IEEE P802.11
Wireless LANs

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |
| --- |
| CR QOS SF |
| Date: 2017-06-12 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Matthew Fischer | Broadcom |  |  | Matthew.fischer@broadcom.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

 |

Abstract

Comment resolution with proposed changes to TGax D1.3 for CIDs 8427, 7710 from the WG LB for TGax D1.0 relating to the QOS control field, in particular, modifying the proposed resolutions because of the need for a modification to the changes created by those CIDs.

The CID list is:

8427

The proposed changes on this document are based on TGax Draft 1.3.

**REVISION NOTES:**

**R0**:

Initial

**R1**:

Minor non-technical wording changes

Deleted CID 7710, since one change for R1 is to remove the change that arose from the re-examination of 7710

**END OF REVISION NOTES**

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 TGax Draft. This introduction is not part of the adopted material.

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

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

**CIDs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 8427 | Robert Stacey | 25.34 | 9.2.4.6.4.5 | The BSR is poorly designed. Its only purpose is to report queue state for traffic not in the current aggregate (since queue size in QoS Control can do it for traffic in the aggregate). Even so, it is not strictly necessary since that status could be collected through multi-TID aggregation or through a separate access. It is not compatible with queue size reported in QoS Control since it reports per AC and has a queue size range that different from queue size in QoS Control. | Redesign BSR so that it reports queue size in a manner compatible with queue size in QoS Control. Say 3 fields of 8-bits representing the queue sizes of TIDs in each of the ACs not represeted by the TID of the QoS Data frame carrying the BSR. Queue size reported in a manner compatible with queue size in QoS Control (units of 256 octets). The TIDs reported in sets: say {1, 0, 4, 6} and {2, 3, 5, 7}, so that if the QoS Data frame is for a TID in set 1 the queue size for other TIDs are in set 1. | REVISED (MAC: 2017-05-21 07:55:43Z)Revised –Similar considerations as for comment to 8426.The BSR Control field is an alternative way of delivering buffer status information to the AP, which in contrast to the delivery in the QoS Control field has a more flexible BSR range, thanks to the scaling factor, can deliver BSR for one AC and for all ACs in the same field, and the number of TIDs for which there is buffered traffic. All of this without the need of additional access to the medium or multi-TID aggregation. Please refer to https://mentor.ieee.org/802.11/dcn/16/11-16-0628-01-00ax-buffer-status-report-in-he-control-field.pptx for more information on this functionality.However, based on further comparison of the two BSR methods, it was identified that having only one value of the SF for the QoS Contorl field is limited for certain traffic types (SF is 256 octets when compared to the BSR Control field (which contains a Scaling Factor with 4 values). See https://mentor.ieee.org/802.11/dcn/17/11-17-0477-00-00ax-buffer-status-report.pptxTo address this ssue the proposed resolution is to enable the QoS Control field signaling to use a scaling factor (along the lines of the BSR Control field) that is backwards compatible and negotiable between the STA and the AP.**TGax editor to make the changes shown in 11-17/0607r1 under all headings** that include CID 8427, followed by all changes in 11-17-1135r1 under all headings that include CID 8427. |

**Discussion:**

The changes indicating that the original meaning of the Queue Size subfield are relevant only for a non-HE STA sending the frame are incorrect. An HE STA might be associated with an AP which is non-HE, and in that case, the HE STA must send the original format of the Queue Size subfield.

**Proposed Changes to Draft Text of TGax D1.3:**

**CID 8427, 7710**

***TGax editor: modify TGax D1.3 subclause 9.2.4.5.6 Queue Size subfield as follows:***

9.2.4.5.6 Queue Size subfield

Change subclause 9.2.4.5.6 as follows:

The Queue Size subfield is an 8-bit field that indicates the amount of buffered traffic for a given TC or TS at the non-HE STA(#7710) sending ~~this~~ the frame that contains this subfield(#8427). A non-AP HE STA uses the Queue Size subfield to indicate the amount of buffered traffic intended for transmission to the HE(#8427) STA identified by the receive address of the frame containing the QoS Control field. The Queue Size subfield is present in QoS Data and QoS Null frames sent by non-AP STAs with bit 4 of the QoS Control field equal to 1. The AP might(#7711) use information contained in the Queue Size subfield to determine the TXOP duration assigned to the STA or to determine the UL resources assigned to the HE STA (see 27.5.2 (UL MU operation)).

When transmitted by a non-HE STA or transmitted to a non-HE STA, the queue size value is the approximate total size, rounded up to the nearest multiple of 256 octets and expressed in units of 256 octets, of all MSDUs and A-MSDUs buffered at the STA (excluding the MSDU or A-MSDU of the present QoS Data frame) in the delivery queue used for MSDUs and A-MSDUs with TID values equal to the value in the TID subfield of this QoS Control field.

When sent by a non-AP HE STA to an HE AP, the Queue Size subfield contains a Scaling Factor subfield in the 2 MSBs (bits 14-15 of the QoS Control subfield) and an unscaled value, UV, in the 6 LSBs (bits 8-13 of the QoS Control subfield). The Scaling Factor sub-field provides the scaling factor, SF, with an encoding that is shown in Figure 9-18d (Scaling Factor subfield encoding). The queue size value, QS, for an HE non-AP STA transmitting the Queue Size subfield to an HE AP is calculated as follows:

QS = 16 x UV when the Scaling Factor subfield is 0

QS = 1024 + 256 x UV when the Scaling Factor subfield is 1 Equation 9-x

QS = 17 408+ 2 048 x UV when the Scaling Factor subfield is 2

QS = 148 480 + 32 768 x UV when the Scaling Factor subfield is 3(#8427)

When transmitted by a non-AP HE STA to an HE AP, the queue size value QS is the approximate total sizein units of octet(#8427) of all MSDUs and A-MSDUs buffered at the STA (including the MSDUs or A-MSDUs contained in the (A-)MPDU containing the Queue Size subfield,(#7868)) in the delivery queue used for MSDUs and A-MSDUs with TID values equal to the value in the TID subfield of this QoS Control field. The value of QS is calculated as defined in equation 9-x.(#8427) The value of QS is an approximation of the actual queue size at the transmitter, where the approximation is due to rounding to a variable resolution. The transmitter rounds the actual value of queue size up to the nearest 16 octets when SF is equal to 0 and placese the resulting value into the UV subfield. The transmitter rounds the actual queue size as follows, for SF values greater than 0:

When SF is equal to 1, the actual queue size minus 1024 is rounded up to the nearest 256 octets and placed into the UV subfield.

When SF is equal to 2, the actual queue size minus 17,408 is rounded up to the nearest 2048 octets and placed into the UV subfield.

When SF is equal to 3, the actual queue size minus 148,480 is rounded up to the nearest 32,768 octets and placed into the UV subfield.

A queue size subfield value of 0 is used to indicate the absence of any buffered traffic in the queue used for the specified TID. A queue size value of 254 is used for all sizes greater than 64 768 octets when transmitted by a non-HE STA or transmitted by an HE STA to a non-HE STA and 2 147 328 octets when transmitted by an HE STA to an HE STA(#8427). A queue size subfield value of 255 is used to indicate an unspecified or unknown size. If an MSDU or A-MSDU(#7866) is fragmented and is not car-ried in an A-MPDU, then the queue size value may(#7719, #8015) remain constant in all fragments even if the amount of queued traffic changes as successive fragments are sent(#6255). If an MSDU or A-MSDU(#7866) is fragmented and is carried in an A-MPDU, then the queue size bits 8-15 of the QoS Control field(#5435) is set as defined in 10.13.1 (A-MPDU contents).(#7869)

**End of proposed changes.**