IEEE P802.11
Wireless LANs

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| LB257 Resolution for CID 2179 |
| **Date:** November 9, 2021 |
| **Author(s):** |
| **Name** | **Affiliation** | **Address** | **Phone** | **Email** |
| Pei Zhou | OPPO |  |  | zhoupei1@oppo.com |
| Lei Huang |  |  | huang.lei1@oppo.com |
| Chaoming Luo |  |  |  |
| Liuming Lu |  |  |  |

Abstract

This submission proposes resolution for CID 2179 received from LB257: P802.11bc D2.0 Working Group Recirculation Ballot.

Note: The changes shown are based on 802.11bc draft 2.0.

Revisions:

* Rev 0: Initial version of the document.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause Number(C)** | **Page(C)** | **Line(C)** | **Comment** | **Proposed Change** | **Resolution** |
| 2179 | Lei Huang | 11.55.2 | 18 |  | For an associated STA receiving EBCS traffic streams from current AP, if it transits to a new AP due to mobility, it has to re-associate with the new AP, and this would introduce a large transition delay. | Fast BSS Transition (FT) procedure may be a solution to reduce the transition delay. | **Revised.**Agree with the commenter. The corresponding signaling and descriptions are added.TGbc editor to make the changes shown in 11-21/1830r0. |

*Editor: Please insert the following line in Table 9-92 and align Element ID Extension:*

**9.4 Management and Extension frame body components**

**9.4.2 Elements**

**9.4.2.1 General**

**Table 9-92—Element IDs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Element ID** | **Element ID Extension** | **Extensible** | **Fragmentable** |
| EBCS Parameters (see [9.4.2.296](#bookmark79) [(EBCS Parame-](#bookmark79) [ters element](#bookmark79))) | 255 | [ANA] | Yes | No |
| EBCS TIM (see [9.4.2.297 (EBCS](#bookmark81) [TIM element](#bookmark81))) | 255 | [ANA] | Yes | No |
| (#2179) EBCS Transition (see 9.4.2.298 (EBCS Transition element)) | (#2179) 255 | (#2179)[ANA] | (#2179) Yes | (#2179) Yes |

*Editor: Please insert the following subclause after subclause 9.4.2.297 (EBCS TIM element)：*

**(#2179) 9.4.2.299 EBCS Transition element (ETE)**

(#2179) The EBCS Transition element is used by an EBCS non-AP STA to request for EBCS transition information and by an EBCS AP STA to respond to a request for EBCS transition information from an associated STA. The format of this element is shown in Figure 9-788eh (ETE format).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Element ID | Length | Element ID Extension | Content ID | Enhanced Broadcast Service Response Control | Transition Time Info(optional) | Authentication Info (optional) |

Octets: 1 1 1 1 1 variable variable

**(#2179) Figure 9-788eh—ETE format**

(#2179) The Element ID, Length, and Element ID Extension fields are defined in 9.4.2.1 (General).

(#2179) The Content ID subfield indicates the identifier of the content.

(#2179) The Enhanced Broadcast Service Response Control subfield is shown in Figure 9-788ei (Enhanced Broadcast Service Response Control subfield)

B0 B1 B2 B7

|  |  |  |
| --- | --- | --- |
| Transition Time Info Present | Transition Authentication Info Present | Reserved |

Bits: 1 1 6

**(#2179) Figure 9-788ei—Enhanced Broadcast Service Response Control subfield format**

(#2179) A value 1 in the Transition Time Info Present subfield indicates that a Transition Time Info subfield is included in the ETE. A value 0 indicates that the ETE does not contain a Transition Time Info subfield.

(#2179) A value 1 in the Transition Authentication Info Present subfield indicates that a Transition Authentication Info subfield is included in the ETE. A value 0 indicates that the ETE does not contain a Transition Authentication Info subfield.

(#2179) The Transition Time Info subfield indicates the EBCS time information as shown in Figure 9-788ej.

|  |  |  |
| --- | --- | --- |
| EBCS SP Duration | EBCS SP Interval | Next Tx Schedule |

Octets: 0 or 2 0 or 2 0 or 2

 **(#2179) Figure 9-788ej—Transition Time Info subfield format**

(#2179)The EBCS SP Duration subfield indicates the nominal duration of each EBCS service period in TUs. The EBCS SP Interval subfield indicates the target interval between consecutive EBCS service periods for the EBCS traffic stream identified by the Content ID subfield in the same EBCS Response Info subfield in TUs.

(#2179) The Next Tx Schedule subfield indicates the number of TBTTs until the beacon interval in which the next frame belonging to the EBCS traffic stream, identified by the Content ID subfield, is transmitted. A value of 0 indicates that this transmission occurs in the beacon interval that starts at the next TBTT. A value of 1 indicates that it occurs in the beacon interval that follows that beacon interval. A value of 65535 indicates that there is no specific transmission starting time.

(#2179) The Authentication Info subfield is used by STA to authenticate the EBCS traffic streams and shown in Figure 9-788ek (Authentication Info subfield format).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Content Authentication Algorithm | Content Information Control | Content Address Type | Content Address | Title Length | Title | Negotiation Info | Time Of Termination (optional) | Next TX Schedule (optional) |

Octets: 1 1 1 variable 1 variable 1 0 or 2 0 or 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Allowable Time Difference (optional) | HCFA Base Key (optional) | Previous Period HCFA Base Key 0 Sequence (optional) | Previous Period HCFA Base Key 0 (optional) | Previous Period HCFA Base Key 1 Sequence (optional) | Previous Period HCFA Base Key 1 (optional) |

Octets: 0 or 2 0 or 32 0 or 1 0 or 32 0 or 1 0 or 32

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HCFA KeyChange Interval (optional) | Number Of Instant Authenticat ors (optional) | Instant Authenticat or List (optional) | Service URL Length (optional) | Service URL(optional) |

Octets: 0 or 1 0 or 1 *n* x 33 0 or 1 variable

**(#2179) Figure 9-788ek Authentication Info subfield format**

(#2179) The Content Authentication Algorithm subfield is defined in Table 9-397c (Content Authentication Algorithm field).

(#2179) The Content Information Control subfield is shown in Figure 9-909ao (Content Information Control subfield format).

(#2179) The Content Address Type subfield and the Content Address subfield are defined in Figure 9.4.5.30 (Enhanced Broadcast Services ANQP-element).

(#2179) The Title Length subfield indicates the length of the following Title subfield in octets. The Title subfield is a human readable title of the content as a UTF-8 string.

(#2179) The Negotiation Info subfield indicates the negotiation method. The format of the Negotiation Info subfield is shown in Figure 9-909ap (Negotiation Info subfield format).

(#2179) The Time Of Termination Present subfield indicates whether the Time Of Termination field is present.

(#2179) The Next Schedule Present subfield indicates whether the Next Schedule field is present.

(#2179) The Allowable Time Difference subfield is present if the Content Authentication Algorithm indicates PKFA or HCFA and is not present otherwise. The value indicates the allowable time difference between the clock of the EBCS transmitter and the clock of the EBCS receivers in milliseconds.

(#2179) The HCFA Base Key subfield, the Previous Period HCFA Base Key 0 Sequence subfield, the Previous Period HCFA Base Key 0 subfield, the Previous Period HCFA Base Key 1 Sequence subfield, the Previous Period HCFA Base Key 1 subfield and the HCFA Key Change Interval subfield are present if the Content Authentication Algorithm field indicates HCFA and are not present otherwise.

(#2179) The HCFA Base Key subfield contains the first HCFA base key of the HCFA period that starts from this EBCS Info frame.

(#2179) The Previous Period HCFA Base Key 0 Sequence subfield and the Previous Period HCFA Base Key 1 Sequence subfield indicate the key sequence number of the Previous Period HCFA Base Key 0 subfield and the Previous Period HCFA Base Key 1 subfield respectively. The Previous Period HCFA Base Key 0 subfield and the Previous Period HCFA Base Key 1 subfield contain the HCFA base key to be disclosed for the previous HCFA period.

(#2179) If the previous HCFA period does not exist, e.g. at the start of the EBCS transmission, the Previous Period HCFA Base Key 0 Sequence subfield, the Previous Period HCFA Base Key 0 subfield, the Previous Period HCFA Base Key 1 Sequence subfield and the Previous Period HCFA Base Key 1 subfield are set to 0.

(#2179) The HCFA Key Change Interval subfield indicates the EBCS HCFA key change interval in units of 10 milliseconds (see dot11eBCSHCFAKeyChangeInterval).

(#2179) The Number Of Instant Authenticators subfield and the Instant Authenticators subfield are present if the Content Authentication Algorithm field indicates HCFA with instant authentication, and are not present otherwise.

(#2179) The Number Of Instant Authenticators subfield, if present, indicates the number of the Instant Authenticators contained in the Instant Authenticator List.

(#2179) The Instant Authenticator List subfield, if present, contains one or more Instant Authenticators.

(#2179) The format of each Instant Authenticator is shown in Figure 9-909ar (Instant Authenticator format).

(#2179) The Service URL Length subfield indicates the number of octets in the Service URL subfield.

(#2179) The Service URL subfield indicates the URL at which information relevant to the corresponding EBCS traffic stream might be retrieved, including negotiation or registration for the service, formatted in accordance with IETF RFC 3986.

*Editor: Please insert the following line in Table 9-479(FT Request frame body)：*

**9.6 Action frame format details**

**9.6.8 FT Action frame details**

**9.6.8.2 FT Request frame**

**Table 9-479—FT Request frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| 1 | RSN | A RSNE is present if dot11RSNAActivated is true. |
| 2 | Mobility Domain | The MDE is present. |
| 3 | Fast BSS Transition | An FTE is present if dot11RSNAActivated is true. |
| (#2179) <ANA> | (#2179) EBCS Transition | (#2179) The ETE is present. |

*Editor: Please insert the following line in Table 9-480(FT Response frame body)：*

**9.6.8.3 FT Response frame**

**Table 9-480—FT Response frame body**

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| 1 | RSN | A RSNE is present if dot11RSNAActivated is true. |
| 2 | Mobility Domain | The MDE is present. |
| 3 | Fast BSS Transition | An FTE is present if dot11RSNAActivated is true. |
| (#2179) <ANA> | (#2179) EBCS Transition | (#2179) The ETE is present. |

*Editor: Please insert the following subclauses in clause 11.55.2 (EBCS DL procedures):*

**11.55 Enhanced Broadcast Service procedures**

**(#2179)** **11.55.2.7 EBCS DL transition for an associated EBCS non-AP STA**

(#2179) In mobility scenario, an associated EBCS non-AP STA may move out of the coverage of the current EBCS AP. The EBCS DL Transition procedure allows an associated EBCS non-AP STA to perform fast transition between EBCS APs in order to ensure EBCS traffic streams continuity. The frame sequence for an associated EBCS non-AP STA is shown in Figure 11-x (EBCS DL transition frame sequence for an associated EBCS non-AP STA).



**(#2179) Figure 11-61h EBCS DL transition frame sequence for an associated EBCS non-AP STA**

(#2179) For an associated EBCS non-AP STA, it requests to obtain EBCS traffic streams from the current EBCS AP by transmitting an EBCS Content Request frame. When the associated EBCS non-AP STA is about to leave the coverage of current EBCS AP, it starts to perform fast BSS transition by transmitting a FT request frame. The FT request frame can include an ETE in order to request the target EBCS AP’s EBCS related information, for example, Content ID, Transition Time Info and Authentication Info.

(#2179) After receiving a FT request frame from an associated EBCS STA, the EBCS AP shall respond with a FT response frame that includes a Transition Time Info field to indicate the EBCS SP duration, EBCS SP interval and Next Tx Schedule for the following EBCS traffic streams. If the EBCS AP indicates in the FT response frame that the request for EBCS transition information is successful, it may also include an Authentication Info field to indicate the authentication algorithm and related key information for the following EBCS traffic streams. During STA’s transition, the target EBCS AP does not transmit the EBCS traffic stream. After successful transition, the target AP should start transmission of the EBCS traffic stream by being requested FT frame.