IEEE P802.11
Wireless LANs

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| LB275 CR for 9.4.2.19 and 9.4.2.20 |
| Date: 2023-10-08 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Guogang Huang | Huawei |  |  | huangguogang1@huawei.com |
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Abstract

This submission proposes CR for 9 CIDs:

19427 19428 19429 19430 19431 19432 19433 19434 19869

Revisions:

* Rev 0: Initial version of the document.

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

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

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

| **CID** | **Commenter** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- | --- |
| 19427 | Guogang Huang | 0.00 | 9.4.2.19.7 | For the Beacon Reporting subelement, the serving AP is unclear under the MLO scenario. Because there are multiple serving APs. Please add the text to clarify. | Add an MLO Link Information subelement to indicate which AP is the serving AP as reference | RevisedAgree in principle. On the one hand, considering the fact that the AP MLD doesn’t care about the affiliated STA, the non-AP MLD uses to do the measurement, the Beacon Request/Report should be defined at the MLD level and the corresponding Spectrum/Radio Measurement Request/Report frames can be sent on any enabled link. On the other hand, for the Beacon Reporting subelement, considering there are multiple serving APs in the MLO scenario, an MLO Information subelement shall be included to indicate which AP the serving AP is referring to. TGbe editor, please make the changes tagged by CID #19427 in 11-23/1805r0. |
| 19428 | Guogang Huang | 0.00 | 9.4.2.20.7 | For the Actual Measurement Start Time and Parent TSF subfields, add an MLO Link Information subelement to indicate which AP's TSF is refered to | As in comment. | RevisedAgree in principle. On the one hand, considering the fact that the AP MLD doesn’t care about the non-AP MLD uses which affiliated STA to do the measurement, the Beacon Request/Report should be defined at the MLD level and the corresponding Spectrum/Radio Measurement Request/Report frame can be sent on any enabled link. On the other hand, considering there is timing info (e.g. Actual Measurement Start Time, Parent TSF) of the measuring STA, an MLO Information subelement shall be included in this case.TGbe editor, please make the changes tagged by CID #19428 in 11-23/1805r0. |

Discussion

Most of measurement types included within Spectrum/Radio Measurement Request/Response frames should be defined at the MLD level, because the measurement request is sent by the AP MLD to the non-AP MLD. As for which STA affiliated with the non-AP MLD to do the measurement, the AP MLD really doesn’t care.

But the issue is that there is some link-specific info (e.g. serving AP, measuring STA, Actual Measurement Start Time and so on) within the Measurement Request/Report element, so we still need to include an MLO Link Information (sub)element or link ID info to indicate the corresponding reference link.

Although the resulting difference on the signalling is minor compared with defining the measurement request at the link-level, they are totally different in the text description. The most serious case is for the Transmit Stream/Category Measurement Request/report, which is mainly used for the average transmit delay. Considering that an MSDU can be transmitted through any enabled link and the corresponding transmit delay is measured from time the MSDU is passed to the MAC, to the point at which the entire MSDU has been successfully transmitted, including receipt of the final Ack frame, it should be defined at the MLD-level.

Based on the above discussion, we suggest to define the measurement request/response at the MLD level, except STA Statistics request/report and Multicast Diagnostics request/report.

**End of discussion**

*TGbe editor: Please note baseline is 11be D4.1 and REVme D**4.0*

**9.4.2.19.7 Beacon Request**

*TGbe editor: Change Table 9-140 (Optional subelement IDs for Beacon request) as follows (not all rows shown):(CID 19427)*

**Table 9-140—Optional subelement IDs for Beacon request**

|  |  |  |
| --- | --- | --- |
| **Subelement ID** | **Name** | **Extensible** |
| … |  |  |
| 165 | Bandwidth Indication | Yes |
| 166 | MLO Link Information | No |
| 167–220 | Reserved |  |
| … |  |  |

*TGbe editor: Insert the following paragraphs after the paragraph (“When the Bandwidth Indication subelement is present…”) (CID 19427)*

For a non-AP MLD, an MLO Link Information subelement is present along with a Beacon Reporting subelement to indicate which AP the serving AP is referred to if the Reporting Condition subfield is set to a value from 5 to 10.

**9.4.2.20.7 Beacon Report**

*TGbe editor: Change* [*Table 9-166 (Optional subelement IDs for Beacon report)*](#_bookmark135) *as follows (not all rows shown): (CID 19428)*

**Table 9-166—Optional subelement IDs for Beacon report**

|  |  |  |
| --- | --- | --- |
| **Subelement ID** | **Name** | **Extensible** |
| … |  |  |
| 165 | Bandwidth Indication | Yes |
| 166 | MLO Link Information | No |
| 167–220 | Reserved |  |
| … |  |  |

***TGbe editor: Insert the following paragraphs after the paragraph (“When the Bandwidth Indication subelement is present…”)******(CID 19428)***

For a non-AP MLD, an MLO Link Information subelement is present to indicate which STA the measuring STA is referred to.

| **CID** | **Commenter** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- | --- |
| 19432 | Guogang Huang | 0.00 | 9.4.2.19.11 | The Transmit Stream/Category Measurement request/report should be allowed to apply to the TIDs for SCS streams associated QoS Characteristics element. Please update the text. | As in comment. | RevisedAgree in principle. Considering the Transmit Stream/Category Measurement request/report is mainly used to measure the average transmit delay of MSDUs, it should be at the MLD level. Accordingly, the text regarding the Transmit Stream/Category Measurement request/report is updated to accommodate the MLO scenario. TGbe editor, please make the changes tagged by CID #19432 in 11-23/1805r0. |
| 19429 | Guogang Huang | 0.00 | 9.4.2.19.11 | For the Transmit Stream/Category Measurement request, the Peer STA Address subfield of the Measurement Request field should contain the MLD MAC Address in the MLO scenario, rather than the RA. Please add the text to clarify. | As in comment. | RevisedAgree in principle. Considering the Transmit Stream/Category Measurement request/report is mainly used to measure the average transmit delay of MSDUs, it should be at the MLD level. Accordingly, the text regarding the Transmit Stream/Category Measurement request/report is updated to accommodate the MLO scenario. TGbe editor, please make the changes tagged by CID #19432 in 11-23/1805r0. |
| 19430 | Guogang Huang | 0.00 | 9.4.2.19.20 | For the Transmit Stream/Category Measurement report, the Peer STA Address subfield of the Measurement Request field should contain the MLD MAC Address in the MLO scenario, rather than the RA. Please add the text to clarify. | As in comment. | RevisedAgree in principle. Considering the Transmit Stream/Category Measurement request/report is mainly used to measure the average transmit delay of MSDUs, it should be at the MLD level. Accordingly, the text regarding the Transmit Stream/Category Measurement request/report is updated to accommodate the MLO scenario. TGbe editor, please make the changes tagged by CID #19432 in 11-23/1805r0. |
| 19431 | Guogang Huang | 0.00 | 9.4.2.19.20 | For the Actual Measurement Start Time field of the Transmit Stream/Category Measurement report, it's not clear which TSF time is refered to under the MLO scenario. Please clarify it. | As in comment. | RevisedAgree in principle. Considering the Transmit Stream/Category Measurement request/report is mainly used to measure the average transmit delay of MSDUs, it should be at the MLD level. Accordingly, the text regarding the Transmit Stream/Category Measurement request/report is updahted to accommodate the MLO scenario. TGbe editor, please make the changes tagged by CID #19432 in 11-23/1805r0. |

9.4.2.20.11 Transmit Stream/Category Measurement Request

***TGbe editor: modify the first paragraph of subclause 9.4.2.19.11 of Draft REVme 4.0 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 paragraph of subclause 9.4.2.19.11 of Draft REVme 4.0 as:***

If the peer STA is not affiliated with an MLD, the Peer STA Address field contains a MAC address indicating the RA for the measured frames; Otherwise, if the peer device is an MLD, it contains a MLD MAC Address indicating the DA for the measured frame.

9.4.2.20.11 Transmit Stream/Category Measurement Report

***TGbe editor: modify the first paragraph of subclause 9.4.2.20.11 of Draft REVme 4.0 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 paragraph of subclause 9.4.2.20.11 of Draft REVme 4.0 as:***

The Actual Measurement Start Time field is set to the TSF at the time at which the measurement started, or for a triggered Transmit Stream/Category Measurement report, the TSF value at the reporting QoS STA when the trigger condition was met. For MLO, it is in reference to the TSF time of the link, indicated by the MLO Link Information subelement.

***TGbe editor: modify the following paragraph of subclause 9.4.2.20.11 of Draft REVme 4.0 as:***

If the peer STA is not affiliated with an MLD, the Peer STA Address field contains a MAC address indicating the RA for the measured frames. Otherwise, if the peer device is an MLD, it contains a MLD MAC Address indicating the DA for the measured frame.

***TGbe editor: modify the following paragraph of subclause 9.4.2.20.11 of Draft REVme 4.0 as:***

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.

***TGbe editor: modify Table 9-172 of Draft REVme 4.0 as:***

|  |
| --- |
| * Optional subelement IDs for Transmit Stream/Category Measurement report
 |
| Subelement ID | Name | Extensible |
| 0 | MLO Link Information | No |
| 1-220 | Reserved |  |
| 221 | Vendor Specific | Vendor defined |
| 222–255 | Reserved |  |

***TGbe editor: insert the following paragraph before the paragraph (“The Vendor Specific subelements…”)of subclause 9.4.2.20.11 of Draft REVme 4.0 as:***

The MLO Link Information subelement is defined in 9.4.2.317 (MLO Link Information element). For MLO, the MLO Link Information subelement is included within the Transmit Stream/Category Measurement report to indicate the link whose TSF is used as a reference.

**11.10.9.8 Transmit Stream/Category Measurement report**

***TGbe editor: modify the first paragraph in subclause 11.10.9.8 of Draft REVme 4.0 as:***

The Transmit Stream/Category Measurement applies to TIDs for Traffic Streams associated with TSPECs and also to TIDs for Traffic Categories for QoS traffic without TSPECs or with QoS Characteristics elements.

| **CID** | **Commenter** | **Pg/Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- | --- |
| 19433 | Guogang Huang | 0.00 | 9.4.2.19.20 | For the Reporting Reason field of the Transmit Stream/Category Measurement report, add a MSDU Delivery Ratio Trigger subfield by considering the MSDU Delivery Ratio is an important metric for the low-latency traffic. | As in comment. | RevisedAgree in principle. Define a new trigger condition, i.e. an MSDU Delivery Ratio, to monitor the QoS of the low-latency traffic.TGbe editor, please make the changes tagged by CID #19433 in 11-23/1805r0. |
| 19434 | Guogang Huang | 0.00 | 9.4.2.19.11 | For the Triggered Reporting subelement, add a MSDU Delivery Ratio subfield within the Trigger Conditions subfield and a corresponding MSDU Delivery Ratio Threshold subfield within the Triggered Reporting field. Because the MSDU Delivery Ratio is an important metric for the low-latency traffic. | As in comment. | RevisedAgree in principle. Define a new trigger condition, i.e. an MSDU Delivery Ratio, to monitor the QoS of the low-latency traffic.TGbe editor, please make the changes tagged by CID #19433 in 11-23/1805r0. |

***TGbe editor: modify the following figure in subclause 9.4.2.19.11 of Draft REVme 4.0 as:***

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

**Figure 9-250 Trigger Condition subfield format**

***TGbe editor: Add the following bullet after the bullet (“The Delay subfield is set to…”) of subclause 9.4.2.19.11 of Draft REVme 4.0 as:***

* The MSDU Delivery Ratio subfield is set to 1 to request that a Transmit Stream/Category Measurement report be generated when the resulting MSDU delivery ratio for the TC, given by the TID, is lower than the value specified in the MSDU Delivery Ratio field in the relevant QoS Characteristics element. Otherwise, it is set to 0.

***TGbe editor: modify the following paragraph (“The Measurement Count field contains…”) of subclause 9.4.2.19.11 of Draft REVme 4.0 as:***

The Measurement Count field contains a number of MSDUs. This value is used to calculate an average discard count for the average trigger condition and the MSDU delivery ratio trigger condition. It is also used in place of measurement duration in determining the scope of the reported results when a report is triggered; see 11.10.9.8 (Transmit Stream/Category Measurement report).

***TGbe editor: modify the following figure in subclause 9.4.2.20.11 of Draft REVme 4.0 as:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 B7 |
|  | Average Trigger | Consecutive Trigger | Delay Trigger | MSDU Delivery Ratio Trigger | Reserved |
| Bits: | 1 | 1 | 1 | 1 | 5 |

**Figure 9-305 Reporting Reason field format**

***TGbe editor: Add the following bullet after the bullet (“The Delay Trigger subfield set to…”) of subclause 9.4.2.20.11 of Draft REVme 4.0 as:***

* The MSDU Delivery Ratio Trigger subfield is set to 1 to indicate that the Transmit Stream/Category Measurement report was generated as a triggered report, due to the MSDU delivery ratio for the TC, given by the TID, being lower than the value specified in the MSDU Delivery Ratio field in the relevant QoS Characteristics element. Otherwise, it is set to 0.