### IEEE P802.11Wireless LANs

|  |
| --- |
| 11be D0.3 CR for 11.3.5  |
| Date: 2021-03-10 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Po-Kai Huang | Intel Corporation | 2200 Mission College Blvd, Santa Clara, CA 950542200  |  | po-kai.huang@intel.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes resolutions for the following CIDs:

1025, 2892, 1166, 2895, 2897, 1211, 2894, 2896, 1810, 1811, 1847, 1848, 1849, 1850, 1851, 1869, 2281, 2574, 2826, 2884

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Minor editorial change and add SP text.
* Rev 2: Update motion CID list

Do you support the proposed change in 11-21-435r2 for the following CIDs?

* 1851, 1810, 2894, 1211, 1166, 1025, 2896, 1848, 1849, 2897, 1847

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 D0.3 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe D0.3 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.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 1025 | Abhishek Patil | 11.3.5.3 | 98.10 | Need an entry for refusing the assoc request if the requesting STA doesn't support EHT rates. Same comment applies to 11.3.5.5 item h | As in comment | Revised –Agree in principle with the commenter. Since each link may independently not be accepted due to the reason, we move all the correspoinding descriptions to 35.3.5. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1025. |
| 2892 | Stephen McCann | 11.3.5.3 | 97.60 | What is a "corresponding AP"? | The term "corresponding AP" needs to be defined. | Revised –Since each link may independently not be accepted due to the reason, we move all the correspoinding descriptions to 35.3.5. We also revise the sentence so it is more clear.TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1025. |
| 1166 | Arik Klein | 11.3.5.3 | 96.51 | Use unified terminology: The Association Response frame is sent by the AP affiliated with the AP MLD to which the non-AP STA affiliated with the non-AP MLD has sent the Association Request frame with Basic variant MLE and not by the AP MLD as mentioned in the sentence | The revised sentece shall be " The following procedure shall be used by an AP or PCP upon receipt of an Association Request frame from a STA or by an \* AP affiliated with\* AP MLD upon receipt of an Association Request frame with Basic variant Multi-Link element indicates the AP MLD from a non-AP STA affiliated with a non-AP MLD" | Revised – Agree in principle with the commenter. We note that it is still AP MLD does the decision, so we just tweak the description to be an AP affiliated with the AP MLD receives the Association Reuqest frame. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1166. |
| 2895 | Stephen McCann | 11.3.5.3 | 96.51 | The initial sentence of the cited paragraph, seems to imply that an AP MLD receives an Association Request frame from a non-AP STA affiliated with a non-AP MLD. | An Association Request frame should be received by an AP MLD from a non-AP MLD. | Revised – We note that the transmission here means the over-the-air transmission. We revise the sentence to clarify.TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1166. |
| 2897 | Stephen McCann | 11.3.5.5 | 102.18 | The initial sentence of the cited paragraph, seems to imply that an AP MLD receives a Reassociation Request frame from a non-AP STA affiliated with a non-AP MLD. | A Reassociation Request frame should be received by an AP MLD from a non-AP MLD. | Revised – Here the transmission is meant for the on the air transmission. We revise the texts to avoid ambiguity. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 2897. |
| 1211 | Arik Klein | 11.3.5.3 | 96.51 | Remove the words "indicates the AP MLD" from the sentence - seems irrelevant to the context of this sentence. | The revised sentece shall be " The following procedure shall be used by an AP or PCP upon receipt of an Association Request frame from a STA or by an AP MLD upon receipt of an Association Request frame with Basic variant Multi-Link element from a non-AP STA affiliated with a non-AP MLD" | Revised – Agreed with the commenter that the texts is probably wrong. The intention is that the basic variant multi-link element with non-AP MLD MAC address, which his covered in 35.3.5.4 already. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1211. |
| 2894 | Stephen McCann | 11.3.5.2 | 95.20 | The initial sentence of item c), seems to imply that a non-AP MLD transmits an Association Request Frame to an AP affiliated with an AP MLD. | An Association Request frame should be transmitted from a non-AP MLD to an AP MLD. | Revised – Here the transmission is meant for the on the air transmission, but agree that there is an ambiguity on “MLME transmits”. We revise the texts to avoid ambiguity. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 2894. |
| 2896 | Stephen McCann | 11.3.5.4 | 99.56 | The initial sentence of item b), seems to imply that a non-AP MLD transmits a Reassociation Request Frame to an AP affiliated with a new AP MLD. | A Reassociation Request frame should be transmitted from a non-AP MLD to a new AP MLD. | Revised – Here the transmission is meant for the on the air transmission, but agree that there is an ambiguity on “MLME transmits”. We revise the texts to avoid ambiguity. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 2896. |
| 1810 | James Yee | 11.3.5.1 | 94.14 | The description of behavior enabled in various states here does not mention Link status. Though Link is not needed for legacy STAs, it seems incomplete to not include Link status in enabled behavior of each state. | Clarify | Revised – Agree in principle with the commenter. We describe the sentence separately and clarify that it is subject to additional constraints. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1810. |
| 1811 | James Yee | 11.3.5.3 | 96.43 | Not clear how the AP MLD determines that a non-AP STA is affiliated with a non-AP MLD when there is no ML Element present in the Assoc Req. | Proabably need more Status Codes to describe all the scenarios of interest for rejecting a request. | Rejected – AP MLD knows the MAC address of each affiliated non-AP STA of existing associated non-AP MLD, which is carried in the Association Request frame.  |
| 1847 | Jarkko Kneckt | 11.3.5.4 | 100.01 | The reassociation from the AP MLD to the same AP MLD may create links with different APs afiliated with the MLD AP, i.e. in the MLD association had setup links 1,2,3 before reassociation and after the MLD reassociation to the same AP MLD, there are links 1,3,4 and 5. The spec shuold describe how this is done and provide details for the operation. | Please add description that in a reassociation within the same AP MLD the setup links may be different. i.e. STA may generate different number of links and setup links may be created with different affiliated APs. | Revised – Currently, the texts are general in the sense that in the reassociation request frame the setup links maybe different, the capability maybe different, and the operation parameters maybe different. The description if needed should be a note. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1847. |
| 1848 | Jarkko Kneckt | 11.3.5.4 | 100.12 | Please clarify to which list TWT agreements and TWT flows belong | Please clarify. | Revised – Somehow in the baseline, TWT is not mentioned in the list. Given similar operation like power save mode and WNM sleep mode are deleted, TWT agreement should be in the delteded list. TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1848. |
| 1849 | Jarkko Kneckt | 11.3.5.4 | 100.35 | Some of the maintained agreements, like FMS, PSMP session and TDLS agreements are AP specific, so in AP MLD reassociation, are they deleted, if the STA does not create a link with the same affiliated AP. | Please specify for each state, agreement and allocation whether they are affected, if 1) the non-AP MLD does not create a link with the same AP 2) the non-AP MLD creates a link with the same AP. | Rejected – The group has not agreed to add FMS and PSMP to MLD. TDLS agreements are not AP specific. However, details of TDLS between MLDs or between an MLD to a legacy STA have not been finalized.For now, we just clarify that all the states to a new AP MLD are deleted as well.TGbe editor to make the changes shown in 11-21/0435r2 under all headings that include CID 1849. |
| 1850 | Jarkko Kneckt | 11.3.5.4 | 100.01 | 802.11be should define that an AP MLD should either reject the association request or setup all requested links.If AP MLD reduces the number of setup links:- The AP MLD may not setup the most suitable links for non-AP MLD, causing poor performance to non-AP MLD.- The non-AP MLD has difficulty to estimate AP MLD performance. The links that looked available were not allowed to operate.- The flexibility of the non-AP MLD operation is reduced, non-AP MLD may be forced to operate on one /less links that it desired- The non-AP MLD may continuously try to create more links, which adds signaling overhead | Please clarify that AP shall establish all setup links as requested by the non-AP MLD, i.e. AP has no reason to reject related to suitable configurations, or reject the (re)association request. | Rejected – The current status code field in the associaton response allows AP to reject association for not mentioned reasons. Follow the same logic, AP MLD should be allowed to accept only part of the requested links as already enabled in the current spec. |
| 1851 | Jarkko Kneckt | 11.3.5.2 | 96.12 | It is unclear whether AP MLD may reject association not related to configuration. | Please change from:" (e.g. AP or PCP is unable..)to:"(e.g. AP, AP MLD or PCP is unable..) | Accepted – |
| 1869 | Jarkko Kneckt | 11.3.5.3 | 100.01 | A non-AP MLD shall have means to require that all links defined in association request frame are setup, i.e. AP may only accept or reject all links requested by the non-AP MLD. | Please add means for non-AP MLD to control whether all requested links shall be setup. | Rejected – Potentially, all the reasons defined in the status code today can apply as the reason why a specific link is not accepted for setup. Non-AP MLD does not gain more on having all requested links rejected compared with certain links are accepted. Non-AP MLD only needs to know the reason why certain links are not accepted, which is allowed by the signaling in ML element.  |
| 2281 | Michael Montemurro | 11.3.5.1 | 94.45 | Why is this statement even required? Up until this point, it looks as though state between an AP MLD and non-AP MLD operate in a BSS. That better be the case. | Delete "Between an AP MLD and a non-AP MLD, association is required." | Rejected – The definition of BSS is a set of STAs that have synchronized with each other. For AP MLD, different APs may have different TSFs, and it is not correct to call the whole AP MLD one BSS. As a result, the statement is required. *basic service set (BSS): A set of stations (STAs) that have successfully synchronized using the JOINservice primitives19 and one STA that has used the START primitive.* |
| 2574 | Rojan Chitrakar | 11.3.5.2 | 95.01 | "For a non-AP MLD associated with an AP MLD, a non-AP STA affiliated with the non-AP MLD shall not send an Association Request frame without Multi-Link element."Is the sentence referring to a non-AP MLD that is already associated with an AP MLD? If so, the Association Request frame should be Re-association Request frame. Else, it should be clarified that the no-AP MLD intends to associate with an AP MLD. | Clarify whether the non-AP MLD that is already associated with an AP MLD. If yes, change the Association Request frame to Re-association Request frame. Else, clarify that the no-AP MLD is not yet associated but intends to associate with an AP MLD. | Rejected – The sentence indeed refers to a non-AP MLD associated with an AP MLD based on the description at the beginning. At this point the DS mapping is about <AP MLD, non-AP MLD>.Now if a non-AP STA of the non-AP MLD sends the association request, then we have another DS mapping <AP, non-AP STA>, which makes MLD operation nonworkable. Hence, the sentence is added to prevent this exact case. For reassociation frame, we have the following sentence to prevent the same issue in 11.3.5.4.*For a non-AP MLD associated with an AP MLD, a non-AP STA that is affiliated with the non-AP MLD andhas MAC address not equal to the MLD MAC address of the non-AP MLD shall not send a ReassociationRequest frame without Multi-Link element to any AP affiliated with that AP MLD* |
| 2826 | Srinivas Kandala | 11.3.5.3 | 96.42 | The newly inserted paragraph states that the association request shall be denied if a non-AP STA (affiliated to a non-AP MLD) does not include the Multi-link element in its association request frame. But how does the AP (affiliated to the AP MLD) know that the non-AP STA is indeed affiliated with a non-AP MLD without the presence of the the Multi-link element. I think there is a missing piece somewhere here. | Clarify | Rejected – The referred sentence starts with “for a non-AP MLD associated with an AP MLD”, and the case is when the association request is from “a non-AP STA affiliated with the non-APMLD”. We note that for a non-AP MLD associated with an AP MLD, the AP MLD knows the MAC addresses of the affiliated STA of the non-AP MLD since this information is provided in ML element during ML setup.*For a non-AP MLD associated with an AP MLD, if an AP affiliated with the AP MLD receives anAssociation Request frame without Multi-Link element from a non-AP STA affiliated with the non-APMLD, then the AP shall reject the association request with a status code ofDENIED\_STA\_AFFILIATED\_WITH\_MLD\_WITH\_EXISTING\_MLD\_ASSOCIATION.* |
| 2884 | Stephen McCann | 11.3.5.1 | 94.16 | What is a "non-FILS MLD"? | The term "non-FILS MLD" needs to be defined. | Rejected – We note that in the baseline, terms like non-FILS STA has been used without specific definition. The meaning is simply a STA that does not support FILS. Here, non-FILS MLD simply means a MLD that does not support FILS. |

**Discussion:** *None.*

**Propose:**

*TGbe editor: Change 11.3.5* *as follows (track change on):*

* Association, reassociation, and disassociation
* General

***Change the third, fourth, and fifth paragraphs as follows:***

Successful association enables a STA to exchange Class 3 frames. Successful association enables an MLD to exchange Class 3 frames on any setup links subject to additional constraints (see 35.3.6 (Link management)).(#1810) Successful association sets the state for a non-FILS STA or a non-FILS MLD to State 3 or State 4. Successful association sets the state for FILS STAs to State 4.

Successful reassociation enables a STA or an MLD to exchange Class 3 frames. Unsuccessful reassociation when not in State 1 leaves the state for a STA state unchanged (with respect to the AP or PCP that was sent the Reassociation Request (which may be the current STA)) or for a non-AP MLD state unchanged (with respect to the AP MLD that was sent the Reassociation Request). Successful reassociation sets the state for a non-FILS STA to State 3 or State 4 (with respect to the AP or PCP that was sent the Reassociation Request frame) or for a non-FILS non-AP MLD to State 3 or State 4 (with respect to the AP MLD that was sent the Reassociation Request frame). Successful reassociation when not in State 1 sets the state for a STA to State 2 (with respect to the current AP or PCP, if this is not the AP or PCP that was sent the Reassociation Request frame) or for a non-AP MLD to State 2 (with respect to the current AP MLD, if this is not the AP MLD that was sent the Reassociation Request frame). Successful reassociation sets the state for a FILS STA to State 4 (with respect to the AP or PCP that was sent the Reassociation Request frame) and enables it to exchange Class 3 frames. Reassociation shall be performed only if the originating STA or non-AP MLD is already associated in the same ESS.

Disassociation notification when not in State 1 sets the state for a non-FILS STA or a non-FILS MLD to State 2. Disassociation notification when not in State 1 sets the state for a FILS STA to State 1. The STA or MLD shall become associated again prior to sending Class 3 frames. A STA or an MLD may disassociate a peer STA or a peer MLD, respectively, at any time, for any reason.

***Change the last paragraph as follows:***

Association is not applicable in an IBSS. In an infrastructure BSS, association is required. Between an AP MLD and a non-AP MLD, association is required. In a PBSS, association is optional. APs, AP MLDs, and PCPs do not initiate association.

***Change the title of the subclause 11.3.5.2 as follows:***

* Non-AP STA, non-AP MLD, and non-PCP STA association initiation procedures

***Insert the following paragraph after the first paragraph (“The SME shall delete ...”):***

The MLDME shall delete any PTKSA, GTKSA, IGTKSA, BIGTKSA and temporal keys held for communication with the AP MLD by using MLME-DELETEKEYS.request primitive (see 12.6.18 (RSNA security association termination)) before invoking MLME-ASSOCIATE.request primitive.

***Insert the following two paragraphs after the now-shifted fifth paragraph (“Upon receipt of an MLME-ASSOCIATE.request primitive that is ...”):***

For a non-AP MLD associated with an AP MLD, a non-AP STA affiliated with the non-AP MLD shall not send an Association Request frame without Multi-Link element.

NOTE—A non-AP MLD can disassociate with the associated AP MLD to allow a non-AP STA that was affiliated with the non-AP MLD to allow to send an Association Request frame without Multi-Link element to perform regular STA association, i.e., non-MLD association.

***Change the now-shifted eighth paragraph as follows:***

Upon receipt of an MLME-ASSOCIATE.request primitive, a non-AP, non-AP MLD, and non-PCP STA shall associate with an AP, AP MLD, or PCP, respectively, using the following procedure:

* If the state for the AP, AP MLD, or PCP is State 1, the MLME shall inform the SME of the failure of the association by issuing an MLME-ASSOCIATE.confirm primitive, and this procedure ends.
* All the states, agreements and allocations listed in both numbered lists in 11.3.5.4 (Non-AP, non-AP MLD, and non-PCP STA reassociation initiation procedures) item c) are deleted or reset to initial values.
* The non-AP STA(#2894) shall transmit an Association Request frame to the AP or PCP or a non-AP STA affiliated with the non-AP MLD(#2894) shall transmit an Association Request frame with Basic variant Multi-Link element in the Association Request frame(#1211) to an AP affiliated with the AP MLDThe RSNE contained in the MLME-ASSOCIATE.request primitive shall be included in the Association Request frame. The RSNE shall specify exactly one pairwise cipher suite and exactly one AKM suite. If the MLME-ASSOCIATE.request primitive contained the EmergencyServices parameter equal to true, an Interworking element with the UESA field set to 1 shall be included in the Association Request frame.
* If an Association Response frame is received with a status code of SUCCESS, a DMG STA shall write to each of the following MIB attributes the corresponding subfield of the DMG BSS Parameter Configuration field of the DMG Operation element received from the AP or PCP to which it requested association:
* dot11PSRequestSuspensionInterval from the PSRequestSuspensionInterval subfield
* dot11MinBHIDuration from the MinBHIDuration subfield
* dot11BroadcastSTAInfoDuration from the BroadcastSTAInfoDuration subfield
* dot11AssocRespConfirmTime from the AssocRespConfirmTime subfield
* dot11MinPPDuration from the MinPPDuration subfield
* dot11SPIdleTimeout from the SPIdleTimeout subfield
* dot11MaxLostBeacons from the MaxLostBeacons subfield
* If an Association Response frame is received with a status code of SUCCESS, the state for the AP, AP MLD, or PCP shall be set to State 4 or, if dot11RSNAActivated is true, State 3. The state for any other AP, AP MLD, or PCP which is State 3 or State 4 prior to the association request shall be set to State 2, and the MLME shall issue an MLME-ASSOCIATE.confirm primitive to inform the SME of the successful completion of the association.
* If an Association Response frame is received with a status code of SUCCESS at an MM-SME coordinated STA and the Single AID field within the MMS element is equal to 1, then
* For each of its MAC entities advertised within the MMS element and for which dot11RSNAActivated is true, the state is set to State 3. Progress from State 3 to State 4 occurs independently in each such MAC entity.
* For each of its MAC entities advertised within the MMS element and for which dot11RSNAActivated is false, the state is set to State 4.
* For each of its MAC entities advertised within the MMS element the state for any other AP or PCP which is State 3 or State 4 prior to the association request shall be set to State 2.
* If an Association Response frame is received with a status code other than SUCCESS or the association fails to complete within dot11AssociationResponseTimeout the state for the AP, AP MLD, or PCP shall be set to State 2, and the MLME shall issue an MLME-ASSOCIATE.confirm primitive to inform the SME of the failure of the association. The status code returned in the Association Response frame indicates the cause of the failed association attempt. Any misconfiguration or parameter mismatch, e.g., data rates required as basic rates that the STA or a non-AP STA affiliated with the non-AP MLD did not indicate as supported in the ~~STA’s~~ Supported Rates and BSS Membership Selectors element, shall be corrected before the SME issues an MLME-ASSOCIATE.request primitive for the same AP, AP MLD, or PCP. If the status code indicates the association failed because of a reason that is not related to configuration (e.g., the AP, AP MLD,(#1851) or PCP is unable to support additional associations) and the Association Response frame does not include a Timeout Interval element with Timeout Interval Type equal to 3 the SME shall not issue an MLME-ASSOCIATE.request primitive for the same AP, AP MLD, or PCP until a period of at least 2 s has elapsed. If the status code indicates the association failed and the Association Response frame contains a Timeout Interval element with Timeout Interval Type equal to 3, the SME shall not issue an MLME-ASSOCIATE.request primitive for the same AP, AP MLD, or PCP until the period specified in the Timeout Interval element has elapsed.
* If an MLME-ASSOCIATE.confirm primitive is received with a ResultCode of SUCCESS, and RSNA is required, and FILS authentication was not used, then the SME shall perform a 4-way handshake to establish an RSNA with the STA or the AP MLD. As a part of a successful 4-way handshake, the SME shall enable protection by generating an MLME-SETPROTECTION.request(Rx\_Tx) primitive. If an MLME-ASSOCIATE.confirm primitive is received with a ResultCode of SUCCESS, and FILS authentication was used, then the SME shall enable protection by generating an MLME-SETPROTECTION.request(Rx\_Tx) primitive.
* Upon receipt of the MLME-SETPROTECTION.request(Rx\_Tx) primitive, the MLME shall set the state of the STA or the AP MLD to State 4.

***Change the title of the subclause 11.3.5.3 as follows:***

* AP, AP MLD, or PCP association receipt procedures

***Insert the following paragraph as the first paragraph of the subclause:***

For a non-AP MLD associated with an AP MLD, if an AP affiliated with the AP MLD receives an Association Request frame without Multi-Link element from a non-AP STA affiliated with the non-AP MLD, then the AP shall reject the association request with a status code of DENIED\_STA\_AFFILIATED\_WITH\_MLD\_WITH\_EXISTING\_MLD\_ASSOCIATION.

***Change the remaining paragraphs of the subclause as follows:***

The following procedure shall be used by an AP or PCP ~~U~~upon receipt of an Association Request frame from a STA ~~the AP or PCP shall use the following procedure~~ or by an AP MLD after an AP affiliated with the AP MLD receives (#1166)an Association Request frame with Basic variant Multi-Link element (#1211)from a non-AP STA affiliated with a non-AP MLD:

* The MLME shall issue an MLME-ASSOCIATE.indication primitive to inform the SME of the association request. The SME shall issue an MLME-ASSOCIATE.response primitive addressed to the STA or MLD identified by the PeerSTAAddress parameter of the MLME-ASSOCIATE.indication primitive. If the association is not successful, the SME shall indicate a specific reason for the failure to associate in the ResultCode parameter. Upon receipt of the MLME-ASSOCIATE.response primitive, the MLME shall transmit an Association Response frame.
* If the state for the STA is 1 and the STA is a non-DMG STA or the state of the non-AP MLD is 1, the SME shall refuse the association request by issuing an MLME-ASSOCIATE.response primitive with ResultCode NOT\_AUTHENTICATED.
* AP with dot11InterworkingServiceActivated true only: If the MLME-ASSOCIATE.indication primitive has the EmergencyServices parameter set to true and the RSN parameter does not include an RSNE, the SME shall not reject the association request on the basis that dot11RSNAActivated is true, thereby granting access, using unprotected frames (see 9.2.4.1.9 (Protected Frame subfield)), to the network for emergency services purposes.
* Otherwise, in an RSNA the SME shall check the values received in the RSN parameter to see whether the values received match the security policy. If they do not, the SME shall refuse the association by issuing an MLME-ASSOCIATE.response primitive with a ResultCode indicating the security policy mismatch.
* Otherwise, if the state for the STA or the non-AP MLD is 4, the STA or the non-AP MLD has a valid security association, the STA or the non-AP MLD has negotiated management frame protection, the STA or the non-AP MLD has not performed a successful SAE authentication after the current association was established, and there has been no earlier, timed out SA Query procedure with the STA or the non-AP MLD (which would have allowed a new association process to be started, without an additional SA Query procedure):
* The SME shall refuse the association request by issuing an MLME-ASSOCIATE.response primitive with ResultCode REFUSED\_TEMPORARILY and TimeoutInterval containing a Timeout Interval element with the Timeout Interval Type field set to 3 (Association Comeback time). If the SME is in an ongoing SA Query with the STA or the non-AP MLD, the Timeout Interval Value field shall be set to the remaining SA Query period, otherwise it shall be set to dot11AssociationSAQueryMaximumTimeout or dot11MLDAssociationSAQueryMaximumTimeout.
* The state for the STA or the non-AP MLD shall be left unchanged.
* Following this, if the SME is not in an ongoing SA Query with the STA or the non-AP MLD, the SME shall issue one MLME-SA-QUERY.request primitive addressed to the STA or the non-AP MLD every dot11AssociationSAQueryRetryTimeout TUs until an MLME-SA-QUERY.confirm primitive for the STA or the non-AP MLD is received or dot11AssociationSAQueryMaximumTimeout TUs or dot11MLDAssociationSAQueryMaximumTimeout TUs from the beginning of the SA Query procedure have passed. The SME shall increment the TransactionIdentifier by 1 for each MLME-SA-QUERY.request primitive, rolling it over the value to 0 after the maximum allowed value is reached.
* 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 affiliated STA of the non-AP MLD within this period.

NOTE 1—Reception of an MSDU implies reception of a valid protected frame, which obviates the need for the SA Query procedure.

* The SME shall refuse an association request from a STA that does not support all of the rates in the BSSBasicRateSet parameter and all of the membership selectors in the BSSMembershipSelectorSet parameter in the MLME-START.request primitive. (#1025)
* The SME shall refuse an association request from an HT STA that does not support all of the MCSs in the Basic HT-MCS Set field of the HT Operation parameterin the MLME-START.request primitive. (#1025)
* The SME shall refuse an association request from a VHT STA that does not support all of the <VHT-MCS, NSS> tuples indicated by the Basic VHT-MCS And NSS Set field of the VHT Operation parameterin the MLME-START.request primitive. (#1025)
* The SME shall refuse an association request from a HE STA that does not support all of the <HE-MCS, NSS> tuples indicated by the Basic HE-MCS And NSS Set field of the HE Operation parameter in the MLME-START.request primitive. (#1025)
* An AP or PCP may refuse GLK association based on local policy and, if so, shall return the GLK\_NOT\_AUTHORIZED ResultCode.

NOTE 2—For example, there might be a list of authorized GLK peers or clients or a limit on the number of GLK peers or clients and the peer or client is not on that list or its acceptance would exceed the limit.

* The SME shall generate an MLME-ASSOCIATE.response primitive with the PeerSTAAddress parameter set to the MAC address of the STA or the non-AP MLD identified by the PeerSTAAddress parameter of the MLME-ASSOCIATE.indication primitive. If the ResultCode in the MLME-ASSOCIATE.response primitive is SUCCESS, the SME has an existing SA with the STA or the non-AP MLD, and an SA Query procedure with that STA or that non-AP MLD has failed to receive a valid response (i.e., has not received an MLME-SA-QUERY.confirm primitive within the dot11AssociationSAQueryMaximumTimeout period or the dot11MLDAssociationSAQueryMaximumTimeout period), the SME shall issue an MLME-DISASSOCIATE.request primitive addressed to the STA or the non-AP MLD with ReasonCode INVALID\_AUTHENTICATION.

NOTE 3—This MLME-DISASSOCIATE.request primitive generates a protected Disassociation frame. If the association request was genuine, the STA has deleted the PTKSA by this point and so the protected Disassociation frame is ignored. The purpose is to inform a STA which has for some reason failed to respond to an SA Query procedure triggered by a forged association request.

* If the ResultCode in the MLME-ASSOCIATE.response primitive is SUCCESS, all the states, agreements and allocations pertaining to the associating STA or the associating non-AP MLD and listed in both numbered lists in 11.3.5.4 (Non-AP, non-AP MLD, and non-PCP STA reassociation initiation procedures) item c) are deleted or reset to initial values.
* If the ResultCode in the MLME-ASSOCIATE.response primitive is SUCCESS, the SME shall delete any PTKSA, GTKSA, IGTKSA, BIGTKSA, WIGTKSA and temporal keys held for communication with the STA or non-AP MLD by using the MLME-DELETEKEYS.request primitive (see 12.5.18 (RSNA security association termination)).
* If the MLME-ASSOCIATE.indication primitive includes an MMS parameter, the AP or PCP shall generate the MLME-ASSOCIATE.response primitive directed to the MLME of the STA identified by the PeerSTAAddress parameter of the MLME-ASSOCIATE.request primitive and take the following additional action, as appropriate:
* If the Single AID field in the MMS parameter of the MLME-ASSOCIATE.indication primitive is equal to 1, the AP or PCP may allocate a single AID for all of the STAs included in the MMS element. If the AP or PCP allocates the same AID to each STA whose MAC address was included in the MMS element, it shall include the MMS element received from the MM-SME coordinated STA in the MLME-ASSOCIATE.response primitive.
* If the Single AID field is 0, the AP or PCP shall allocate a distinct AID for each STA specified in the MMS element.

NOTE 4—When the Single AID field is 0, a separate association request/response exchange is performed for each STA specified in the MMS element, and this assigns the multiple AIDs for the STAs.

* If an Association Response frame with a status code of SUCCESS is acknowledged by the STA or the non-AP MLD, the state for the STA or for the non-AP MLD shall be set to State 4 or, if dot11RSNAActivated is true, State 3.
* If the ResultCode in the MLME-ASSOCIATE.response primitive is not SUCCESS and management frame protection is in use the state for the STA or for the non-AP MLD shall be left unchanged. If the ResultCode is not SUCCESS and management frame protection is not in use the state for the STA or for the non-AP MLD shall be set to State 3 if it was State 4.
* If the ResultCode in the MLME-ASSOCIATE.response primitive is SUCCESS and RSNA establishment is required, and FILS authentication was not used, the SME shall attempt a 4-way handshake with the STA or with the non-AP MLD. Upon a successful completion of the 4-way handshake, the SME shall enable protection by issuing an MLME-SETPROTECTION.request(Rx\_Tx) primitive. If FILS authentication was used, the SME shall enable protection by generating an MLME-SETPROTECTION.request(Rx\_Tx) primitive. In either case, upon receipt of the MLME-SETPROTECTION.request(Rx\_Tx) primitive, the MLME shall set the state for the STA or with the non-AP MLD to State 4.
* AP or AP MLD only: The SME shall inform the DS of any changes in the state of the STA or of the non-AP MLD.

***Change the title of the subclause 11.3.5.4 as follows:***

* Non-AP, non-AP MLD, and non-PCP STA reassociation initiation procedures

***Change the first paragraph as follows:***

Except when the association is part of a fast BSS/ML transition, the SME shall delete any PTKSA, GTKSA, IGTKSA, BIGTKSA, WIGTKSA and temporal keys held for communication with the AP, AP MLD, or PCP by using the MLME-DELETEKEYS.request primitive (see 12.6.18 (RSNA security association termination)) before invoking an MLME-REASSOCIATE.request primitive.

***Insert the following paragraph after the fourth paragraph (“Upon receipt of an MLME-REASSOCIATE.request primitive that is ...”):***

For a non-AP MLD associated with an AP MLD, a non-AP STA that is affiliated with the non-AP MLD and has MAC address not equal to the MLD MAC address of the non-AP MLD shall not send a Reassociation Request frame without Multi-Link element to any AP affiliated with that AP MLD.

***Change the now-shifted sixth paragraph as follows:***

Upon receipt of an MLME-REASSOCIATE.request primitive, a non-AP, non-AP MLD, and non-PCP STA shall reassociate with an AP, AP MLD, or PCP, respectively, using the following procedure:

* If the STA (with respect to the AP or PCP) or non-AP MLD (with respect to the AP MLD) is not associated in the same ESS or the state for the new AP, AP MLD, or PCP is State 1, the MLME shall inform the SME of the failure of the reassociation by issuing an MLME-REASSOCIATE.confirm primitive, and this procedure ends.
* The non-AP STA(#2896) shall transmit a Reassociation Request frame to the new AP or PCP or a non-AP STA affiliated with the non-AP MLD(#2896) shall transmit a Reassociation Request frame with Basic variant Multi-Link element in the Reassociation Request frame (#1211)to an AP affiliated with the new AP MLD. The RSNE contained in the MLME-ASSOCIATE.request primitive shall be included in the Reassociation Request frame. The RSNE shall specify exactly one pairwise cipher suite and exactly one AKM suite. If the MLME-REASSOCIATE.request primitive contained the EmergencyServices parameter equal to true, an Interworking element with the UESA field set to 1 shall be included in the Reassociation Request frame.
* If a Reassociation Response frame is received with a status code of SUCCESS, the state variable for the new AP, AP MLD, or PCP shall be set to State 4 or to State 3 if dot11RSNAActivated is true and the FT protocol is not used with respect to the new AP, AP MLD, or PCP and, unless the old AP, AP MLD, or PCP and new AP, AP MLD, or PCP, respectively, are the same, to State 2 with respect to the old AP, AP MLD, or PCP, and the MLME shall issue an MLME-REASSOCIATE.confirm primitive to inform the SME of the successful completion of the reassociation.

If the MLME-REASSOCIATION.request primitive has the new AP’s, AP MLD’s, or PCP’s MAC address in the CurrentAPAddress parameter (reassociation to the same AP, AP MLD, or PCP), the following states, agreements and allocations shall be deleted or reset to initial values:

* All EDCAF state
* Any block ack agreements that are not GCR agreements
* Sequence number
* Packet number
* Duplicate detection caches
* Anything queued for transmission
* Fragmentation and reassembly buffers
* Power management mode
* WNM sleep mode
* TPKSAs established with any peers
* TSPECs
* DMG TSPECs
* GLK-GCR agreement
* MSCS
* SCS
* TWT(#1848)

If the reassociation is to the same AP (as described above), the following states, agreements and allocations are not affected by the reassociation procedure:

* PSMP sessions
* Enablement/Deenablement
* GDD enablement
* TDLS agreements
* MMSLs
* GCR agreements that are not GLK-GCR agreements
* DMS agreements
* TFS agreements
* FMS agreements
* Triggered autonomous reporting agreements
* FTM sessions
* DMG SP and CBAP allocations
* PTP TSPECs.

In the case of reassociation to a different AP, AP MLD, or PCP (the CurrentAPAddress parameter is not the new AP’s or PCP’s MAC address or the new AP MLD’s MLD MAC address), all the states, agreements and allocations listed above are deleted or reset to initial values.(#1849)

* If a Reassociation Response frame is received with a status code of SUCCESS, a DMG STA shall write to each of the following MIB attributes the corresponding subfield of the DMG BSS Parameter Configuration field of the DMG Operation element received from the AP or PCP to which it requested reassociation:
* dot11PSRequestSuspensionInterval from the PSRequestSuspensionInterval subfield
* dot11MinBHIDuration from the MinBHIDuration subfield
* dot11BroadcastSTAInfoDuration from the BroadcastSTAInfoDuration subfield
* dot11AssocRespConfirmTime from the AssocRespConfirmTime subfield
* dot11MinPPDuration from the MinPPDuration subfield
* dot11SPIdleTimeout from the SPIdleTimeout subfield
* dot11MaxLostBeacons from the MaxLostBeacons subfield
* If an Association Response frame is received with a status code of SUCCESS at an MM-SME coordinated STA and the Single AID field within the MMS element is equal to 1, then
* For each of its MAC entities advertised within the MMS element and for which dot11RSNAActivated is true, the state is set to State 3. Progress from State 3 to State 4 occurs independently in each such MAC entity.
* For each of its MAC entities advertised within the MMS element and for which dot11RSNAActivated is false, the state is set to State 4.
* For each of its MAC entities advertised within the MMS element the state for any other AP or PCP which is State 3 or State 4 prior to the association request shall be set to State 2.
* If a Reassociation Response frame is received with a status code other than SUCCESS or the reassociation fails to complete within dot11AssociationResponseTimeout:
* Except when the association is part of a fast BSS/ML transition, the state for the AP, AP MLD, or PCP shall be set to State 2 with respect to the new AP, AP MLD, or PCP.
* The MLME shall issue an MLME-REASSOCIATE.confirm primitive to inform the SME of the failure of the reassociation. The ResultCode returned in the MLME-REASSOCIATE.confirm primitive indicates the cause of the failed reassociation attempt. Any misconfiguration or parameter mismatch, e.g., data rates required as basic rates that the STA did not indicate as supported in the STA’s Supported Rates and BSS Membership Selectors element, shall be corrected before the SME issues an MLME-REASSOCIATE.request primitive for the same AP, AP MLD, or PCP. If the status code indicates the reassociation failed because of a reason that is not related to configuration (e.g., the AP or PCP is unable to support additional associations) and the Reassociation Response frame does not include a Timeout Interval element with Timeout Interval Type equal to 3 the SME shall not issue an MLME-REASSOCIATE.request primitive for the same AP, AP MLD, or PCP until a period of at least 2 s has elapsed. If the status code indicates the reassociation failed and the Reassociation Response frame contains a Timeout Interval element with Timeout Interval Type equal to 3, the SME shall not issue an MLME-REASSOCIATE.request primitive for the same AP, AP MLD, or PCP until the period specified in the Timeout Interval element has elapsed.
* If an MLME-REASSOCIATE.confirm primitive is received with a ResultCode of SUCCESS, and RSNA is required, and FILS authentication was not used, and the STA or the non-AP MLD is in State 3, then the SME shall perform a 4-way handshake to establish an RSNA with the STA or the AP MLD. As a part of a successful 4-way handshake, the SME shall enable protection by generating an MLME-SETPROTECTION.request(Rx\_Tx) primitive. If an MLME-REASSOCIATE.confirm primitive is received with a ResultCode of SUCCESS, and FILS authentication was used, and the STA is in State 3, then the SME shall enable protection by generating an MLME-SETPROTECTION.request(Rx\_Tx) primitive.
* Upon receipt of the MLME-SETPROTECTION.request(Rx\_Tx) primitive, the MLME shall set the state of the STA or of the AP MLD to State 4.

***Change the title of the subclause 11.3.5.5 as follows:***

* AP, AP MLD, or PCP reassociation receipt procedures

***Insert the following paragraph as the first paragraph of the subclause:***

For a non-AP MLD associated with an AP MLD, if an AP affiliated with the AP MLD receives an Reassociation Request frame without Multi-Link element from a non-AP STA that is affiliated with the   non-AP MLD and has MAC address not equal to the MLD MAC address of the non-AP MLD, then the AP shall reject the reassociation request with a status code of DENIED\_STA\_AFFILIATED\_WITH\_MLD\_WITH\_EXISTING\_MLD\_ASSOCIATION.

***Change the remaining paragraphs of the subclause as follows:***

The following procedure shall be used by an AP or PCP u~~U~~pon receipt of a Reassociation Request frame from a STA ~~the AP or PCP shall use the following procedure~~ or by an AP affiliated with an(#2897) AP MLD upon receipt of a Reassociation Request frame with Basic variant Multi-Link element (#1211)from a non-AP STA affiliated with a non-AP MLD:

* The MLME shall issue an MLME-REASSOCIATE.indication primitive to inform the SME of the reassociation request. The SME shall issue an MLME-REASSOCIATE.response primitive addressed to the STA or the non-AP MLD identified by the PeerSTAAddress parameter of the MLME-REASSOCIATE.indication primitive. If the reassociation is not successful, the SME shall indicate a specific reason for the failure to reassociate in the ResultCode parameter. Upon receipt of the MLME-REASSOCIATE.response primitive, the MLME shall transmit a Reassociation Response frame.
* If the state for the STA is 1 and the STA is a non-DMG STA or the state for the non-AP MLD is 1, the SME shall refuse the reassociation request by issuing an MLME REASSOCIATE.response primitive with ResultCode NOT\_AUTHENTICATED.
* AP with dot11InterworkingServiceActivated true only: If the MLME-REASSOCIATE.indication primitive has the EmergencyServices parameter set to true and the RSN parameter does not include an RSNE, the SME shall not reject the reassociation request on the basis that dot11RSNAActivated is true and dot11PrivacyInvoked is true thereby granting access, using unprotected frames (see 9.2.4.1.9 (Protected Frame subfield)), to the network for emergency services purposes.
* Otherwise, in an RSNA the SME shall check the values received in the RSN parameter to see whether the values received match the security policy. If they do not, SME shall refuse the reassociation by issuing an MLME-REASSOCIATE.response primitive with a ResultCode indicating the security policy mismatch.
* Otherwise, if the state for the STA or the non-AP MLD is 4, the STA or the non-AP MLD has a valid security association, the STA or the non-AP MLD has negotiated management frame protection, the reassociation is not a part of a fast BSS/ML transition, the STA or the non-AP MLD has not performed a successful SAE authentication after the current association was established, and there has been no earlier, timed out SA Query procedure with the STA or the non-AP MLD (which would have allowed a new reassociation process to be started, without an additional SA Query procedure):
* The SME shall refuse the reassociation request by issuing an MLME-REASSOCIATE.response primitive with ResultCode REFUSED\_TEMPORARILY and TimeoutInterval containing a Timeout Interval element with the Timeout Interval Type field set to 3 (Association Comeback time). If the SME is in an ongoing SA Query with the STA or the non-AP MLD, the Timeout Interval Value field shall be set to the remaining SA Query period, otherwise it shall be set to dot11AssociationSAQueryMaximumTimeout or dot11MLDAssociationSAQueryMaximumTimeout.
* The state for the STA or the non-AP MLD shall be left unchanged.
* Following this, if the SME is not in an ongoing SA Query with the STA or the non-AP MLD, the SME shall issue one MLME-SA-QUERY.request primitive addressed to the STA or the non-AP MLD every dot11AssociationSAQueryRetryTimeout TUs until an MLME-SA-QUERY.confirm primitive for the STA or the non-AP MLD is received or dot11AssociationSAQueryMaximumTimeout TUs or dot11MLDAssociationSAQueryMaximumTimeout TUs from the beginning of the SA Query procedure have passed. The SME shall increment the TransactionIdentifier by 1 for each MLME-SA-QUERY.request primitive, rolling it over to 0 after the maximum allowed value is reached.
* 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 affiliated STA of the non-AP MLD within this period.

NOTE 1—Reception of an MSDU implies reception of a valid protected frame, which obviates the need for the SA Query procedure.

* The SME shall refuse a reassociation request from a STAthat does not support all the rates in the BSSBasicRateSet parameter and all of the membership selectors in the BSSMembershipSelectorSet parameterin the MLME-START.request primitive. (#1025)
* The SME shall refuse a reassociation request from an HT STA that does not support all of the MCSs in the Basic HT-MCS Set field of the HT Operation parameterin the MLME-START.request primitive. (#1025)
* The SME shall refuse a reassociation request from a VHT STA that does not support all of the <VHT-MCS, NSS> tuples indicated by the Basic VHT-MCS And NSS Set field of the VHT Operation parameter in the MLME-START.request primitive. (#1025)
* The SME shall refuse a reassociation request from a HE STA that does not support all of the <HE-MCS, NSS> tuples indicated by the Basic HE-MCS And NSS Set field of the HE Operation parameter in the MLME-START.request primitive. (#1025)

(…existing texts…)

*TGbe editor: Change 35.3.5.1* *as follows (track change on):*

**35.3.5 Multi-link (re)setup
35.3.5.1 Multi-link (re)setup procedure**

(…existing texts….)

In the (Re)Association Requeust frame, the non-AP MLD indicates the links that are requested for (re)setup
as described in 35.3.5.4 (Usage and rules of Basic variant Multi-Link element in the context of multi-link
setup)

NOTE – The links that are requested for resetup and the capability and operation parameters of each link that are requested for resetup are independent of the existing setup links with an associated AP MLD and the capability and operation parameters of each setup link with an associated AP MLD.(#1847)

In the (Re)Association Response frame, the AP MLD indicates the links that are accepted for (re)setup as
described in 35.3.5.4 (Usage and rules of Basic variant Multi-Link element in the context of multi-link
setup).

The AP MLD shall not accept a link that is requested for (re)setup if any of the following condition is true:

* The non-AP STA affiliated with the non-AP MLD corresponding to the link does not support all of the rates in the BSSBasicRateSet parameter and all of the membership selectors in the BSSMembershipSelectorSet parameter of the AP affiliated with the AP MLD corresponding to the link in the MLME-START.request primitive.
* The non-AP STA affiliated with he non-AP MLD corresponding to the link does not support all of the MCSs in the Basic HT-MCS Set field of the HT Operation parameterin of the AP affiliated with the AP MLD corresponding to the link in the MLME-START.request primitive.
* The non-AP STA affiliated with he non-AP MLD corresponding to the link does not support all of the <VHT-MCS, NSS> tuples indicated by the Basic VHT-MCS And NSS Set field of the VHT Operation parameterin of the AP affiliated with the AP MLD corresponding to the link in the MLME-START.request primitive.
* The non-AP STA affiliated with he non-AP MLD corresponding to the link does not support all of the <HE-MCS, NSS> tuples indicated by the Basic HE-MCS And NSS Set field of the HE Operation parameterin of the AP affiliated with the AP MLD corresponding to the link in the MLME-START.request primitive.
* The non-AP STA affiliated with he non-AP MLD corresponding to the link does not support all of the <EHT-MCS, NSS> tuples indicated by the Basic EHT-MCS And NSS Set field of the EHT Operation parameterin of the AP affiliated with the AP MLD corresponding to the link in the MLME-START.request primitive.(#1025)

(…existing texts….)