IEEE P802.11
Wireless LANs

|  |
| --- |
| OMI Comment Resolutions  |
| Date: 2019-07-12 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Jarkko Kneckt | Apple Inc | Cupertino CA |  | jkneckt@apple.com |
| Guoqing Li | Apple Inc |  |  |  |
| Chris Hartmann | Apple Inc |  |  |  |

Abstract

This submission solves 4 CIDs on OMI. The solved CIDs are: 20716, 20788, 21208, 21478, and 21618.

R1 – Discussed in the 802.11ax ad hoc call

R2 – Changes as proposed in the 802.11ax ad hoc call and by Mark Rison.

R3 – Changes proposed by Alfred Asterjadhi. Modification to CID 20716 and CID 21618 resolutions. New resolution to CID 20788, editorial changes in other CIDs.

R4 – Changes as done as outcome of discussion in 802.11ax ad hoc meeting.

R5 – Clause 26.5.7 modified.

R6 – CID 20716 Added clarification that responses to other than Basic Trigger frame types are not suspended.

R7 – Comments with green track changes are implemented.

R8 – Change to 9.2.4.6a.2 OM Control field and clarification to the new Status Code.

R9 –  Resolution to cid 20788 and 20475 added

R10 – Resolution to CID 20788 removed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 20716 | 391.44 | 26.9.3 | Re 15990: the proposed change was indeed wrong, but the comment was valid and not addressed. The point is that disabling UL MU data hinders trigger-enabled TWT, even for the "just one STA" case. Also "data transmission" is not clear as to whether QoS Null frames and Ps-Poll frames are included | After the para at the referenced location add a "NOTE---QoS Null frame transmission is not allowed in this case, but PS-Poll frame transmission is. Operation of trigger-enabled TWT is therefore only possible using PS-Poll frames, not U-APSD triggers.". At 77.39 change "UL MU Data transmission" to "UL MU Data frame transmission". At 77.44 change "UL MU Control response transmission" to "UL MU control response transmission". At 391.44 change "UL MU data transmission" to "UL MU Data frame transmission" | Revised. Agree on the proposed editorial changes at the end of the Proposed Changes. Resolution additionally harmonizes the terminologies throughout the table and provides the references to the subclauses where normative behaviors are defined. The comment is discussing on the frame that can be transmitted as a response to a trigger frame in triggered TWT use when STA has set UL MU Data Disabled. TWT operations are defined in clause 26.8.3.2 has already a Note that covers this operation and new Note is not needed: NOTE 1—The TWT scheduling AP does not intend to schedule for transmission of a Trigger frame for the TWT sched- uled STA when the broadcast TWT is not a trigger-enabled TWT or when the TWT scheduled STA has sent an OM Control subfield that has the UL MU disable bit equal to 1 (see 26.9 (Operating mode indication)). TGax Editor, please make the changes as shown in document 11-19-696r10 and marked for CID 20716.  |
| **Backup, copy of the referred CID 15990:***Comment*: "UL MU data transmission is suspended" is not clear because it is not clear whether the special case of a Trigger frame that solicits from a single STA is "UL MU"*Proposed Change*: At the referenced location change "only UL MU data transmission is suspended but UL MU control response transmissions in response to a Basic Trigger frame or a frame with TRS Control subfield present is not suspended" to "only transmission of QoS Data frames in HE TB PPDUs is suspended but transmission of Control frames in HE TB PPDUs in response to a Basic Trigger frame or a frame with TRS Control subfield present is not suspended"*Resolution*: A proposal was discussed in doc 11-18/1831r5. The draft includes two mechanisms for UL MU disable. After debating the issues it was decided not to include a third mechanism. A straw poll indicated that a technical consensus of 75% would not be achieved in an equivalent motion. |
| 21208 | 390.18 | 26.9.1 | This Note is encouraging bad behavior. | Since the next section indicates when the change should occur, and we have added a Channel Switch Timing Element, the preferred behavior is to take advantage of this. Let's specify when it happens in the next section, and require the OMI responder to not schedule traffic for the duration indicated in the Channel Switch Timing Element. | Rejected. The OMI mode may change from lower BW to larger BW and the non-AP STA may have done the transition prior it transmits the OMI to the AP. In this case the proposed inactivity time in OMI transition blocks frames transmissions to the STA. The current wording allows the non-AP STA to control whether it is available to receive frames or not. The Note is not encouraging bad behaviour, it suggests transition to power save mode only if non-AP STA will not be available and if the frame loss is problem for the STA.  |
| 21478 | 77.18 | 9.2.4.6a.2 | The sentence "The UL MU Disable subfield is combined with the UL MU Data Disable subfield and the recipient's settingof the OM Control UL MU Data Disable RX Support subfield in the HE MAC capabilities to determine theallowed UL MU operations and frame types that can be transmitted as a response to a Basic Trigger frame ora frame carrying a TRS Control field, as indicated in Table 9-24a (UL MU Disable and UL MU Data Disablesubfields encoding)." is garbled and difficult to understand. Please rephrase. | please rewrite the sentence to make it clear. | Revised. Agree in principle with the comment. TGax Editor, please make the changes as shown in document 11-19-696r10 and marked for CID 21478.  |
| 21618 | 76.53 | 9.2.4.6a.2 | UL MU Data disable cannot guarantee a short TB PPDU duration which is needed for some coex scenario | Define UL MU data disable to make sure it will generate short TB PPDU which can be garanteed. | Revised. Agree in principle. A STA should have means to signal to AP that it is limited to transmit long responses to the Trigger frame. This signaling informs AP on the STA limitations and improves system throughput by mitigating non-AP STA co-existence problems.ADDTS and TSPEC are typically used to signal traffic requirements. TGax Editor, please make the changes as shown in document 11-19-696r10 This field is reserved in the ADDTS Request frame and is set by the HC in the ADDTS Response frame. and marked for CID 21618.  |
| ~~20788~~ | ~~390.42~~ | ~~26.9.2~~ | ~~Re CID 16362: the resolution fails to provide a justification of the value of allowing an AP to lie (also can a non-AP STA lie?)~~ | ~~Change "should" to "shall" in "An OMI initiator that is an HE AP~~ **~~should~~** ~~be capable of receiving within an operating channel width andwith NSS that are up to the values of the most recently transmitted Channel Width subfield and Rx NSS sub-field that the OMI initiator has successfully indicated in the OM Control subfield or in the Operating Modefield sent to any associated STA."~~ |  |
| **~~Backup, copy of the referred CID 16362:~~***~~Comment~~*~~: "An OMI initiator that is an HE AP should be capable of receiving within an operating channel width and with NSS that are up to the values of the most recently transmitted Channel Width subfield and Rx NSS subfield that the OMI initiator has successfully indicated in the OM Control subfield or in the Operating Mode field sent to any associated STA." -- should honour promises made~~*~~Proposed Change~~*~~: Change "should" to "shall" in the cited text~~*~~Resolution~~*~~: REJECTED (MAC: 2018-09-20 21:45:24Z)~~~~Rejected. The 802.11ax has discussed and agreed long time that should provide enough support for the feature.~~ |
| 20475 | 392.47 | 26.9.3 | "The OMI responder shall indicate an RU allocation in the RU Allocation subfield of the Per User Info fieldof a Trigger frame or TRS Control subfield addressed to the OMI initiator" is not clear | Change the cited text at the referenced location to "The OMI responder shall indicate **to the OMI initiator** an RU allocation in the RU Allocation subfield (of the Per User Info fieldof a Trigger frame, or of a TRS Control subfield)" | Accepted. The proposed resolution clarifies the whom the OMI responder indicates the RU allocation.  |

**9.4.1.9 Status Code field**

*TGax Editor:Please insert the new Status Code Value as shown below*

|  |  |  |
| --- | --- | --- |
| Status code | Name | Meaning |
| ANA | ACCEPTED\_WITH\_TB\_RESTRICTION  | Same as Success (Status code 1) and AP limits the HE TB PPDU,see 26.5.8(Use of TSPEC by HE STAs).  |
| ANA+1 - 65535 |   | Reserved.  |

**9.2.4.6a Control subfield variants of an A-Control subfield**

**9.2.4.6a.2 OM Control**

*TGax Editor: Please replace the paragraph with the text shown below.*

~~The UL MU Disable subfield UL MU Data Disable subfield and the recipient's setting of the OM Control UL MU Data Disable RX Support subfield in the HE MAC capabilities to determine the allowed UL MU operations and frame types that can be transmitted as a response to a Basic Trigger frame or a frame carrying a TRS Control field, as indicated in Table 9-24a (UL MU Disable and UL MU Data Disable subfields encoding).~~

The allowed UL MU operations and frame types that can be transmitted as a response to a Trigger frame or a frame carrying a TRS Control subfield are determined by the UL MU Disable subfield, UL MU Data Disable subfield and the recipient's setting of the OM Control UL MU Data Disable RX Support subfield in the HE Capabilities element, as indicated in Table 9-24a (UL MU Disable and UL MU Data Disable subfields encoding). [21478]

**9.2.4.6a.2 OM Control**

*TGax Editor: Please change Table 9-24a as shown below.*

|  |
| --- |
| * UL MU Disable and UL MU Data Disable subfields encoding
 |
| UL MU Disable subfield | UL MU Data Disable subfield | Interpretation by an AP that transmits a value of 0 in the OM Control UL MU Data Disable RX Support | Interpretation by an AP that transmits a value of 1 in the OM Control UL MU Data Disable RX Support |
| 0 | 0 | All trigger based UL MU transmissions are enabled by the STA as defined in 26.5.2 (UL MU operation). | All trigger based UL MU transmissions are enabled by the STA as defined in 26.5.2 (UL MU operation). |
| 0 | 1 | All trigger based UL MU transmissions are enabled by the STA as defined in 26.5.2 (UL MU operation). | Trigger based UL MU Data frame transmissions in response to a Basic Trigger frame are suspended by the STA as defined in 26.9.3 (Transmit operating mode (TOM) indication).Other trigger based UL MU transmissions remain enabled by the STA as defined in 26.9.3 (Transmit operating mode (TOM) indication). |
| 1 | 0 | All trigger based UL MU transmissions are suspended by the STA. The STA will not respond to a received Trigger frame or MPDU containing a TRS Control subfield. | All trigger based UL MU transmissions are suspended by the STA. The STA will not respond to a received Trigger frame or MPDU containing a TRS Control subfield. [20716] |
| 1 | 1 | Reserved | Reserved |

**9.4.2.29 TSPEC element**

*TGax Editor: Please change the Medium Time field description as shown below.*

The Medium Time field contained in an ADDDTS Response frame is an unsigned integer and contains the amount of time admitted to access the medium, in units of 32 µs/s. ~~This field is reserved in the ADDTS Request frame and is set by the HC in the ADDTS Response frame.~~ The derivation of this field is described in K.2.2 (Deriving medium time). This field is set by the HC and is not used for controlled channel access. [21618]

The Medium Time field contained in an ADDTS Request frame sent by an HE non-AP STA to an HE AP is set to a nonzero value to indicate the maximum duration of HE TB PPDUs that the AP is recommended to allocate, in units of 128 µs, and is set to 0 to indicate that there is no limitation to the maximum duration of HE TB PPDUs. The Medium Time field is reserved if contained in an ADDTS Request frame sent by a non-HE STA or sent to a non-HE STA. [21618]

**26.5.8 Use of TSPEC by HE STAs**

*TGax Editor: Please add the new paragraph after the first paragraph of the clause as shown below. Add new ACCEPTED\_WITH\_TB\_RESTRICTION*

If an HE AP receives from an HE non-AP STA an ADDTS Request frame with a nonzero value in the Medium Time field and the AP responds with an ADDTS Response frame with the Status Code field indicating ACCEPTED\_WITH\_TB\_RESTRICTION, then the TS-setup is completed as in Status Code Success and the HE AP should not transmit triggering frames to the STA that trigger HE TB PPDUs with a duration that exceeds that indicated by the Medium Time field. The HE AP may respond to that ADDTS Request also with ADDTS Response frame containing other value in Status Code field. The HE AP may respond with Status Code ACCEPTED\_WITH\_TB\_RESTRICTION only if the HE AP has included nonzero value in the Medium Time field. [21618]

**26.9.3 Transmit operating mode (TOM) indication**

*TGax Editor: Please change as shown below.*

If a non-AP HE STA has received the OM Control UL MU Data Disable RX Support field in the HE Capabilities element set to 1, then the HE non-AP STA, acting as an OMI initiator, may set the UL MU Disable subfield to 0 and the UL MU Data Disable subfield to 1 to indicate that only UL MU ~~d~~Data frame transmission is suspended but UL MU control response frame transmissions in response to a Basic Trigger frame is not suspended (see 26.5.3 (UL MU operation)). Responses to other Trigger frame variants are not suspended. Management frame transmissions are not suspended. [20716]