IEEE P802.11
Wireless LANs

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| Sub-Clause 9.19 Comments Resolutions (Part 4) |
| Date: 2012-05-01 |
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This document provides resolutions for comments in sub-clause 9.19 of draft spec D2.0. All CIDs are for MAC ad hoc.

* Sub-clause 9.19.2.7: 5274, 4412
* Sub-clause 9.19.2.8: 4413, 4415
* Sub-clause 9.19.3.2.4: 4417, 5015
* Sub-clause 9.19.3.5.4: 5362, 5363

**Sub-clause 9.19.2.7: 5274**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 5274Sudheer Grandhi | 119.01 | 9.19.2.7 | For VHT wider channel width operation, when a CF-End is sent by a TXOP holding VHT STA or VHT AP to truncate the TXOP on primary and secondary channels, it will reset the NAV for STAs associated with the same VHT BSS but not for neighboring BSS VHT STAs on the secondary channels that had their NAV set by the TXOP holder. So the neighboring BSS VHT STAs for which the primary channel is the TXOP holder's secondary channel are at a disadvantage and will be unfairly denied channel access. Given that there will be dense deployment of VHT devices such cenarios are very likely to occur and lead to poor performance. This unfairness issue for VHT STAs needs to be resolved. | Update TXOP truncation rules with CF-End for VHT AP and VHT STAs to remove this unfairness in channel access for VHT STAs. | **Rejected** |

**Discussion:**

The scenario described by the commenter could happen and lead to unfairness. However, if the BSSID of the received CF-End frame does not need to match the recepient’s BSSID, then one network’s CF-End could mess up another network’s NAV settings. For example, STA-1 in BSS-A transmits a CF-End, and most STAs in both BSS-A and BSS-B receive it. At this time, BSS-B may be in the middle of a TXOP so its STAs shall not reset their NAVs. Otherwise it could cause a mess in BSS-B.

Comparing the negative effects of these two situations, the fairness issue seems less important. Therefore the resolution is rejected (no changes).

**Sub-clause 9.19.2.7: 4412**

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| 4412Brian | 119.10 | 9.19.2.7 | Why referring to I/G bit of BSSID - e.g. signalling TA affects the TA only!? | double check this language. Are we checking the BSSID or TA, or BSSID and designaled TA? | **Revised** |

**Discussion:**

It seems the text intends to say that only the BSSID will be checked and it has to match the STA’s BSSID. In addition, the “Individual/Group bit” of the CF-End frame will not be checked (so it does not matter whether it is a signalling TA). In fact, this inserted phrase is not necessary since it just emphasizes that the signalling TA is not checked. In this sense, the phrase can be removed.

**Proposed Resolution**

TGac Editor, please remove the following phase in the existing text (TGac D2.1, P121L46-L47) as below.

After receiving a CF-End frame with a matching BSSID ~~without comparing Individual/Group bit~~, an AP may respond by transmitting a CF-End frame after SIFS.

**Sub-clause 9.19.2.8: 4413­**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4413Brian | 119.47 | 9.19.2.8 | "CCA is sampled" but CCA from PHY is only issued at state changes (e.g. busy to idle) - need an additional undfined "hold" function on the CCA at the bottom of the MAC to preserve the latest CCA state in order for "sampling CCA" to make sense. Likely a problem with the baseline too. | Add CCA hold function in MAC. And at P119L50, change CCA to "the CCA state", 2x | **Rejected**. |

**Discussion:**

Once a state change of a channel is recorded, it will not change until the next state change. Therefore, the current state of a channel indicates whether it is busy or idle. It seems the MAC only needs a timer to record the time when the state changes, and this does not need to be put into the spec.

Also it seems the description of the following sentence is fine.

*"Channel idle for an interval of PIFS" means that whenever CCA is sampled during the period of PIFS that ends at the start of transmission, the CCA for that channel was determined to be idle.*

This sentence describes the PHY layer behavior and therefore there is no need to change it to “the CCA state”, which describes the channel status at the MAC layer.

**Sub-clause 9.19.2.8: 4415**

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| 4415Brian | 120.10 | 9.19.2.8 | Both these notes describe the existence of additional rules. My experience is that often such notes claiming the existence of additional rules are too optimistic - that often such additional rules do not exist. Ease my mind by adding reference to these rules | As in comment | **Revised**. |

**Proposed Resolution**

TGac Editor, please change the existing text (TGac D2.1, P122L46-L51) as below.

NOTE 1—In the case of rule e), the STA selects a new random number using the current value of CW[AC], and the retry counters are not updated (as described in 9.19.2.5, backoff procedure invoked for event a)).(#4824)

NOTE 2—For both an HT and a VHT STA, an EDCA TXOP is obtained based on activity on the primary channel (as described in 9.19.2.3, Obtaining an EDCA TXOP). The width of transmission is determined by the CCA status of the non-primary channels during the PIFS interval before transmission (as described in 9.19.2.4, Multiple frame transmission in an EDCA TXOP).

**Sub-clause 9.19.3.2.4: 4417**

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
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| 4417Brian | 120.39 | 9.19.3.2.4 | Rules are too simple, either here or in clause 7 (which seems to allow any-old combination of members in the set). E.g. I'm a 160 MHz STA and my expected response is 40 MHz wide, but someone is TXing on my secondary80. So I see P20, S20 and S80 as busy - so the channel-list set does not equal P20 or {P20, S20}. | Try "ch-list contains primary" (and drop the other cases)? | **Revised** |
| 5015Robert Stacey | 120.43 | 9.19.3.2.4 | While {primary, secondary} might be possible for an HT PHY, {primary, secondary, secondary40} is not possible according to 22.3.19.5 (in fact, a VHT PHY's channel-list always has a single element). Since this section is about an expected response that should occupy the primary the only possibilities are "BUSY, -" (legacy PHY), "BUSY, {primary}" (HT or VHT PHY) and "BUSY, {primary, secondary}" (HT PHY). | Delete all inserted bullet items. Modify the original text to read "The beginning of reception of an expected response is detected by the occurance of PHYCCA.indication (BUSY, channel-list) where channel-list is either empty or includes the element primary." The receiving STA does not need to consider the capabilities of the sending STA. | **Accepted** |

**Discussion**:

The bullets inserted by the VHT draft tried to follow the way HT draft used to describe the situation in the HT case. However, in the VHT case the situations are a lot more complicated. Therefore it would be easier if the proposed changes from the commenters are accepted.

**Sub-clause 9.19.3.5.4: 5362, 5363**

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
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| 5362Yongho Seok | 120.60 | 9.19.3.5.4 | "A VHT STA in a BSS that supports multiple channel widths is granted a TXOP for a specified duration and for a channel width that is equal to the channel width of the frame containing the QoS CF-Poll."How does the AP grant the multiple channel width?QoS CF-Poll frame may be transmitted in a non-HT or non-HT duplicate format.Also, it also indicates the granted channel width to TXVECTOR parameters CH\_BANDWIDTH\_IN\_NON\_HT. | For clarifying the granting procedure of the multiple channel width, add the following sentence (that is referred from 9.3.2.5a VHT RTS Procedure)."A VHT STA transmitting an QoS CF-Poll frame carried in non-HT or non-HT duplicate format and addressed to a VHT STA shall set the TA field to a signaling TA and shall set the TXVECTOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and CH\_BANDWIDTH to the same value." | **Accepted** |
| 5363Yongho Seok | 120.64 | 9.19.3.5.4 | "During a TXOP obtained in this fashion, the STA shall not transmit in a wider channel width than that granted."Please clarify how the granted channed width is determined. | As per comment. | **Revised** |

**Discussion:**

Both comments talk about the same thing; how the channel width is granted in the HCCA mode. Once CID 5362 is resolved, CID 5363 is addressed too. So the key is to resolve CID 5362.

The proposed change to CID 5362 provides a good resolution.

**Proposed Resolution**

TGac Editor, please insert the following text as the first paragraph of 9.19.3.5.4 (TGac D2.1, P123L16) as below.

A VHT STA transmitting a QoS CF-Poll frame carried in non-HT or non-HT duplicate format and addressed to a VHT STA shall set the TA field to a signaling TA and shall set the TXVECTOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and CH\_BANDWIDTH to the same value.