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| CR for CIDs relevant to device ID--part 1 | | | | |
| Date: 2023-8-17 | | | | |
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Abstract

This submission proposes resolutions for the following CIDs:

1, 13，14，16，19，24, 72，73，75，82,

83, 88，91，92, 103，104，105，106，121，123,

133，145, 166, 170, 171，172，174，175，176，177，

178，179，180，226，232，233，234，235，236, 237,

238, 244, 245, 246，247，248，249，251,253，255

R0: initial the draft

R1: minor change according to the off-line feedback from some members.

R2：add CIDs 82, 83, 170,

R3: add CIDs 1, 24, 236,237,238,244,245,

R4: add CIDs 123,166,251

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 TGbh D1.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbh D1.0 Draft. (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGbh Editor: Editing instructions preceded by “TGbh Editor” are instructions to the TGbh editor to modify existing material in the TGbh draft. As a result of adopting the changes, the TGbh editor will execute the instructions rather than copy them to the TGbh Draft.***

***Section a: CIDs relevant to MLO and the first paragraph in* 12.2.11.1**

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| **CID** | **Page/Line** | **Comment** | **Proposed Change** | **Resolution** |
| 19 | 30/6 | MLO/MLD device starts to be deployed in the market this year, several use cases caused by RMC are also seen in WiFi 7 device. In order to meet Wi-Fi industry requirement and catch up the Wi-Fi industry timeline, 11bh group should consider extending device ID and IRM to MLD device. | add the support of device ID and IRM for MLO. | Revised--  Agree in principle.  Divide the solution into two parts(device ID and IRM) in separated doc.  TGbh editor: please incorporate the proposed change label with CID19 in 1316r4. |
| 88 | 30/6 | this clause only considers description for the legacy device; not 11be multi-link device; please clarify how device ID and IRM work in multi-link scenario. | add support for device ID and IRM for multi-link operation | Revised--  Agree in principle.  Divide the solution into two parts(device ID and IRM) in separated docs.  TGbh editor: please incorporate the proposed change label with CID19 in 1316r4. |
| 75 | 30/26 | "Device ID indication" is not a good name for the procedure and not referenced anywhere else as such. | Change to "Device ID mechanism" or "Device ID operation" | Revised--  Agree in principle.  “Device ID indication” has 3 occurrences in draft1.0.  TGbh editor: Globally change “Device ID indication” to “Device ID operation” |
| 103 | 30/29 | The sentences in this paragraph look to be out of order in terms of the negotiation. I would assume that the AP would advertised Device ID/IRM in the RSNXE. The STA would discover the capability, and then include the elements in the (re-)association request. | Replace the cited paragraph with the following: "An AP advertises support for Device ID by setting the Device ID Active field to 1 in the Extended RSN Capabilities field of the RSNXE in Beacon, and Probe Response frames. A non-AP STA indicates activation of device ID for a particular ESS by setting the Device ID Active field to 1 in the Extended RSN Capabilities field (see 9.4.2.241 (RSNXE)) in (Re)Association Request frames or the first PASN frame (when using PASN) sent to any AP in the ESS. An AP indicates activation of Device ID by setting the Device ID Active field to 1 in the Extended RSN Capabilities field in (Re)Association Response, or in the second PASN frame (when using PASN)." | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID 103  in 1316r4. |
| 244 | 30/29 | It is not necessary to state that a non-AP STA indicates to a "particular ESS" or that it indicates to "any AP in the ESS". As all (Re)Association Request frames and first PASN frames are always sent to a particular AP and the non-AP STA should only use device ID with, Delete these unnecessary terms. | Replace: "A non-AP STA indicates activation of device ID for a particular ESS by setting the Device ID Active field to 1 in the Extended RSN Capabilities field (see 9.4.2.241 (RSNXE)) in (Re)Association Request frames or the first PASN frame (when using PASN) sent to any AP in the ESS." With: "A non-AP STA indicates activation of device ID by setting the Device ID Active field to 1 in the Extended RSN Capabilities field (see 9.4.2.241 (RSNXE)) in (Re)Association Request frames or the first PASN frame (when using PASN)." | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID 103  in 1316r4. |
| 123 | 30/29 | Typo, missing article "a" | Change "of Device ID" to "of a Device ID" | Rejected--  Device ID here refer to “Device ID Operation feature”,no need article “a”. |
| 104 | 30/34 | The amendment cannot enforce a normative requirement on a configuration of an ESS. | Remove "APs in a given ESS shall set this field to the same value."  At 30.36, add "NOTE -- The Device ID Active field should be confiigured consistently throughout the ESS." | TGbh editor: please incorporate the proposed change label with CID 104  in 1316r4. |
| 170 | 30/33 | I think "given" is implied here and not normally used | Change "a given ESS" to "an ESS". At 32.43 change "each ESS" to "an ESS" | TGbh editor: please incorporate the proposed change label with CID 104  in 1316r4. |
| 249 | **30/37** | The statement that "A STA shall not send a device ID to any STA that does not indicate Device ID is active" is not correct. What is not included in the frame is a Device ID element. Device ID elements should only be sent between STAs that indicated device ID is active. | Replace: "A STA shall not send a device ID to any STA that does not indicate Device ID is active." With: "A STA shall only send a frame that includes a Device ID element to a STA that has indicate Device ID is active." | TGbh editor: please incorporate the proposed change label with CID 249  in 1316r4. |
| 105 | 30/40 | Not sure what "shall send a device ID" means | perhaps change to "shall include a Device ID element in a <> frame". Locations are 30.40 and 30.48 | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID 105  in 1316r4. |
| 106 | 30/37 | Not sure what "shall not send a device ID" means | perhaps change to "shall not include a Device ID element in a <> frame". Locations are 30.37, 30.58 and 30.64 | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID 106  in 1316r4. |
| 121 | 30/16 | "upon a new association" implies a reassociation and I'm not sure what the difference is. | Change "upon a new association" to "upon a new (re)association". | Revised--  The proposed change is same to the resolution on CID49 in 1245r7.  TGbh editor: no further action. |
| 133 | 30/42 | Strange wording:" when using PASN authentication in the Device ID element..." This should be saying that when Device ID is used in the PASN authenticaion, the Device ID is tranmitted in the first PASN frame. | Please correct the samiliar sentences for 6 sentences in lines 42 -53. | Revised--  Agree in principle.  Rewording the 6 sentences.  TGbh editor: please incorporate the proposed change label with CID 133  in 1316r4. |
| 82 | 30/53 | The sentence says "3) When not using FILS authentication, in the Device ID KDE in message 3 of the 4 way handshake." The sentence should say "When not using FILS or PASN authentication, ..." | Change the sentence to: 3) When not using PASN or FILS authentication, in the Device ID KDE in message 3 of the 4 way handshake. | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID 133  in 1316r4. |
| 83 | 30/58 | The sentence says "... the non-AP STA has not previously associated or using PASN ..." It should be "used PASN" because this sentence talks about the first interaction, so non-AP STA has not used PASN before. | Change "using PASN" to "used PASN" | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID 133  in 1316r4. |

**Section B: CIDs relevant to identity frames**

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| **CID** | **Page/Line** | **Comment** | **Proposed Change** | **Resolution** |
| 13 | **30/58** | Plural form of non-AP STA Identity frame should be used in this paragraph and the next paragraph. | Change 'non-AP STA Identity frame' to 'non-AP STA Identity frame(s)' in this paragraph and the next paragraph. | Revised--  Agree in principle.  Change to “the frame(s) with device ID.”  TGbh editor: please incorporate the proposed change in 1316r4. |
| 232 | **30/40** | The text says "via the following frames" but the numbered items below describe both elements and frame. | Change to "A non-AP STA shall send a device ID when required by the procedures described below via the following frames and elements..." | Revised--  TGbh editor: please incorporate the proposed change label with CID 133  in 1316r4. |
| 233 | **30/42** | The manner in which the numbers options are phrased makes it hard to parse the intent. | Add a colon before "in the Device ID" for each of the three numbered items. e.g., "When using PASN authentication: in the Device ID element in the first PASN frame" | Revised--  TGbh editor: please incorporate the proposed change label with CID 133  in 1316r4. |
| 234 | **30/48** | The text says "via the following frames" but the numbered items below describe both elements and frame. | Change to "A non-AP STA shall send a device ID when required by the procedures described below via the following frames and elements..." | Revised--  TGbh editor: please incorporate the proposed change label with CID 133  in 1316r4. |
| 235 | **30/50** | The manner in which the numbers options are phrased makes it hard to parse the intent. | Add a colon before "in the Device ID" for each of the three numbered items. e.g., "When using PASN authentication: in the Device ID element in the first PASN frame." (Note: in item three, replace comma with colon) | Revised--  TGbh editor: please incorporate the proposed change label with CID 133  in 1316r4. |
| 245 | **30/53** | Why is PASN not included as an exception for the AP as it is for the non-AP STA when non-FILS and non-PASN authentication is used. | Insert PASN in to item 3) as shown: 3) When not using PASN or FILS authentication, in the Device ID KDE in message 3 of the 4 way handshake. | Revised--  TGbh editor: please incorporate the proposed change label with CID 133  in 1316r4. |
| 14 | **31/17** | Change: send the device ID with the Identified Status set to "Recognized" and send the device ID in the second PASN frame. To: send the device ID with the Identified Status set to "Recognized" in the second PASN frame. | as in comment. | Revised--  TGbh editor: please incorporate the proposed change label with CID14  in 1316r4. |
| 179 | 31/16 | "send the device ID with the Identified Status set to "Recognized" and send the device ID in the second PASN frame." sounds as if two frames are sent. Reword to make it clear the first is just setting a field in the "second PASN frame" | As it says in the comment | Revised--  TGbh editor: please incorporate the proposed change label with CID14  in 1316r4. |
| 16 |  | There is no 'Identifier Status' field in clause 9. | Globally change 'Identifier Status' to 'Device ID Status' | Accepted |
| 175 | 31 | "Identifier Status" doesn't exist, even assuming it's a field name | Change "Identifier Status" to "the Device ID Status field" (4x) (except no additional "the" needed for the last instance). Also "Identified Status" at line 17 | Revised--  The resolution is same to CID16. |
| 73 | **30/37** | Surely this is just a statement about including Device ID element in 4-way handshake (and FILS authentication frame)? If so, then write it that way. Also, it seems that you need a condition something like: AP indicates active, non-AP STA indicates active -> may include element; otherwise shall not. For this reason, it can be combined with subsequent statements. | Change this to "An AP that has dot11DeviceIDActivated equal to true and that receives a Association Request frame that includes an Extended RSN Capabilities element with the Device ID Active field equal to 1 does the following: - Shall include an Extended RSN Capabilities element in the Association Response frame with the Device ID Active field set to 1 - May includes a Device ID element in message 3 of the 4-way handshake. An AP shall not include a Device ID element in message 3 of the 4-way handshake unless it has dot11DeviceIDActivated equal to true, has received an Association Request frame with... and responded with an Association Response frame with..." | Rejected  RSNE/RSNXE in Beacon and (re)association response should be consistent,the proposed condition is really unnecessary. |
| 91 | **30/41** | "via the following frames (known as "non-AP Identity frames"):" If the non-AP Identity frames are not defined neither in the baseline nor in the current draft, it should be explicitly defined, not just saying as "known as ...". | As in comment. | Revised--  Delete “(known as “non-AP Identity frames”)”  TGbh editor: please incorporate the proposed change label with CID105  in 1316r4. |
| 92 | **30/49** | "via the following frames (known as "AP Identity frames"):" If the AP Identity frames are not defined neither in the baseline nor in the current draft, it should be explicitly defined, not just saying as "known as ...". | As in comment. | Revised--  Delete “(known as “AP Identity frames”)”  TGbh editor: please incorporate the proposed change label with CID106 in 1316r4. |
| 172 | **30/41** | "(known as "non-AP Identity frames")" has spurious capitalisation ... and the term is never used anyway! | Delete the parenthesis. Or actually it seems the intended term is "non-AP STA identity frame" (note lowercase identity) | Revised--  Delete “(known as “non-AP Identity frames”)”  TGbh editor: please incorporate the proposed change label with CID105 in 1316r4. |
| 248 | **30** | The use of the term Identity frame is only used in clause 12.2.11.1 and does not seem to be necessary. Providing clarity as to when the Device ID element is and is not included and what information is provided in the Device ID element should be all that is necessary to specify the desired behavior/feature. Also Identity frame is used in a confusing manner: e.g., the first PASN frame would not be an "non-AP Identity frame" unless it contained a Device ID element, but later in the draft there is a statement that the Identity frame shall not contain a Device ID how can a frame contain a Device ID element and not contain a device ID? Is the intent to send a null device ID in the Device ID element? This needs to be clearly stated. | Remove the term "Identity frame". Where the term is used to mean a frame carrying a Device ID element, use wording such as: A non-AP STA shall not send a frame with a Device ID element if ... . Where the term is used to mean a message carrying a Device ID KDE, that terminology should be used. Where it is meant to refer to either a Device ID element or a Device ID KDE, it should state so. Where the term is defined simply delete the phrase or sentence. There are currently 8 locations in the draft where the term is used. There are two are definitions: 30.41 and 30.50 which should be deleted. There are 8 other uses at: 30.58, 30.64, 31.5, 31.7, 31.11, 31.13, 31,20, and 31.25 which need to updated. e.g., @ 31.25 change the text to read: When a non-AP STA receives a frame that contains a Device ID Status field equal to "Not Recognized", .... | Revised--  Agree in principle.  Change “non-AP STA Identity frame” with “ frame with device ID”, and  change “AP Identity frame” with “frame with device ID”  TGbh editor: please incorporate the proposed change label with CID248 in 1316r4. |
| 176 | 31 | I think we don't use scare quotes for enum tags | Delete the scare quotes around "[Not] Recognized", and consider using "indicating" (4x) | Revised--  Agree in principle. Rewording the sentence to “receives a frame that contains a Device ID Status field of Device ID KDE or Device ID element equal to 1 to indicate that the AP or AP MLD doesn’t recognize..”  TGbh editor: please incorporate the proposed change label with CID176 in 1316r4. |
| 177 | 31/9 | "Send a zero-length device ID" -- yes, but how? Ditto "send the device ID" next bullet | Change to "Send a zero-length Device ID field" and "send the device ID in the Device ID field" respectively. Ditto below | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID177 in 1316r4 |
| 253 | 31/10 | What is a zero-length device ID? The term is only used once in the draft. | If the intent to send a reply frame or message that only includes the single octet Device ID Status field and no Device ID field octets, why not simply state so. e.g., "Send a reply frame or message that includes an Identifier Status field set to "Recognized" and does not include a Device ID field." | TGbh editor:  Agree in principle.  Use the word “Do not include a Device ID field” instead.  please incorporate the proposed change label with CID177 in 1316r4 |
| 246 | 30/55 | This sentence can be made clearer and less awkward: "A non-AP STA that is associating with any AP in an ESS or that is using PASN with any AP in an ESS, when Device ID is active for both the non-AP STA and the AP and the non-AP STA has not previously associated or using PASN with any AP in the ESS, shall not send a device ID in the non-AP STA Identity frame." Note this may cover both sentences in this paragraph - comment needs more work. | Replace: "A non-AP STA that is associating with any AP in an ESS or that is using PASN with any AP in an ESS, when Device ID is active for both the non-AP STA and the AP and the non-AP STA has not previously associated or using PASN with any AP in the ESS, shall not send a device ID in the non-AP STA Identity frame." With: "A non-AP STA that has not previously associated with any AP in an ESS or used PASN with any AP in an ESS and does not have a saved device ID for the ESS shall not send a device ID in the non-AP STA Identity frame." | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID246 in 1316r4 |
| 1 | 30/55 | The clause at 30.55 is long and simply says if the non-AP STA does not have a Device ID, it does not send one. Seems pretty obvious and does it really need all the cases that are detailed here? Suggest a simple sentence to say that the non-AP STA shalll not include a device ID if it does not have one that has been allocated to it. | Delete paragraph page 30 lines 55 to 64. At P31.6 add "If the non-AP STA does not have a device ID for that ESS, the non-AP STA shall not send a device ID in the non-AP STA Identity frame. | Revised--  Agree in principle.  TGbh editor: please incorporate the proposed change label with CID246 in 1316r4 |
| 247 | 31/2 | This required behavior need not be described so awkwardly. 1) there is already a requirement that a non-AP STA only send the Device ID element if device ID is active in the non-AP STA and the AP. 2) A non-AP STA can only send a Device ID "New" requirement is to send the most recently received device ID for the ESS. | Replace: "A non-AP STA that is associating or using PASN with any AP in an ESS with Device ID active for both the non-AP STA and the AP and the non-AP STA has a saved device ID for the ESS shall send the most recently received device ID for that ESS in the non-AP STA Identity frame. With: "A non-AP STA shall use the most recently received device ID for the ESS in the Device ID element sent to any AP in the ESS." | TGbh editor: please incorporate the proposed change label with CID247 in 1316r4 |
| 236 | 30/55 | Incorrect verb form: "or using PASN" should be "or used PASN" | Replace with "A non-AP STA that is associating with any AP in an ESS or that is using PASN with any AP in an ESS, when Device ID is active for both the non-AP STA and the AP and the non-AP STA has not previously associated or used PASN with any AP in the ESS, shall not send a device ID in the non-AP STA Identity frame." | TGbh editor: please incorporate the proposed change label with CID247 in 1316r4 |
| 237 | 31/2 | Phrasing makes requirement hard to understand | Replace with "A non-AP STA that is associating or using PASN with any AP in an ESS, when Device ID is active for both the non-AP STA and the AP and the non-AP STA has a saved device ID for that ESS, shall send the most recently received device ID for that ESS in the non-AP STA Identity frame" | TGbh editor: please incorporate the proposed change label with CID247 in 1316r4 |
| 238 | 31/7 | The two requiremetnts seem to overlap/conflict. Requriement on line 7 applies when AP receives a "non-AP STA Identity frame" and requirement starting on line 15 applies when AP receives a "first PASN frame". However, definition on prior page indicates that first PASN frame is a non-AP STA Identity frame. | Revise first requirement to say "non-AP STA Identity frame other than a first PASN frame". | TGbh editor: please incorporate the proposed change label with CID247 in 1316r4 |

**Section C: CIDs relevant to MIB**

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|  | **Page/Line** | **Comment** | **Proposed Change** | **Resolution** |
| 72 | **30/29** | The relationship between the MIB object dot11DeviceIDActivated, the Device ID Active field in the Extended RSN Capabilities field needs to be clarified. One would assume that the MIB object is used to activate/deactivate the feature. The Device ID Active field should then just reflect this activated/deactivated state. | Change to "A non-AP STA that has dot11DeviceIDActivated equal to true, shall set the Device ID Active field in the Extended RSN Capabilities field in the (Re-)Association Request frame or first PSN frame set to an AP in the ESS. An AP that has dot11DeviceIDActivated equal to true shall set..." | Revised--  Agree in principle.  Use MIB instead in other places as well.  TGbh editor: please incorporate the proposed change in 1316r4. |

**Section D:misc CIDs**

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| **CID** | **Page/Line** | **Comment** | **Proposed Change** | **Resolution** |
| 145 | **31/20** | In the paragraphs P31L20-L28, use of "can" (1 location) and "must" (2 locations) in the normative text is inappropriate. In addition, what these paragraphs are specifying is unclear. | Please specify behavior of non-AP STA and AP with text using "shall" or "may". Alternatively, change the current description to informative note. | Revised--  Change “can” to “may”, and change “must” to “shall”  TGbh editor: please incorporate the proposed change label with CID 145 in 1316r4. |
| 180 | **31/25** | "must" is not an 802.11 normative verb form | Change to "shall" (2x) | Revised--  Change “must” to “shall”  TGbh editor: please incorporate the proposed change label with CID 180 in 1316r4. |
| 255 | **31/28** | When a non-AP STA is "not recognized" why is the behavior described as: "the non-AP STA must (re)establish any desired, shared identity state per the procedures previously described." If the non-AP STA has Device ID active, and the AP has Device ID active, there is no additional procedure to follow when the ID is not recognized. The sending of the new ID is automatic, so there is no action really required of the non-AP STA to establish a new ID. This statement should be deleted. | Delete the phrase: "and the non-AP STA must (re)establish any desired, shared identity state per the procedures previously described" | Accepted-- |
| 226 | **31/28** | It is indicated that in case the identity is not recognized it should be re-established using a procudure previously defined but there is not procedure previously defined. | It is not clear the procedure, add a reference? | Revised--  The resolution is same the CID255. |
| 171 | **30/29** | Identifying which frames the Device ID Active bit is set in seems a bit brittle (i.e. what if there's another frame that can carry that field -- is it reserved or ignored in that frame)? | Remove the list of frames. Ditto in next subclause |  |
| 24 | **30/30** | RSXNE is also carried in EAPOL-2 and EAPOL-3 frame, suppose the Device ID active field to 1 is also set in EAPOL2/3 frame | please clarifiy whether the 11bh SPEC need to define Device ID/IRM in RSNXE should be in EAPOL-2/EAPOL-3 or not? | Rejected--  **In 12.7.6.3 4-way handshake message 2, the baseline has a sentence say “**The RSNXE that the Supplicant sent in its (Re)Association Request frame, if this element is present in the (Re)Association Request frame that the Supplicant sent.”, and **In 12.7.6.4 4-way handshake message 3, the baseline has a sentence say “**The RSNXE that the Authenticator sent in its Beacon or Probe Response frame, if this element is present in the Beacon or Probe Response frame that the Authenticator sent.**”** .  no need to define Device ID/IRM in RSNXE in EAPOL-2/3 |
| 174 | **30/55** | "A non-AP STA that is associating with any AP in an ESS or that is using PASN with any AP in an ESS, when Device ID is active for both the non-AP STA and the AP and the non-AP STA has not previously associated or using PASN with any AP in the ESS, shall not send a device ID in the non-AP STA Identity frame. Similarly, if the non-AP STA is associating with any AP in an ESS or is using PASN with any AP in an ESS, when Device ID is active for both the non-AP STA and the AP but the non-AP STA no longer has a device ID for that ESS for implementation-specific reasons (for example, configuration changes have lost the device ID, or sufficient time has passed since the last association to the ESS so that the device ID has been deleted), then the non-AP STA shall not send a device ID in the non-AP STA Identity frame. A non-AP STA that is associating or using PASN with any AP in an ESS with Device ID active for both the non-AP STA and the AP and the non-AP STA has a saved device ID for the ESS shall send the most recently received device ID for that ESS in the non-AP STA Identity frame." -- gobbledygook | Change to "A non-AP STA that is associating with an AP or that is using PASN with an AP shall not send a device ID in the non-AP STA identity frame if it has not previously associated or used PASN with an AP in the ESS." A non-AP STA that is associating with an AP or that is using PASN with an AP shall not send a device ID in the non-AP STA identity frame if it no longer has a device ID for that ESS for implementation-specific reasons (for example, configuration changes have lost the device ID, or sufficient time has passed since the last association to the ESS so that the device ID has been deleted). A non-AP STA with device ID active that is associating with or using PASN with an AP with device AP active, and that has a saved device ID for the ESS shall send the most recently received device ID for that ESS in the non-AP STA identity frame." | Revised--  TGbh editor: please incorporate the proposed change label with CID 174 in 1316r4. |
| 178 | **31/22** | "bound to the non-AP STA's current MAC address" not clear in the case where the STA has a random MAC address and also an IRM | Identify more clearly which address it is bound to |  |
| 166 | **30/13** | "AP's ESS" -- not sure APs have ESSes per se | Change to "ESS" or "ESS or which the AP is a member" | REVISED  **At Page 30.8 replace entire text in 12.2.11 with following**  “To mitigate tracking and traffic analysis, a non-AP STA may randomly change its MAC address (see 4.5.4.10 (MAC privacy enhancements)).  This presents a problem for the network in that it is unable to identify a non-AP STA that previously associated and is not able to apply cached information from that previous association to the current association. The two mechanisms defined in 12.2.11 alleviate this problem.  The first mechanism, referred to as device ID, has the AP provide an identifier to the non-AP STA during association or PASN authentication that the non-AP STA can then report back to the AP during a future association or PASN authentication. The second mechanism, referred to as IRM, has the non-AP STA provide a random MAC address (different from the address it is using) to the AP during association or PASN authentication and then use that MAC address for the next association or PASN authentication.  The two mechanisms device ID and IRM, may be used concurrently.” |
| 251 | **30/9** | The statement that: "it may be desired by the user that the non-AP STA is identified by an AP and network services." is not very clear, could be more accurate, and should be improved. 1) it is not clear who or what would be providing the service, 2) depending on the service it may be the AP and/or the network that provides the service, 3)the user may want their non-AP to be identified by the AP and/or network. | Replace: "For some services, however, it may be desired by the user that the non-AP STA is identified by an AP and network services." With: "When a user is using a random MAC address to mitigating tracking and traffic analysis, they may desire to identify themselves to an AP or network to allow the AP or network to provide services to their non-AP STA based on their identity. A non-AP STA can use a device ID or an IRM to identify the user to an AP or a network, while maintaining the tracking and traffic analysis mitigation provided by using random MAC addresses." | REVISED  **At Page 30.8 replace entire text in 12.2.11 with following**  “To mitigate tracking and traffic analysis, a non-AP STA may randomly change its MAC address (see 4.5.4.10 (MAC privacy enhancements)).  This presents a problem for the network in that it is unable to identify a non-AP STA that previously associated and is not able to apply cached information from that previous association to the current association. The two mechanisms defined in 12.2.11 alleviate this problem.  The first mechanism, referred to as device ID, has the AP provide an identifier to the non-AP STA during association or PASN authentication that the non-AP STA can then report back to the AP during a future association or PASN authentication. The second mechanism, referred to as IRM, has the non-AP STA provide a random MAC address (different from the address it is using) to the AP during association or PASN authentication and then use that MAC address for the next association or PASN authentication.  The two mechanisms device ID and IRM, may be used concurrently.” |

**TGbh editor: the context in 12.2.11 is based on the proposed change in 1245r8.**

**12.2.11 Changing MAC Address**

To mitigate tracking and traffic analysis, a non-AP STA may randomly change its MAC address (see 4.5.4.10 (MAC privacy enhancements)).

This presents a problem for the network in that it is unable to identify a non-AP STA that had previously associated and is not able to apply cached information from that previous association to the current association. The two mechanisms defined in 12.2.11 alleviate this problem.  
（**CID 19**）  
The first mechanism, referred to as device ID, has the AP or AP MLD provide an identifier to the non-AP STA or non-AP MLD during association or PASN authentication that the non-AP STA or non-AP MLD can then report back to the AP or AP MLD during a future association or PASN authentication. The second mechanism, referred to as IRM, has the non-AP STA or non-AP MLD provide a random MAC address (different from the address it is using) to the AP or AP MLD during association or PASN authentication and then use that MAC address for the next association or PASN authentication.  
  
The two mechanisms device ID and IRM, may be used concurrently.

**12.2.11.1** **Device ID operation**

~~A non-AP STA indicates activation of device ID for a particular ESS by setting the Device ID Active field to 1 in the Extended RSN Capabilities field (see 9.4.2.241 (RSNXE)) in (Re)Association Request frames or the first PASN frame (when using PASN) sent to any AP in the ESS. An AP indicates activation of Device ID by setting the Device ID Active field to 1 in the Extended RSN Capabilities field in Beacon, (Re)Association Response, and Probe Response frames, or in the second PASN frame (when using PASN).~~

(CID 103)

An AP or an AP affiliated with an AP MLD advertises support for device ID by setting the Device ID Active field to 1 in the Extended RSN Capabilities field((see 9.4.2.241 (RSNXE)) in Beacon, and Probe Response frames. A non-AP STA or a STA affiliated with a non-AP MLD indicates activation of device ID ~~for a particular ESS~~ by setting the Device ID Active field to 1 in the Extended RSN Capabilities field in (Re)Association Request frames.An AP or an AP affiliated with an AP MLD indicates activation of device ID by setting the Device ID Active field to 1 in the Extended RSN Capabilities field in (Re)Association Response frame.For non-MLO, a non-AP STA indicates activation of device ID by setting the Device ID Active field to 1 in the Extended RSN Capabilities field in the first PASN frame (when using PASN) sent to any AP in the ESS. For non-MLO,an AP indicates activation of device ID by setting the Device ID Active field to 1 in the Extended RSN Capabilities field in the second PASN frame (when using PASN)

(CID 104, CID 249)

All APs or all the affiliated APs within AP MLDs should be configured consistently throughout the ESS.A STA or a STA affiliated with an MLD may send a frame with device ID to any STA or any STA affiliated with an MLD that has indicate dot11DeviceIDActivated is true.

(CID 105)

A non-AP STA or a STA affiliated with a non-AP MLD shall include a device ID when required by the procedures described below via the following frames :

(CID 133)

1) (Re)Association Request frame carrying Device ID element in the FILS authentication procedure .

2) Message 2 of the 4-way handshake carrying Device ID KDE in 4-way handshake procedure.

3) Probe request frame carrying Device ID element in radio measurement procedure

(CID 106)

An AP or an AP affiliated with an AP MLD shall include a device ID when required by the procedures described below via the following frames:

(CID 133)

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1) (Re)Association Response frame carrying Device ID element in the FILS authentication procedure.

2) Message 3 of the 4-way handshake carrying Device ID KDE in 4-way handshake procedure.

3) Beacon request frame carrying Device ID element in radio measurement procedure.

In PASN authentication procedure,a non-AP STA shall include a device ID when required in the Device ID element in the first PASN frame. An AP shall include a device ID when required in Device ID element in the second PASN frame.

CID 248, CID 246,CID 174

~~A non-AP STA that is associating with any AP in an ESS or that is using PASN with any AP in an ESS, when Device ID is active for both the non-AP STA and the AP and the non-AP STA has not previously associated or using PASN with any AP in the ESS, shall not send a device ID.~~

For non-MLO,a non-AP STA that has not previously associated with any AP or used PASN with any AP and does not have a saved device ID for the ESS shall not send a frame with device ID.~~Similarly,if the non-AP STA is associating with any AP in an ESS or is using PASN with any AP in an ESS, when Device ID is active for both the non-AP STA and the AP but the non-AP STA no longer has a device ID for that ESS for implementation-specific reasons~~ A non-AP STA that is associating with an AP or that is using PASN with an AP shall not send a frame with device ID if it no longer has a device ID for that ESS for implementation-specific reasons(for example, configuration changes have lost the device ID, or sufficient time has passed since the last association to the ESS so that the device ID has been deleted)~~, then the non-AP STA shall not send a frame with device ID~~..

For MLO, a STA affiliated with a non-AP MLD that has not previously associated with any AP MLD, and does not have a saved device ID for the ESS shall not send a frame with device ID. A STA affiliated with a non-AP MLD is associating with an AP MLD in an ESS shall not send a frame with device ID if it no longer has a device ID for that ESS for implementation-specific reasons (for example, configuration changes have lost the device ID, or sufficient time has passed since the last association to the ESS so that the device ID has been deleted).

CID 247

~~A non-AP STA that is associating or using PASN with any AP in an ESS with dot11DeviceIDActivated equal to true for both the non-AP STA and the AP and the non-AP STA has a saved device ID for the ESS shall send the most recently received device ID for that ESS in the frame(s) with device ID.~~

A non-AP STA or a STA affiliated with a non-AP MLD shall use the most recently received device ID for the ESS in the Device ID element or Device ID KDE sent to any AP or the AP affiliated with an AP MLD in the ESS.

When an AP or an AP affiliated with an AP MLD with dot11DeviceIDActivated equal to true receives a frame with device ID from a non-AP STA or a STA affiliated with a non-AP MLD with dot11DeviceIDActivated equal to true and the received device ID is recognized, the AP or the AP affiliated with an AP MLD shall perform one of the following actions:

(CID177)

1) Do not include Device ID field(indicating the current device ID is maintained) and set Device ID Status field of Device ID KDE or Device ID element to 0 to indicate that AP or AP MLD recognizes the non-AP STA or the non-AP MLD in the appropriate frame.

2) Assign a new device ID value in Device ID field, and set Device ID Status field of Device ID KDE or Device ID element to 0 to indicate that AP or AP MLD recognizes the non-AP STA or non-AP MLD in the appropriate frame.

(CID14)

When an AP with dot11DeviceIDActivated equal to true receives a first PASN frame containing a device ID which is recognized,the AP shall assign a new device ID value to the non-AP STA,via setting a new device ID in Device ID field with the Device ID Status field of Device ID element set to 0 to indicate that the AP recognizes the non-AP STA in the second PASN frame.

CID 145

When a non-AP STA or a STA affiliated with a non-AP MLD receives a frame that contains a Device ID Status field of Device ID KDE or Device ID element equal to 0, it may proceed with the assumption that the shared identity state with the AP or AP MLD or ESS (as per the concepts of 12.2.10) is now bound to the non-AP STA’s current MAC address or non-AP MLD’s current MLD MAC address.

CID176, CID 180,CID255

When a non-AP STA or a STA affiliated with a non-AP MLD receives a frame that contains a Device ID Status field of Device ID KDE or Device ID element equal to 1 to indicate that the AP or AP MLD doesn’t recognize the non-AP STA or the non-AP MLD , it shall assume that no shared identity state exists with the AP or AP MLD or ESS (as per the concepts of 12.2.10). ~~and the non-AP STA must (re)establish any desired, shared identity state per the procedures previously described.~~