IEEE P802.11
Wireless LANs

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| 11bi D1.0 CRs for 9.4.2.349 |
| Date: 2025-03-05 |
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Abstract

This submission proposes resolutions for the following CIDs:

469, 1005, 50, 51, 52, 470, 471, 1006, 472, 952, 53, 210, 473, 474, 949, 933, 54, 475, 953, 934, 476, 55, 477, 478, 211, 212, 753, 122, 479, 313.

Revisions:

* Rev 0: Initial version of the document.

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbi D1.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbi D1.0 Draft. (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents). TGbi Editor: Editing instructions preceded by “TGbi Editor” are instructions to the TGbi editor to modify existing material in the TGbi draft. As a result of adopting the changes, the TGbi editor will execute the instructions rather than copy them to the TGbi Draft.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 469 | Mark RISON | 9.4.2.349 | 61.53 | "The OTA MAC Collision Warning element is used when an OTA MAC address expected to be used by an EDP non-AP MLD in an upcoming epoch is calculated to collide with the MAC address of another STA." -- the MAC address or the OTA MAC address of the other STA? | As it says in the comment | REJECTEDThe other STA’s MAC address may be OTA or not (it could also be for example the DS MAC of another STA on the same AP, as specified in 10.71.2.5).  |
| 1005 | Philip Hawkes | 9.4.2.349 | 61.54 | "when an OTA MAC address expected to be used by anEDP non-AP MLD". Clarify that this is used with frame anonymization | Replace identified text with "when a frame anonymization OTA MAC address expected to be used by an non-AP MLD" | ACCEPTEDImplemented as described in 11-25/0452. |
| 50 | Graham Smith | 9.4.2.349 | 61.56 | At cited location need to reffer to the Figure 9-1074dr | At cited location insert "The OTA MAC Collisionn Warning element format is shown in Figure 9-1074dr." | REVISEDTGbi editor, please implement the recommendation (without the typo collisionn) of CID 50 as described in 11-25/0452. |
| 51 | Graham Smith | 9.4.2.349 | 61.65 | Figure 9-1074dr title needs "format" | Change Figure 9-1074dr title to "OTA MAC Collision Warning element format" | ACCEPTEDTGbi editor, please implement the recommendation as stated in CID 51. Implemented as described in 11-25/0452. |
| 52 | Graham Smith | 9.4.2.349 | 62.03 | "The Collision Status field indicates the intent of the OTA MAC Collision Warning element." I can't see that this is the "intent" it seems to be used as actions. I would delete thisparagraph and replace with the correct reference to the Table. | At cited paragraph, replace paragraph with: "The OTA MAC Collision Waarning values are defined in Table 9-417aj." | REVISEDAccepted in principle, but the text needs to mention the Collision Status field, so the reader understand which field the table is informing. TGbi editor, please implemend edits in 11-25/0452. |
| 470 | Mark RISON | 9.4.2.349 | 62.03 | "The field takes value 0 when sent by the AP MLD, and values 1 or 2 when sent by the EDP non-AP MLD in response to the AP MLD OTA MAC Collision Warning action frame." duplicates table | Delete the cited text | ACCEPTEDImplemented as described in 11-25/0452. |
| 471 | Mark RISON | 9.4.2.349 | 62.06 | "Table 9-401h lists the possible values and their mean-ing." should be referring to Table 9-417aj | As it says in the comment | REVISEDAcepted in principle, and in fact table 9-417aj is mentioned in the previous sentence, so this sentence is a duplicate and can be removed. TGbi editor, please implemend edits in 11-25/0452 |
| 1006 | Philip Hawkes | 9.4.2.349 | 62.06 | The text cross references Table 9-401h, but I think it Table 9-417aj is intended. | Replace the cross reference "Table 401h" with "Table 9-417a" | REVISEDAcepted in principle, and in fact table 9-417aj is mentioned in the previous sentence, so this sentence is a duplicate and can be removed. TGbi editor, please implemend edits in 11-25/0452 |
| 472 | Mark RISON | 9.4.2.349 | 62.11 | "OTA MAC Collision Warning values", no, these are "Collision Status values" | As it says in the comment | REVISEDTable title changed to Collisions Status values as described in 11-25/0452 |
| 952 | Robert Stacey | 9.4.2.349 | 62.11 | Table label should reflect field name | Change to "Collision Status field values" | ACCEPTEDImplemented as described in 11-25/0452. |
| 53 | Graham Smith | 9.4.2.349 | 62.18 | "AP MLD signals collision risk to the non-AP MLD and suggest a remediation action to skip the OTA MAC intended for one or more epochs where collision risk is expected." Surely this is simply that the AP MLD is indicating that a collision is detected. If you waant to give further information this should be in a third column "Notes". Suggest changes to the three descriptions. Having said that, value 2 seems strange, even reading 10.71.2.5 does not seem to indictae what happens or how the collision is avoided. Is it hoping that the other STA does take action? | At cited location change to : "0 - AP MLD informs non-AP MLD that there is a future MAC collision risk. 1 - Non-AP MLD indictates it will take action 2 - Non-AP STA indicates it will not take action" | REVISEDAccepted in principle, TGbi editor, please implemend edits in 11-25/0452. |
| 210 | Jarkko Kneckt | 9.4.2.349 | 62.40 | The collision warning messge is acknowledgement by sending ACK/Block Ack a SIFS after the warning message transmission. | Please remove the acknowledgement text is collision status 1 and 2. | ACCEPTEDImplemented as part of CID 53 resolution, as described in 11-25/0452. |
| 473 | Mark RISON | 9.4.2.349 | 62.18 | "suggest" should be "suggests" | As it says in the comment | REVISEDAccepted in principle. With CID 53, the verb was changed from ‘suggest’ to ‘inform’, and as per this CID, ‘inform**s**’ as described in 11-25/0452. |
| 474 | Mark RISON | 9.4.2.349 | 62.18 | "a remediation action toskip the OTA MAC intended for one or more epochs where collision risk is expected" is not clear | Change to "that the intended OTA MAC address be skipped for one or more epochs" | REVISEDAccepted in principle, CID 53 led to the suppression of the sentence as described in 11-25/0452. |
| 949 | Robert Stacey | 9.4.2.349 | 62.18 | Missing articles. Bad grammar. It is not clear how a single value 0 provides so much information -- how does a value 0 suggest a specific remediation action? Of course it does not, this is the expected behavior on receiving this value and should be defined elsewhere in the standard. (Clause 9 defines meaning, behavior is defined elsewhere). | Change the meaning of value 0 to "Indicates collision risk".Change the meaning of value 1 to "Indicates acknowledgement of collision risk with remediation actions defined in YYY to be taken"Change the meaning of value 2 to "Indicates acknowledgement of collision risk without remediation actions defined in YYY being taken"In the appropriate subclause YYY (presumably 10.71.2.5), define the "remediation action" to be taken by the non-AP MLD. | REVISEDAccepted in principle. The sentences were shortened and deleted as per this CID and CID 53, and as decribed in 11-25/0452. The remediation description is indeed already in 10.71.2.5, and was therefore not needed in this clause (in addition to the fact that clause 9 should not describe behavior). |
| 933 | Srinivas Kandala | 9.4.2.349 | 62.20 | In Table 9-417aj, Collision Status field value, I think,the meaning is confusing (and likely is not phrased correctly)."suggest" should be "suggests". Do you "skip the OTA MAC" or do you skip the epochs? | Please clarify and likely replhrase | REVISEDAccepted in principle, the sentence was deleted as part of CID 53, and rephrased as described in 11-25/0452. |
| 54 | Graham Smith | 9.4.2.349 | 62.29 | "The Colliding Epoch field indicates ..." Needs "value" inserted | At cited location, insert "value " after "field". "The Colliding Epoch field value indicates.." | REVISEDThe baseline seems to have adopted “the field contains a value that”, using this form. TGbi editor, please implemend edits in 11-25/0452. |
| 475 | Mark RISON | 9.4.2.349 | 62.29 | "future epoch" -- well, it's not going to be a past epoch | Delete "future" | ACCEPTEDImplemented as described in 11-25/0452. |
| 953 | Robert Stacey | 9.4.2.349 | 62.29 | "MAC" => "MAC address". There is an assumption that the epochs are sequentially numbered but this is not stated. | Change to "The Colliding Epoch field identifies the future epoch in which the MAC address collision is expected to occur. The future epochs are sequentially numbered starting with the value 1 for the epoch following the current epoch." | REVISEDAccepted in principle, the sentence was also worded with CIDs 54 and 475 and therefore is not exactly as in the suggested resolution. However, MAC address and the numbering of epoch was added, as described in 11-25/0452. |
| 934 | Srinivas Kandala | 9.4.2.349 | 62.30 | Not to keep on harping on the same subject, but it is not a "MAC collision" as far as I can understand | I find many of these instances and must be cleaned up. If saying the phrase "MAC Address collision" is mouthful, use an abbreviation | REVISEDThis comment is similar to CID 953. Changed to MAC address collision as described in 11-25/0452 |
| 476 | Mark RISON | 9.4.2.349 | 62.30 | "A value of 1 indicates the next epoch." -- OK, so presumably 0 is reserved | Add "The value 0 is reserved." and change "A value of 1" to "The value 1" | ACCEPTEDImplemented as described in 11-25/0452. |
| 55 | Graham Smith | 9.4.2.349 | 62.33 | "field indicates" should be "field value indicates" | At cited location, insert "value " after "field". | REVISEDThe baseline seems to have adopted “the field contains a value that”, using this form. TGbi editor, please implemend edits in 11-25/0452. |
| 477 | Mark RISON | 9.4.2.349 | 62.33 | "non-AP MLD Specific Epoch Number Offset field" wrong case | Change to start "Non-AP" | ACCEPTEDImplemented as described in 11-25/0452. |
| 478 | Mark RISON | 9.4.2.349 | 62.33 | "the epoch count that the non-AP MLD skips to mitigate the OTA MAC address collision" is not clear | Change to "the number of epochs that need to be skipped to avoid the OTA MAC address collision" | ACCEPTEDImplemented as described in 11-25/0452. |
| 211 | Jarkko Kneckt | 9.4.2.349 | 62.10 | In some cases, multiple collision warning messages may be send to the same receiver. A dialog token is typically added to management frames to ensure that each receiver knows which management frames are new and which are retransmissions, etc. | Please add a Dialog Token to the collision warning frame. | ACCEPTEDImplemented as described in 11-25/0452. |
| 212 | Jarkko Kneckt | 9.4.2.349 | 62.10 | The address collision may occur at any link of the STA. Currently the collision warning is common for all links. The collision warning should include the link in which the collision may occur. | Please add a link ID in which the collision may occur to the warning. | ACCEPTEDImplemented as described in 11-25/0452. |
| 753 | Jerome Henry | 9.4.2.349 | 61.54 | This element (OTA MAC Collision warning) signals the future collision but it does not indicate on what link, so STA does not know what link to act upon | Introduce Link Info field in the element. | ACCEPTEDImplemented as described in 11-25/0452. |
| 122 | Chaoming Luo | 9.4.2.349 | 62.38 | No definition for "Epoch Sequence Duration field". | Remove the sentence. | REVISEDThe field was renamed Epochs Remaining in 9.4.1.83, so the field here should be named properly, but this is behavioral anyway and belogs to 10.71.2.5, moving the sentence, with the corrected field name, to that clause, as described in 11-25/0452. |
| 479 | Mark RISON | 9.4.2.349 | 62.36 | "The sum of the Colliding Epoch field value and the non-AP MLD Specific Epoch Number Offset value can-not be larger than the Epoch Sequence Duration field. " -- there is no Epoch Sequence Duration field here and anyway this sounds informative rather than an extra constraint | Delete the cited text | REVISEDThe field was renamed Epochs Remaining in 9.4.1.83, so the field here should be named properly, but this is behavioral anyway and belogs to 10.71.2.5, moving the sentence, with the corrected field name, to that clause, as described in 11-25/0452. |
| 313 | Michael Grigat | 9.4.2.349 | 62.06 | consistent naming for frames used? "OTA MAC" or "otaMAC" Collision Warning action frame | change to "otaMCA" Collision Warning action frame | REVISEDAccepted in principle, the naming convention should be unified. In cc49 CID 1285, the group decided to adopt the name OTA MAC Collision warning. The change was made in cc49 for this clause, but not for other clauses, in particular 9.6.42.1 and 9.6.42.7. The change needs to be propagated to these clauses as described in 11-25/0452. |

**Discussion**

**Starting state for the clause**

**9.4.2.349 OTA MAC Collision Warning element**

The OTA MAC Collision Warning element is used when an OTA MAC address expected to be used by an EDP non-AP MLD in an upcoming epoch is calculated to collide with the MAC address of another STA.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | Collision Status | Colliding Epoch | Non-AP MLD Specific Epoch Number Offset |
| Octets: | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 9-1074dr - OTA MAC Collision Warning element**

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

The Collision Status field indicates the intent of the OTA MAC Collision Warning element. The field takes value 0 when sent by the AP MLD, and values 1 or 2 when sent by the EDP non-AP MLD in response to the AP MLD OTA MAC Collision Warning action frame. Table 9-401h lists the possible values and their meaning.

**Table 9-417aj - OTA MAC Collision Warning values**

|  |  |
| --- | --- |
| **Collision Status field value** | **Meaning** |
| 0 | AP MLD signals collision risk to the non-AP MLD and suggest a remediation action to skip the OTA MAC intended for one or more epochs where collision risk is expected |
| 1 | Non-AP MLD acknowledges collision warning message and will take suggested action |
| 2 | Non-AP MLD acknowledges collision warning message but will not take suggested action |
| 3-255 | Reserved |

The Colliding Epoch field indicates the future epoch at which MAC collision is likely to occur. The value is indicated in units of epochs. A value of 1 indicates the next epoch.

The non-AP MLD Specific Epoch Number Offset field indicates the epoch count that the non-AP MLD skips to mitigate the OTA MAC address collision. The value 0 is reserved.

The sum of the Colliding Epoch field value and the non-AP MLD Specific Epoch Number Offset value cannot be larger than the Epoch Sequence Duration field.

CID 469

Rejected

The other STA’s MAC address may be OTA or not (it could also be for example the DS MAC of another STA on the same AP, as specified in 10.71.2.5).

In 10.71.2.5:

“A CPE AP MLD may calculate that the OTA MAC address that a CPE non-AP MLD is anticipated to use in a subsequent epoch may cause a collision with the OTA MAC address of another CPE non-AP MLD(s) **or another STA in the ESS**”.

CID 1005

Accepted

The OTA MAC Collision Warning element is used when a~~n~~ frame anonymization OTA MAC address expected to be used by an EDP non-AP MLD in an upcoming epoch is calculated to collide with the MAC address of another STA.

CID 50

Revised

The OTA MAC Collision Warning element is used when a frame anonymization OTA MAC address expected to be used by an EDP non-AP MLD in an upcoming epoch is calculated to collide with the MAC address of another STA. The OTA MAC Collision Warning element format is shown in Figure 9-1074dr.

CID 51

Accepted

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | Collision Status | Colliding Epoch | Non-AP MLD Specific Epoch Number Offset |
| Octets: | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 9-1074dr - OTA MAC Collision Warning element format**

CID 52

Revised

The possible values for the Collision Status field are listed in Table 9-417aj. ~~The Collision Status field indicates the intent of the OTA MAC Collision Warning element.~~ The field takes value 0 when sent by the AP MLD, and values 1 or 2 when sent by the EDP non-AP MLD in response to the AP MLD OTA MAC Collision Warning action frame. Table 9-401h lists the possible values and their meaning.

CID 470

Accepted

The possible values for the Collision Status field are listed in Table 9-417aj. ~~The field takes value 0 when sent by the AP MLD, and values 1 or 2 when sent by the EDP non-AP MLD in response to the AP MLD OTA MAC Collision Warning action frame.~~ Table 9-401h lists the possible values and their meaning.

**Table 9-417aj - OTA MAC Collision Warning values**

|  |  |
| --- | --- |
| **Collision Status field value** | **Meaning** |
| 0 | AP MLD signals collision risk to the non-AP MLD and suggest a remediation action to skip the OTA MAC intended for one or more epochs where collision risk is expected |
| 1 | Non-AP MLD acknowledges collision warning message and will take suggested action |
| 2 | Non-AP MLD acknowledges collision warning message but will not take suggested action |
| 3-255 | Reserved |

CIDs 471, 1006

Revised

The possible values for the Collision Status field are listed in Table 9-417aj. ~~Table 9-401h lists the possible values and their meaning.~~

**Table 9-417aj - OTA MAC Collision Warning values**

|  |  |
| --- | --- |
| **Collision Status field value** | **Meaning** |
| 0 | AP MLD signals collision risk to the non-AP MLD and suggest a remediation action to skip the OTA MAC intended for one or more epochs where collision risk is expected |
| 1 | Non-AP MLD acknowledges collision warning message and will take suggested action |
| 2 | Non-AP MLD acknowledges collision warning message but will not take suggested action |
| 3-255 | Reserved |

CID 472, 952

Revised

The possible values for the Collision Status field are listed in Table 9-417aj.

**Table 9-417aj - ~~OTA MAC Collision Warning~~ Collision Status values**

|  |  |
| --- | --- |
| **Collision Status field value** | **Meaning** |
| 0 | AP MLD signals collision risk to the non-AP MLD and suggest a remediation action to skip the OTA MAC intended for one or more epochs where collision risk is expected |
| 1 | Non-AP MLD acknowledges collision warning message and will take suggested action |
| 2 | Non-AP MLD acknowledges collision warning message but will not take suggested action |
| 3-255 | Reserved |

CID 53

Revised

The meaning description can indeed be simplified and the field indded indicates the collision, not the remediation suggestion. We need to make sure that the remediation is clear, so some text needs to be added to the description of the Offset field. It should also be clear that the action/not action that the non-AP MLD takes is about the suggestion from the AP, not another action.

The STA is always allowed to reject an AP’s proposal. If that happens, then either the AP may send the same message to the other cause of collision (the other STA), that may accept and act upon the warning or not. If both STAs refuse, well then there is a collision and the STA experience will suffer. I am not sure that that standard can specify something particular (beyond a “told you” frame to the STA).

**Table 9-417aj - Collision Status values**

|  |  |
| --- | --- |
| **Collision Status field value** | **Meaning** |
| 0 | AP MLD ~~signals collision risk to~~ informs the non-AP MLD that there is a future OTA MAC ~~and suggest a remediation action to skip the OTA MAC intended for one or more epochs where~~ collision risk ~~is expected~~ |
| 1 | Non-AP MLD indicates that it ~~acknowledges collision warning message and~~ will take suggested action |
| 2 | Non-AP MLD indicates that it ~~acknowledges collision warning message but~~ will not take suggested action |
| 3-255 | Reserved |

The Colliding Epoch field indicates the future epoch at which MAC collision is likely to occur. The value is indicated in units of epochs. A value of 1 indicates the next epoch.

The non-AP MLD Specific Epoch Number Offset field indicates the epoch count that the non-AP MLD should skip~~s~~ to mitigate the OTA MAC address collision. The value 0 is reserved. The field is reserved when the Collision Status field value is 1 or 2.

The sum of the Colliding Epoch field value and the non-AP MLD Specific Epoch Number Offset value cannot be larger than the Epoch Sequence Duration field.

CID 210

Accepted

Sentences were deleted as part of CID 53 resolution.

CIDs 473, 474

Revised

Changes were implemented as part of CID 53 resolution.

CIDs 949

Revised

Accepted in principle. The sentences were shortened and deleted as per this CID and CID 53, and as decribed in 11-25/0452. The remediation description is indeed already in 10.71.2.5, and was therefore not needed in this clause (in addition to the fact that clause 9 should not describe behavior).

CIDs 933

Revised

Accepted in principle, the sentence was deleted as part of CID 53 resolution.

CID 54

Revised

The baseline seems to have adopted the form “the XYZ field contains a value that identifies/indicates” etc. Suggesting to use this baseline form, as the description is about the field.

The Colliding Epoch field contains a value that indicates the future epoch at which MAC collision is likely to occur. The value is indicated in units of epochs. A value of 1 indicates the next epoch.

CID 475

Accepted

The Colliding Epoch field contains a value that indicates the ~~future~~ epoch at which MAC collision is likely to occur. The value is indicated in units of epochs. A value of 1 indicates the next epoch.

CID 953, 934

Revised

The Colliding Epoch field contains a value that indicates the epoch at which MAC address collision is likely to occur. The value is indicated in units of epochs. The epochs are sequentially numbered starting with the value 1 for the epoch following the current epoch. ~~A value of 1 indicates the next epoch.~~

CID 476

Accepted

The Colliding Epoch field contains a value that indicates the epoch at which MAC address collision is likely to occur. The value is indicated in units of epochs. The epochs are sequentially numbered starting with the value 1 for the epoch following the current epoch. The value 0 is reserved.

CID 55

Revised

The non-AP MLD Specific Epoch Number Offset field contains a value that indicates the epoch count that the non-AP MLD should skip to mitigate the OTA MAC address collision. The value 0 is reserved.

CID 477

Accepted

The ~~n~~Non-AP MLD Specific Epoch Number Offset field contains a value that indicates the epoch count that the non-AP MLD should skip to mitigate the OTA MAC address collision. The value 0 is reserved.

CID 478

Accepted

The Non-AP MLD Specific Epoch Number Offset field contains a value that indicates the number of epochs ~~count~~ that need to be skipped ~~the non-AP MLD should skip~~ to avoid ~~mitigate~~ the OTA MAC address collision. The value 0 is reserved.

CID 211

Accepted

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | Dialog Token | Collision Status | Colliding Epoch | Non-AP MLD Specific Epoch Number Offset |
| Octets: | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 9-1074dr - OTA MAC Collision Warning element format**

The Dialog Token field is defined in 9.4.1.12 (Dialog Token field).

CIDs 212, 753

Revised

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | Dialog Token | Collision Status | Colliding Epoch | Link ID info | Non-AP MLD Specific Epoch Number Offset |
| Octets: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 9-1074dr - OTA MAC Collision Warning element format**

The Link ID Info field is defined in 9.4.1.77 (Link ID Info field) and indicates the link for which the collision is likely to occur.

CIDs 479, 122

Revised

~~The sum of the Colliding Epoch field value and the non-AP MLD Specific Epoch Number Offset value cannot be larger than the Epoch Sequence Duration field.~~

**10.71.2.5 OTA MAC address collision avoidance**

A CPE AP MLD and a CPE non-AP MLD anonymize selected OTA MAC header fields of individually addressed frames of the CPE affiliated STAs within EDP epochs.

A CPE AP MLD may calculate that the OTA MAC address that a CPE non-AP MLD is anticipated to use in a subsequent epoch may cause a collision with the OTA MAC address of another CPE non-AP MLD(s) or another STA in the ESS. When such a collision is detected, the CPE AP MLD shall send to the CPE non-AP MLD an OTA MAC Collision Warning action frame before the epoch where the collision is anticipated to risk occurring and indicated in the Colliding Epoch field, instructing the non-AP MLD to apply the non-AP MLD specific epoch offset signaled in the AP MLD OTA MAC Collision Warning action frame to avoid address collision.

Thus, if the Colliding Epoch value is m, indicating that the collision is expected to occur m epochs after the current epoch, and if the non-AP MLD Specific Epoch Number Offset is n, then for the epoch occurring m epochs later, the CPE AP MLD is requesting the CPE non-AP MLD to use the CPE non-AP MLD OTA MAC address that the CPE non-AP MLD had planned to use for the epoch occurring m+n epochs later. In the subsequent epoch, the CPE non-AP MLD is expected to use the CPE non-AP MLD OTA MAC address that the CPE non-AP MLD had planned to use m+n+1 epochs later, unless the CPE AP MLD also signals a collision warning for that epoch. The sum m+n cannot be larger than the value of the Epochs Remaining field signaled during the epoch when the AP sent the OTA MAC Collision Warning frame. The CPE non-AP MLD shall respond with an OTA MAC Collision Warning action frame acknowledging the CPE AP MLD warning, and either accepting the CPE AP MLD proposed remediation, thus applying the offset requested by the CPE AP MLD, or rejecting the CPE AP MLD proposed remediation, and thus using the CPE non-AP MLD OTA MAC address that the CPE non-AP MLD had planned to use for that epoch before receiving the CPE AP MLD OTA MAC Collision Warning action frame.

CID 313

Revised

In cc49 CID 1285, we had the comment "otaMAC Collision Warning element" -- bleargh!” and “Rename to OTA MAC Collision Warning element", the comment was accepted from 11-24/1291r2 and motioned in #46. However, the change was not propagated to other clauses than this Collision Warning clause. Other clauses need to align with this one, in particular:

**9.6.42.1 EDP Action field**

An EDP Action field, in the octet immediately after the Category field, differentiates the EDP Action frame formats. The EDP Action field values associated with each frame format within the EDP category are defined in Table 9-658u (EDP Action field values).

**EDP Action field values**

|  |  |
| --- | --- |
| **Value** | **Meaning** |
| 0 | Capabilities And Operation Parameters Request |
| 1 | Capabilities And Operation Parameters Response |
| 2 | EDP Group Parameter frame |
| 3 | EDP Epoch Request |
| 4 | EDP Epoch Response |
| 5 | ~~otaMAC~~ OTA MAC Collision Warning |
| 6 | Privacy Beacon Solicit Request |
| 7 | AID Assignment |
| 8-255 | Reserved |

And

**9.6.42.7 ~~otaMAC~~ OTA MAC Collision Warning frame format**

The ~~otaMAC~~ OTA MAC Collision Warning frame is used to signal when an OTA MAC address expected to be used by an EDP non-AP MLD in an upcoming epoch is calculated to collide with the MAC address of another STA.

**~~otaMAC~~ OTA MAC Collision Warning frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Meaning** |
| 0 | Category |
| 1 | EDP Action |
| 2 | OTA MAC Collision Warning element |

The Category field is defined in 9.4.1.11 (Action field).

The EDP Action field is defined in 9.6.42.1 (EDP Action field).

The OTA MAC Collision Warning element is defined in 9.4.2.349 (OTA MAC Collision Warning element).

*TGbi editor: Modify clause 9.4.2.349 as follows (track change on):*

**9.4.2.349 OTA MAC Collision Warning element**

The OTA MAC Collision Warning element is used when a frame anonimyzation OTA MAC address expected to be used by an EDP non-AP MLD in an upcoming epoch is calculated to collide with the MAC address of another STA. The OTA MAC Collision Warning element format is shown in Figure 9-1074dr.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | Dialog Token | Collision Status | Colliding Epoch | Link ID Info | Non-AP MLD Specific Epoch Number Offset |
| Octets: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 9-1074dr - OTA MAC Collision Warning element format**

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

The Dialog Token field is defined in 9.4.1.12 (Dialog Token field).

The possible values for the Collision Status field are listed in Table 9-417aj.

**Table 9-417aj - Collision Status values**

|  |  |
| --- | --- |
| **Collision Status field value** | **Meaning** |
| 0 | AP MLD informs the non-AP MLD that there is a future OTA MAC collision risk is expected |
| 1 | Non-AP MLD indicates that it will take suggested action |
| 2 | Non-AP MLD indicates that it will not take suggested action |
| 3-255 | Reserved |

The Colliding Epoch field contains a value that indicates the epoch at which MAC address collision is likely to occur. The value is indicated in units of epochs. The epochs are sequentially numbered starting with the value 1 for the epoch following the current epoch. The value 0 is reserved.

The Link ID Info field is defined in 9.4.1.77 (Link ID Info field) and indicates the link for which the collision is likely to occur.

The Non-AP MLD Specific Epoch Number Offset field contains a value that indicates the number of epochs that need to be skipped to avoid the OTA MAC address collision. The value 0 is reserved. The field is reserved when the Collision Status field value is 1 or 2.

The sum of the Colliding Epoch field value and the non-AP MLD Specific Epoch Number Offset value cannot be larger than the Epoch Sequence Duration field.

*TGbi editor: Modify clause 9.6.42.1 as follows (track change on):*

**EDP Action field**

An EDP Action field, in the octet immediately after the Category field, differentiates the EDP Action frame formats. The EDP Action field values associated with each frame format within the EDP category are defined in Table 9-658u (EDP Action field values).

**EDP Action field values**

|  |  |
| --- | --- |
| **Value** | **Meaning** |
| 0 | Capabilities And Operation Parameters Request |
| 1 | Capabilities And Operation Parameters Response |
| 2 | EDP Group Parameter frame |
| 3 | EDP Epoch Request |
| 4 | EDP Epoch Response |
| 5 | OTA MAC Collision Warning |
| 6 | Privacy Beacon Solicit Request |
| 7 | AID Assignment |
| 8-255 | Reserved |

*TGbi editor: Modify clause 9.6.42.7 as follows (track change on):*

**9.6.42.7 OTA MAC Collision Warning frame format**

The OTA MAC Collision Warning frame is used to signal when an OTA MAC address expected to be used by an EDP non-AP MLD in an upcoming epoch is calculated to collide with the MAC address of another STA.

**otaMAC Collision Warning frame Action field format**

|  |  |
| --- | --- |
| **Order** | **Meaning** |
| 0 | Category |
| 1 | EDP Action |
| 2 | OTA MAC Collision Warning element |

The Category field is defined in 9.4.1.11 (Action field).

The EDP Action field is defined in 9.6.42.1 (EDP Action field).

The OTA MAC Collision Warning element is defined in 9.4.2.349 (OTA MAC Collision Warning element).

*TGbi editor: Modify clause 10.71.2.5 as follows (track change on):*

**10.71.2.5 OTA MAC address collision avoidance**

A CPE AP MLD and a CPE non-AP MLD anonymize selected OTA MAC header fields of individually addressed frames of the CPE affiliated STAs within EDP epochs.

A CPE AP MLD may calculate that the OTA MAC address that a CPE non-AP MLD is anticipated to use in a subsequent epoch may cause a collision with the OTA MAC address of another CPE non-AP MLD(s) or another STA in the ESS. When such a collision is detected, the CPE AP MLD shall send to the CPE non-AP MLD an OTA MAC Collision Warning action frame before the epoch where the collision is anticipated to risk occurring and indicated in the Colliding Epoch field, instructing the non-AP MLD to apply the non-AP MLD specific epoch offset signaled in the AP MLD OTA MAC Collision Warning action frame to avoid address collision.

Thus, if the Colliding Epoch value is m, indicating that the collision is expected to occur m epochs after the current epoch, and if the non-AP MLD Specific Epoch Number Offset is n, then for the epoch occurring m epochs later, the CPE AP MLD is requesting the CPE non-AP MLD to use the CPE non-AP MLD OTA MAC address that the CPE non-AP MLD had planned to use for the epoch occurring m+n epochs later. In the subsequent epoch, the CPE non-AP MLD is expected to use the CPE non-AP MLD OTA MAC address that the CPE non-AP MLD had planned to use m+n+1 epochs later, unless the CPE AP MLD also signals a collision warning for that epoch. The sum m+n cannot be larger than the value of the Epochs Remaining field signaled during the epoch when the AP sent the OTA MAC Collision Warning frame. The CPE non-AP MLD shall respond with an OTA MAC Collision Warning action frame acknowledging the CPE AP MLD warning, and either accepting the CPE AP MLD proposed remediation, thus applying the offset requested by the CPE AP MLD, or rejecting the CPE AP MLD proposed remediation, and thus using the CPE non-AP MLD OTA MAC address that the CPE non-AP MLD had planned to use for that epoch before receiving the CPE AP MLD OTA MAC Collision Warning action frame.