IEEE P802.11Wireless LANs

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| Proposed resolutions to 11be LB266 CIDs on group addressed data frame duplicate detection |
| Date: 2022-11-01 |
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Abstract

This submission proposes the resolutions to 11be LB266 CIDs 11377, 11378, 12089, 13120, and 13121, all on the topic of group addressed data frame duplicate detection.

The page and line numbers for proposed changes refer to those in 11be\_D2.2 [1].

**Introduction**

This submission proposes the resolution to 11be LB266 CIDs 11377, 11378, 12089, 13120, and 13121, all on group addressed frames duplicate detection.

The page and line numbers for proposed changes refer to those in 11be\_D2.2 [1].

**Comments:**

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| --- | --- | --- | --- | --- | --- | --- |
| CID | Commenter | Page.Line | Clause | Comment | Proposed change | Resolution |
| 11377 | Qi Wang | 284.18 | 10.3.2.14.3 | "A group addressed Data frame received on any link shall be discarded using an implementation specific duplicate detection mechanism. "Although the text proceeding this sentence and the wording "specific duplicate detection mechanism" provide the context, please add the word "duplicated" before "group addressed Data frame" in this sentence to make the sentence extra clear. In addition, wording "implementation specific duplicate detection mechanism" can be ambiguous. | Modify the sentence to: "A duplicated group addressed Data frame received on any link shall be discarded and the method used to handle the sequence number wrap around is implementation specific.**"** | Accept. **TGbe editor: please make the change indicated in this doc 11-22/1887r0 tagged by #11377.** |
| 11378 | Qi Wang | 285.64 | 10.3.2.14.3 | Table 10-6 , "RR8: The MLD shall discard the frame based on an implementation specific duplicate detention mechanism." The wording "implementation specific duplicate detection mechanism" can be ambiguous. Improve the clarify to the wording. | Modify the sentence to: "RR8: The MLD shall discard duplicated frame and the method used to handle the sequence number wrap around is implementation specific." | Revised. Agree with the commenter. An article “a” needs to be added to the text recommended by the commenter. **TGbe editor: please make the change indicated in this doc 11-22/1887r0 tagged by #11378.** |
| 12089 | Chaoming Luo | 282.56 | 10.3.2.14 | Clarify the same group addressed Data frame transmitted over multiple links of the non-AP MLD shall also use the same sequence number for transmission on each link. | As commented | Rejected. A broadcast/groupcast frame from an non-AP MLD is transmitted in an individually addressed frame to the AP MLD, and the AP MLD sends it in a broadcast/groupcast frame to the BSS. So, at the non-AP MLD, the frame is not duplicated to be transmitted on each link.  |
| 13120 | Mark Rison  | 284.18 | 10.3.2.14.2 | “A group addressed Data frame received on any link shall be discarded using an implementation specific dupli-cate detention mechanism.” – this would mean groupcasts wouldn’t be possible anymore, which is very undesirable | Delete the cited text | Revised. Agree with the commenter that the text needs to be clarified. Revise the text to clarify that the discarded frames are duplicated frames and the implementation specific mechanism is with respect to how the sequence number wrap around issue is handled by different implementations. **Tgbe editor: please make the change indicated in this doc 11-22/1887r0 tagged by #13120.**  |
| 13121 | Mark Rison | 284.64 | 10.3.2.14.2 | “The MLD shall discard the frame based on an implementation specific duplicate detention mechanism.” – I do not think it is reasonable to leave this undefined | Replace with rules on how to detect duplicates | Revised. The text needs to be clarified that the implementation specific mechanism is with respect to how the sequence number wrap around issue is handled by different implementations. **Tgbe editor: please make the change indicated in this doc 11-22/1887r0 tagged by #13121.** |

1. **Proposed resolution:**

 ***11be Editor: Please modify the 11be spec as shown below. The proposed changes are with respect to 11be\_D2.2 [1] (#11377 #13120).***

**10.3.2.14 Duplicate detection and recovery**

**….**

**10.3.2.14.3 Receiver requirements**

***Change the third paragraph as follows:***

A receiving STA shall implement the applicable receiver requirements defined in Table 10-6 (Receiver caches (#11529) (#11924) with (#12266)the Status indicated as Mandatory. An MLD shall implement the applicable receiver requirements defined in Table 10-6 (Receiver caches(#11529)(#11924)) with the Status indicated as Mandatory. All STAs affiliated with an MLD shall (#10291) use RC14 in Table 10-6 (Receiver caches (#11529)(#11924)), where the duplicated detection cache is maintained by the MLD, to assist the MLD in discarding duplicated individually addressed QoS Data frames belonging to a TID without BA negotiation that are transmitted from the STAs affiliated with (#13119)another MLD. All STAs affiliated with an MLD with dot11QMFActivated equal to false shall use RC15 in Table 10-6 (Receiver caches(#11529)(#11924)), where the duplicate detection cache is maintained by the MLD, to assist the MLD in discarding duplicate individually addressed Management frame (except the frames that are excluded in 35.3.14 (Multi-link device individually addressed Management frame delivery)) that are transmitted from the STAs affiliated with (#13119)another MLD. An MLD shall implement RC16 in Table10-6 (Receiver caches(#11529)(#11924)) maintained (#14042)by the MLD to discard duplicate group addressed Data that are delivered from the associated MLD. A duplicated group addressed Data frame received on any link shall be discarded. The method used to handle the sequence number wrap around for duplicate detection is implementation specific(#11377, #13120). A receiving STA should implement the applicable receiver requirements defined in Table 10-6 (Receiver caches(#11529)(#11924)) with (#12266)the Status indicated as Recommended. A receiving STA and a receiving MLD may implement the applicable receiver requirements defined in Table 10-6 (Receiver caches(#11529)(#11924)) with Status indicated as Optional. Applicability is defined by the Applies to column. The Status column indicates the level of support that is required if the Applies to column matches the received frame. The Multiplicity / Cache size column indicates the indexes that identify a cache entry and the number of entries that shall be supported. The Receiver requirements column identifies requirements for the operation of this cache. The referenced requirements are defined at the end of the table. The requirements relate to caching information that identifies a cache entry and discarding duplicate MPDUs.

***11be Editor: Please change RR8 to Table 10-6 (Receiver caches) as shown below (#11378, #13121):***

**Table 10-6—Receiver caches**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Receiver cache identifier** | **Cache name**  | **Applies to** | **Status** | **Multiplicity/Cache size** | **Receiver requirements** |
| RC16  | Group addressed Data  | (#13496)An MLD receiving through any STA affiliated with the MLD a group addressed Data frame  | Mandatory  | Indexed by <MLD MAC Address that the STA identified by Address 2 is affiliated with, sequence number> per MLD. At least the most recent cache entry per MLD MAC address that the STA identified by Address 2 is affiliated with in this cache.  | RR8  |
| RR7: The MLD shall discard the frame if the Retry subfield of the Frame Control field is 1 and it matches an entry in the cache.RR8: The MLD shall discard a duplicated frame. The method used to handle the sequence number wrap around for duplicate detection is implementation specific (#11378, #13121).  |

**References**

[1] IEEE P802.11be™/D2.2, Draft standard for information technology – Telecommunications and information exchange between systems local and metropolitan area networks – Specific requirements Part 11: Wireless LAN medium access control (MAC) and physical layer (PHY) specifications, Amendment 9: Enhancements for extremely high throughput (EHT)