IEEE P802.11
Wireless LANs

|  |
| --- |
| CR for P2P buffer report |
| Date: 2022-08-04 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Yunbo Li | Huawei |  |  | liyunbo@huawei.com |
| Ming Gan |  |  |  |  |
| Yuchen Guo |  |  |  |  |
| Guogang Huang |  |  |  |  |
| Yousi Lin |  |  |  |  |
| Zhenguo Du |  |  |  |  |
| Stephen McCann |  |  |  |  |
| Edward Au |  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes comment resolution(s) for the following 15 CID(s) received in LB266 on TGbe D2.3 related to 35.2.1.2 Triggered TXOP sharing procedure

CIDs:

10727, 10077, 10016, 12723, 12836, 13654, 13684, 14091, 13340, 12332, 13322, 10711, 10675, 10882, 11241

Revisions:

* Rev 0: Initial version of the document.
* Rev 1:
	+ Remove TID in the frame structure
	+ Increase the length of Requested Medium Time subfield from 8 bits to 10 bits
	+ Add sentence to clarify that the requested time requirement applies on the link that the TXOP Sharing Resource Request control is transmitted.
* Rev 2-3: modification base on offline discussion
* Rev 4: add CID 10711
* Rev 5: add CIDs 12332, 13322
* Rev 6: add CIDs 10675, 10882

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause**  | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 10727 | Insun Jang | 35.2.1.2 | 399.52 | Non-AP STA supporting TXOP sharing needs to deliver its resource requirements of P2P (e.g., BW, required time) to AP by using a mechiansm (e.g., A-control) | As in the comment, we need to design a mechanism where a non-AP STA transmits its resource requirements of P2P to AP | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 10077 | Pei Zhou | 35.2.1.2 | 400.33 | How does AP determine which TXOP sharing mode should be signalled to the STA? STA may need to indicate its UL or P2P transmission requirement to the AP. | Before MU-RTS TXS TF transmitted by AP, STA may need to transmit a frame (e.g., QoS Null frame) to AP to indicate its UL or P2P transmission requirement to AP. Then, AP can determine the TXOP sharing mode based on STA's indication. | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 10016 | Jay Yang | 35.2.1.2.2 | 400.27 | the EHT AP shall have a solution to know the required allocation duration before TXOP sharing procedure. | 11be spec should use a-control to indicate the required allocation duration to AP. | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 12723 | Pascal VIGER | 35.2.1.2 | 399.52 | TXS procedure allows an AP to allocate a portion of its TXOP time to associated STA, with Mode 2 indicating the transmission is for another STA. There is a need of a BSR for P2P traffic, so that AP may allocate appropriate resource.The BSR shall contain an amount of data along with the identification of the recipient P2P STA | as per comment | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 12836 | Laurent Cariou | 35.2.1.2.3 | 402.41 | In order to reduce overallocation or underallocation of time to a STA in the TXS frame, the STA should be able to dynamically inform AP about its P2P traffic requirements similar to BSR for UL traffic. | Define a way for the STA to report instantenous P2P traffic requirements to its associated AP. | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 13654 | Rubayet Shafin | 35.2.1.2 | 399.53 | Currently there is no mechanism in the spec that enables to request for TXOP from an AP by a non-AP STA. However, such capability would be essential for efficient operation, especially for P2P communication. | Please provide mechanisms and frameworks for requesting TXOP from the AP or AP MLD by an STA or non-AP MLD and describe AP MLD's behavior upon receiving such request. | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 13684 | Yunbo Li | 35.2.1.2.3 | 402.28 | AP could allocate TXOP duration to P2P transmission, but current spec doesn't support P2P buffer report yet. | introduce a solution that allows non-AP STA to report P2P buffer related info to AP. The commenter will prepare a CR document. | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 14091 | Liwen Chu | 35.2.1.2 | 399.52 | The signaling of STA's reporting resource request for P2P traffic should be defined. | As in comment | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 13340 | Liwen Chu | 35.2.1.2 | 399.52 | The resource request for triggered TXOP sharing (medium time request per reference BW) should be defined as optional feature. | As in comment | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 12332 | Guogang Huang | 35.3.22 | 478.02 | Please define a UL/P2P buffer report to assist the TXOP sharing | As in comment | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 13322 | Muhammad Kumail Haider | ï»¿35.2.1.2 | 399.52 | With addition of TXOP sharing mode 2, there is a need to deliver information about buffer status of STA's p2p traffic so as to help the AP allocate resources/time using TXOP sharing. BSR signaling mechanism (Triggering and reporting) should be enhanced to enable inquiry and reporting of STA's p2p traffic | as in comment | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 10711 | Liangxiao Xin | 9.2.4.6.4 | 122.44 | Before an AP initiates trigger-based TXOP sharing, it needs to know how long time it should share with the intended STAs. The current BSR can only report of bit size of the buffer. For Trigger-based UL transmission, AP could control the MCS of the transmission and calculate the length of TB PPDU. However, for P2P traffic, AP cannot control the MCS of the P2P traffic. | BSR should report the TXOP duration requested by the non-AP STA | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 10675 | Duncan Ho | 9.4.2.316 | 251.40 | Currently, the standard lacks a fast way to convey the resouce request for p2p scheduling. Add a more dynamic resource request for p2p scheduling | Add a more dynamic resource request for p2p scheduling. Contribution to follow | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| 10882 | Yousi Lin | 9.4.2.316 | 251.41 | QoS Characteristics element only provides the predicted and average estimation of the P2P buffer. An instantaneous P2P buffer report is still needed. | as in comment | RevisedAgree with the commenter. A P2P buffer report mechanism is introduced to solve this issue.In 802.11ax, an HE AP solicits the resource request from associated STAs through a BSRP Trigger frame. A STA sends the resource request either after receiving a soliciting BSRP Trigger frame or without the AP’s soliciting. The requested resource in units of buffered octets is carried in either the QoS Control field or the BSR Control field. If this solution is introduced to 802.11be, it is difficult for the AP to decide the allocated medium time, since the MCS and bandwidth being used by the STA for P2P transmission are not known. In other words, the resource request signaling used by 802.11ax is not suitable here. For a resource request for TXOP sharing, the following requested parameters are needed: medium time, BW, and TID. The medium time requested is the requested resource based on the BW. The BW gives the maximal bandwidth that the TXOP sharing will be used for. The AP can decide the priority to allocate its medium time based on the TID and other information.TGbe editor to make changes in 11-22/1264r6 under CID 10727 |
| ~~11241~~ | ~~Peshal Nayak~~ | ~~35.2.1.2.1~~ | ~~399.58~~ | ~~A mechanism is needed to enable the STA to inform the AP about the urgency for traffic transmission. The AP can use this information to prioritize those STAs with urgent traffic transmission needs via TXOP sharing~~ | ~~Define a mechanism by which the STA can provide a traffic urgency indication to the AP~~ | ~~Revised~~~~A P2P buffer report mechanism is introduced to help an AP perform time allocation in MU-RTS TXS mode 2. In the proposed P2P buffer report, a TID subfield is added that helps the AP to determine the priority of buffered traffic at the STA side.~~~~TGbe editor to make changes in 11-22/1264r2 under CID 10727~~ |

1. **Proposed spec text**

9.2.4.6 HT Control field

9.2.4.6.4 HE variant

***TGbe editor: Please make the following changes in Table 9-25 (Control ID subfield values) :***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |
| --- |
| Control ID value |

 |

|  |
| --- |
| Meaning |

 |

|  |
| --- |
| Length of the Control Information subfield (bits) |

 |

|  |
| --- |
| Content of the Control Information subfield |

 |
| … | … | … | … |
| 10 | P2P Buffer Status Report (P2P BSR)(#10727) | 16 | See 9.2.4.7.12 |
| 11-14 | Reserved |  |  |
| 15 |

|  |
| --- |
| Ones need expansion surely (ONES) |

 | 26 |

|  |
| --- |
| Set to all 1s |

 |

***TGbe editor: add the following subclause in subcaluse 9.2.4.7 (Control subfield variants of an A-Control subfield)***

9.2.4.7.12 P2P BSR Control (#10727)

The Control Information subfield in a P2P BSR subfield contains information related to the required medium time for TXOP sharing for the STA transmitting the frames to its P2P peer STA (see 35.2.1.3 Triggered TXOP sharing procedure). The format of the subfield is shown in [Figure 9-x (Control Information subfield format in aP2P BSR Control subfield)](#bookmark2)

 B0 B3 B4 B6 B7 B13 B14

|  |  |  |  |
| --- | --- | --- | --- |
| TID | Channel Width | Required Medium Time | Reserved |

 Bits: 4 3 7 1

 [Figure 9-x Control Information subfield format in a P2P BSR Control subfield](#bookmark2)

The TID subfield indicates the TID whose medium time is requested.

The Channel Width subfield as defined in Table 9-y (Channel Width subfield) indicates the maximal bandwidth of the P2P link that corresponds to the link on which the P2P BSR Control is transmitted.

The Required Medium Time subfield indicates the required medium time in unit of 256 microseconds, requested for TXOP sharing on the link on which the P2P BSR Control is transmitted base on the channel width specified in by the Channel Width subfield.

Table 9-y — Channel Width subfield

|  |  |
| --- | --- |
| Value | Meaning |
| 0 | 20 MHz |
| 1 | 40 MHz |
| 2 | 80 MHz |
| 3 | 160 MHz |
| 4 | 320 MHz |
| 5 to 7 | Reserved |

***TGbe editor: add the following paragraphs in 35.2.1.2.3 (Non-AP STA behaviour):*** (#10727)

35.2.1.2.3 Non-AP STA behavior

If a non-AP STA with dot11EHTTXOPSharingTFOptionImplemented equal to true received the EHT Capabilities element with the Triggered TXOP Sharing Mode 2 Support subfield in the EHT Capabilities element equal to 1 from its associated AP, the non-AP STA may deliver a P2P BSR Control to its associated AP to assist the AP in allocating resources for TXOP sharing operation.

After receiving the soliciting BSRP Trigger frame, a non-AP STA with dot11EHTTXOPSharingTFOptionImplemented equal to true may transmit a QoS Null frame with P2P BSR Control subfield as defined in 9.2.4.7.11 (TXOP sharing resource request).

When associated with an AP from which the EHT Capabilities element with the Triggered TXOP Sharing Mode 2 Support subfield in the EHT Capabilities element equal to 1 is received, a non-AP STA with dot11EHTTXOPSharingTFOptionImplemented equal to true, may deliver QoS Null/Data frame with P2P BSR Control subfield as defined in 9.2.4.7.11 (P2P BSR Control) that is not carried in EHT TB PPDU or HE TB PPDU.

The required time duration in a P2P BSR Control applies on the link that the P2P BSR Control is transmitted.

NOTE 3 — When a non-AP STA reports a P2P BSR Control to its associated AP, if the value of TID subfiled in the P2P BSR Control matches the TID of an established SCS stream, the report of P2P BSR Control doesn’t changes the parameters of the SCS stream.