IEEE P802.11
Wireless LANs

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| Concluding MAC Trigger Padding |
| Date: 2016-07-22 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs:

* 1634, 2890, 2896,

Revisions:

* Rev 0: Initial version of the document.

Interpretation of a Motion to Adopt

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

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

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

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 1634 | Matthew Fischer | 39.01 | Need text that indicates how to pad the trigger frame using behavioral language and normative verbs for the entity that is transmitting the trigger frame. It feels like this text should be in clause 10, but I am not certain where in 10 it should appear - maybe there needs to be a specific subclause just for generic trigger frame rules. | Add language that describes the rules for transmitting a trigger frame in the generic case, include specific trigger subtype rules in other subclauses. | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes.TGax editor to make the changes shown in 11-16/0870r0 under all headings that include CID 1634. |
| 2890 | Zhou Lan | 19.00 | Motion 75 was approved but no corresponding spec text is present in the draft. Motion 75 says the draft specification shall specify that when a Trigger needs to be padded to allow sufficient UL PPDU transmission preparation time, the padding shall be at the MAC layer and the padding shall not include an FCS | add spec text | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes.TGax editor to make the changes shown in 11-16/0870r0 under all headings that include CID 2890. |
| 2896 | Zhou Lan | 19.00 | The spec shall specify the MAC padding mechanism for slow STAs to prepare UL MU transmission | add a MAC padding mechanism for trigger frame | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested changes.TGax editor to make the changes shown in 11-16/0870r0 under all headings that include CID 2896. |

**Discussion: *This submission concludes the MAC trigger padding design. The discussion of the definition of the MAC Padding field and the MAC trigger padding related parameter setting can be found incontribution 11-16-0949r0.***

**25.5.2.2 Rules for soliciting UL MU frame**

**25.5.2.2.1 General**

**TGax Editor: *Insert the following paragraph somewhere in this subclause as follows (#CID 1634):***

A transmitted Trigger frame that contains a Per User Info field with the AID of a non-AP STA may contain a Padding field, whose length shall ensure that at least *MinTrigProcTime,* in microseconds, passes from the end of the Per User Info field that contains that AID and the end of the PPDU that contains the Trigger frame, where the *MinTrigProcTime* is equal to the value specified by the non-AP STA in the Trigger Frame MAC Padding subfield of the HE Capabilities element it transmits. AP shall apply the Trigger Frame MAC Padding field with duration corresponding to the longest value among all STAs that have requested extra *MinTrigProcTime* through Trigger Frame MAC Padding Duration Capability.

The AP shall ensure that the duration of the symbols that follow the symbol in the Trigger Frame that contains the last bit of the STA’s Per User info field is larger than or equal to the *MinTrigProcTime* value specified by the STA.

NOTE 1— The start of the Padding subfield is identified by a Per User Info field that has a value of the AID equal to 2047, and the remaining subfields of the Padding field are set to 1.

NOTE 2— This rule applies to all variants of the Trigger frame (Basic, MU BAR, MU RTS, etc).

**9.3.1.23 Trigger frame**

**TGax Editor: *Change the figure below as follows (#CID 2890, 2896):***

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Frame Control | Duration | (RA) | TA | Common Info | Per User Info | … | Per User Info | Padding | FCS |
| Octets: | 2 | 2 | 6 | 6 | TBD | TBD |  | TBD | variable | 4 |

Figure 9‑51a - Trigger frame

**TGax Editor: *Change the paragraph below as follows (#CID 2890, 2896):***

The Padding field extends the frame length to give the recipient STAs more time to prepare a response. ~~The length and the content of Padding field are TBD.~~ The Padding field of the Trigger frame, if present, is an integer number of bytes >= 2: Padding field starts with special STAID[11:0] as 0xFFF and the rest bits of the Padding field are all set to one. 0xFFF is reserved as the special value to indicate the start of the MAC padding. The length of the Padding field is in units of octets and is set as defined in the following formulas.

For Non-HT, HT and VHT PPDUs:



For HE PPDUs:



**TGax Editor: *add the following paragraph at the end of section 9.3.1.2.3 (#CID 2890, 2896):***

STBC is disallowed for Trigger Frame transmission.

**9.4.2.213 HE Capabilities element**

**TGax Editor: *Insert a Trigger Frame MAC Padding Duration subfield, of 2 bits in length, in Figure 9-554b (HE Capabilities field format) (#CID 1634, 2890, 2896).***

**TGax Editor: *Insert the paragraph below at the end of the subclause (#CID 1634, 2890, 2896):***

The Trigger Frame MAC Padding Duration subfield indicates the additional amount of time defined as *MinTrigProcTime*, in microseconds, needed for a non-AP STA to process a received Trigger frame. The Trigger Frame MAC Padding Duration subfield is set to 0 to indicate no additional processing time; 1 to indicate 8us; 2 to indicate 16 us; remaining values are reserved.