### IEEE P802.11Wireless LANs

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| 11ax D0.1 Comment Resolution for Trigger Frame Format – MU-RTS Variant |
| Date: 2016-06-28 |
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Abstract

This submission proposes resolutions for comments in clause 9.3.1.23.2 of TGax Draft 0.1 with the following CIDs:

* 1311, 2223, 110, 2587, 8, 2222, 1068, 1310, 1312, 2588, 2601, 2894, 1204, 2907

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 D0.1 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax D0.1 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** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1311 | Mark RISON | 22.48 | 9.3.1.23.2 | "The Duration/ID field is defined in 9.2.5.2 Duration/ID field (QoS STA)." seems to be irrelevant here | Delete this sentence | Accepted –Agree with the commenter. Also, Duration/ID field has been defined in 9.3.1.23. Hence, there is no need to mention it again here. |
| 2223 | Tomoko Adachi | 22.49 | 9.3.1.23.2 | It says "The Duration/ID field is defined in 9.2.5.2 Duration/ID field (QoS STA)." What is the difference between the one explained under 9.3.1.23 and this? If it is the same, delete the sentence. | As in comment. | Revised –As discussed in CID 1311, the sentence is deleted. |
| 110 | Alfred Asterjadhi | 40.43 | 9.3.1.23.2 | If statements are generally followed by then or otherwise statemements, neither of which seem to be the case for the CTS frames sent as a response to the MU-RTS variant. Remove the "If" from the sentence unless there is a compelling reason for the otherwise statement which seems not the case since this is legacy NAV protection. Also specify what the contents of hte Trigger Dependent Per-User Info field are in this case. | As in comment. | Revised –The commenter refers to the “if” statement for CTS response to be carried in non-HT or non-HT duplicate PPDU. Agree with the commenter. Based on the agreement in 16/648, CTS solicited by MU-RTS shall be carried in non-HT or non-HT duplicate PPDU. Hence, delete the “if” statement.The frame format of Dependent Per-User Info field is discussed in CID 2222. |
| 2587 | Young Hoon Kwon | 22.43 | 9.3.1.23.2 | There's no indication which frame format the MU-RTS frame solicits. | Add an information subfield that indicates the frame format that the responder shall use in response to the MU-RTS frame. | Revised –As discussed in CID 110, currently, only non-HT frame format is agreed for CTS response to MU-RTS. Hence, there is no need to add indication in the frame format of MU-RTS.Further, the “if” statement is removed based on the discussion in CID 110. |
| 8 | Ahmadreza Hedayat | 22.43 | 9.3.1.23.2 | Referring to "If an MU-RTS frame requests a STA to respond with a CTS frame carried in a non-HT or non-HT duplicate PPDU, ...", there is no indication for such request anywhere in the MU-RTS frame. | Add an indicator in the Common Info of the MU-RTS frame that indicates the type of response that the sender of the MU-RTS frame seeks. | Revised –As discussed in CID 110, currently, only non-HT frame format is agreed for CTS response to MU-RTS. Hence, there is no need to add indication in the frame format of MU-RTS.Further, the “if” statement is removed based on the discussion in CID 110.  |
| 2222 | Tomoko Adachi | 22.00 | 9.3.1.23.2 | How will the Trigger Dependent Common Info and the Trigger Dependent Per User Info fields be? Add such description. | As in comment. | Revised –Agree in principle with the commenter that the frame format of MU-RTS needs to be specific. Based on the current agreement, there is no Trigger Dependent Per-User Info or Trigger Dependent Common Info. Hence, the frame format will follow Figure 9-51b and 9-51c and latest agreement in 16/379 and 16/611 without Trigger Dependent Per-User Info or Trigger Dependent Common Info.Further, based on the agreement in 16/648, CTS solicited by MU-RTS shall be carried in non-HT or non-HT duplicate PPDU. Hence, the fields used to solicit HE trigger-based PPDU are not used by the MU-RTS and will be treated as reserved.Finally, based on the comment resolution document 16/780, User Indentifier field in the Per-User Info is changed to AID12 field. |
| 1068 | Kiseon Ryu | 22.38 | 9.3.1.23.2 | MU-RTS variant is different from the Basic Trigger variant (e.g. RU Allocation, Coding Type, MCS, DCM, SS Allocation) | Define the MU-RTS variant clearly | Revised –As discussed in CID 2222, the format of MU-RTS has been added for clarification. |
| 1310 | Mark RISON | 22.40 | 9.3.1.23.2 | "The MU-RTS frame format is a variant of Trigger frame format as shown in Figure 9-51a (Trigger frame)." -- great, but what is the format of the TD Common and Per User Info fields? | Specify the format | Revised –As discussed in CID 2222, the format of MU-RTS has been added for clarification. |
| 1312 | Mark RISON | 22.42 | 9.3.1.23.2 | "If an MU-RTS frame requests a STA to respond with a CTS frame carried in a non-HT or non-HT duplicate PPDU, the RU Allocation subfield in the Per-User Info field addressed to the STA indicates whether the CTS frame is transmitted on the primary 20 MHz channel, primary 40 MHz channel, primary 80 MHz channel, 160 MHz channel, or 80+80 MHz channel." -- great, but what about all the other subfields? | Specify the format | Revised –As discussed in CID 2222, the format of MU-RTS has been added for clarification. |
| 2588 | Young Hoon Kwon | 22.48 | 9.3.1.23.2 | In case non Trigger based PPDU is requested for CTS frame transmission, lots of subfield in both Common Info field and Per User Info field are not used. So, these fields need to be removed or set to default values. | Define the Common Info field and Per User Info field clearly in case the MU-RTS frame solicits non-Trigger based PPDU format. | Revised –As discussed in CID 2222, the format of MU-RTS has been added for clarification. |
| 2601 | Young Hoon Kwon | 40.60 | 10.3.2.8a.2 | how to set HE-SIG-A Info field in case the MU-RTS frame solicits CTS responses in a non-HT or non-HT duplicate PPDU needs to be described. | Add an explanation on how to set the HE SIG-A field in case the MU-RTS frame solicits CTS responses in a non-HT or non-HT duplicate PPDU format at the end of the paragraph. | Revised –Agree in principle with the commenter that for the field that is not used by the CTS response, the spec shall clarify how to set the field. As discussed in CID 2222, based on the agreement in 16/648, CTS solicited by MU-RTS shall be carried in non-HT or non-HT duplicate PPDU. Hence, the fields used to solicit HE trigger-based PPDU are not used by the MU-RTS and will be treated as reserved. |
| 2894 | Zhou Lan | 22.38 | 9.3.1.23.2 | The content of RA field of a MU-RTS is missing | Add the rule for RA field setting of MU-RTS otherwise remove the field if not needed | Revised –Based on the agreement in 16/379, RA field is present in Trigger frame. Hence, RA field can not be removed.In the case of MU-RTS, since multiple STAs are solicited for CTS response, the RA field is set to the broadcast address. |
| 1204 | Liwen Chu | 22.38 | 9.3.1.23.2 | MU-RTS frame format should be redefined: all the STAs should use same bandwidth as MU-RTS to transmit responding CTS. | Add MU-RTS frame format accordingly. | Rejected –Not all STAs can be allocated the same bandwidth of MU-RTS. For example, if a STA chooses to operate only on primary 20MHz channel, then MU-RTS can not force the STA to respond CTS beyond primary 20MHz channel. Hence, we shall not limit all the solicited STAs to transmit CTS on the same bandwidth of MU-RTS. |
| 2907 | Zhou Lan | 40.59 | 10.3.2.8a.2 | "the RU Allocation subfield in the Per-User Info field addressed to the STA shall be set to a value indicating either primary 20 MHz channel, primary 40 MHz channel, primary 80 MHz channel, 160 MHz channel, or 80+80 MHz channel" spending 8 bits to indicate 5 cases is a waste. | Propose a more effient indication method | Rejected – Based on the agreement for the frame format of trigger frame (See 16/379), RU Allocation subfield is not allocated to Type dependent Per User Info. Hence, RU allocation subfield in Per-User info field exists for every variant of trigger frame and always have 8 bits. Due to this reason, redesigning an efficient indication method will not reduce the number of bits of the Per-User info field in MU-RTS. Hence, it is then better to reuse the signalling agreed in 11ax (See 16/383).  |

**Discussion:** *None.*

**Propose:**

Revised for CID 1311 per discussion and editing instructions in 11-16/0808r0.

***TGax editor: Modify the sentence on page 22 line 49 as the following:***

~~The Duration/ID field is defined in 9.2.5.2 Duration/ID field (QoS STA).~~

**Propose:**

Revised for CID 110, 2222 per discussion and editing instructions in 11-16/0808r0

***TGax editor: Modify 9.3.1.23.2 MU-RTS variant on page 22 as the following:***

~~If an MU-RTS frame requests a STA to respond with a CTS frame carried in a non-HT or non-HT duplicate
PPDU, the RU Allocation subfield in the Per-User Info field addressed to the STA indicates whether the CTS frame is transmitted on the primary 20 MHz channel, primary 40 MHz channel, primary 80 MHz channel, 160 MHz channel, or 80+80 MHz channel.~~(#110)

The Common Info field is defined in Figure 9-51f (Common Info field for MU-RTS variant). (#2222)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Trigger Type | Length | Cascade Indication | CS Required | BW | CP and LTF Type | MU MIMO LTF Mode  | # of LTFs |
| Bits: | 4 | 12 | 1 | 1 | 2 | 2 | 1 | 3 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| STBC | LDPC Extra Symbol | AP TX Power | Packet Extension  | Spatial Reuse | HE-SIG-A Reserved | Reserved |
| 1 | 1 | 6 | 3 | 16 | 10 | 1 |

Figure 9-51f— Common Info field for MU-RTS variant(#2222)

The Trigger Type field is set to 3 to indicate MU-RTS variant. (#2222)

The Bandwidth field indicates the total PPDU bandwidth, and is(#2222)

|  |  |
| --- | --- |
| BW | Description |
| 0 | 20 MHz |
| 1 | 40 MHz |
| 2 | 80 MHz |
| 3 | 80 + 80 or 160 MHz |

The Length filed, CP and LTF Type field, MU MIMO LTF Mode field, Number of LTFs field, STBC field, LDPC Extra Symbol field, AP TX Power field, Packet Extension field, Spatial Reuse Field, and HE-SIG-A Reserved field are reserved for MU-RTS. (#2222)

Note that there are no Type-dependent Common Info field for MU-RTS. (#2222)

The Per User Info field is defined in Figure 9-51h (Per User Info field for MU-RTS variant). (#2222)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | AID12 | RU Allocation | Coding Type | MCS | DCM | SS Allocation | Target RSSI |
| Bits: | 12 | 8 | 1 | 4 | 1 | 6 | 7 |

Figure 9-51h - Per User Info field for MU-RTS variant

The Coding Type field, DCM field, SS Allocation field, and Target RSSI field are reserved for MU-RTS. (#2222)

~~If an MU-RTS frame requests a STA to respond with a CTS frame carried in a non-HT or non-HT duplicate
PPDU, t~~(#110)The RU Allocation subfield in the Per-User Info field addressed to the STA follows the same definition as described in 9.3.1.23 and(#2222) indicates whether the CTS frame is transmitted on the primary 20 MHz channel, primary 40 MHz channel, primary 80 MHz channel, 160 MHz channel, or 80+80 MHz channel.

Bit 12 of RU Allocation subfield is always 0. For Bit 19 to Bit 13 of RU Allocation subfield, (#2222)

* if the Bandwidth field indicates 20MHz, the 242-subcarrier entry 0111101 indicates primary 20MHz;
* if the Bandwidth field indicates 40MHz, then the 242-subcarrier entry corresponding to the primary 20MHz indicates primary 20MHz; the 484-subcarrier entry 1000001 indicates primary 40MHz.
* if the Bandwidth field indicates 80MHz or 80+80 or 160 MHz, the 242-subcarrier entry corresponding to the primary 20MHz indicates primary 20MHz; the 484-subcarrier entry corresponding to the primary 40MHz indicates primary 40MHz; the 996-subcarrier entry 1000011 indicates primary 80MHz.
* if the Bandwidth field indicates 80+80 or 160 MHz, the entry 1000100 indicates primary and secondary 80MHz.

Note that there are no Type-dependent Per User Info field for MU-RTS. (#2222)

**Propose:**

Revised for CID 2894 per discussion and editing instructions in 11-16/0808r0

***TGax editor: Add the sentence on page 22 line 41 as the following:***

The RA field of the MU-RTS is set to the broadcast address.