IEEE P802.11  
Wireless LANs

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| IEEE 802.11 TGac Sponsor Ballot 1  Assorted SB01 comment resolutions | | | | |
| Date: 18 June 2013 | | | | |
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##### These comments were submitted on SB0 on 802.11ac draft 5.0. The proposed resolutions are relative to 802.11ac draft 5.0 (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 19): May, Hawaii meeting: 10209, 10292, 10069, 10070, 10106, 10154, 10159, 10160, 10161, 10162, 10163, 10207, 10208, 10210, 10212, 10213, 10214, 10215, 10253.

June: 10305, 10167, 10022

History: r0 - initial revision

r1 - updates discussed in May (Hawaii)

r2 - updates discussed in May (Hawaii)

r3 - updates discussed in May (Hawaii), motioned

r4 - added newly assigned CIDs from June conference calls

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10305 | 133.47 | 9.7.6.5.3 | Two primary problems: (a) there are many combinations, including deletion and intersection; (b) how does one combine two parameters -- concatenate their names? Apparently the union of the two sets is intended. | Replace: "the combination of the BSSBasicMCSSet and the BSSBasicVHTMCS\_NSSSet parameters." with: "the union of the BSSBasicMCSSet and the BSSBasicVHTMCS\_NSSSet." |

**Discussion:**

Changing "combination" to "union" does indeed improve the cited statement.

**Proposed Resolution:**

Accepted.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10167 | 123.25 | 9.3.1 | Explanation of the effect of RTS/CTS exchange by VHT STAs is added. But this also applies to RTS/CTS exchange by HT STAs, which use the secondary 20 MHz channel. In the first place, do you need to add this sentence? The former sentences do not restrict the channels and seem to be enough. Futhermore, it seems that the RTS/CTS exchange performs not the fast collision interference but the fast collision interference check. | Delete the 6th paragraph in 9.3.1 and its editing instruction. Or, change the sentence added to cover also the HT STAs and add "check" after "the fast collision interference". |

**Discussion:**

A new aspect of a VHT RTS/CTS exchange is that it can probe the available bandwidth throug the explicit bandwidth signaling in the scrambler seed of the RTS and the CTS transmitted by the VHT STA (the present of which is signaled through a Signaling TA). This explains the presence of the new sentence at this location. The second aspect of the comment is about the fast collision "inference", but the commenter likely misread this for the fast collision "interference".

**Proposed Resolution:**

Rejected. A new aspect of a VHT RTS/CTS exchange is that it can probe the available bandwidth throug the explicit bandwidth signaling in the scrambler seed of the RTS and the CTS transmitted by the VHT STA (the present of which is signaled through a Signaling TA). This explains the presence of the new sentence at this location. The second aspect of the comment is about the fast collision "inference", but the commenter likely misread this for the fast collision "interference".

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10022 | 119.17 | 8.6.3 | NOTE 2 in subclause 8.6.3 lacks description about MPDU length limit in a DMG PPDU. | Change the second sentence of NOTE 2 as "The 4095 octet MPDU length limit does not apply to A-MPDUs carried in VHT or DMG PPDUs.". |

**Discussion:**

The additional exception of DMG PPDUs from the 4095 octet length limit by changing "carried in VHT PPDUs" to "carried in VHT or DMG PPDUs" seems fine.

**Proposed Resolution:**

Accepted.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10209 | 1004.00 | 10.2.1.17 | In the TIM Broadcast, some 11ac specific events shall be considered as critical updates for increasing the value of the Check Beacon field. | "In the TIM Broadcast, add the following event as a critical update:  - Inclusion of a Wide Bandwidth Channel Switch element  - Inclusion of a Channel Switch Wrapper element  - Inclusion of a Operating Mode Notification element  - Inclusion of a Quiet Channel element  - Modification of the VHT Operating element |

**Discussion:**

Agree with adding these items.

***Modify 10.2.2.17 (TIM Broadcast) as follows:***

The AP shall increase the value (modulo 256) of the Check Beacon field in the next transmitted TIM frame(s) when a critical update occurs to any of the elements inside the Beacon frame. The following events shall classify as a critical update:

1. Inclusion of a Channel Switch Announcement
2. Inclusion of an Extended Channel Switch Announcement
3. Modification of the EDCA parameters
4. Inclusion of a Quiet element
5. Modification of the DSSS Parameter Set
6. Modification of the CF Parameter Set
7. Modification of the HT Operation element
8. Inclusion of a Wide Bandwidth Channel Switch element
9. Inclusion of a Channel Switch Wrapper element
10. Inclusion of a Operating Mode Notification element
11. Inclusion of a Quiet Channel element
12. Modification of the VHT Operating element

An AP may classify other changes in the Beacon frame as critical updates.

**Proposed Resolution:**

Revised - per the editor instruction in 11-13-0584-01-00ac.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10292 | 124.03 | 9.3.2.5a | "the non-VHT STA does not recognize the RTS sender as the TXOP holder." So? What is the purpose of this note? Do non-VHT implementers need to do something new? Or do VHT implementers need to do anything special/ | Mention some purpose to the note, or just delete it (since non-VHT STAs won't know what to do with other VHT STA-generated frames, as well as this one). |

**Discussion:**

The note is related to the preceding normative requirement that an RTS shall not be sent to a non-VHT STA during a TXOP that started with a bandwidth signaling RTS.

**Proposed Resolution:**

Rejected - The note explains the preceding normative requirement that an RTS can not be sent to a non-VHT STA during a TXOP that started with a bandwidth signaling RTS.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10069 | 102.11 | 8.4.2.162 | The introduction of 8.4.12.162 indicates that the extended BSS load element is strictly about MU capable STAs. That restriction seems to be lost later in the subclause (specifically for the bandwidth utilization). | "Confirm that the measurements involve MU-capable STAs only and make this explicit in the definitions of bandwidth utilization parameters. |

**Discussion:**

The bandwidth utilization is not limited to MU capable STAs, because it indicates the average bandwidth utilization for all STAs. Therefore, the statement "by MU capable STAs" must be removed:

**Proposed Resolution:**

Revised. The bandwidth utilization is not limited to MU capable STAs, because it indicates the average bandwidth utilization for all STAs. Therefore, the statement "by MU capable STAs" must be removed:

***In 8.4.2.162 (Extended BSS Load element), first paragraph, delete "by MU capable STAs".***

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10070 | 105.63 | 8.4.2.165 | The Length field of the Channel Switch Wrapper element does not indicate the correct number of bytes. | It is stated that the value of Length field is between 1 and 3, depending on the number of subelements. However, devices that are not familiar with the Channel Switch Wrapper element will interpret this number as the number of bytes in the element, rather than the number of subelements. This will cause a misalignment that will interfere with the further parsing of the element. In order to avoid the problem, the Length field would either have to be value 0, or the total length in bytes of the included subelements. Even for devices that are familiar with this element, the parsing would have to be done differently depending on the value of the Element ID. It seems better to stick with the same interpretation of Length field for all Element IDs (i.e. #bytes). |

**Discussion:**

The comment correctly observes that the Length field of an information element must contain the number of octets following the Length field. This issue is also present in the VHT Transmit Power Envelope element.

**Proposed Resolution:**

Revised. In 8.4.2.164 (VHT Transmit Power Envelope element) and 8.4.2.165 (Channel Switch Wrapper element), replace the definition of the Length field with "The Length field specifies the number of octets in the element following the Length field.".

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10106 | 77.05 | 8.4.2.10 | The sentence "No channel is indiacted by more than one pair of First Channel Number and Number of Channels fields within a Subband Triplet Sequence field do not have overlapping channel identifiers." does not make sense. What does this mean? | Fix this sentence. |

**Discussion:**

It looks like "do not have overlapping channel identifiers" should have been deleted as part of the edits.

**Proposed Resolution:**

Revised. In 8.4.2.10 (Country element), on page 77 line 6, delete "do not have overlapping channel identifiers".

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 10154 | 85.46 | 8.4.2.27.2 | In Table 8-99, CCMP-256 is added. Then shouldn't the original CCMP be CCMP-128? In the baseline, there is a sentence "The ciper suite selector 00-0F-AC: 4 (CCMP) is the default cipher suite value." Shouldn't this sentence be updated as well? From the above sentence, is my understanding correct that CCMP-256 is option? | As in comment. |

**Discussion:**

CCMP indeed refers to CCMP-128, but there is no need to update this term because CCMP-256 provides sufficient distinction from CCMP. CCMP-256 can be advertised as supported, but there is no statement in the standard that it shall be advertised and therefore it is optional.

**Proposed Resolution:**

Rejected. CCMP indeed refers to CCMP-128, but there is no need to update this term because CCMP-256 provides sufficient distinction from CCMP. CCMP-256 can be advertised as supported, but there is no statement in the standard that it shall be advertised and therefore it is optional.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| 10159 | 90.55 | 8.4.2.56 | Figure 8-246a is the format of the Current Operating Class Extension Sequence field and its length is 1+variable octets. This field should fit in the field with the same name in Figure 8-246 but the field there is said to be 1 octet. | Change "1" under the "Current Operating Class Extension Sequence (optional)" in Figure 8-246 to "variable". | Accepted |
| 10160 | 90.65 | 8.4.2.56 | The OneHundredAndThirty Delimiter field is no longer extensible from its definition, name, and value. Is this OK? Feels like there is a more straight forward way, such as changing it to be like a sub IE and adding the length information of the Current Operating Class Extension field. | As in comment. | Rejected. The 130 delimiter is indeed not extensible, but this does not appear to cause a problem. |
| 10161 | 91.01 | 8.4.2.56 | Here, an explanation of the Current Operating Class Extension field is required, not the Current Operating Class Extension Sequence field. | As in comment. | Revised. Delete "Sequence" in "Current Operating Class Extension Sequence field".  In addition, in Figure 8-246 (Supported Operating Classes element format), in the fourth field, add "es" to "Operating  Class". |
| 10162 | 91.15 | 8.4.2.56 | Figure 8-246b is the format of the Operating Class Duple Sequence field and its length is 1+2n octets. This field should fit in the field with the same name in Figure 8-246 but the field there is said to be 1 octet. | Change "1" under the "Operating Class Duple Sequence (optional)" in Figure 8-246 to "variable". | Accepted. |
| 10163 | 91.24 | 8.4.2.56 | The Zero Delimiter field is no longer extensible from its definition, name, and value. Is this OK? Feels like there is a more straight forward way, such as changing it to be like a sub IE and adding the length information of the Operating Class Duple List field. | As in comment. | Rejected. The 0 delimiter is indeed not extensible, but this does not appear to cause a problem. |

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| 10207 | 105.64 | 8.4.2.165 | The length of the Channel Switch Wrapper element can be set to a value greater than 3. | Correct the range of value of the length field. | Revised. In 8.4.2.164 (VHT Transmit Power Envelope element) and 8.4.2.165 (Channel Switch Wrapper element), replace the definition of the Length field with " The Length field specifies the number of octets in the element following the Length field.". |
| 10208 | 104.25 | 8.4.2.164 | For the backward compatibility, the length field of IE shall be set to the number of octets of the remaining fields. | The Length field of the VHT Transmit Power Envelope element varies between 1 and 5, not 1 and 4. | Revised. In 8.4.2.164 (VHT Transmit Power Envelope element) and 8.4.2.165 (Channel Switch Wrapper element), replace the definition of the Length field with " The Length field specifies the number of octets in the element following the Length field.". |
| 10210 | 95.65 | 8.4.2.88 | If the channel usage element supports 80MHz/160MHz/80+80MHz channel bandwidth, the Channel Usage Response frame should also include the VHT Transmit Power Envelope element as an optional feature. Because the Power Constraint element couldn't indicate the local maximum transmit power for 80MHz/160MHz/80+80MHz. | Include th VHT Transmit Power Envelope element in Figure 8-495 Channel Usage Response frame format as an optional IE. | Revised. In 8.5.14.24 (Channel Usage Response frame format), in Figure 8-495 (Channel Usage Response frame format), add "VHT Transmit Power Envelope element (optional)" as the last element in the frame. At the end of the subclause, add the following description of the new element: "The VHT Transmit Power Envelope element conveys the local maximum transmit power for various transmission bandwidths. The format of the VHT Transmit Power Envelope element is shown in Figure 8-401bx.". |
| 10212 | 103.28 | 8.4.2.162 | "If the AP indicates a channel width of 20 MHz, 40 MHz or 80 MHz in the STA Channel Width field in the  HT Operation element and in the Channel Width field in the VHT Operation element, then the 160 MHz Utilization field is reserved." 160 MHz Utilization field was change to Observable Secondary 80 MHz Utilization. | Change the sentence as the following: "If the AP indicates a channel width of 20 MHz, 40 MHz or 80 MHz in the STA Channel Width field in the HT Operation element and in the Channel Width field in the VHT Operation element, then the Observable Secondary 80MHz Utilization field is reserved." | Accepted. |
| 10213 | 103.30 | 8.4.2.162 | "If the AP indicates a channel width of 20 MHz or 40 MHz in the STA Channel Width field in the HT Operation element, then the 80 MHz Utilization field is reserved." The 80 MH Utilization field was changed to the Observable Secondary 40 MHz Utilization. | Change the sentence as the following: "If the AP indicates a channel width of 20 MHz or 40 MHz in the STA Channel Width field in the HT Operation element, then the Observable Secondary 40 MHz field is reserved." | Accepted. |
| 10214 | 102.10 | 8.4.2.162 | "The Extended BSS Load element reported by the AP contains information on MIMO spatial stream underutilization and bandwidth utilization by MU capable STAs." Bandwidth utilization is not restricted to MU-capable STAs. | Change the sentence as as the following: "The Extended BSS Load element reported by the AP contains information on MIMO spatial stream underutilization by MU capable STAs and bandwidth utilization." | Accepted. |
| 10215 | 103.32 | 8.4.2.162 | "If the AP indicates a channel width of 20 MHz in the STA Channel Width field in the HT Operation element, then the 40 MHz Utilization field is reserved." The 40 MHz Utilization field was changed to the Observable Secondary 20 MHz Utilization. | Change the sentence as the following: "If the AP indicates a channel width of 20 MHz in the STA Channel Width field in the HT Operation element, then the Observable Secondary 20 MHz is reserved." | Accepted. |
| 10253 | 35.32 | 8.2.4.3.8 | Need to define "bandwidth signaling TA" in the main body of this standard. | At line 32 insert the paragraph: "A bandwidth-signaling TA is a TA used by a VHT STA to indicate the presence of additional bandwidth signaling for EDCA TXOP transmissions. This TA is represented by the IEEE MAC individual address of the transmitting VHT STA with the Individual/Group bit value 1." | Rejected. Terms that are use throughout the draft are typically defined in the definitions section. |