IEEE P802.11  
Wireless LANs

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| Sub-Clause 9.19 Comments Resolutions (Part 3) | | | | |
| Date: 2012-05-16 | | | | |
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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 9.19.2.5: 4408, 4669, 4409, 4410, 4617, 4621, 4833, 4612, 4613, 4614, 4670, 4411

**Sub-clause 9.19.2.5: 4408**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4408  Brian | 117.28 | 9.19.2.5 | "TXOP sharing mode" - not defined or used elsewhere | Use defined or more-widely used terminology |

**Proposed Resolution:**

**Revised**

The “TXOP sharing mode” is defined in the first paragraph of sub-clause 9.19.2.2 (P111L20, D2.0) using a slightly different language which makes it difficult to be searched. Suggest deleting the phrase “through TXOP sharing mode”

TGac Editor, please change the existing text (TGac D2.1, P120L6-10) as below.

d) The transmission attempt collides internally with another EDCAF of an AC that has higher priority, that is, two or more EDCAFs in the same STA are granted a TXOP at the same time, and the EDCAF of the lower priority AC is not sharing the TXOP with the winning AC ~~through TXOP sharing mode~~.

**Sub-clause 9.19.2.5: 4669**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4669  Kaiying | 117.37 | 9.19.2.5 | "MU TXOP" is not defined | Change "MU TXOP" to "sharing TXOP" or "TXOP" |

**Proposed Resolution:**

**Revised**

Change “MU TXOP” to “TXOP”

Note this CID is a duplicate of CID 5419 as in doc # 11-12/474r2.

The editor does not need to do anything if the resolution to CID 5419 has already been applied.

**Sub-clause 9.19.2.5: 4409** (resolved 5/15)

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4409  Brian | 117.38 | 9.19.2.5 | "sharing TXOP ... shall keep their CW" - why would I care about their CW since I'm transmitting them now - I should only care about CW after a transmission \*and\* a failure | Rewrite to express behavior of CW after the transmission given failure? |

**Proposed Resolution:**

**Rejected**

This is something special to secondary ACs. A primary AC just needs to transmit and does not need to care about its CW for now. However, a secondary AC shall keep its CW unchanged because this CW value could be used after its transmission. For example, if the transmission result was a success, then the secondary AC shall resume countdown from its current (i.e. before transmission) CW and timer values (unless the timer has already reached zero, in which case the secondary AC shall randomly choose another timer value).

**Sub-clause 9.19.2.5: 4410, 4617**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4410  Brian | 117.40 | 9.19.2.5 | "depending on the TX results ... shall" - bad style to have the absoluteness of a shall after the vagueness of a "depending on ..." | Split into each case, and apply the shall to each. Or maybe there is pre-existing language for each shall so extra shalls here are redundant? |
| 4617  Jing-Rong Hsieh | 117.40 | 9.19.2.5 | In the sentence "at the end of the transmissions, depending on the transmission results, ..." It is not clear that whether the transmission results are of the primary AC or certain secondary AC. | Clarify it. |

**Proposed Resolution:**

**Revised**

“At the end of the transmission” points to a time later than “now”. We don’t need to worry about it since we are talking about the behavior of “now”.

TGac Editor, please delete the following sentence in the existing text (TGac D2.1, P120L20-22) as below.

~~In addition, at the end of the transmissions, depending on the transmission results, a secondary AC shall invoke different backoff procedures defined for either event b) or event c).~~

**~~Sub-clause 9.19.2.5: 4621~~**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4621  Jing-Rong | 117.40 | 9.19.2.5 | What will a secondary AC do if the transmission results match neither event b) nor event c)? | Clarify it. |

This CID was withdrawn by the commenter.

**Sub-clause 9.19.2.5: 4833**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4833  Mark Rison | 117.46 | 9.19.2.5 | What is "a non-initial PPDU or MU PPDU"? And does the "non-initial" apply to the "MU PPDU" or just the first "PPDU"? | Change to "in a non-initial PPDU" |

**Proposed Resolution:**

**Accepted**

An MU PPDU is also a PPDU. So the spec only needs to mention PPDU. Note the "non-initial" does apply to the "MU PPDU".

TGac Editor, please change the existing text (TGac D2.1, P120L26) as described in the Proposed Change by the commenter.

**Sub-clause 9.19.2.5: 4613, 4670** (resolved 5/15)

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4613  Jing-Rong | 117.61 | 9.19.2.5 | Depending on the transmission results, the event d) may find the event b) as specified in current draft. If the backoff timer of a secondary AC which encountered internal collision does not change in this case, its EDCAF would either be succeeding to commence transmission or internal collisions may happen again if there are multiple secondary ACs encountering internal collision in current TXOP. Therefore, it could induce fairness problem in channel access. | If the backoff procedure is invoked for the secondary AC in this case, the backoff timer shall be set to an integer value chosen randomly with a uniform distribution taking values in the range [0, CW[AC]] inclusively. |
| 4670  Kaiying | 117.61 | 9.19.2.5 | If the internal collision happened, the lower priority AC that is a secondary AC in TXOP sharing will keep its CW[AC] and backoff timer before the transmission(as described in P117, L39), and after the transmission success, we have the rule here as:" If the backoff procedure is invoked because of reason b) above and the AC is a secondary AC in an MU transmission, neither the value of CW[AC] nor the backoff timer shall be changed. ", the backoff timer of the lower priority AC mentioned above will always keep a zero value, and this is not reasonable. | change the rule such as "If the backoff procedure is invoked because of reason b) above and the AC is a secondary AC in an MU transmission, the value of CW[AC] shall not be changed. And if the backoff timer has a zero value, chosing randomly a number from[0, CW[AC]]for the backoff timer, otherwise the value of the backoff timer shall not be changed." |

**Proposed Resolution:**

**Revised**

Current backoff procedure for event b) says “… If the backoff procedure is invoked because of reason b) above and the AC is a secondary AC in a MU transmission, neither the value of CW[AC] nor the backoff timer shall be changed”. This means the secondary AC will continue countdown from its CW and timer values before it transmitted (resume countdown). Therefore, if a secondary AC gets to transmit when a internal collision has been resolved, and the transmission result was a success, the secondary AC will compete for the channel access immediately, since its timer has already reached zero. To address this problem, one additional rule needs to be added; the secondary AC shall choose a random number as its new timer within its current CW if its current timer has a value of zero, after a successful transmission.

TGac Editor, please change the existing text (TGac D2.1, P120L40-41) as below.

If the backoff procedure is invoked because of reason b) above and the AC is a secondary AC in an MU transmission, the value of CW[AC] shall be kept unchanged. The backoff timer of the secondary AC shall also be kept unchanged unless it has a value of zero, in which case the backoff timer is set to an integer value chosen randomly with a uniform distribution taking values in the

range [0,CW[AC]] inclusive.

**Sub-clause 9.19.2.5: 4411**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4411  Brian | 118.56 | 9.19.2.5  (should be 9.19.2.6) | ACs don't transmit ... | "contribute a MPDU to a"? |

**Proposed Resolution:**

**Accepted**

This is more an editorial than a technical comment.

TGac Editor, please change the existing text (TGac D2.1, P121L28) as below.

For internal collisions occurring with the EDCA access method, the appropriate retry counters of the colliding ACs that did not contribute an MPDU to a TXOP (short retry counter for MSDU, A-MSDU, or MMPDU and QSRC[AC] or long retry counter for MSDU, AMSDU, or MMPDU and QLRC[AC]) are incremented.

**Sub-clause 9.19.2.5: 4612 (transferred from Editor, 5/15/2012)**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4612  Jing-Rong | 117.36 | 9.19.2.5 | In the description of event d), the internal collision has been identified and resolved once the EDCAF of an AC to commence transmission is selected. The AC becomes the primary AC if the transmission includes traffic from other ACs in MU PPDUs. Thus TXOP sharing does not help resolve the internal collision. | Change "In event d) above, if an internal collision can be resolved by one or more secondary ACs sharing ..." to "In event d) above, if one or more secondary ACs share the TXOP for downlink MU transmission, ..." |

**Discussion:**

This comment was marked as an editorial comment by the commenter but later transferred from the editer to the MAC ad hoc as a technical comment.

Conversations with the commenter revealed that his major concern is the use of the term “resolved” in the following sentence,

"In event d) above, if an internal collision can be resolved by one or more secondary ACs sharing the MU TXOP for downlink transmission…"

The commenter believes at the moment one AC wins over another AC or other ACs when an internal collision occurs, the internal collision is considered resolved. However, in the quoted text above, the word “resolved” is used to indicate the fact that colliding ACs can transmit together through TXOP sharing.

**Proposed Resolution:**

**Revised**

To avoid the ambiguity, it is better not to use the term “resolved” in this sentence.

TGac Editor, please change the existing text (TGac D2.1, P120L17-20) as below.

In event d) above, if the EDCAF(s) of the lower priority AC(s) can share the TXOP with the winning AC, the one or more secondary ACs shall keep their CW[AC]s and backoff timer values unchanged before transmitting in an MU TXOP.

**Sub-clause 9.19.2.5: 4614 (deferred for further discussion, 5/11/2012)**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 4614  Jing-Rong | 117.61 | 9.19.2.5 | If the backoff timer of secondary AC does not change solely because of event b), it could induce fairness issue when comparing the primary AC with the secondary AC or comparing the same AC in other non-AP STAs with the secondary AC. | If the backoff procedure is invoked for the secondary AC in this case, the backoff timer shall be set to an integer value chosen randomly with a uniform distribution taking values in the range [0, CW[AC]] inclusively. |

**Discussion**:

The comment tries to address the follow concern (confirmed by the commenter).

After a successful transmission (sharing the TXOP of the primary AC), a secondary AC will resume countdown from its frozen CW and timer values. Since this secondary AC has been counting down for a certain period, statistically it will have a timer value that is smaller than CW[AC]/2 (mean of the CW[AC]). Therefore the commenter believes the secondary AC gains unfair advantage over its peer ACs in other STAs.

**Proposed Resolutions:**

**Rejected**

The principle here is that a secondary AC’s own transmit opportunity will not be affected because of sharing someone else’s TXOP. Therefore the secondary AC shall not change its CW and timer value, unless it has a timer value of zero. In addition, it is not clear how much advantage the secondary AC will gain in this case. Comparing to the sharing of the TXOP, this advantage can be neglected.