IEEE P802.11
Wireless LANs

|  |
| --- |
| LB275 Misc. CIDs |
| Date: Oct 25th, 2023 |
| Author(s): |
| Name | Affiliation | Address | Phone | Email |
| Yue Qi | Samsung Research America | 6105 Tennyson parkway., Plano, TX, 75023 |  | sunshine.qi@samsung.com |
| Rubayet Shafin |  | r.shafin@samsung.com |
| Boon Loong Ng |  |  |
| Vishnu Ratnam  |  |  |
| Peshal Nayak |  |  |
| Elliot Jen |  |  |

 Abstract

This submission proposes resolutions for the following 7 comments received for TGbe LB275:

* 7 CIDs: 19302 19966 19985 19986 ~~19991~~ 20000 20107

SP: Do you agree to the resolutions provided in doc 11-23/1780r0 for the following CIDs for inclusion in the latest 11be draft?

19302 19966 19985 19986 ~~19991~~ 20000 20107

Revisions:

* Rev 0:
	+ Initial version.

***TGbe editor: Please note Baseline is 11be D4.1***

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. This introduction is not part of the adopted material.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Pg/Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 19302 | 580.22 | The opening of this section should make reference to the procedures in clause 26.8.3 (Broadcast TWT operation). | As in comment | **Revised**Agree in principle. A sentence is added to clarify that a STA affiliated with an MLD, for broadcast TWT operation, shall follow the baseline.**TGbe editor, please make changes as shown in this doc 11-23/1780r0 tagged by #19302.** |
| 19966 | 554.17 | In the current spec, the NSTR capability information exchange with the AP MLD is pretty much on a long term basis. However, a device's NSTR ability can change more dynamically. For example, for a folding device, the device can be in STR when in unfolded position, while it is NSTR-constrained when in folded position. The current mechanism in the spec on NSTR information exchange is not conducive to more dynamic NSTR update. | Please provide procedures in the spec to enable dynamic NSTR update. | **Rejected**This issue was discussed in the group multiple times in the past. However, there was no consensus. Please see 11-23/763r1 for related details.  |
| 20107 | 580.22 | Broadcast TWT operation procedure for NSTR Mobile AP MLD needs to be clarified in the specification. | as in comment. | **Revised**The issue was resolved in doc 11-23/1553r3. No further action is needed. |
| 19985 | 580.22 | 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. | **Revised**Agree in principle. Currently there is no mechanism to inform the AP dynamically about the non-AP STA’s P2P buffer or P2P resource need. So the AP would not be able to assess and appropriately allocate TXOP for P2P. A mechanism is needed to inform the AP about the non-AP STA’s need for resources for P2P communications. **TGbe editor, please make changes as shown in this doc 11-23/1780r0 tagged by #19985.** |
| 19986 | 580.22 | An R-TWT or B-TWT scheduled STA affiliated with a non-AP MLD may want to seek TXOP from the AP MLD. However, currently there is no mechanism defined in the spec that would enable the non-AP MLD to explicitly seek the TXOP from the AP MLD and such a mechanism should be added in the spec. | as in comment. | **Revised**Agree in principle. Currently there is no mechanism to inform the AP dynamically about the non-AP STA’s P2P buffer or P2P resource need. So the AP would not be able to assess and appropriately allocate TXOP for P2P. A mechanism is needed to inform the AP about the non-AP STA’s need for resources for P2P communications. **TGbe editor, please make changes as shown in this doc 11-23/1780r0 tagged by #19985.** |
| 20000 | 483.55 | For TXOP sharing, the STA should have a mechanism to indicate its need for TXOP and what kind of TXOP (mode 1 or 2) so that AP would know what to send. This is currently missing and need to be provided. | as in comment. | **Revised**Agree in principle. Currently there is no mechanism to inform the AP dynamically about the non-AP STA’s P2P buffer or P2P resource need. So the AP would not be able to assess and appropriately allocate TXOP for P2P. A mechanism is needed to inform the AP about the non-AP STA’s need for resources for P2P communications. **TGbe editor, please make changes as shown in this doc 11-23/1780r0 tagged by #19985.** |

***TGbe editor: Please insert the following paragraph as the first paragraph in clause 35.3.24.3 (Broadcast TWT operation) (#19302)***

A STA affiliated with an MLD, for broadcast TWT operation, shall follow the rules defined in 26.8.3 (Broadcast TWT operation) with additional rules described in this subclause. (#19302)

***--------------------------------------------Part 2: TXOP REQUEST ------------------------------------------------***

***Option-1: Explicit resource request for peer-to-peer communication***

***TGbe editor: Please update Table 9-628c (Protected EHT Action field values) as follows* (#19985)*:***

**Table 9-628c—Protected EHT Action field values(#19985)**

|  |  |  |
| --- | --- | --- |
| **Value** | **Meaning** | **Time priority** |
| 0 | TID-To-Link Mapping Request | No |
| 1 | TID-To-Link Mapping Response | No |
| 2 | TID-To-Link Mapping Teardown | No |
| 3 | EPCS Priority Access Enable Request | No |
| 4 | EPCS Priority Access Enable Response | No |
| 5 | EPCS Priority Access Teardown | No |
| 6 | EML Operating Mode Notification | No |
| 7 | Link Recommendation | No |
| 8 | Multi-Link Operation Update Request | No |
| 9 | Multi-Link Operation Update Response | No |
| 10 | Link Reconfiguration Notify | No |
| 11 | Link Reconfiguration Request | No |
| 12 | Link Reconfiguration Response | No |
| 13 | P2P Resource Solicitation | No |
| 14–255 | Reserved |  |

***TGbe editor: Please insert the following subclause (9.6.35.xx1 P2P Resource Solicitation frame format) including the Table (9-628xx2—P2P Resource Solicitation Action field format) under clause 9.6.35 (Protected EHT Action frame details)***(#19985):

**9.6.35.xx1 P2P Resource Solicitation frame format (#19985)**

The P2P Resource Solicitation frame is transmitted by an EHT non-AP STA to request for TXOP to its associated AP for peer-to-peer communication. The Action field of the P2P Resource Solicitation frame contains the information shown in Table 9-628xx2 (P2P Resource Solicitation frame Action field format).

**Table** **9-628xx2—P2P Resource Solicitation Action field format**

|  |  |
| --- | --- |
| **Order** | **Information** |
| 1 | Category |
| 2 | Protected EHT Action |
| 3 | P2P Resource Request |

The Category field is defined in [9.4.1.11 (Action field)](file:///C%3A%5CUsers%5Cr.shafin%5CDownloads%5C11-23-1124-02-00be-lb271-cids-on-tdls.docx#_bookmark105).

The Protected EHT Action field is defined in [9.6.35.1 (Protected EHT Action field)](file:///C%3A%5CUsers%5Cr.shafin%5CDownloads%5C11-23-1124-02-00be-lb271-cids-on-tdls.docx#_bookmark296).

The P2P Resource Request field is defined in 9.4.2.xx3 (P2P Resource Request element).

***TGbe editor: Please update Table 9-128 (Element IDs) as follows*(#19985)*:***

**Table 9-128—Element IDs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Element ID** | **Element ID Extension** | **Extensible** | **Fragmentable** |
| … |  |  |  |  |
| P2P Resource Request | 255  | 136 | Yes | No |

***TGbe editor: Please insert the following subclause (9.4.2.xx3 (P2P Resource Request element)) under clause 9.4.2 (Elements)*** (#19985)

**9.4.2.xx3 P2P Resource Request element** (#19985)

The P2P Resource Request element contains a set of parameters that indicates a non-AP STA’s resource need for peer-to-peer communication. The format of the P2P Resource Request element is shown in Figure 9-f1.



Figure 9-f1: P2P Resource Request element format (#19985)

The Element ID, Length, and Element ID Extension fields are defined in 9.4.2.1 (General).

The P2P Resource Request Set field contains one or more P2P Request fields. The format of the P2P Request field is shown in Figure 9-f2.



Figure 9-f2: P2P Request field format (#19985)

The TID subfield indicates the TID for which medium time is requested for peer-to-peer communication.

The Bandwidth subfield indicates the maximum bandwidth of the P2P link(s) for which medium time is requested on the link identified by the Link ID subfield. The encoding of the Bandwidth subfield is shown in Table 9-t1

**Table 9-t1: Encoding of the Bandwidth subfield (#19985)**

|  |  |
| --- | --- |
| Bandwidth subfield value | Bandwidth |
| 0 | 20 MHz |
| 1 | 40 MHz |
| 2 | 80 MHz |
| 3 | 160 MHZ |
| 4 | 320 MHZ |
| 5-7 | Reserved |

The Medium Time subfield contains an unsigned integer that specifies the medium time, in units of 256 microseconds, requested by the STA on the link identified by the Link ID subfield for peer-to-peer communication.

The Link ID subfield indicates the link on which medium time is requested.

***TGbe editor: Please insert the following paragraph in clause 35.2.1.2.3 (Non-AP STA behavior)*** ***(#19985)***

A non-AP STA with dot11EHTTXOPSharingTFOptionImplemented equal to true and that sets the Triggered TXOP Sharing Mode 2 Support subfield in the EHT Capabilities element to 1 may send a P2P Resource Solicitation frame to its associated AP to indicate the need of non-AP STA for TXOP for peer-to-peer communication if the non-AP STA receives an EHT Capabilities element from the AP with the Triggered TXOP Sharing Mode 2 Support subfield set to 1. (#19985)

***Option-2: repurpose the current BSR as an indication for the need for P2P resources***

***TGbe editor: Please revise the first paragraph in clause 26.5.5 (Buffer status report operation) as follows: (#19985)***

A non-AP STA delivers buffer status reports (BSRs) to assist its AP in allocating UL MU resources or in allocating resources to facilitate peer-to-peer communications (see 35.17 (EHT SCS procedure)). (#19985) The non-AP STA can either implicitly deliver BSRs in the QoS Control field or BSR Control subfield of any frame transmitted to the AP (unsolicited BSR) or explicitly deliver BSRs in any frame sent to the AP in response to a BSRP Trigger frame (solicited BSR). The buffer status reported in the QoS Control field consists of a queue size value for a given TID (see 9.2.4.5.6 (Queue Size subfield)). The buffer status reported in the BSR Control field consists of an ACI bitmap, delta TID, a high priority AC, and two queue sizes (see 9.2.4.7.4 (BSR Control)).

***TGbe editor: Please insert the following paragraph as the last paragraph in clause 35.17 (EHT SCS procedure)(#19985)***

A non-AP EHT STA with dot11EHTTXOPSharingTFOptionImplemented equal to true that has successfully established an SCS stream with an EHT AP for a direct link as specified in a QoS Characteristics element included in the corresponding SCS Request frame may send a buffer status report for a TID identified in the QoS Characteristics element (see 26.5.5 (Buffer status report operation)). This buffer status report, when transmitted during the P2P service period characterized by the Minimum Service Interval and the Maximum Service Interval field values of the QoS Characteristics element, shall account for both uplink and peer-to-peer traffic for the non-AP STA. The EHT AP, upon receiving the buffer status report from the non-AP STA that indicates a non-empty queue for the TID, should facilitate the transmission of the pending BUs over the direct link specified in the LinkID subfield of the QoS Characteristics element within the minimum and maximum service interval specified in the QoS Characteristics element. (#19985)