IEEE P802.11
Wireless LANs

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| 802.11 TGac WG Letter Ballot LB190Proposed resolutions on MAC Comments |
| Date: 12 Nov 2012 |
| Author(s): |
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##### These comments were submitted on LB190 on 802.11ac draft 4.0. The proposed resolutions are relative to 802.11ac draft 4.0 (as indicated in each resolution). Changes are indicated by a mixture of Word track-changes and editing instructions.

The following CIDs are covered in this document (total 18): MAC 7004, 7018, 7019, 7087, 7099, 7138, 7139, 7211, 7221, 7231, 7238, 7306, 7307, 7327, 7330, 7341, 7343, 7399.

History: R0 - initial revision

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7138 | 139.01 | 9.9 | A STA does not have the value true (or false, for that matter. IEEE 802.11-2012 instead describes the value of dot11 variables. | Replace "A STA that has a value of true for at least one of" with "A STA, at least one of whose" and replace "shall set ..." with "is true, shall set ...". |

**Discussion:**

The cited text is baseline text (i.e. not text that was created in TGac), so the comment would need to made in revmc.

**Proposed Resolution:**

Rejected. The cited text is baseline text (i.e. not text that was created in TGac), so the comment would need to made in revmc.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7139 | 139.61 | 9.11 | It is faulty logic to argue that, because a frame \_might\_ exceed a limit to PPDU length, it \_cannot\_ be retransmitted in a a PPDU. | Turn NOTE1 into the normative statement it should be. Delete "NOTE 1-", replace "cannot" with "shall not", and replace "NOTE 2" with "NOTE". |

**Discussion:**

The related note reads as follows:

"NOTE 1—An A-MSDU that meets the A-MSDU length limit for transmission in a VHT PPDU might exceed the A-MSDU length limit for an HT PPDU and thus cannot be retransmitted in an HT PPDU."

The last part of the note is not true for any A-MSDU, but only for A-MSDUs that indeed exceed the A-MSDU length limit for an HT PPDU. Therefore, a better wording can be as follows:

"NOTE 1—An A-MSDU that meets the A-MSDU length limit for transmission in a VHT PPDU might exceed the A-MSDU length limit for an HT PPDU, in which case it ~~and thus~~ cannot be retransmitted in an HT PPDU."

**Proposed Resolution:**

Revised. On P139L61, modify Note 1 as follows:

"NOTE 1—An A-MSDU that meets the A-MSDU length limit for transmission in a VHT PPDU might exceed the A-MSDU length limit for an HT PPDU, in which case it ~~and thus~~ cannot be retransmitted in an HT PPDU."

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7004 | 49.47 | 8.3.3.1 | "NOTE--In an MMPDU carried in one or more PPDUs, all of which are VHT PPDUs, an MMPDU of maximum size is fragmented if it is encrypted (i.e. transmitted in robust management frames) or is transmitted with an HT Control field, so that the maximum MPDU size is not exceeded."This doesn't really say what was meant, because we are almost never going to encounter MMPDUs of maximum size, and this applies only to MMPDUs of precisely maximum size. | Replace with:"NOTE--In an MMPDU carried in one or more PPDUs, all of which are VHT PPDUs, an MMPDU is fragmented as necessary so that the maximum MPDU size is not exceeded. The presence of encryption overhead (i.e., the MMPDU is transmitted in robust management frames) or an HT Control field might cause an MMPDU to be fragmented that would not otherwise need to be fragmented." |

**Discussion:**

The suggested note correctly captures the intent of the current note. The first sentence is true for any MPDU and may therefore be omitted.

**Proposed Resolution:**

Revised. Replace the note on P43L47 with "NOTE---In an MMPDU carried in one or more PPDUs, all of which are VHT PPDUs, the presence of encryption overhead (i.e., the MMPDU is transmitted in robust management frames) or an HT Control field might cause an MMPDU to be fragmented that would not otherwise need to be fragmented.".

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7018 | 46.61 | 8.3.1.19 | VHT NDP Announcement frame need not use signaling TA and need not carry BW indication in Service field since the immediate followed VHT NDP carries the same BW information in VHT-SIG A | Remove the text regarding setting the TA of VHT NDP Announcement frame as signaling TA |
| 7019 | 133.36 | 9.7.6.6 | VHT NDP Announcement frame need not use signaling TA and need not carry BW indication in Service field since the immediate followed VHT NDP carries the same BW information in VHT-SIG A | 1) Remove VHT NDP Announcement frame from Note 1; 2) change the sentence in L22 of the same page to "If a VHT STA transmits to another VHT STA a control frame that is not an RTS frame or a CF-End frame or a VHT NDP Announcement frame, and that control frame elicits a control response frame or a VHT Compressed Beamforming frame:" |
| 7099 | 133.36 | 9.7.6.6 | Since a VHT NDP Announcement frame is always followed by an NDP frame which has the bandwidth information in SIG A feild, the VHT NDP Announcement frame does not need to set the TA field to a bandwidth signaling TA when being transmitted in a non-HT duplicate PPDU or a non-HT PPDU. | Remove "VHT NDP Announcement frames" from "NOTE 1í¬Such control frames are BlockAckReq frames, BlockAck frames in th e context of HT-delayed Block Ack,PS-Poll frames, VHT NDP Announcement frames and Beamforming Report Poll frames. " |

**Discussion:**

The bandwidth selection of a response frame is conditioned on the bandwidth of the frame eliciting the response, which in this case is the VHT NDPA. An NDP never solicits a response, and does not have a source address or a destination address. Therefore, the VHT NDPA should signal a bandwidth, similar to other control frames soliciting a response.

**Proposed Resolution:**

Rejected. The bandwidth selection of a response frame is conditioned on the bandwidth of the frame eliciting the response, which in this case is the VHT NDPA. An NDP never solicits a response, and does not have a source address or a destination address. Therefore, the VHT NDPA should signal a bandwidth, similar to other control frames soliciting a response.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7087 | 45.48 | 8.3.1.4 | "The RA field of the ACK frame is copied from the Address 2 field of the immediately previous individually addressed data, management, BlockAckReq, BlockAck, or PS-Poll frames."The TA field of BlockAckReq, BlockAck and PS-Poll frames can be set to a bandwidth signaling TA.Similar to CTS frame, the RA field of the ACK frame is set to a non-bandwidth signaling TA obtained from the TA field of the immediately previous BlockAckReq, BlockAck and PS-Poll frames. | Change the RA field of ACK frame as the following:- The RA field of the ACK frame is set to a non-bandwidth signaling TA obtained from the Address 2 field of the immediately previous individually addressed data, management, BlockAckReq, BlockAck, or PS-Poll frames. |

**Discussion**

Similar wording is used in the definition of the CTS, and it seems fine to also use this for the ACK.

**Proposed Resolution**

Revised. See editing instruction in 11-12/1405r2.

**Editing Instruction**

On P45L48, insert the following editing instruction:

**8.3.1.4 ACK frame format**

*Change the second paragraph as follows:*

The RA field of the ACK frame is ~~copied~~ set to the non-bandwidth signaling TA obtained from the Address 2 field of the immediately previous individually addressed data, management, BlockAckReq, BlockAck, or PS-Poll frames.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7341 | 148.48 | 9.17a | "the PHYCONFIG\_VECTOR paramter PARTIAL\_AID\_LIST" -- there is no such thing (and "paramter" has a typo) | Change to "the PHYCONFIG\_VECTOR parameters PARTIAL\_AID\_LIST\_GID00 and PARTIAL\_AID\_LIST\_GID63" |

**Discussion:**

The commenter is correct and this needs to be changed.

**Proposed Resolution:**

Accepted.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7343 | 46.00 | 8.3.1.19 | What is the maximum length of an NDPA? Is the maximum number of STA Infos 2007, i.e. the NDPA would be about 4k long? This seems excessive compared to other control frames | Specify an upper limit on the number of STA Infos, e.g. one which would result in an NDPA no bigger than the biggest control frame currently possible (which is probably a basic BA control frame) |
| 7211 | 46.42 | 8.3.1.19 | There does not appear to be a limit on "n". Given that AID is 12 bits one can only assume that the limit is 4095! | Recommend on setting a "sensible" maximum limit on n. |

**Discussion:**

The NDPA size for SU sounding is already constrained to a single STA Info field, while for MU the frame size is implicitly limited by the maximum PPDU size. There is no need to limit this any further.

**Proposed Resolution:**

Rejected. The NDPA size for SU sounding is already constrained to a single STA Info field, while for MU the frame size is implicitly limited by the maximum PPDU size. There is no need to limit this any further.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7327 | 37.11 | 8.2.4.6.2 | It's not possible to use DEI with +VHT-HTC | Remove b29 from the HT Control middle and make it part of the top-level flags (like b0, b30 and b31). Move the Unsolicited MFB bit of +VHT-HTC from b29 to b1 (currently reserved) |

**Discussion:**

The commenter is correct that the VHT variant HT control field does not include the Drop Eligibility Indication (DEI) bit that was defined in 802.11aa. However, this function can be used with the HT variant HT control field, which seems fine because it is not expected that DEI would need to be combined with the VHT variant HT control field functions.

**Proposed Resolution:**

Rejected. DEI can be used with the HT variant HT control field, and does not have to be combined with the VHT variant HT control field functions.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7330 | 174.00 | 10 | How exactly are PARTIAL\_AID\_LIST\* and GROUP\_ID\_MANAGEMENT constructed (e.g. values set in Membership Status Array and User Position Array fields)? | Be more specific than "with the GROUP\_ID\_MANAGEMENT parameter based on the content of the received Group ID Management frame" and "include the values computed in Table 9-19 in the PHYCONFIG\_VECTOR paramter PARTIAL\_AID\_LIST." |

**Discussion:**

The Group ID management frame and the PHY configuration have the same structure, which therefore avoids any ambiguity. The Partial AID list parameters are dependent on the STA's role and whether it wants to save power and participate in TDLS links. As such the setting of the PARTIAL\_AID parameters is implementation dependent.

**Proposed Resolution:**

Rejected.

The Group ID management frame and the PHY configuration have the same structure, which therefore avoids any ambiguity. The Partial AID list parameters are dependent on the STA's role and whether it wants to save power and participate in TDLS links. As such the setting of the PARTIAL\_AID parameters is implementation dependent.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7399 | 51.44 | 8.3.3.6 | Why is there an OMN in (Re)Association Response? When will the operating width ever differ from the value signalled in the HT Operation? | Remove the OMN from (Re)Association Response, unless the idea is to allow the AP to change the number of STSes for some reason -- if so, add a NOTE to cover this |

**Discussion:**

The Operation Mode Notification element can signal a temporary reduction in the number of spatial streams the AP can receive at. Therefore, there is a reason to keep the Operation Mode Notification element included in (Re)Association Response frames.

**Proposed Resolution:**

Rejected. The Operation Mode Notification element can signal a temporary reduction in the number of spatial streams the AP can receive at. Therefore, there is a reason to keep the Operation Mode Notification element included in (Re)Association Response frames.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7307 | 48.32 | 8.3.1.20 | The word 'frequency' in "The bit in position n is set to 0 when the frequency segment with the Remaining Feedback Segments subfield in the VHT MIMO Control field set to n is not requested" not make sense. It seems it'd make sense without it. | As in comment |

**Discussion:**

The comment correctly identifies an error in this sentence.

**Proposed Resolution:**

Revised. On P48L32, modify as follows: "The bit in position n is set to 0 when the ~~frequency~~ feedback segment with the Remaining Feedback Segments subfield in the VHT MIMO Control field set to n is not requested".

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7231 | 174.27 | 10.2 | In LB188, comment 6091 asks the question "It is not clear if VHT PPDU can be transmitted after PS Poll is received and if VHT PPDU is allowed what is the allowed bandwidth.".The resolution is "REJECTED (MAC: 2012-09-13 04:14:42Z)The sequences for PS-Poll are defined in Annex G. 10.2.1 describes the delivery of a single buffered non-QoS BU per PS-Poll. Either an Ack or a single Data MPDU may be returned as the response to a PS-Poll. The existence of a VHT PPDU creates no ambiguity.".This resolution is not wnough to resolve the comment. a single MPDU in a VHT PPDU is clear. The issue is If a VHT PPDU which includes multiple MPDUs is allowed as responding to PS-Poll. | Clarify it. |

**Discussion:**

A VHT PPDU that includes multiple MPDUs is not allowed in response to a PS-Poll, because a single buffered BU is a single MSDU or A-MSDU, which can not be fragmented and then be aggregated in an A-MPDU.

The definition of BU in subclause 3.2 reads as follows: "bufferable unit (BU): An MSDU, A-MSDU (HT STAs only) or bufferable MMPDU that is buffered to operate the power saving protocol.".

The delivery rule in 10.2.1.6 (AP operation during CP) item g) is "A single buffered BU for a STA in the PS mode shall be forwarded to the STA after a PS-Poll has been received from that STA.".

**Proposed Resolution:**

Rejected.

A VHT PPDU that includes multiple MPDUs is not allowed in response to a PS-Poll, because a single buffered BU is a single MSDU or A-MSDU, which can not be fragmented and then be aggregated in an A-MPDU.

The definition of BU in subclause 3.2 reads as follows: "bufferable unit (BU): An MSDU, A-MSDU (HT STAs only) or bufferable MMPDU that is buffered to operate the power saving protocol.".

The delivery rule in 10.2.1.6 (AP operation during CP) item g) is "A single buffered BU for a STA in the PS mode shall be forwarded to the STA after a PS-Poll has been received from that STA.".

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7221 | 45.47 | 8.2.5.2 | TSINGLE-MSDU is the estimated time required for the transmission of the allowed frame exchange sequence defined in 19.19.2.2 (EDCA TXOPs) (for a TXOP limit value of 0), including applicable IFS durations | Name is misleading; 19.19.2.2 indicates that the exchage can even inculde A-MPDUs. Adopt a more appropriate name |

**Discussion:**

This naming matter is not specific to VHT.

**Proposed Resolution:**

Rejected. This naming matter is not specific to VHT.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7238 | 45.43 | 8.3.1.3 | I assume that the non-bandwidth signalling TA obtained from a TA is unique. If so, it's better to talk about "the" non-bandwidth signalling TA rather than "a" non-bandwidth signalling TA. | Replace "set to a non-bandwidth signalling TA" by "set to the non-bandwidth signalling TA" |

**Discussion:**

The non-bandwidth signaling TA is indeed unique for a given MAC address. So the comment can be accepted.

**Proposed Resolution:**

Accepted.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 7306 | 44.34 | 8.2.5.2 | This note seems to be the repetition of the last sentece of the previous paragraph. | Remove the note. |

**Discussion:**

The note indeed appears to be a duplication.

**Proposed Resolution:**

Accepted.