IEEE P802.11
Wireless LANs

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| LB200 Proposed Resolutions for Subclauses 8.4.2.30 and 8.4.2.32 |
| Date: 2013-12-24 |
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Abstract

Addressing all CIDs from LB200 which relate to Subclauses 8.4.2.30 and 8.4.2.32.

**REVISION NOTES:**

R0: initial

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGah Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGah Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGah Editor: Editing instructions preceded by “Instruction to Editor” are instructions to the TGah editor to modify existing material in the TGah draft. As a result of adopting the changes, the TGah editor will execute the instructions rather than copy them to the TGah Draft.***

**CID LIST:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1103 | Adrian Stephens | 76.26 | 8.4.2.30 | I don't understand what it means to have a classifier based on AC. An \*MSDU\* is classifed by a TCLAS, which results in a TID or TS determining whether it is transmitted using EDCA or HCCA. Once it has been determined to be EDCA, the UP is used to determine an AC. How can the AC value be used to classify an MSDU, when it is assigned an AC after the classification process?I don't see any description in Clause 9 as to how this "do classification all over again, in the wrong place in the architecture" process is supposed to work. | Describe how classification by AC works in Clause 9. If, as I suspect, I doesn't fit cleanly into the existing architecture, remove it. | Reject - The comment is in fact, inverted. The question that should be asked is of most of the pre-existing classifiers, which provide instruction to the MLME to classify frames based on information that is unknown to the MLME, for example, TCP/IP, UDP and Ethernet fields and values that are found only inside of the data parameter of the MU-UNITDATA.request SAP, but not explicitly described to the MLME. In contrast, figure 4-17 of the baseline clearly shows that the MLME, which currently owns the TFS function, has direct access to the MAC sublayer and can communicate directly with the MAC sublayer without restriction as explicitly described in 6.1, to wit: “Other interactions are not defined explicitly within this standard, such as the interfaces between the MAC and MLME and between the PLME and PHY; the specific manner in which these MAC and PHY LMEs are integrated into the overall MAC sublayer and PHY is not specified within this standard.” The existing TFS description in subclause 10.24.12 refers to the examination of frames, not MSDUs, so the language there effectively accommodates the inspection of MPDUs for filtering purposes and not just MSDUs. Therefore, there is no architectural issue with the new classifiers, even though there miight be such an issue with the old ones and furthermore, there is no issue with the language of 10.24.12 or of 8.4.2.30. |
| 1104 | Adrian Stephens | 77.13 | 8.4.2.30 | Please note that REVmc D2.0 has a frame classifier type 6, which is an 802.11 MAC header classifier.This creates two issues:1. Collision for the number 6. This is easy to fix. .11ah moves up by one.2. Duplication of mechanism. | Review the mechanism provided in REVmc D2.0 and determine whether it meets (or nearly meets) .11ah's requirements. If so remove the .11ah classifiers type 6,7,8, and add amendments to REVmc D2.0 to make it suite .11ah's requirements.If not, rename the classifier types so that they are clearly distinct from REVmc D2.0, and from each other.Hint: "IEEE 802.11 MAC header parameters (B1B0 of the Frame Control field = 00)" is really not a catchy \*name\* for a classifier. | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-0395r0 found under all headings which include CID1104 |
| 1105 | Adrian Stephens | 77.13 | 8.4.2.30 | Classifiers on MPDU parameters make no sense when attached to TSPECS, which classify MSDUs as they arrrive at the MAC-SAP. These were presumably added for some other purpose. | Find some place, e.g. add a column to Table 8-124 that specifies which frames the classifer is permitted in, or some other constraint that indicates it is meaningless to attempt to classify incoming MSDUs (i.e. MAC-DATA.requests) using a MAC header-based classifier. | Revise - , TGah editor to execute proposed changes from 11-14-0395r0 found under all headings which include CID1105 which include the use of the term MPDU in a few places to indicate that the new classifiers operate on MPDUs and not on MSDUs - other places in the baseline already discuss MSDU as appropriate. The use of the term “MAC header” in many places also seems to make it clear that the item being filtered must include a MAC header. |
| 1106 | Adrian Stephens | 83.43 | 8.4.2.32 | " It indicates how MDUshould be processed by the classifier." -- no it doesn't. REVmc D2 fixes this. | Update baseline to REVmc D2.0, then remove any change by .11ah. | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-0395r0 found under all headings which include CID1106 |
| 1107 | Adrian Stephens | 84.07 | 8.4.2.32 | The three rows inserted by .11ah are superfluous, based on modifications in REVmc D2 to the previous 3 rows. A similar change to the .11ah one was presented to TGmc, and the alternative method in REVmc D2 was chosen. | Update baseline to REVmc D2.0. Then remove the three rows inserted. This means there are no changes in this subclause, which can now be removed from the amendment. | Accept |

**Discussion**

Some of the TGah TFS MAC header field filtering functionality was adopted within TGmc and now appears in the TGmc draft. Additional functionality which applies strictly to TGah (e.g. short MAC header frames) is not in TGmc. Therefore, some of the current TGah draft amendment changes for TFS are already in the TGmc baseline document and need to be removed from the TGah draft and some other modifications need to be made to account for the existence of the general MAC header matching concept in the baseline.

**Proposed changes**

**CID 1104, 1105, 1106**

8.4.2.30 TCLAS element

***Editor’s Note: Numbering based on 802.11REVmc D1.1***

***Change the sub-clause 8.4.2.30 as the following:***

***TGah editor: remove the items highlighted in yellow from the TGah draft, note that once the changes are removed, there will be no need to keep these paragraphs within the subclause 8.4.2.30 TCLAS element, within the TGah draft, however, note that some of the other changes that are in the TGah subclause 8.4.2.30 will remain, and/or will be modified, although NOT all of the 8.4.2.30 TCLAS element text will be shown in this document, so if the editor chooses, he can instead, simply undo the changes in the yellow paragraphs and keep them in the draft:***

The TCLAS element specifies an element that contains a set of parameters necessary to identify MPDUs. It is used to identify incoming MSDUs (from a higher layer in all STAs or from the DS in an AP) that belong to a particular TS. The TCLAS element is also used when the traffic does not belong to a TS, for example, by the FMS, DMS, and TFS services. If required, the TCLAS element is provided in ADDTS Request and ADDTS Response frames only for the downlink or bidirectional links. TCLAS element needs not be provided for the uplink or direct- link transmissions. The structure of this element is shown in Figure 8-200.

The Element ID and Length fields are defined in 8.4.2.1.

When t~~T~~he UP field contains ~~the~~ a value that is less than or equal to 7 and greater than or equal to 0, the value specifies ~~of~~ the UP of the associated MSDUs. When the UP field contains a value that is greater than or equal to 8 and less than or equal to 11, the value specifies the access category of the associated MPDUs. The UP field value of 255 is reserved and indicates that this field value needs not to be compared. The content of the User Priority field of an TCLAS element is specified in Table 8-123a (User Priority field of TCLAS element).

The Frame Classifier field is 3–255 octets in length and is defined in Figure 8-231 (Frame Classifier field).

When the Classifier type is a value less than or equal to 5, t~~T~~he Classifier Mask subfield specifies a bitmap in which bits that have the value 1 identify a subset of the classifier parameters whose values need to match those of the corresponding parameters in a given MSDU for that MSDU to be classified to the TS of the affiliated TSPEC. The bitmap is ordered from the LSB to the MSB, with each bit pointing to one of the classifier parameters of the same relative position as shown in this subclause based on classifier type. An incoming MSDU that failed to be classified to a particular TS may be classified to another active TS based on the frame classifier for that TS. If, however, all the frame classifiers for the active TS have been exhausted, the MSDU does not belong to any active TS and is classified to be a best-effort MSDU. In cases where there are more bits in the bitmap than classifier parameters that follow, the MSBs that do not point to any classifier parameters are reserved.

When the Classifier Type is equal to 6, 7 or 8, the Classifier Mask subfield specifies a bitmap in which every two bits correspond to one field of the MAC header, as specified in Table 8-124a (Classifier Mask for Classifier Type (6)), Table 8-124b (Classifier Mask for Classifier Type (7)) and Table 8-124c (Classifier Mask for Classifier Type (8)), Setting the LSB of the 2 bits to 1 indicates the use of the corresponding MAC Header field for comparison, and setting the LSB of the two bits to 0 indicates the corresponding MAC header field is not used for comparison, and the corresponding Match Specification is not included in the Classifier. The setting of the MSB of the two bit to 1 indicates the inclusion of the corresponding MAC Header Filter (a bit mask) in the corresponding Match Specification; the setting of the MSB of the two bits to 0 indicates the MAC Header Filter is not included in the corresponding Match Specification and every bit of the Match Specification, if included in the Classifier Parameter, needs to be compared. If an optional MAC Header field needs to be compared, the LSB of the two bits in the Classifier Mask corresponding to the optional MAC header field shall be set to 1, and an MPDU that does not include the optional field is not a matching MPDU.

***TGah editor: remove table 8-123a User Priority field of TCLAS element from the TGah draft.***

***TGah editor: remove figure 8-231 Frame Classifier field from the TGah draft.***

***TGah editor: note that this document does not alter the appearance of Tables 8-124a, 8-124b, 8-124c and figure 8-239 in the TGah draft.***

***TGah editor: modify the existing changes to Table 8-124 Frame Classifier type as shown in the TGah draft, so that the modifications appear as shown:***

**Table 8-124 - Frame classifier type**

|  |  |
| --- | --- |
| Classifier type | Classifier parameters |
| 0 | Ethernet parameters |
| 1 | TCP/UDP IP parameters |
| 2 | IEEE Std 802.1Q parameters |
| 3 | Filter Offset parameters |
| 4 | IP and higher layer parameters |
| 5 | IEEE Std 802.1D/Q parameters |
| 6 | IEEE 802.11 non-short MAC header parameters |
| 7 | IEEE 802.11 down short MAC header parameters |
| 8 | IEEE 802.11 non-down short MAC header parameters |
| 9-255 | Reserved |

***TGah editor: include the following changes in the TGah draft:***

The Frame Classifier field for Classifier Type 5 is defined in Figure 8-239 (Frame Classifier field of Classifier Type 5).

The classifer type value of 6 applies only to frames with a value of 00b in the Protocol Version subfield of the Frame Control field of the MAC header.

The classifer type value of 7 applies only to frames with a value of 01b in the Protocol Version subfield of the Frame Control field of the MAC header and a value of 1 in the FromDS subfield of the Frame Control field of the MAC header.

The classifer type value of 8 applies only to frames with a value of 01b in the Protocol Version subfield of the Frame Control field of the MAC header and a value of 0 in the FromDS subfield of the Frame Control field of the MAC header.

When the Classifier Type is equal to 6, 7 or 8, the Classifier Mask subfield is three octets in length and contains a sequence of two-bit Classifier Mask Control subfields. Each Classifier Mask Control subfield applies to a specific target field of the MAC header of an MPDU and determines whether the target field is included in the comparison and whether an additional bitmask (the target field filter mask) is present. When the target field filter mask is present, it determines which bits of the target field are used in the comparison. Setting the LSB of the 2 bits to 1 indicates the use of the corresponding MAC Header field for comparison, and setting the LSB of the two bits to 0 indicates the corresponding MAC header field is not used for comparison, and the corresponding Match Specification is not included in the Classifier. The setting of the MSB of the two bit to 1 indicates the inclusion of the corresponding MAC Header Filter (a bit mask) in the corresponding Match Specification; the setting of the MSB of the two bits to 0 indicates the MAC Header Filter is not included in the corresponding Match Specification and every bit of the Match Specification, if included in the Classifier Parameter, needs to be compared. If an optional MAC Header field needs to be compared, the LSB of the two bits in the Classifier Mask corresponding to the optional MAC header field shall be set to 1, and an MPDU that does not include the optional field is not a matching MPDU. Table 8-124a (Classifier Mask for Classifier Type (6)), Table 8-124b (Classifier Mask for Classifier Type (7)) and Table 8-124c (Classifier Mask for Classifier Type (8)) specify the interpretation of the Classifier Mask Control subfield for each of the Classifier Type values 6,7, and 8, respectively.

***TGah editor: remove the items highlighted in yellow from the TGah draft, note that once the changes are removed, there will be no need to keep these paragraphs within the subclause 8.4.2.30 TCLAS element, within the TGah draft, however, note that some of the other changes that are in the TGah subclause 8.4.2.30 will remain, and/or will be modified:***

For Classifier Type 6, the format of the Frame Classifier field of an TCLAS element is illustrated in Figure 8-239a (Frame Classifier field of Classifier Type 6).

***TGah editor: change the following paragraph of 8.4.2.30 TCLAS element as shown:***

For Classifier Type 6, the formats of the Frame Control Match Specification subfield, Duration/ID subfield, Address 1 subfield, Address 2 subfield, Address 3 subfield, Sequence Control subfield, Address 4 subfield, QoS Control subfield and HT Control subfield of the Frame Classifier field of a TCLAS element are illustrated in from Figure 8-241 (Frame Control Match Specification Subfield of Classifier Type 6, 7, 8) to Figure 8-249 (HT Control Match Specification Subfield of Classifier Type 6), respectively. The Match Specification subfield contains the match specification (i.e., the parameters) of the corresponding MAC header field with which an MPDU needs to be compared. When the corresponding Filter Mask is not present, every bit in a Match Specification needs to be compared; otherwise, only the bits with the same bit positions as the bits that are set to 1 in the corresponding Filter Mask subfield are compared.

***TGah editor: remove Figure 8-239a - Frame Classifier field of Classifier Type 6 from the TGah draft as it already appears in the baseline in the form shown in the TGah draft.***

***TGah editor: the TGah draft figures 8-239b through 8-239j already appear in the baseline as figure 8-241 through 8-249 - so the figures in the TGah draft need tobe removed along with their captions, as the figures are unchanged from the baseline, however, the captions of several of the figures need to be changed, so there needs to be an editing instruction and caption changes inserted into the TGah draft as follows:***

***Modify the captions of several figures as indicated:***

**Figure 8-241—Frame Control Match Specification Subfield of Classifier Type 6, 7, 8**

**Figure 8-243—Address1 Match Specification Subfield of Classifier Type 6, 8**

**Figure 8-244—Address2 Match Specification Subfield of Classifier Type 6, 7**

**Figure 8-245—Address3 Match Specification Subfield of Classifier Type 6, 7, 8**

**Figure 8-246—Sequence Control Match Specification Subfield of Classifier Type 6, 7, 8**

**Figure 8-247—Address4 Match Specification Subfield of Classifier Type 6, 7, 8**

***TGah editor: figures 8-239k through 8-239n need to be renumbered to reflect the figure deletions made earlier at the instruction of this document.***

***TGah editor: change the following paragraphs of the TGah draft as shown:***

For Classifier Type 7, the format of the Frame Classifier field of an TCLAS element is illustrated in Figure 8-239k (Frame Classifier field of Classifier Type 7).

For Classifier Type 7, the formats of the Frame Control Match Specification subfield, Address 1 (SID) subfield, Address 2 (BSSID) subfield, Sequence Control subfield, Address 3 subfield, and Address 4 subfield of the Frame Classifier field of a TCLAS element are illustrated in Figure 8-241 (Frame Control Match Specification Subfield of Classifier Type 6, 7, 8), Figure 8-239l (Address1 (SID) Match Specification Subfield of Classifier Type 7), Figure 8-244 (Address2 Match Specification Subfield of Classifier Type 6, 7), Figure 8-246 (Sequence Control Match Specification Subfield of Classifier Type 6, 7, 8), and Figure 8-245 (Address3 Match Specification Subfield of Classifier Type 6, 7, 8), and Figure 8-247 (Address4 Match Specification Subfield of Classifier Type 6, 7, 8), respectively. The Match Specification subfield contains the match specification (i.e., the parameters) of the corresponding MAC header field with which an MPDU needs to be compared. When the corresponding Filter Mask is not present, every bit in a Match Specification needs to be compared; otherwise, only the bits with the same bit positions as the bits that are set to 1 in the corresponding Filter Mask subfield are compared.

For Classifier Type 8, the format of the Frame Classifier field of an TCLAS element is illustrated in Figure 8-239m (Frame Classifier field of Classifier Type 8)

For Classifier Type 8, the formats of the Frame Control Match Specification subfield, Address 1 (BSSID) subfield, Address 2 (SID) subfield, Sequence Control subfield, and Address 3 subfield are illustrated in Figure 8-242 (Frame Control Match Specification Subfield of Classifier Type 6, 7, 8), Figure 8-243 (Address1 Match Specification Subfield of Classifier Type 6, 8), Figure 8-239n (Address2 (SID) Match Specification Subfield of Classifier Type 8), Figure 8-246 (Sequence Control Match Specification Subfield of Classifier Type 6, 7, 8), Figure 8-245 (Address3 Match Specification Subfield of Classifier Type 6, 7, 8), and Figure 8-247 (Address4 Match Specification Subfield of Classifier Type 6, 7, 8), respectively. The Match Specification subfield contains the match specification (i.e., the parameters) of the corresponding MAC header field with which an MPDU needs to be compared . When the corresponding Filter Mask is not present, every bit in a Match Specification needs to be compared; otherwise, only the bits with the same bit positions as the bits that are set to 1 in the corresponding Filter Mask subfield are compared.

***TGah editor: remove all of the changes to text and tables within subclause 8.4.2.32 TCLAS Processing element that are currently indicated in the TGah draft as they are redundant to the latest 802.11 baseline document.***

**8.4.2.32 TCLAS Processing element**

The TCLAS Processing element is present in the ADDTS Request, ADDTS Response, FMS Request, DMS Request, and TFS Request frames if there are multiple TCLASs associated with the request. It indicates how an ~~MSDU received from higher layers~~MPDU should be processed by the classifier. The TCLAS Processing element is defined in Figure 8-241 (TCLAS Processing element).

***(Note - Table 8-126 changes that are part of 8.4.2.32 are also to be removed from the TGah draft and therefore, 8.4.2.32 can be removed from the TGah draft)***

**References:**