IEEE P802.11
Wireless LANs

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| D1.0 comment resolutions on Clause 9.19.2 |
| Date: 2011-11-07 |
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Abstract

This document proposes resolutions for CIDs 2915, 3376, 3092, and 3093 (MAC). (comments on P802.11ac/D1.0)

Changes in the text refer to: Draft P802.11ac/D1.2 and Draft P802.11REVmb/D11.0

Comments (CID 2915 - MAC)

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| 2915 | Liu, Yong | 9.19.2.4 | 83-84 | 57 | T | It appears to be too many rules / conditions on TXOP BW selection. | Consider to rewrite this section and make the rules simpler and clearer. | Agree in principle. Resolution to CID 3500 (11/1060r0) also resolves this CID | MAC |

Discussion

Agree in Principle.

CID 2915 is similar to CID 3500 (11/1060r0) which has already passed the motion.

CID 3500 is as follows:

“This paragraph and the next two or three seem overly complex with a lot of repetition. For example, The second sentence talks about TXOP bandwidth coming from the CTS response to non-HT RTS with dynamic bit sent and the so does the bullet at L53. The third sentence says that in all other cases the bandwidth of the TXOP is from the initial frame and then so does L58 and P84L6”

11/1060r0 proposed the following changes to 11ac D1.0 and it was included in TGac D1.2, and it also resolves CID 2915.

**9.19.2.4 Multiple frame transmission in an EDCA TXOP**

A TXOP is obtained after a STA transmitting an initial frame successfully receives a response frame. When a TXOP is obtained for a bandwidth that is greater than 20MHz by non-HT duplicate frame exchange, the TXOP holder may transmit PPDUs using CH\_BANDWIDTH that are up to and including the bandwidth obtained for the TXOP. During the TXOP, the TXOP holder shall not transmit PPDUs using CH\_BANDWIDTH greater than the obtained bandwidth for the TXOP.

If a TXOP is protected by non-HT or non-HT duplicate RTS/CTS, the TXOP holder shall set the TXVECTOR parameter CH\_BANDWIDTH of a PPDU as follows:

— To be the same or narrower than RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT of the last received CTS frame in the same TXOP, if the RTS frame with the Individual/Group bit of the TA set to one and the TXVECTOR parameter DYN\_BANDWIDTH\_IN\_NON\_HT set to Dynamic has been sent by the TXOP holder in the last RTS/CTS exchange.

— Otherwise, to be the same or narrower than the TXVECTOR parameter CH\_BANDWIDTH of the RTS frame that has been sent by the TXOP holder in the last RTS/CTS in the same TXOP.

If there is no RTS/CTS exchange in non-HT duplicate format in a TXOP and there is at least one non-HT duplicate frame exchange in a TXOP, the TXOP holder shall set the CH\_BANDWIDTH parameter in TXVECTOR of a PPDU to be the same or narrower than the CH\_BANDWIDTH parameter in TXVECTOR of the initial frame in the first non-HT duplicate frame exchange in the same TXOP.

If there is no non-HT duplicate frame exchange in a TXOP, the TXOP holder shall set the TXVECTOR parameter CH\_BANDWIDTH of a non-initial PPDU to be the same or narrower than the TXVECTOR parameter CH\_BANDWIDTH of the preceding PPDU that it has transmitted in the same TXOP.

If a TXOP is protected by non-HT or non-HT duplicate CTS-to-Self, the TXOP holder shall set the TXVECTOR parameter CH\_BANDWIDTH of a PPDU to be the same or narrower than the TXVECTOR parameter CH\_BANDWIDTH of the CTS-to-Self in the same TXOP.

**Proposed resolution**:

Accept the existing resolution to CID 3500 (11/1060r0).

Comments (CID 3376 – MAC)

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| 3376 | Rosdahl, Jon | 9.19.2.3 | 81 | 64 | T | Is this a change from 11n? On 11n were the medium conditions on the secondary channel also taken into account? | Clarify | Agree in principle. Clarification is provided in this documen.t. Added a note to the draft. | MAC |

Discussion

Agree in principle.

The commenter is questioning about the following sentence in the clause 9.19.2.3 “Obtaining an EDCA TXOP.”:

“All references to medium idle and medium busy within this subclause refer specifically to the medium condition on the primary channel.”

The detailed description regarding this sentence can be found in the current D1.2 text in the clause 9.19.2.3 as follows:

“When a STA and the BSS of which the STA is a member both support multiple channel widths, an EDCA TXOP is obtained based solely on activity of the primary channel. "Idle medium" in this subclause means "idle primary channel". Likewise "busy medium" means "busy primary channel". Once an EDCA TXOP has been obtained according to this subclause further constraints defined in 10.15.9 (STA CCA sensing in a 20/40 MHz BSS) and 9.19.2.8 (EDCA channel access(#3592) in a VHT BSS) might limit the width of transmission during the TXOP or deny the channel access, based on the state of the CCA on secondary channel(s). (#3764)”

Clause 10.15.9 (STA CCA sensing in a 20/40 MHz BSS) in 802.11REVmb D11.0 specifies limitation on the width of transmission during the TXOP for 20/40 MHz BSS as follows:

“At the specific slot boundaries (defined in 9.3.7) determined by the STA based on the 20 MHz primary channel CCA, when the transmission begins a TXOP using EDCA (as described in 9.19.2.3), the STA may transmit a pending 40 MHz mask PPDU only if the secondary channel has also been idle during the times the primary channel CCA is performed (defined in 9.3.7) during an interval of a PIFS for the 5 GHz band and DIFS for the 2.4 GHz band immediately preceding the expiration of the backoff counter.”

9.19.2.8 (EDCA channel access(#3592) in a VHT BSS) in 11ac D1.2 specifies limitation on the width of transmission during the TXOP for VHT BSS as follows:

If (#3593)a STA is permitted to begin a TXOP (as defined in 9.19.2.3 (Obtaining an EDCA TXOP))(#3764) and the STA has at least one MSDU pending for transmission for the AC of the permitted TXOP, the STA shall perform exactly one of the following steps:

1. transmit a 160 MHz or 80+80 MHz mask PPDU if the secondary channel, the secondary 40 MHz channel and the secondary 80 MHz channel were idle during an interval of PIFS immediately preceding the start of the TXOP
2. (#2099)transmit an 80 MHz mask PPDU on the primary 80 MHz channel if both the secondary channel and the secondary 40 MHz channel were idle during an interval of PIFS immediately preceding the start of the TXOP.
3. transmit a 40 MHz mask PPDU on the primary 40 MHz channel if the secondary channel was idle during an interval of PIFS immediately preceding the start of the TXOP.
4. transmit a 20 MHz mask PPDU on the primary 20 MHz channel

So, for both 11n and 11ac, EDCA TXOP is obtained based on activity of the primary channel, and the width of transmission is determined by PIFS idle status of the secondary channels. This is not a change from 11n, but 80 MHz, 160 MHz, and 80+80MHz transmissions are considered in 11ac. The sentence “All references to medium idle and medium busy within this subclause refer specifically to the medium condition on the primary channel.” is added for clarify in the 11ac draft.

**Proposed resolution**:

 Clarification is provided in this document.

**Editing Instructions**:

**Add a note to the TGac D1.2 as follows:**

Note: For both HT and VHT STA, EDCA TXOP is obtained based on activity of the primary channel. The width of transmission is determined by the CCA status of the non-primary channels during the PIFS before transmission.

Comments (CID 3092 – MAC)

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| 3092 | Merlin, Simone | 9.19.2.4 | 83 | 18 | T | "A frame exchange may be a group addressed frame, a frame transmitted with No Ack policy (for which thereis no expected acknowledgment), or an individually addressed frame followed by a correctly received ACKframe transmitted by a STA (either a non-AP STA or an AP)" this does not include Poll-BR frame, NDPA-BR frame etc. Suggest to state more generally that the frame exchange is based not eh expected response | Change to: "A frame exchange may be a group addressed frame, a frame transmitted with No Ack policy (for which there is no expected acknowledgment), or an individually addressed frame followed by a correctly received expected response frame transmitted by a STA (either a non-AP STA or an AP)." | Agree in principle. Changed the text accordingly. | MAC |

Discussion

Agree in principle.

In current 11ac Draft, frame exchanges such as NDPA-NDP-VHT Compressed Beamforming frame or Beamforming Report Poll-VHT Compressed Beamforming frame have been defined for VHT sounding, but they are not included in the section 9.19.2.4 as a frame exchange. They should be added to the section 9.19.2.4 as a frame exchange.

**Proposed resolution**:

See the proposed text.

**Editing Instructions**:

***Change the following sentence in Section 9.19.2.4 of TGac Draft D1.2:***

***(P100L31)***

A frame exchange may be a group addressed frame, a frame transmitted with No Ack policy (for which there is no expected acknowledgment), an individually addressed frame followed by a correctly received ACK frame transmitted by a STA (either a non-AP STA or an AP), an NDPA followed by a VHT NDP and followed by a correctly received VHT Compressed Beamforming frame, or a Beamforming Report Poll frame followed by a correctly received VHT Compressed Beamforming frame.

Comments (CID 3093 – MAC)

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| 3093 | Merlin, Simone | 9.19.2.4 | 83 | 39 | T | A TXOP is obtained after a STA transmitting an initial frame successfully receives a response frame. What about CT-to-Self, as stated later on in the same section? | change to: "A TXOP is obtained after a STA transmitting an initial frame successfully receives a response frame, or the initial frame is a CTS-to-Self" | Agree. Changed the text accordingly. | MAC |

Discussion

Agree.

In 9.19.2.2 EDCA TXOPs in TGac Draft D1.2, it is stated that

“If a TXOP is protected by non-HT or non-HT duplicate CTS-to-Self, the TXOP holder shall set the TXVECTOR parameter CH\_BANDWIDTH of a PPDU to be the same or narrower than the TXVECTOR parameter CH\_BANDWIDTH of the CTS-to-Self in the same TXOP.”

but CTS-to-Self is missing from the description on obtaining TXOP in 9.19.2.2, so it has to be added in the description.

**Proposed resolution**:

See the proposed text.

**Editing Instructions**:

***Change the following sentence in Section 9.19.2.4 of TGac Draft D1.2: (P100L52)***

A TXOP is obtained after a STA transmitting an initial frame successfully receives a response frame, or the initial frame is a CTS-to-Self.