):"The FA parameters for an EPP epoch comprises an AID assigned to the non-AP MLD, a CPE MHA parameter set assigned to the non-AP MLD and (if BPE FA is enabled) a BPE MHA Paramter set common to all associated non-AP MLDs." | **Revised.**Replaced by a similar definition in clause 3.2.**Instructions to the editor:** Please makes the changes as shown under CID 2385 in this document. |

***TGbi editor: Apply the following changes to the text in clause 3.2 (Definitions specific to IEEE 802.11))***

***TGbi editor add the following definition at page 26, line 7***

**frame anonymization parameters:** [FA parameters] Per-EPP-epoch parameters used in FA, comprising (if the receiving or transmitting non-AP MLD has CPE FA enabled) an AID and a CPE MHA parameter set, and (if the AP MLD has BPE FA enabled) a BPE MHA parameter set. (#2056, #2385)

***TGbi editor: Apply the following changes starting at page 26, line 21***

**over-the-air packet number:** [OPN] The value transmitted in a (#2376) Counter Mode (CTR) with cipher-block chaining message authentication code (CBC-MAC) protocol (CCMP) header or Galois/Counter Mode (GCM) protocol (GCMP) header in the place of the packet number as part of frame anonymization.

**over-the-air sequence number:** [OSN] The value transmitted in a (#2377) medium access control (MAC) protocol data unit (MPDU) header in the place of the sequence number as part of frame anonymization.

***TGbi editor: Apply the following changes to the text in clause 10.71.2.5 (OTA MAC address collision) avoidance***

* **OTA MAC address collision avoidance**

An EPP (CPE or BPE) AP MLD and an EPP (CPE or BPE) non-AP MLD anonymize selected OTA MAC header fields of individually addressed frames they transmit to each other.

An EPP AP MLD shall determine whether the OTA MAC address that an EPP non-AP MLD will use in a subsequent epoch will cause a collision with the BSSID of the affiliated APs of the associated AP MLD, the OTA MAC address of another non-AP MLD(s) or another STA on a link. When such a collision risk is anticipated with the OTA MAC of a non-CPE or non-BPE STA or non-AP MLD, the EPP AP MLD shall send to the EPP non-AP MLD an OTA MAC Collision Notification frame before the epoch when the collision is anticipated to risk occurring and indicated in the Colliding Epoch field, instructing the EPP non-AP MLD to apply the non-AP MLD specific collision (#2056) epoch offset signaled in the AP MLD OTA MAC Collision Notification frame to avoid address collision. When such a collision risk is anticipated with the MAC address of a EPP STA affiliated with a EPP non-AP MLD, the AP shall send the OTA MAC Collision Notification frame to both EPP STAs affiliated with the EPP non-AP MLDs.

In general, the operation is as follows. If the collision is expected to occur m epochs after the current epoch (colliding epoch number c = n + m), then the EPP AP MLD sends an OTA Collision Warning element to the EPP non-AP MLD with the value of the Colliding Epoch field in the Collision Warning element equal to m, the Collision Status field set to 0, indicating the collision risk, and the non-AP MLD Specific Collision Epoch Offset field set to q, where q is the epoch count that the non-AP MLD is requested to skip. The EPP AP MLD is therefore requesting that for the epoch occurring after m epochs, the EPP AP MLD uses the EPP non-AP MLD CPE MHA (#2056) parameters that the EPP non-AP MLD had planned to use for the epoch occurring m+q epochs later. Then, in the subsequent epoch, the EPP non-AP MLD is expected to use the EPP non-AP MLD CPE MHA (#2056) parameters that the EPP non-AP MLD had planned to use m+q+1 epochs later, unless the EPP AP MLD also signals a collision notification for that epoch. The sum m+q cannot be larger than the value of the Epochs Remaining field signaled during the epoch when the AP sent the OTA MAC Collision Notification frame. A non-AP MLD that received an OTA MAC Collision Notification frame shall respond with an OTA MAC Collision Response frame with the Collision Status field set to either 1, accepting the EPP AP MLD proposed remediation, thus applying the offset requested by the EPP AP MLD, or 2, rejecting the EPP AP MLD proposed remediation, thus using the EPP non-AP MLD CPE MHA (#2056) parameters that the EPP non-AP MLD had planned to use for that epoch before receiving the EPP AP MLD OTA MAC Collision Notification frame. The AP may not accept traffic from, or forward traffic to, a EPP STA affiliated with the non-AP MLD that rejected the proposed remediation for the affected link, during the epoch when the collision occurs. Alternatively, the AP may disassociate a EPP non-AP MLD that rejected the proposed remediation.

NOTE 1—A non-AP MLD might decline to apply the requested offset for procedural reasons, e.g., the inability to skip epoch FA parameter sequences, or internal privacy configuration or policy reasons.

NOTE 2— Detection and remediation of a BPE AP MLD BSSID collision with MAC addresses other than the BPE AP MLD associated non-AP MLDs is outside the scope of this standard.

NOTE 3—The per-EPP-epoch AID values assigned by the EPP AP MLD to the EPP non-AP MLD as described in 10.71.7 (Frame anonymization and AID) are not impacted by OTA MAC address collision avoidance. That is, if an AID value is assigned for EPP epoch number n, then that value is used in EPP epoch number n even if the OTA MAC address collision avoidance instructs the EPP non-AP MLD to use the CPE MHA parameters that the EPP non-AP MLD planned to use for a future EPP epoch. (#2056)