IEEE P802.11
Wireless LANs

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| Comment Collection 09 MAC CIDs (Comment Resolutions for CC09) |
| Date: 2013-07-16 |
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Abstract

This document provides comment resolutions for CIDs: 84, 85, 128, 194, 456, 460, 462, 752, 875, and 987 from TGah Draft 0.1 Command Collection 9

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Decision** |
| 84 | 148 | 9.32j | The following formula is not correct: "TIM segment start = Page Offset + ((Length of Page Segment) ╫ (TIM Segment Number -1)) + 1"? | TIM segment start = Page Offset + ((Length of Page Segment) ╫ (TIM Segment Number ))and TIM segment end = Page Offset + Length of Page Segment ╫ TIM Segment Number-1or the following:TIM segment start = Page Offset + ((Length of Page Segment) ╫ (TIM Segment Number -1))and TIM segment end = Page Offset + Length of Page Segment ╫ TIM Segment Number-1 | Accepted |
| 194 | 147 | 9.32j | Subchannel selective transmission has some implementation implications on both AP and STA sides, therefore this feature should be optionall at AP and STA. | Add SST AP and STA capabilities. | Rejected (out of scope) |
| 462 | 148 | 9.32j | The equations for block offset and block range are incorrect and they are inconsistent with the equations in 8.4.2.7 (P60/L27). For example, if TIM is segmented into 4 TIM segments, the TIM Segment Number field can have a value from 0 to 3. When the TIM Segment Number field is 1, based on the equation, the value for the TIM segment start (or Block offset start) = (Page Offset + 0 + 1) and the TIM segment end (or Block Range) = (Page Offset + Length of page Segmentx1), which are incorrect. The correct values of the TIM segment start (or Block offset start) = (Page Offset + Length of Page Segmentx1) and the TIM segment end (or Block Range) = (Page Offset + Length of Page Segmentx2 -1). | Change the following sentence "At every TIM segment, the STAs may compute the initial block offset and block range indicated in the segment based on the following equations:" to "At every TIM segment, the STAs may compute a TIM segment start and a TIM segment end values based on the following equations:" and replace"For zero value in the TIM Segment Number field:Block offset / start = Page OffsetFor non-zero value in the TIM Segment Number field:Block offset / start = Page Offset + ((length of page segment) \* (TIM Segment Number -1)) + 1Block Range = Page Offset + length of page segment \* TIM Segment Number" with"TIM segment start = Page Offset + (Length of Page Segment)x(TIM Segment Number)TIM segment end = TIM segment start + Length of Page Segment -1" | Accepted |

**Discussion:**

CIDs 84 and 462 point out the incoherence in expressions for TIM Segment Start and TIM Segment End values and spells out the correct expressions; CID 194 is rejected because it is out of scope in the discussion on TIM and Page segmentation.

**Propose:** I accepted the comments and rejected CID 194.

**Instructions to the Editor**

***Please modify the lines starting at P148/L41 as follows*:**

At every TIM segment, the STAs may compute ~~the initial block offset and block range indicated in the segment~~ a TIM segment start and a TIM segment end values based on the following equations:

~~For zero value in the TIM Segment Number field:~~

~~Block offset / start = Page Offset~~

~~For non-zero value in the TIM Segment Number field:~~

~~Block offset / start = Page Offset + ((length of page segment) \* (TIM Segment Number -1)) + 1~~

~~Block Range = Page Offset + length of page segment \* TIM Segment Number~~

TIM segment start = Page Offset + (Length of Page Segment) x (TIM Segment Number)

TIM segment end = TIM segment start + Length of Page Segment - 1

The value of the Page Offset is obtained from the Page Offset field in the Segment Count element (8.4.2.170c Segment Count element) and the value of the TIM ~~s~~Segment ~~n~~Number is obtained from the TIM Segment Number field in the Bitmap Control field of the TIM ~~segment~~ element (8.4.2.7 TIM element).

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Decision** |
| 85 | 148 | 9.32j | What happens if the values are not divisible (the result is not an integer) | Make it clear or define a rule for restriction otherwise | Accepted |
| 460 | 148 | 9.32j | The length of Page segment has to be integer. However, the equation "Length of Page segment = (Number of blocks in Page Bitmap /Page Segment Count)" can result in a non-integer number. | Change the equation as follows: "Length of Page segment = floor(Number of blocks in Page Bitmap /Page Segment Count)", and add the following sentence after the equation "where floor(x) is the largest integer not greater than x." | Accepted |

**Discussion:**

CIDs 85 and 460 propose to modify the expression for the Length of the Page segment such that the final value is an integer.

**Propose:** I accepted the comments

**Instructions to the Editor**

***Please modify the lines starting at P148/L41 as follows*:**

The length of Page segment assigned to each TIM segment is calculated as:

Length of Page segment = floor(Number of blocks in Page Bitmap /Page Segment Count),

where floor(x) is the largest integer not greater than x, ~~and~~ ~~the n~~Number of blocks in Page Bitmap is defined from the ~~size~~ length of the Page Bitmap field in Segment Count ~~IE~~ element, and the value of the Page Segment Count is obtained from the Page Segment Count field ~~is defined~~ in Segment Count element (8.4.2.170c Segment Count element).

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Decision** |
| 128 | 148 | 9.32j | In the sentence "If a bit in Page Bitmap field is set to 0, it indicates that there is no buffered data for STAs with AIDs located in that block. They may return to Doze state .." what does they refer to? | Please clarify | Revised |

**Discussion:**

CID 128 requests to clarify the sentence following the description on the possible values of each bit in page Bitmap field in segment count element.

**Propose:** I revised the comment

**Instructions to the Editor**

***Please modify the line in P148/L65 as follows*:**

If a bit in Page Bitmap field is set to 0, it indicates that there is no buffered data for STAs with AIDs located in ~~that~~ the block corresponding to that bit. ~~They~~ These STAs may return to Doze state immediately or after receiving buffered broadcast/multicast data as indicated in the DTIM.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Decision** |
| 456 | 147 | 9.32j | Throughout subclause 9.32j, "Segment Count IE" should be replaced with "Segment Count element". In Figure 9-44d, P148/L35, P148/L41, P148/L64. | As suggested in the comment. | Accepted |
| 987 | 147 | 9.32j | The description is redundant | Remove "and not in TIM segments." | Accepted |

**Discussion:**

CID 456 requests to replace the phrase “Segment Count IE” with “Segment Count element.” CID 987 suggests rephrasing the sentence after removing some redundant text in second paragraph of sub-clause 9.32j.

**Propose:** I accepted the comment

**Instructions to the Editor**

***Please modify the line in P147/L38 as follows*:**

The TIM element usually indicates downlink buffered data for all STAs in the BSS. However, in a BSS with large amount of associated STA, it is not viable to indicate downlink buffered data for all STAs in a Page in the TIM element. Hence, when dot11TIMSegmentSupported is true, an AP may fragment the TIM element into equal sized TIM segments consisting only of Page segment with a subset of STA AIDs as depicted in Figure 9-44d (Illustration of TIM and Page Segmentation with Segment Count ~~IE~~ element).

***Please modify the line in P148/L48 as follows*:**

Multiple such TIM segments may be assigned within a DTIM beacon interval and the Segment Count element indicates the sequence of Page segments among scheduled TIM segments. The Segment Count element is only transmitted in DTIM beacon frames ~~and not in TIM segments~~. Each TIM segment shall use a fixed length Page segment within one DTIM beacon interval. However, the length of Page segment may vary over multiple DTIM intervals. Each ordered page segment is assigned sequentially to TIM segments, where the first Page segment may be assigned to the DTIM segment, second Page segment in first TIM segment, and so on. Figure 9-44d (Illustration of TIM and Page Segmentation with Segment Count ~~IE~~ element) is an illustration with 4 Page segments that are assigned to the DTIM segment and three TIM segments.

***Please modify the line in P148/L28 as follows*:**

The Segment Count element indicates assignment of STAs in Page segments corresponding to their assigned TIM segments. STAs within the assigned Page segment wake up at corresponding TIM segment sequentially to receive buffered data from AP and access medium for uplink traffic. In order to wake up at the appropriate TIM segment, the STAs may compute the Page segment assignment to the TIM segments using the length of the Page Bitmap field and the value in the Page Segment Count fields of Segment Count ~~IE~~ element.

***Please modify the line in P148/L61 as follows*:**

The STAs supporting TIM Segmentation, wake up to receive the DTIM beacon frame from the AP. The STAs check the DTIM frame comprising of the Page Bitmap field and the block bitmap fields in Segment Count element and TIM segments, respectively. The Page Bitmap field in the Segment Count ~~IE~~ element provides an early indication of buffered data for all blocks in the assigned Page segments.



**Figure 9-44d—Illustration of TIM and Page Segmentation with Segment Count ~~IE~~ element**

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| 752 | 149 | 9.32j | The text is redundant as the TIM IE section has the complete text. The text includes only Block Bitmap mode. It is not reasonable to exclude other modes. | Remove the text "The method of decoding is based on the Block Bitmap Mode (see 8.4.2.7.1.1). This determination is with respect to a STA's AID in the TIM segment and the corresponding bit at that AID position. If the bit corresponding to that AID is set to 0, then it indicates that there is no buffered data for that STA. This STA may return to Doze state immediately. If the bit corresponding to an AID location is set to 1, then it indicates that there is buffered data for this STA." | Rejected |

**Discussion:**

CID 752 requests to delete the description on decoding the information in the TIM segment. However, there are multiple methods of encoding the partial Virtual Bitmap as illustrated in Sub-clause 8.4.2.7. The TIM segmentation is based only on the Block Bitmap mode of encoding as in 8.4.2.7.1.1 and it needs to be specified while illustrating the decoding method of TIM segments.

**Propose:** I rejected the comment

**Instructions to the Editor**

No modifications needed

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Decision** |
| 875 | 147 | 9.32j | Because the TIM and Page segmentation is a power saving mechanism, Section 10.2.2.21 is more appropriate. | Move Section 9.32j to Section 10.2.2.21. | Rejected |

**Discussion:**

CID 875 requests to move the description of TIM and Page Segmentation from Sub-clause 9.32j to Sub-clause 10.2.2.21 since the commenter believes it is a power saving mechanism. However, the TIM and Page segmentation mechanism is mainly defined due to the increased number (around 6000) of active STAs in IEEE 802.11ah that may not be possible to serve within a beacon period. The segmentation allows flexibility in medium access and suitability to the AP in resource allocations.

**Propose:** I rejected the comment

**Instructions to the Editor**

No modifications needed