IEEE P802.11
Wireless LANs

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| 11be D2.0 CR for Miscellaneous Editorial CIDs |
| Date: 2022-09-02 |
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Abstract

This submission proposes resolutions for the following CIDs:

13993, 10573, 11815, 12264, 12781, 13149, 13332, 13333, 12900, 12901,

13118, 10151

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Editorial revision.

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 TGbe D2.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe D2.0 Draft. (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

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| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 13993 | Geonjung Ko | 35.3.14.2 | 450.12 | Use a capital letter B for bitmap. | As in comment | Accepted -  |
| 10573 | Abhishek Patil | 9.4.2.317 | 255.01 | Rename this element to avoid double occurrence of the term 'Link' in the name. | As in comment | Revised –We change the name to MLO Link Information element. TGbe editor to make the changes shown in 11-22/1430r1 under all headings that include CID 10573 |
| 11815 | Alfred Asterjadhi | 3.2 | 52.48 | No need for capitalization. Replace Multi-Link with multi-link here and next definition. | As in comment. | Accepted -  |
| 12264 | Stephen McCann | 9.6.8.4 | 257.56 | The sentence uses the passive voice and is not correct. | Change "The FT Confirm frame in an RSN is confirmation to the target AP or AP MLD of receipt of the ANonce and indicates the liveness of the PTKSA" to"The FT Confirm frame in an RSN confirms to the target AP or AP MLD the receipt of the ANonce and indicates the liveness of the PTKSA" | Rejected – The commenter comments the usage of passive voice in a sentence of baseline spec. The commenter is encouraged to submit the comment to revme.  |
| 12781 | Romain GUIGNARD | 9.6.8.2 | 257.30 | FTR is not defined in the section 3 and seems not be present in the previous standard version | Could you please define the FTR acronym? | Revised – Agree in principle with the commenter. We add the definition to 3.4 Acronyms and abbreviations.TGbe editor to make the changes shown in 11-22/1430r1 under all headings that include CID 12781 |
| 13149 | Mark RISON | 11.13 | 327.51 | An SA is a source address, not a security association | Change "an SA" to "a security association" | Revised – The commenter raises a valid issue. In the baseline 3.4, we have ”SA Query” means “security association query” and “SA” means “source address”. Hence, we indeed need to be careful when we use “SA”. The proposed sentence inherits a bug from the baseline where “SA” is also used, but should mean security assocaiton. See below. We simply change “SA” to “security association”. *If a non-AP and non-PCP STA that has an SA with its AP or PCP for an association that negotiatedmanagement frame protection receives an unprotected Deauthentication or Disassociation frame with reasoncode INVALID\_CLASS2\_FRAME or INVALID\_CLASS3\_FRAME from the AP or PCP, ….*TGbe editor to make the changes shown in 11-22/1430r1 under all headings that include CID 13149 |
| 13332 | Muhammad Kumail Haider | ï»¿35.3.14.2 | 450.22 | "ï»¿indicates any link without being setup" --> "ï»¿indicates any link that is not setup" | as in comment | Revised – Agree in principle with the commenter. TGbe editor to make the changes shown in 11-22/1430r1 under all headings that include CID 13332 |
| 13333 | Muhammad Kumail Haider | ï»¿35.3.14.2 | 450.21 | "ï»¿..received by a STA affiliated with the MLD, then the MLD shall discard.." --> "..ï»¿received by a STA affiliated with the non-AP MLD, then the non-AP MLD shall discard..." | as in comment | Rejected – We note that the description intends to work for both AP MLD and non-AP MLD. |
| 12900 | Payam Torab Jahromi |   | 0.00 | Use "associated non-AP MLD" instead of "a non-AP MLD associated with an AP MLD" (i.e., when AP MLD is not specific). If needed, can add a sentence in 1.4 (Word usage) to define this. | As in comment | Rejected – We note that both styels are used in the baseline as follows. There is no specific style guide to mandate when to use which style. One style can be shorter, but both styles are allowed.*The IEEE 802.11 QoS facility provides MAC enhancements to support LAN applications with QoSrequirements. The QoS enhancements are available to QoS STAs associated with a QoS access point or PCPin a QoS BSS.**The AP sends a Radio Measurement Request frame that contains a Measurement Request element to an associated STA that supports neighbor reporting and beacon reporting.* |
| 12901 | Payam Torab Jahromi |   | 0.00 | Use "an affiliated STA" instead of "a STA affiliated with an MLD" (i.e., when MLD is not specific). If needed, can add a sentence in 1.4 (Word usage) to define this. | As in comment | Revised – “affiliated STA” has been used in various locations when possible.However, there are usage of the following patterns:“affiliated STA of” => 10 instances“affiliated non-AP STA of” => 1 instance“affiliated AP of” => 9 instancesThese patterns are not compatible with the main stream patten“STA affiiated with” or “AP affiliated with” => around 1000 instancesWe revise the 21 instances to the main stream usage.TGbe editor to make the changes shown in 11-22/1430r1 under all headings that include CID 12901 |
| 13118 | Mark RISON |   | 0.00 | Sometimes it's "maintained at the MLD level" and sometimes it's "maintained by the MLD" | Change to the latter throughout | Revised – We search the spec and only find one instance of “maintained at the MLD level”. We simiply change the instance to “maintained by the MLD” as suggested by the commenter.TGbe editor to make the changes shown in 11-22/1430r1 under all headings that include CID 13118 |
| 10151 | Ulrich Sinn | 2003-03-11 | 307.58 | Text talks about nonmesh MLDs, but it is unclear in the clause heading that the clause is on nonmesh MLDs only. | add nonmesh in front of MLDs: "... for nonmsh STAs or nonmesh MLDs" | Accepted – |

**Discussion: None**

***TGbe editor: Change the name of “*Multi-Link Link Information element” to “MLO Link Information element” and apply the change across 11be specification (#10573)**

***TGbe editor: Insert one acronym in 3.4 as follows (track change on):***

**3.4 Acronyms and abbreviations**

(…existing texts …)

FTO fast BSS transition originator

FTR fast BSS transition responder(#12781)

(…existing texts …)

***TGbe editor: Change 11be specification as follows (track change on):***

* + - 1. **Identification of the Intended STA**

Between an AP MLD and a non-AP MLD associated with the AP MLD, an individually addressed MMPDU that is not a TWT Setup frame that includes a Link ID Bitmap subfield in its TWT element and that is intended for one or more STA(s) affiliated with the associated MLD with setup link(s) shall follow the below procedure:

1. If the individually addressed MMPDU is transmitted to another STA (other than the intended STA(s)) affiliated with the associated MLD with a setup link, then the individually addressed MMPDU shall include Multi-Link Link Information element that identifies the intended link(s) of the MMPDU as the last element but before the Vendor Specific element(s) (if present).
2. Otherwise, the individually addressed MMPDU may include Multi-Link Link Information element that identifies the intended link(s) of the MMPDU as the last element but before the Vendor Specific element(s) (if present).

NOTE—If the Multi-Link Link Information element is not present in the individually addressed MMPDU, the individually addressed MMPDU cannot be retransmitted to different STA as described in the first bullet above.

Between an AP MLD and a non-AP MLD associated with the AP MLD, a TWT Setup frame that includes a Link ID Bitmap subfield in its TWT element shall not include a Multi-Link Link Information element.

If dot11EHTBaseLineFeaturesImplementedOnly is equal to true, only one bit in the Link ID Bitmap(#13993) subfield of the Multi-Link Link Information element shall be set to 1.

Between an AP MLD and a non-AP MLD associated with the AP MLD, an individually addressed MMPDU that is intended for an associated MLD shall not include Multi-Link Link Information element.

Between an AP MLD and a non-AP MLD associated with the AP MLD, if an individually addressed MMPDU that carries Multi-Link Link Information element is received by a STA affiliated with the MLD, then the MLD shall discard the MMPDU if the Multi-Link Link Information indicates any link without being setup.

**3.2 Definitions specific to IEEE 802.11
*Change the following definitions:***

(…existing texts …)

**multi-link probe request: (#11815)** A Probe Request frame that is transmitted by a station (STA) affiliated with a
non-access point (non-AP) multi-link device (MLD) carrying Probe Request Multi-Link element to solicit
information of one or more APs affiliated with an AP MLD as defined in 35.3.4.2 (Use of Multi-Link probe
request and response).

**multi-link probe response: (#11815)** A Probe Response frame transmitted by an access point (AP) affiliated with
an AP multi-link device (MLD) carrying Basic Multi-Link element in response to a Multi-Link probe
request to provide complete profile or requested information of one or more APs affiliated with an AP MLD
as defined in 35.3.4.2 (Use of Multi-Link probe request and response).

(…existing texts …)

**11.13 SA Query procedures**

(…existing texts …)

***change the eighth paragraph as follows:***

If a non-AP and non-PCP STA that has an security association with its AP or PCP for an association that negotiated management frame protection receives an unprotected Deauthentication or Disassociation frame with reason code INVALID\_CLASS2\_FRAME or INVALID\_CLASS3\_FRAME from the AP or PCP, the non-AP and non-PCP STA may use this as an indication that there might be a mismatch in the association state between itself and the AP or PCP. In such a case, the non-AP and non-PCP STA’s SME may initiate the SA Query procedure with the AP or PCP to verify the validity of the security association by issuing one MLME-SA-QUERY.request primitive every dot11AssociationSAQueryRetryTimeout TUs until a matching MLME-SA-QUERY.confirm primitive is received or dot11AssociationSAQueryMaximumTimeout TUs from the beginning of the SA Query procedure has passed. If the AP or PCP responds to the SA Query request with a valid SA Query response, the non-AP STA should continue to use the security association. If no valid SA Query response is received, the non-AP and non-PCP STA’s SME may delete the security association (and temporal keys)(#205) held for communication with the STA by issuing an MLME-DELETEKEYS.request primitive and the non-AP and non-PCP STA may move into State 1 (or State 2, for a DMG STA) with the AP. (#13149)

***Insert the following paragraph after the eighth paragraph (“If a non-AP and non-PCP STA that has ...”)***

If anon-AP STA affiliated with a non-AP MLD(#12901) that has an security association(#13149) with its AP MLD for an association that negotiated management frame protection receives an unprotected Deauthentication or Disassociation frame with reason code INVALID\_CLASS2\_FRAME or INVALID\_CLASS3\_FRAME from the corresponding AP affiliated with (#12901) the AP MLD in a setup link, the non-AP MLD may use this as an indication that there might be a mismatch in the association state between itself and the AP MLD. In such a case, the SME may initiate the SA Query procedure with the AP MLD to verify the validity of the security association by issuing one MLME-SA-QUERY.request primitive every dot11AssociationSAQueryRetryTimeout TUs until a matching MLME-SA-QUERY.confirm primitive is received or dot11MLDAssociationSAQueryMaximumTimeout TUs from the beginning of the SA Query procedure has passed. If the AP MLD responds to the SA Query request with a valid SA Query response, the non-AP MLD should continue to use the security association. If no valid SA Query response is received, the SME may delete the security association and temporal keys held for communication with the AP MLD by issuing an MLME-DELETEKEYS.request primitive and the non-AP MLD may move into State 1 with the AP MLD.(#13149)

**35.3.14.2 Identification of the Intended STA**

(…existing texts …)

Between an AP MLD and a non-AP MLD associated with the AP MLD, if an individually addressed MMPDU that carries Multi-Link Link Information element is received by a STA affiliated with the MLD, then the MLD shall discard the MMPDU if the Multi-Link Link Information indicates any link that is not a setup link(#13332).

**6.3.39.2 MLME-SA-QUERY.request
6.3.39.2.1 Function
*Change as follows:***This primitive requests that an SA Query Request frame be sent to a specified peer STA to which the STA is associated or be sent to a STA affiliated with the specified peer MLD to which the MLD is associated.(#12901)

**6.3.57.4 MLME-BTM.request
6.3.57.4.1 Function
*Change as follows:***This primitive requests transmission of a BSS Transition Management Request frame to a non-AP STA or to a non-AP STA affiliated with the specified peer non-AP MLD with which the AP MLD is associated. (#12901)

**6.3.82.5 MLME-SCS.response
6.3.82.5.1 Function
*Change as follows:***This primitive is generated in response to an MLME-SCS.indication primitive requesting an SCS Response
frame be sent to a non-AP STA or be sent to a non-AP STA affiliated with the specified peer non-AP MLD with which the AP MLD is associated. (#12901)

**6.3.82.5.3 When generated
*Change as follows:***This primitive is generated by the SME in response to an MLME-SCS.indication primitive requesting an
SCS Response frame be sent to a non-AP STA or be sent to a non-AP STA affiliated with the specified peer non-AP MLD with which the AP MLD is associated. (#12901)

**6.3.116.5 MLME-MSCS.response
6.3.116.5.1 Function
*Change as follows:***This primitive is generated in response to an MLME-MSCS.indication primitive requesting an MSCS
Response frame be sent to a non-AP STA or be sent to a non-AP STA affiliated with the specified peer non-AP MLD with which the AP MLD is associated. (#12901)

**6.3.116.5.3 When generated
*Change as follows:***This primitive is generated by the SME in response to an MLME-MSCS.indication primitive requesting an
MSCS Response frame be sent to a non-AP STA or be sent to a non-AP STA affiliated with the specified peer non-AP MLD with which the AP MLD is associated. (#12901)

**11.3.6.3 AP, AP MLD, or PCP association receipt procedures**

(..existing texts…)

4) If no MLME-SA-QUERY.confirm primitive for the STA or the non-AP MLD is received
within the dot11AssociationSAQueryMaximumTimeout period or the
dot11MLDAssociationSAQueryMaximumTimeout period, the SME shall allow a subsequent
association process with the STA or the non-AP MLD to be started without starting an additional SA Query procedure, except that the SME may deny a subsequent association
process with the STA or the non-AP MLD if an MSDU was received from the STA or any
non-AP STA affiliated with the non-AP MLD within this period. (#12901)

(..existing texts…)

**11.3.6.5 AP, AP MLD, or PCP reassociation receipt procedures**

(..existing texts…)

4) If no MLME-SA-QUERY.confirm primitive for a STA or a non-AP MLD is received within
the dot11AssociationSAQueryMaximumTimeout period or the
dot11MLDAssociationSAQueryMaximumTimeout period, the SME shall allow a subsequent
reassociation process to be started without starting an additional SA Query procedure, except
that the SME may deny a subsequent reassociation process with the STA or the non-AP MLD
if an MSDU was received from the STA or any non-AP STA affiliated with the non-AP MLD within this period. (#12901)
NOTE 1—Reception of an MSDU implies reception of a valid protected frame, which obviates the need
for the SA Query procedure.

(..existing texts…)

**12.7.6.1 General**

(..existing texts…)

— For MLO, an MLO Link KDE is included for a STA affiliated with an MLD as follows. When more
than one link is requested and included in message 2, an MLO Link KDE is included for each link
and contains the LinkId field and corresponding affiliated STA MAC address received in the Basic
Multi-Link element by the AP MLD in the (Re)Association Request frame. When included in
message 3, an MLO Link KDE is included for each affiliated AP and contains the LinkId field,
corresponding affiliated AP MAC address, RSNE, and RSNXE (if present) for each affiliated AP
that was sent by the Authenticator. (#12901)

(..existing texts…)

**35.3.21.2 TDLS direct link over a single link**

(..existing texts…)

NOTE 1—Due to the nature of multi-link operation, when a Data frame traverses an AP MLD, it can be relayed on any
available link. Furthermore, when a frame that was transmitted by a STA of a non-AP MLD traverses an AP MLD, the
AP MLD sets the SA field to the transmitting STA’s non-AP MLD MAC address. Therefore, when a non-AP STA affiliated with a non-AP MLD receives a frame from its corresponding associated AP that is affiliated with an AP MLD, it cannot determine the link where the frame originated from and it cannot determine if the initiating STA is affiliated with a nonAP MLD or not. Consequently, the non-AP MLD initiating a TDLS discovery does not know the BSSID of the link where the intended peer STA is operating on. (#12901)

(..existing texts…)

**6.3.57.2.1 Function
*Change as follows:***This primitive requests transmission of a BSS Transition Management Query frame to the AP with which
the STA is associated or to an AP affiliated with the specified peer AP MLD with which the non-AP MLD is associated. (#12901)

**6.3.57.6.1 Function
*Change as follows:***This primitive requests transmission of a BSS Transition Management Response frame to the AP with which
the STA is associated or to an AP affiliated with the specified peer AP MLD with which the non-AP MLD is associated. (#12901)

**6.3.57.6.3 When generated
*Change as follows:***This primitive is generated by the SME to request that a BSS Transition Management Response frame be
sent to the AP with which the STA is associated or be sent to an AP affiliated with the specified peer AP MLD
with which the non-AP MLD is associated. (#12901)

**6.3.82.2.1 Function
*Change as follows:***This primitive requests transmission of an SCS Request frame to an AP or to an AP affiliated with the specified peer AP MLD with which the non-AP MLD is associated. (#12901)

**6.3.82.3.3 When generated
*Change the second paragraph as follows:***This primitive is generated when the STA receives a SCS Response frame from the AP or a non-AP STA affiliated
with the non-AP MLD receives a SCS Response frame from an AP affiliated with the specified peer AP MLD with which the non-AP MLD is associated. (#12901)

**6.3.116.2.1 Function
*Change as follows:***This primitive requests transmission of an MSCS Request frame to an AP or to an AP affiliated with the specified peer AP MLD with which the non-AP MLD is associated. (#12901)

**6.3.116.3.3 When generated
*Change the second paragraph as follows:***This primitive is generated when the STA receives a MSCS Response frame from the AP or a non-AP STA affiliated
with the non-AP MLD receives a MSCS Response frame from aAP affiliated with the specified peer AP MLD with
which the non-AP MLD is associated. (#12901)

**35.3.12.5 WNM sleep mode in multi-link operation**

(..existing texts…)

The WNM sleep state is maintained by the MLD (#13118) and WNM sleep mode procedures defined in 11.2.3
(Power management in a non-DMG infrastructure network) and 11.2.3.16 (WNM sleep mode) are
performed at the MLD level and apply to all the STAs affiliated with the MLD.

(..existing texts…)

**11.3.3 State transition diagram for nonmesh STAs or nonmesh MLDs(#10151)**