IEEE P802.11
Wireless LANs

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| Spec Text for TXOP Return for Triggered SU |
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| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3329 | Yunbo Li | 125.05 | 35 | Needs to a subclause to cover the operation of modified MU-RTS. And in this subclause, also needs to add a mechanism for a STA that allocated SU transmitted time by Modified MU-RTS to return the TXOP to AP if it has some remain duration. So that the it reduce the airtime waste and also avoid the third party STA to jump in. | I prepare a presentation 21/61 to discuss this topic | Revised – agree with the commenter.The corresponding signalling and behaviour at AP and non-AP STA side are added.TGbe editor to make the changes shown in 11-21/xxxxr0 |

**Discussion:**

After AP allocate time within an obtained TXOP to a non-AP STA by transmitting an MU-RTS TXS Trigger frame, there are two use cases that needs the non-AP STA to return the TXOP to AP.

1. **If there is remaining time in allocated SU time period after the target STA finished the transmission of buffered data, a mechanism is needed to return the control to AP. Otherwise,**
	1. It is a waist for the system, no one can use it;
	2. The third party STA may contend the channel within this period
2. **If the P2P Peer STA is not available, and the non-AP STA doesn’t have any Data to transmit target to its associated AP**

The A-control subfield is a good candidate to support the signalling. It can be carried in QoS Data frame (for UL SU case), which no extra signalling overhead. And also can be carried in QoS Null frame (for both P2P and UL SU case).

The RDG/More PPDU subfield in CAS Control subfield can be reused for the signalling purpose. The non-AP STA which is the target STA in MU-RTS TXS Trigger frame is neither an RD initiator, nor an RD responder, so no ambiguity from the new usage of the RDG/More PPDU subfield.

Please find more details in 21/270r0, and 21/0061r0.

1. **Introduction**

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 Draft. The introduction and the explanation of the proposed changes are not part of the adopted material.

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

1. **Proposed spec text**

The baseline for this text is TGbe D0.4

***TGbe editor: Modify the paragraphs in 9.2.4.6.1(General) as follows:***

**9.2.4.6.1 General**

The RDG/More PPDU subfield of the HT Control field is interpreted differently depending on whether it is transmitted by an RD initiator, an RD responder, or the target STA in a MU-RTS TXS Trigger frame as defined in Table 9-15 (RDG/More PPDU subfield values). (#3329)

**Table 9-15—RDG/More PPDU subfield values** (#3329)

|  |  |  |
| --- | --- | --- |
| Value | **Role of transmitting STA** | **Interpretation of value** |
| 0 |  Neither an RD responder nor a target STA in a MU-RTS TXS Trigger frame | No reserve grant |
| RD responder | The PPDU carrying the frame is the last transmission by the RD responder |
| Target STA in a MU-RTS TXS Trigger frame  | The PPDU carrying the frame is the last transmission by the target STA in a MU-RTS TXS Trigger frame |
| 1 | RD initiator | An RDG is present |
| RD responder or the target STA in a MU-RTS TXS Trigger frame | The PPDU carrying the frame is followed by another PPDU |

***TGbe editor: Change following paragraph in 35.2.1.3.2 (AP behavior) as follows:***

**35.2.1.3.2 AP behavior**

(#3329) After transmitting an MU-RTS TXS Trigger frame that allocates time to a non-AP STA and receiving the corresponding CTS frame, an AP shall not transmit any PPDU within the time indicated in the Duration field of that CTS frame except under the following conditions:

* The AP received a frame from the non-AP STA that requires an immediate response.
* The AP transmitted an MU-RTS TXS Trigger frame with TxOP Sharing Modes subfield value set to 1 and the CS mechanism indicates that the medium is idle at the TxPIFS slot boundary.
* The AP received a frame from the non-AP STA that the RDG/More PPDU subfield in CAS Control subfield is set to 0.

***TGbe editor: add following paragraphs at the end of 35.2.1.3.3 (Non-AP STA behavior) as follows:***

**35.2.1.3.3 Non-AP STA behavior**

(#3329) A non-AP STA addressed by a User Info field in the MU-RTS TX Trigger frame may send a QoS Data or QoS Null frame with RDG/More PPDU subfield in CAS Control subfield equals to 0 to associated AP under the following conditions:

* The non-AP STA doesn’t has any buffered data to its associated AP if the TxOP Sharing Modes subfield in the MU-RTS TX Trigger frame equals to 1;
* The non-AP STA doesn’t has any buffered data to its associated AP or another STA if the TxOP Sharing Modes subfield in the MU-RTS TX Trigger frame equals to 2;
* Another STA is not available, and the non-AP STA doesn’t has any buffered data to its associated AP if the TxOP Sharing Modes subfield in the MU-RTS TX Trigger frame equals to 2.

After transmitting a QoS Data or QoS Null frame with with RDG/More PPDU subfield in CAS Control subfield equals to 0, the non-AP STA addressed by a User Info field in the MU-RTS TX Trigger frame shall not transmit any more PPDUs within the time signalled in the UL Length subfield of Common Info field of the MU-RTS TXS Trigger frame.

***End of change***