IEEE P802.11
Wireless LANs

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| TXS related CIDs part 2 |
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Abstract

This submission proposes resolutions for following CIDs relative to 11be draft 2.2: 10011 10075 12458 12721 12722 12754 13857 13879 13880 13214 10217 10738 10970 11834 11017 11521 12420 12838 12480 13255 14030 14025 12489 12321

Revisions:

- Rev 0: Initial version.

#  MU -P2P

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| **CID** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 10011 | 35.2.1.2 | 11be should have a solution to extend TXOP sharing to support mutliple P2P case | the commenter will provide a resolution on it, like 11-22/580r0. | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 10075 | 35.2.1.2 | The Triggered TXOP Sharing procedure in D2.0 only supports that AP allocates a portion of the time to only one STA. This procedure can be extended to allow AP allocate a portion of the time to more than one STA. | The MU-RTS TXS TF can carry multiple user info fields, each one corresponding to a STA. The AID, the start time and the allocation duration of each STA can be signalled in the user info field. | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 12458 | 35.2.1.2.2 | TXOP sharing for P2P communication only allows one P2P frame exchange to be established. In many use cases the P2P STAs are well separated from the AP to allow for a simultaneous P2P link and infrastructure link to operation with limited or no interference. | Extend the TXOP sharing mechanism to allow a simultaneous P2P and infrastructure link to operate when interference conditions permit it. The commenter is willing to participate in resolution. | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 12721 | 35.2.1.2 | The section 35.2.1.3 Triggered TXOP sharing procedure (and sub-sections) does not specify multiple STAs, therefore there is a need to define concurrent OFDMA or successive in TDMA. | as per comment, define both schemes (OFDMA, TDMA) for TXS | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 12722 | 35.2.1.2 | TXS has only one User Info field. This is too limitative and unefficient | Allow several User Info fields, so that several communications can occur in the shared TXOP. | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 12754 | 35.2.1.2  | The TXOP sharing procedure is limited to only one time allocation. This feature could be extended to multiple user (time and frequency RU allocation). | Please define a mechanism for Multi User support. | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 13857 | 35.2.1.2 | Triggered TXOP sharing procedure for multiple STAs is missing. | Please define a Triggered TXOP sharing procedure that allocates time to multiple STAs. | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 13879 | 35.2.1.2.2 | More than one User Info field could also allowed in MU-RTS TXS Trigger in R2, please update the text | update the text for the new cases | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 13880 | 35.2.1.2.2 | The number of User Info fileds could be more than 1 in R2, please update the text | update the text for the new cases | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 13214 | 35.2.1.2 | To increase power spectral density, the TXOP sharing procedure shall allow asynchronous direct link operation between STA1 and STA 2 in parallel to transmission between AP and STA3,4,... | Allow the AP to allocate a secondary subchannel for DL operation | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |
| 12489 | 35.2.1.2.1 | TXS procedure for supporting multiple STAs can be a feature in 11be R2. | Define the TXS procedure for supporting multiple STAs | **Reject.** The comment fails to identify a technical issue. 11be has a solution to share the TXOP by preceding each sharing opportunity with an MU RTS TXS Trigger frame. Enabling the same Trigger frame allocating resources to multiple users may provide some overhead benefit however it adds complexity to the TXOP sharing management, allocation and interactions with the sharing STAs, which require extensive analysis.  |

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 10217 | 35.2.1.2.3 | 403.26 | Sentence describing limitations on use of subchannels in not clear. | Rephrase as "During the time allocated by an associated AP using an MU-RTS TXS Trigger frame, a non-AP STA addressed by the MU-RTS TXS Trigger frame shall not transmit non-TB PPDUs occupying subchannels that are not used when sending the CTS frame in response to the MU-RTS TXS Trigger frame. | **Accept.**  |
| 10738 | 9.2.4.6.1 | 121.49 | The acronym TXS in "MU-RTS TXS Trigger frame" is not defined. The instance herein is the first of numerous appearances throughout this amendment. Table 9-17 does not seem to provide the definition of MU-RTS TXS Trigger frame. Instead, P169L40 does. | Please provide the correct pointer to the definition of "MU-RTS TXS Trigger frame." Add TXS to the acronym table. | **Revised.**Added acronym. The sentence in question does not intend to provide reference for MU-RTS TXS Trigger frame definition. It is correctly describing a usage of this frame in the context of the RDG/More PPDU subfield value. **TGbe editor:** Apply the changes tagged with #10738 in this document.  |
| 10970 | 9.2.5.2 | 132.39 | The list for single protecton settings is incomplete. First, we need to add EHT TB PPDU to the list; second, we need to add an entry for MU-RTS TX Trigger frame to use single protection settings. | As in comment | **Reject.** Regarding the first comment, it is already clarified in P523L39 of 11be draft2.2 that the rules related to HE TB PPDUs also apply to EHT TB PPDUs. Regarding second comment, the number of frames a STA addressed by an MU-RTS TXS frame can transmit is only limited in the TF signaling by the duration of the allocation. Hence, the rules for single protection settings, which roughly limit number of frame transmissions by a STA, do not apply for MU-RTS TXS frames.  |
| 11834 | 9.2.5 | 132.28 | Remove "The Duration/ID is set as follows:". No changes to it and also don't think it is correct. | as in comment | **Revised.**Deleted the second sentence since that is a duplicate of the first. **TGbe editor:** Apply the changes tagged with #11834 in this document.  |
| 11017 | 35.2.1.2.2 | 401.06 | Do we miss anything bewteen "transmit a" and "PIFS"? | Change to "transmit a frame PIFS After the end of ..." | **Revised.** **This text has been modified so the term “a PIFS” does not exist anymore.****TGbe editor:** no further action needed.  |
| 11521 | 9.4.2.313.2 | 229.25 | TXOP sharing related bits should be grouped together instead being separated | as in comment | **Reject.** The commenter failed to identify a technical issue resulting from two similar fields not being grouped together in the same element.  |
| 12420 | 35.2.1.2.3 | 402.30 | In Triggered TXOP Sharing, error recovery method by a non-AP STA is not defined. Since the non-AP STA is not a TXOP holder in the shared TXOP, when the intended receiver of the non-AP STA doesn't respond, the transmission can not be recovered and medium may released. An appropriate error recovery mechanism like PIFS recovery needs to be defined. | Please make the follwoing changes in order to clarify the error recovery mechanism of a non-AP STA during a TXOP sharing period.During the time allocated by an associated AP, the non-AP EHT STA may transmit non-TB PPDUs to the AP or another STA if the TXOP Sharing Mode subfield value is 2. The non-AP EHT STA may perform the PIFS recovery as described in 10.23.2.8 when the non-TB PPDU is not properly transmitted. The non-AP EHT STA may transmit a QoS Data or QoS Null frame to an associated AP to terminate the allocated time, if the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field is equal to 0.NOTE 1--For example, the other STA can be a peer STA of a peer-to-peer link.During the time allocated by an associated AP, the non-AP EHT STA may transmit non-TB PPDUs and only to its associated AP if the TXOP Sharing Mode subfield value is 1. The non-AP EHT STA may perform the PIFS recovery as described in 10.23.2.8 when the non-TB PPDU is not properly transmitted. | **Revised.** Agree in principle. Clarified that the STA can do PIFS error recovery during the allocated time. **TGbe editor:** Apply the changes tagged with #12420 in this document.  |
| 12838 | 35.2.1.12 | 399.53 | Enterprise deployments will need more tools to help improve P2P traffic and get more protection for low latency traffic. It would be good to have ways to advertise a list of channels dedicated for P2P traffic and a list of channels dedicated for infrastructure low latency traffic, and to define a set of rules on how to set these channels and a set of rules to operate on these different types of channels in order to find the right balance so that both P2P traffic and sensitive infrastructure QoS traffic benefit. | as in comment | **Reject.** **Commenter withdrew the comment.**  |
| 12480 | 35.2.1.2.2 | 400.46 | Usage of the TXNAV timer for the Triggered TXOP sharing procedure is not clear. Upon successful MU-RTS TXS Trigger frame transmission, the AP shall not transmit any PPDU unless specific conditions. In next page (401 line 2), it is specified that the AP may send a PPDU before the TXNAV timer expiration. Does it mean that the AP set its TXNAV timer upon successful MU-RTS TXS Trigger frame transmission ? | Please specify how the TXNAV timer is set by the AP during the Triggered TXOP sharing procedure. | **Reject.** Neither of the two sentences the commenter is referring to change how TXNAV timer is set at the AP relative to baseline.  |
| 13255 | 35.2.1.2.3 | 403.21 | Add text describing how the NAV setting would work for a peer STA communicating with the non-AP STA addressed by the MU RTS TXS, during the shared TxOP duration. If peer STA follows NAV setting based on MU-RTS TXS, then it won't be able to transmit any UL traffic to non-AP STA over the p2p link due to NAV indication in MU-RTS TXS. | As in comment | **Reject.** In the absence of new text, it is clear that the peer STA sets its NAV following baseline EDCA rules.  |
| 14025 | 35.2.1.2.3 | 402.29 | Clarify that the Duration field of CTS in response to the MU-RTS TXS trigger frame may be set based on the allocated time by the MU-RTS TXS trigger frame in order to avoid over reserving medium time. | As in comment. | **Reject.**The spec already defines a solution that solves the overallocation problem by returning unused time. It is unclear how much additional benefit the proposed solution would bring relative to the current one.   |
| 14030 | 35.2.1.2.2 | 401.13 | This parapgrah can be one of the conditions that the EHT AP may transmit a PPDU after the end of the allocated time and before its TXNAV timer has expired. | Change this paragraph to one of the conditions described above this paragraph. Delete "or wait for the TXNAV timer to expire andinvoke the backoff procedure" | **Revised.** For clarity, kept this as a separate paragraph for now. However, deleted the “or wait… procedure”. **TGbe editor:** Apply the changes tagged with #14030 in this document.  |
| 12321 | 9.4.2.316 | 252.60 | Considering TID 0-7 and TID 8-15 have completely different usage, i.e. the TID within (0-7) can be shared by one or more traffic flows, but the TID within (8-15) is assigned to one traffic flow at most, the current SCS mechnism cannot prioritize a particular traffic stream. From this point, we should allow the traffic stream to map to a TID within 8-15. | As in comment | **Reject.** The group could not reach consensus on a proposed change that would resolve this comment. Also, note there is no current rule that TID within 8-15 can be assigned to one traffic flow at most.   |

***TGbe editor: insert the following entry to the list of Acronym in P59 of 11be draft 2.2 as:***

TXS Triggered TXOP Sharing (#10738)

35.2.1.2 Triggered TXOP sharing procedure

35.2.1.2.2 AP behavior

***TGbe editor: modify the following paragraph at P419L27 of 11be draft 2.2:***

If the EHT AP determines that the transmission of the MU-RTS TXS Trigger frame is successful and the CS
mechanism indicates that the medium is busy at the end of the allocated time, then the AP might transmit
after the CS mechanism indicates that the medium is idle at the TxPIFS slot boundary or invoke the backoff
procedure as described in 10.23.2.2 (EDCA backoff procedure) (#14030).

35.2.1.2.3 Non-AP STA behavior

***TGbe editor: insert the following paragraph at P421L37 of 11be draft 2.2:***

A non-AP STA addressed by an MU-RTS TXS Trigger frame with the Triggered TXOP Sharing Mode equal to 2 may either perform PIFS recovery within the allocated time or perform a backoff within the allocated time when the non-TB PPDU transmission is not successful (#12420). How it chooses among these options is implementation dependent.

**9.2.5 Duration/ID field (QoS STA)**

 **9.2.5.2 Setting for single and multiple protection under enhanced distributed channel
access (EDCA)**

***TGbe editor: delete the following sentence at P145L30 of 11be draft 2.3(#11834):***