IEEE P802.11
Wireless LANs

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| LB266 CR on Measurement Report for Low-latency Traffic |
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Abstract

This submission contains proposed comment resolutions to comments on P802.11be D2.0. The following CIDs are resolved:

12334, 10906, 10908, 12290

Revisions:

- Rev 0: Initial version of the document.

|  |  |  |  |  |  |  |
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| **CID** | **Commenter** | **Clause** | **Page.****Line** | **Comment** | **Proposed Change** | **Resolution** |
| 12334 | Guogang Huang | 35.3.22 | 478.29 | Similar to the 5G cellular network, a measurement report should be defined to monitor the experienced packet delivery ration given the delay bound of uplink transmissions belonging to a TID. | Please define a measurement to monitor the packet delivery ratio | RevisedAgreed in principle. The current Transmit Stream/Category Measurement Request/Report is modified to address the measurement for the low-latency traffic.Instructions to the editor:Please make the changes to the spec as shown in 11/22-1213r0 |
| 10906 | Akira Kishida | 9.4.2.316 | 251.40 | The QoS Characteristics element contains requirements of QoS expectations of a traffic flow as defined; however, there is no mechanism to notify measurement results of the set of parameters corresponding to the contents of the QoS Characteristics element. Therefore, some mechanisms should be determined to know whether the traffic flow fulfills the requirements of the QoS Characteristic element or not. | A new element such as the "QoS Characteristic report element" should be created to notify the results of measurements of each component in the QoS Characteristic element. | RevisedAgreed in principle. The current Transmit Stream/Category Measurement Request/Report is modified to address the measurement for the low-latency traffic.Instructions to the editor:Please make the changes to the spec as shown in 11/22-1213r0 |
| 10908 | Akira Kishida | 35.9 | 510.51 | A mechanism for how an AP confirms whether the requirements described in the QoS Characteristics element are fulfilled or not should be defined in 35.9 and 35.3.22. | As in the comment. | RevisedAgreed in principle. The current Transmit Stream/Category Measurement Request/Report is modified to address the measurement for the low-latency traffic.Instructions to the editor:Please make the changes to the spec as shown in 11/22-1213r0 |
| 12290 | KENGO NAGATA | 9.4.2.316 | 251.40 | The QoS Characteristics element contains requirements of QoS expectations of a traffic flow as defined; however, there is no mechanism to notify measurement results of the set of parameters corresponding to the contents of the QoS Characteristics element. Therefore, some mechanisms should be determined to know whether the traffic flow fulfills the requirements of the QoS Characteristic element or not. | A new element such as the "QoS Characteristic report element" should be created to notify the results of measurements of each component in the QoS Characteristic element. | RevisedAgreed in principle. The current Transmit Stream/Category Measurement Request/Report is modified to address the measurement for the low-latency traffic.Instructions to the editor:Please make the changes to the spec as shown in 11/22-1213r0 |

9.4.2.20.11 Transmit Stream/Category Measurement Request

***TGbe editor: modify the first paragraph in subclause 9.4.2.20.11 of Draft REVme 1.0 as:***

The Transmit Stream/Category Measurement applies to TIDs for traffic streams associated with TSPECs, to TIDs for traffic categories for QoS traffic without TSPECs or with QoS Characteristics elements. The Measurement Request field corresponding to a Transmit Stream/Category Measurement request is shown in Figure 9-252 (Measurement Request field format for Transmit Stream/Category Measurement Request).

***TGbe editor: modify the following figure in subclause 9.4.2.20.11 of Draft REVme 1.0 as:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 B7 |
|  | Average | Consecutive | Delay | MSDU Delivery Ratio | Reserved |
| Bits: | 1 | 1 | 1 | 1 | 4 |

**Figure 9-256 Trigger Condition bit-field format**

***TGbe editor: add the following bullet in subclause 9.4.2.20.11 of Draft REVme 1.0 as:***

* The Average bit is set to 1 to request that a Transmit Stream/Category Measurement report be generated when the number of MSDUs for the TC or TS given by the TID that are discarded out of the number of preceding MSDUs specified in Measurement Count is greater than or equal to the value given in Average Error Threshold. MSDUs discarded due to the number of transmit attempts exceeding dot11ShortRetryLimit, or due to the MSDU lifetime having been reached, are counted.
* The Consecutive bit is set to 1 to request that a Transmit Stream/Category Measurement report be generated when the number of MSDUs for the TC or TS given by the TID that are discarded in succession is greater than or equal to the value given in Consecutive Error Threshold. MSDUs discarded due to the number of transmit attempts exceeding dot11ShortRetryLimit, or due to the MSDU lifetime having been reached, are counted.
* The Delay bit is set to 1 to request that a Transmit Stream/Category Measurement report be generated when the number of consecutive MSDUs for the TC or TS given by the TID that experience a transmit delay greater than or equal to the value specified in the Delay Threshold subfield is greater than or equal to the value given in Delayed MSDU Count. Delay is measured from the time the MSDU is passed to the MAC until the point at which the entire MSDU has been successfully transmitted, including receipt of the final Ack frame from the peer STA if the QoSAck service class is being used.
* The MSDU Delivery Ratio bit is set to 1 to request that a Transmit Stream/Category Measurement report be generated when the experienced MSDU delivery ratio for the TC given by TID is lower than the value specified in the MSDU Delivery Ratio field in the relevant QoS Characteristics element.

9.4.2.21.11 Transmit Stream/Category Measurement Report

***TGbe editor: modify the first paragraph in subclause 9.4.2.21.11 of Draft REVme 1.0 as:***

The Transmit Stream/Category Measurement report applies to TIDs for Traffic Streams associated with TSPECs, to TIDs for Traffic Categories for QoS traffic without TSPECs or with QoS Characteristics elements. The format of the Measurement Report field corresponding to a Transmit Stream/Category Measurement report is shown in Figure 9-310 (Measurement Report field format for Transmit Stream/Category Measurement report).

***TGbe editor: modify the following figure in subclause 9.4.2.21.11 of Draft REVme 1.0 as:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 B7 |
|  | Average Trigger | Consecutive Trigger | Delay Trigger | MSDU Delivery Ratio Trigger | Reserved |
| Bits: | 1 | 1 | 1 | 1 | 4 |

**Figure 9-311 Reporting Reason field format**

***TGbe editor: add the following bullet in subclause 9.4.2.21.11 of Draft REVme 1.0 as:***

* The Average Trigger bit set to 1 indicates that the Transmit Stream/Category Measurement report was generated as a triggered report due to the Average Error trigger.
* The Consecutive Trigger bit set to 1 indicates that the Transmit Stream/Category Measurement report was generated as a triggered report due to the Consecutive Error trigger.
* The Delay Trigger bit set to 1 indicates that the Transmit Stream/Category Measurement report was generated as a triggered report due to the delay exceeding the Delay Threshold.
* The MSDU Delivery Ratio Trigger bit set to 1 indicates that the Transmit Stream/Category Measurement report was generated as a triggered report due to the MSDU delivery ratio for the TC given by TID being lower than the value specified in the MSDU Delivery Ratio field in the relevant QoS Characteristics element.

***TGbe editor: modify the following paragraphes in subclause 9.4.2.21.11 of Draft REVme 1.0 as:***

The Transmitted MSDU Count, MSDU Failed Count, MSDU Discarded Count, MSDU Multiple Retry Count, QoS CF-Polls Lost Count, Average Queue Delay, Average Transmit Delay, and delay histogram fields relate to transmissions to the QoS STA given in the Peer STA Address field. Metrics are reported over the Measurement Duration, or for triggered transmit stream/category measurements, over the Measurement Count. Any counter that increments to a value of 232–1 terminates the measurement.

The Transmitted MSDU Count field contains the number of MSDUs for the TC or the TS specified by the TID that were successfully transmitted. For the TC with a QoS Characteristics element, the Transmitted MSDU Count field contains the number of MSDUs specified by the TID that were successfully transmitted within the delay bound specified in the Delay Bound field in the relevant QoS Characteristics element.

The MSDU Discarded Count field contains the number of MSDUs for the TC or the TS specified by the TID that were discarded due either to the number of transmit attempts exceeding dot11ShortRetryLimit, or due to the MSDU lifetime having been reached. For the TC with a QoS Characteristics element, the MSDU Discarded Count field contains the number of MSDUs specified by the TID that were discarded due to the number of transmit attempts exceeding QSRC[AC], the Delay Bound specified in the Delay Bound field or the MSDU lifetime specified in the MSDU Lifetime field in the relevant QoS Characteristics element having been reached.

The MSDU Failed Count field contains the number of MSDUs for the TC or the TS specified by the TID that were discarded due to the number of transmit attempts exceeding dot11ShortRetryLimit. For the TC with a QoS Characteristics element, the MSDU Failed Count field contains the number of MSDUs specified by the TID that were discarded due to the number of transmit attempts exceeding QSRC[AC].

The MSDU Multiple Retry Count field contains the number of MSDUs for the TC or the TS specified by the TID that were successfully transmitted after more than one retransmission attempt.

The QoS CF-Polls Lost Count field contains the number of QoS (+)CF-Poll frames that were transmitted where there was no response from the QoS STA. QoS CF-Polls Lost Count are returned only if the reporting QoS STA is contained within an AP and the TID is for a TS. This field is set to 0 when QoS CF-Polls Lost Count is not returned.

The Average Queue Delay field is the average queuing delay of the frames (MSDUs) that are passed to the MAC for the indicated peer STA address and the indicated traffic identifier. Queue Delay is expressed in TUs and is measured from the time the MSDU is passed to the MAC until the point at which the first or only corresponding MPDU begins transmission.

The Average Transmit Delay field is the average delay of the frames (MSDUs) that are successfully transmitted for the indicated Peer STA Address and TID. Average Transmit Delay is measured from the time the MSDU is passed to the MAC until the point at which the entire MSDU has been successfully transmitted, including receipt of the final Ack frame from the peer STA if the QoSAck service class is being used. Average Transmit delay is expressed in units of TUs.