IEEE P802.11  
Wireless LANs

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| 802.11bc LB255 – Resolution for CIDs assigned to Antonio for sections 9.4.5.100 and 9.6.7.102 | | | | |
| Date: January 26, 2021 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Antonio de la Oliva | Interdigital Ltd |  |  | Antonio.delaoliva@interdigital.com |
| Others |  |  |  |  |

This submission proposes resolutions for the following CIDs submitted during LB252 for 11bc D1.0. regarding section 9.4.5.100 and 9.6.7.102

To facilitate the work of the TGbc editor, I have based this resolution on the previous resolution of CIDs 1612, 1515, 1514, 1505, 1501, 1500, 1499, which can be found in <https://mentor.ieee.org/802.11/dcn/21/11-21-0079-02-00bc-lb252-resolution-to-cids-assigned-to-antonio.docx>. The resolutions in this document are marked in blue, while the new resolutions for the CIDs in this document are marked in red.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Clause Number(C)** | **Page(C)** | **Line(C)** | **Comment** | **Proposed Change** | **Resolution** |
| 1012 | 9.4.5.100 | 30 | 4 | There are several fields and subfields in the rest of the element that apply only to an eBCS AP (transmitter). | The spec text needs to clarify which fields are applicable to an eBCS receiver. Otherwise reserved or not present. | Revise: Text explaining the content of the Enhanced Broadcast Service ANQP Element when the request is received in an AP STA and a non-AP STA has been added. |
| 1046 | 9.4.5.100 | 30 | 2 | The transmit capability subfield is for a non-AP STA and not a STA or AP STA | Change STA to non-AP STA | Revised: The element has been changed, adding the Tx/Rx information in the Control field of the Enhanced Broadcast Services Tuple field. The text now clearly states the usage of the new EBCS TxRx. This field can be used by any STA. |
| 1047 | 9.4.5.100 | 30 | 4 | The receive capability subfield is for a non-AP STA. Not a STA or AP STA. | Change STA to non-AP STA | Revised: The element has been changed, adding the Tx/Rx information in the Control field of the Enhanced Broadcast Services Tuple field. The text now clearly states the usage of the new EBCS TxRx. This field can be used by any STA. |
| 1069 | 9.4.5.100 | 30 | 4 | It is not clear the use of the Receive Capability bit to indicate the services received by a non-AP STA | Will provide a contribution addressing this. | Revised: The element has been changed, adding the Tx/Rx information in the Control field of the Enhanced Broadcast Services Tuple field. The text now clearly states the usage of the new EBCS TxRx. This field can be used by any STA. |
| 1215 | 9.4.5.100 | 30 | 14 | Figures 9-bc14 optionally includes Time "to" Termination subfield, however, its notation is different with that ("To") in Figure 9-bc10. | Please make consistent the notation of the subfield if this difference is not intentional. | Accept |
| 1451 | 9.4.5.100 | 31 | 22 | Table 9-bc3 defines for the Request Method subfield values for 0 to 3, but the Request Method subfield is an octet according to Fig. 9-bc14. Hence values 4-255 should be reserved. | Add a row at the end of Table 9-bc3. In the Negotation Method subfield Value column place "4-255" and in the Meaning column "Reserved" | Accept |
| 1452 | 9.4.5.100 | 32 | 17 | Table 9-bc4 defines for the Content Destination Address Type subfield values for 0 to 7, but the subfiels is an octet according to Fig. 9-bc14. Hence, the last row first column in Table 9-bc4 should range from 4 to 255. Replace "7" with "255" | As in comment | Accept |
| 1453 | 9.4.5.100 | 33 | 6 | Fig. 9-bc18 caption reads "Content Destination Address subfield format for UDP/hostname (CID 53)" | Remove "(CID 53)" | Accept |
| 1456 | 9.4.5.100 | 32 | 17 | Table 9-bc9 defines for the Content Destination Address Type subfield values for 0 to 7, but the subfiels is an octet according to Fig. 9-bc29. Hence, the last row first column in Table 9-bc9 should range from 4 to 255. Replace "7" with "255" | As in comment | Accept |
| 1011 | 9.4.5.100 | 30 | 4 | What is the usefulness of the Receiver Capability subfield? In other words, when would an eBCS receiver transmit this element? | As in comment | Revised: The element has been changed, adding the Tx/Rx information in the Control field of the Enhanced Broadcast Services Tuple field. The text now clearly states the usage of the new EBCS TxRx. This field can be used by any STA. |
| 1495 | 9.4.5.100 | 30 | 14 | Figure 9-bc14 is poorly formatted | The "Content ID" subfield is not alligned correctly and needs to be centred within it's cell. | Accept |
| 1512 | 9.4.5.100 | 33 | 4 | Subfield definitions usually occur beneath Figures. | Move the definitions of the "Hostname Length" and "Hostname" subfields below Figure 9-bc18. | Accept |
| 1513 | 9.4.5.100 | 33 | 4 | Subfield definitions usually occur beneath Figures. | Move the definition of the "MAC Address" subfield below Figure 9-bc19. | Reject. There is no Figure 9-bc19 anymore due to CID 1514 |
| 1531 | 9.4.5.100 | 30 | 1 | There is a glitch in Figure 9-bc13 | Make sure graphic is placed on one page | Reject: There is no Figure 9-bc13 due to acceptance of previous CIDS |
| 1532 | 9.4.5.100 | 31 | 1 | Glitch in Figure 9-bc15 | Remove first Column (most left) | Accept |
| 1562 | 9.4.5.100 | 30 | 20 | "Figure 9-bc15a:" There is no Figure 9-bc15a, but Figure 9-bc15. And I think we don't need to use colon here. | Change it to "Figure 9-bc15." | Accept |
| 1602 | 9.4.5.100 | 31 | 1 | empty cell in Figure 9-bc15 | remove empty cell | Accept (same as 1532) |
| 1494 | 9.4.5.100 | 31 | 1 | Figure 9-bc15 is poorly formatted | There is an extra box above "Bits" on the left hand side of the figure which should be removed. | Accept (same as 1532 and 1602) |
| 1141 | 9.6.7.102 | 43 | 15 | Receivers can identify the content by Content ID. Title and Destination Address are duplicate with eBCS Info frame. It may cause inconsistency. | Remove "Title Length", "Title", "Destination Address Type" and "Destination Address" fields. | Reject: This will only work for STAs able to transmit. The Rx only case will not be able to query for the information. This was added to the Info frame to reduce the number of frames (Service Advertisement frame) in previous discussion. |

1. **9.4.5.100 Enhanced Broadcast Services ANQP-element**
2. The Enhanced Broadcast Services ANQP-element provides a list of one or more enhanced broadcast
3. services that are available from the STA transmitting this element. The format of the Enhanced Broadcast
4. Services ANQP-element is defined in Figure 9-bc12.
5. When an ANQP Query requesting the Enhanced Broadcast Service ANQP element is received by an AP STA, the corresponding Enhanced Broadcast Service Element in the response must contain the information about EBCS being transmitted by the AP STA. In case the ANQP Query requesting the Enhanced Broadcast Service ANQP element is received by a non-AP STA, then the services included in the response must be the services being received by the non-AP STA. [CID1012]

***TGbc Editor: Remove Broadcast Control field from Figure 9-bc12***

### 12

|  |  |  |  |
| --- | --- | --- | --- |
| Info ID | Length | ~~Broadcast Control~~ | Enhanced Broadcast Services Tuples |

Octets: 2 2 ~~1~~ variable

**Figure 9-bc12 - EBCS Response Info Control subfield format**

### 13

1. The Info ID and Length fields are defined in 9.4.5.1 (General).

***TGbc editor: Remove all explanation about Broadcast Control field. [CID 1046/1047/1011]***

1. ~~The Broadcast Control field is defined in Figure 9-bc13~~

~~B0 B1 B2 B3 B7~~

|  |  |  |  |
| --- | --- | --- | --- |
| ~~Transmit Capability~~ | ~~Receive Capability~~ | ~~Service Advertisement~~ | ~~Reserved~~ |

~~Bits: 1 1 1 5~~

**~~Figure 9-bc13 Enhanced Broadcast field format~~**

### 16

1. ~~The Transmit Capability subfield is set to 1 by a STA to indicate that it supports the transmission of EBCS.~~
2. ~~This subfield is set to 0 to indicate that there is no support for the transmission of EBCS.~~
3. ~~The Receive Capability subfield is set to 1 by a STA to indicate that it supports the reception of EBCS.~~
4. ~~This subfield is set to 0 to indicate that there is no support for the reception of EBCS. When the Enhanced~~
5. ~~Broadcast Services ANQP-element is transmitted by a non-AP STA, this bit set to 1 indicates that the~~
6. ~~information in the Enhanced Broadcast Services Tuples refers to EBCS being received by the non-AP STA.~~
7. ~~The Service Advertisement subfield is set to 1 by a STA to indicate that the Enhanced Broadcast Services~~
8. ~~Tuples subfield contains information about the EBCS(s) transmitted by the STA. This subfield is set to 0 to~~
9. ~~indicate that there are no Enhanced Broadcast Services Tuples subfields at the time of transmission from~~
10. ~~the STA.~~
11. The Enhanced Broadcast Services Tuples field contains one or more Enhanced Broadcast Services Tuple
12. fields as shown in Figure 9-bc14.

***TGbc Editor: Use this version of the Figure 9-bc14, which solves some formatting issues [CID 1495]***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Control | Content ID | Request Method | Broadcaster MAC Address (Optional) | Next Tx Schedule (Optional) [CID1612] | Time To Termination (Optional) [CID 1215] |
| Octets | 1 | 1 | 1 | 0 or 6 | 0 or 8 | 0 or 2 |

### 14

|  |  |  |  |
| --- | --- | --- | --- |
| Content Destination Address Type (Optional) | Content Destination Address (Optional) | Title Length (Optional | Title (Optional) |

Octets: 0 or 1 variable 0 or 1 variable

### 15

1. **Figure 9-bc14 - Enhanced Broadcast Services Tuple field format**

### 17

1. The Control field defines which of the optional fields are present in the Enhanced Broadcast Services Tuple
2. field and is defined in Figure 9-bc15~~a:~~[CID 1562]

### 20

***TGbc Editor: Makes sure Figure 9-bc15 fits completely in a single page and does not have a first empty column.***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
|  | EBCS TxRx | Broadcaster MAC Address Present | Next Tx Schedule Present [CID1612] | Time To Termination Present | Content Destination Address  Present | Title Present | Association Required | Reserved |
| Bits | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Figure 9-bc15 Control field format**

1. The EBCS TxRx field indicates if the service identified in this Enhanced Broadcast Services Tuple is being transmitted (when set to 0) or received (when set to 1) by the STA sending this Enhanced Service Broadcast ANQP Element.
2. The Broadcaster MAC Address Present subfield is set to 1 by a STA to indicate that the Enhanced
3. Broadcast Services Tuple field contains a Broadcaster MAC Address field. This subfield is set to 0 to
4. indicate that there is no Broadcaster MAC Address field.
5. The Next Tx Schedule Present subfield is set to 1 by a STA to indicate that the Enhanced Broadcast Services Tuple
6. field contains a Next Tx Schedule field. This subfield is set to 0 to indicate that there is no Next Tx Schedule
7. field. [CID 1612]
8. The Time To Termination subfield is set to 1 by a STA to indicate that the Enhanced Broadcast Services
9. Tuple field contains a Time To Termination field. This subfield is set to 0 to indicate that there is no Time
10. to Termination field.[CID1215]
11. The Content Destination Address Present subfield is set to 1 by a STA to indicate that the Enhanced
12. Broadcast Services Tuple field contains Content Destination Address Type and Content Destination
13. Address fields. This subfield is set to 0 to indicate that there are no Content Destination Address Type and
14. Content Destination Address fields.
15. The Title Present subfield is set to 1 by a STA to indicate that the Enhanced Broadcast Services Tuple field
16. contains a Title Length field and a Title field. This subfield is set to 0 to indicate that there are no Title
17. Length and Title fields.
18. The Content ID subfield indicates the identifier of the content.
19. The Request Method subfield indicates the request method to solicit the transmission of an EBCS identified
20. by the content ID contained in the Content ID subfield. The encoding of the Request Method subfield is
21. defined in Table 9-bc3 (Request Method subfield encoding).
22. **Table 9-bc3—Request Method subfield encoding**

|  |  |  |
| --- | --- | --- |
| **Negotiation Method subfield value** | **Meaning** | **Notes** |
| 0 | No negotiation |  |
| 1 | Request using EBCS Request frames | EBCS request by STAs that are associated with the broadcaster |
| 2 | Request using EBCS Request ANQP-elements | EBCS request by STAs that are not associated with the broadcaster |
| 3 | Request using IP request | Out of band IP request |
| 4-255 | Reserved [CID 1451] |  |

### 22

1. The Broadcaster MAC Address field indicates the MAC Address of the AP broadcasting this channel, in
2. the case of a setup with multiple APs.
3. The Time Of Termination subfield indicates the number of TBTTs until the content identified by the
4. content ID contained in the Content ID subfield is terminated. A value of 0 indicates that the content
5. identified by the content ID in the Content ID subfield will be terminated at the following TBTT. A value
6. of 65535 indicates that the content identified by the content ID in the Content ID subfield has no specific
7. termination time.
8. ~~The Next Schedule subfield indicates the number of TBTTs until the content identified by the content ID~~
   * ~~contained in the Content ID subfield is transmitted again.~~
9. The Next Tx Schedule subfield indicates the number of TBTTs until the expected broadcast of the next frame belonging to the EBCS, identified by the Content ID contained in the Content ID subfield, immediately following the current frame.[CID1612]. A value of 0 indicates that the content identified
10. by the content ID in the Content ID subfield will start to transmit at the next TBTT. A value of 65535
11. indicates that the content identified by the content ID in the Content ID subfield has no specific
12. transmission starting time.
13. The Content Destination Address Type subfield is defined in Table 9-bc4 (Content Destination Address
14. Type subfield). The value of 2, indicating a UDP or hostname, shall only be used for EBCS UL frames.
15. The other values are used for both EBCS DL and UL frames.
16. **Table 9-bc4 Content Destination Address Type subfield**

|  |  |
| --- | --- |
| **Value** | **Higher Layer Protocol** |
| 0 | UDP/IPv4 |
| 1 | UDP/IPv6 |
| 2 | UDP/hostname (UL only) |
| 3 | MAC Address |
| 4-255 [CID1452] | Reserved |

### 15

1. The Content Destination Address subfield is the destination address and port of the content, encoded as
2. follows.
3. If the Content Destination Address Type subfield is UDP/IPv4, the format of the Content Destination
4. Address subfield is shown in Figure 9-bc16 (Content Destination Address subfield format for UDP/IPv4).

Destination Port

Destination IPv4 Address

Octets 4 2

1. **Figure 9-bc16 Content Destination Address subfield format for UDP/IPv4**
2. The Destination IPv4 Address subfield indicates the IPv4 address used as destination (typically a multicast
3. IPv4 address) in the broadcasted frames for the specific EBCS service identified by the Content ID field. The
4. Destination Port subfield indicates the UDP Port associated with the IPv4 address indicated in the Destination IPv4
5. Address subfield (following the encoding conventions per 9.2.2.).[CID 1501/1500/1499]
6. If the Content Destination Address Type subfield is UDP/IPv6, the format of the Content Destination
7. Address subfield is shown in Figure 9-bc17 (Content Destination Address subfield format for UDP/IPv6).

Destination Port

Destination IPv6 Address

Octets 16 2

1. **Figure 9-bc17 Content Destination Address subfield format for UDP/IPv6**
2. The Destination IPv6 Address subfield indicates the IPv6 address used as destination (typically a multicast
3. IPv6 address) in the broadcasted frames for the specific EBCS service identified by the Content ID field. The
4. Destination Port subfield indicates the UDP Port associated with the IPv6 address indicated in the
5. Destination IPv6 Address subfield (following the encoding conventions per 9.2.2.).[CID 1501/1500/1499]
   1. If the Content Destination Address Type subfield is UDP/hostname, the format of the Content Destination
   2. Address subfield is shown in Figure 9-bc18 (Content Destination Address subfield format for
   3. UDP/hostname). ~~The Hostname Length subfield indicates the length of the Hostname subfield. The~~
   4. ~~Hostname subfield is the hostname as a UTF-8 string.~~

|  |  |  |
| --- | --- | --- |
| Hostname Length | Hostname | Destination UDP Port |

Octets 1 variable 2

* 1. **Figure 9-bc18 Content Destination Address subfield format for UDP/hostname ~~(CID 53)~~** [CID1453]
  2. The Hostname Length subfield indicates the length of the Hostname subfield. The Hostname subfield is
  3. the hostname as a UTF-8 string. [CID 1512]
  4. The Destination UDP Port subfield indicates the UDP Port associated with the hostname address indicated in the Hostname subfield in little endian format. [CID 1505]

1. If the Content Destination Address Type subfield is MAC Address, the format of the Content Destination
2. Address subfield is the one of a 48 bits MAC address. ~~shown in the Figure 9-bc19 (Content Destination Address subfield format for MAC~~
3. ~~Address).~~ [CID 1514] The MAC Address field is the destination MAC Address of the ~~content~~ EBCS frames [CID 1515].

***TGbc Editor: remove Fig 9-bc19 [CID 1514]***

~~MAC Address~~

~~Octets 6~~

1. **~~Figure 9-bc19 Content Destination Address subfield format for MAC Address~~**

### 11

1. The Title Length field indicates the length of the following Title field in octets.
2. The Title field is a human readable title of the content as a UTF-8 string.
3. **9.4.5.101 Enhanced Broadcast Request ANQP-element**
4. The Enhanced Broadcast Request ANQP-element transmits a register (or de-register) request from a STA
5. to a peer STA to receive (or stop receiving) enhanced broadcast services that are available from the peer
6. STA. The format of the Enhanced Broadcast Request ANQP-element is defined in Figure 9-bc20
7. (Enhanced Broadcast Request ANQP-element format).

### 19

|  |  |  |
| --- | --- | --- |
| Info ID | Length | Enhanced Broadcast Services Request Tuples |

Octets: 2 2 variable

**Figure 9-bc20 – Enhanced Broadcast Request ANQP-element format**

1. The Info ID and Length fields are defined in 9.4.5.1 (General).
2. The format of the Enhanced Broadcast Services Request Tuples field is defined in Figure 9-bc21
3. (Enhanced Broadcast Services Request Tuples).

### 23

Content ID

Broadcast Action

Octets: 1 1

1 **Figure 9-bc21 – Enhanced Broadcast Services Request Tuples format**

### 2

1. The Broadcast Action field values are defined in Table 9-bc5:
2. **Table 9-bc5 – Broadcast Action field values**

|  |  |
| --- | --- |
| **Value** | **Description** |
| 0-1 | Reserved |
| 2 | Register to receive broadcast |
| 3 | Unregister from receiving broadcast |
| 4 | Register with Broadcast Service identified by Content ID |
| 5 | Unregister Broadcast Services identified by Content ID |
| 6-255 [CID 1456] | Reserved |

### 5

1. The Content ID subfield indicates the identifier of the content.
2. **9.4.5.102 Enhanced Broadcast Response ANQP-element**
3. The Enhanced Broadcast Response ANQP-element provides a list of zero or more enhanced broadcast
4. services that are available from a peer STA. The format of the Enhanced Broadcast Response ANQP-
5. element is defined in Figure 9-bc22 (Enhanced Broadcast Response ANQP-element format.

### 11

|  |  |  |
| --- | --- | --- |
| Info ID | Length | Enhanced Broadcast Services Response Tuples  (Optional) |

2 2 variable

12 **Figure 9-bc22 – Enhanced Broadcast Response ANQP-element format**

### 13

1. The Info ID and Length fields are defined in 9.4.5.1 (General). The Enhanced Broadcast Services Response
2. Tuples field contains one or more Enhanced Broadcast Services Response Tuple fields. The Enhanced
3. Broadcast Services Response Tuple field is defined as shown in Figure 9-bc23.

### 4

Broadcast Service Transmitting

Content ID

Octets: 1 1

5 **Figure 9-bc23 - Enhanced Broadcast Services Response Tuple format**

### 6

1. The Broadcast Service Transmitting field indicates whether the Enhanced Broadcast Service referenced by
2. the Content ID field is being transmitted. A value of 1 indicates that the Broadcast Service is being
3. transmitted and a value of 0 indicates that the Broadcast Service is not being transmitted.