IEEE P802.11
Wireless LANs

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| 802.11bc Resolution for CIDs in 9.6.7.100 (LB 252) |
| Date: January 12, 2021 |
| Author(s): |
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 Abstract

This submission proposes resolutions for the following 20 comments submitted during LB 252 for 11bc D1.0 clause 9.6.7.100:

1571, 1519, 1351, 1523, 1637, 1567, 1163, 1113, 1162, 1606, 1627, 1383, 1384, 1261, 1385, 1608, 1346, 1034, 1352, 1357

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Live edits made when the document was presented during the TGbc sessions on 14th January 2021

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

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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1571 | Tomoko Adachi | 36.00 | 4 | 9.6.7.100 | Change "E-BCS Parameters" in Figure 9-bc24 to "E-BCS Parameters element". | As in comment. | **Revised**The description for the field ‘EBCS Parameters’ is updated to clarify that this is an element. Similar change made for the field ‘Destination URI’TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1571 |
| 1519 | Stephen McCann | 36.00 | 5 | 9.6.7.100 | Regarding Figure 9-bc24, the terminology should be "Public Action frames". | Rename Figure 9-bc24 to "eBCS UL Action frame field format" | **Revised**TGbc Editor: Make global change throughout the draft to change the frame name of the frame from ‘UL eBCS frame’ to ‘EBCS UL frame’. Please make the change to the caption under Figure 9-bc24 to reflect the updated name. |
| 1351 | Mark RISON | 36.00 | 5 | 9.6.7.100 | Figure 9-bc24 - UL eBCS frame Action field format shows the E-BCS Parameters field (which contains the eponymous element) as being 4 octets, but it's actually a variable-length field | Change 4 to Variable | **Revised**Figure 9-bc24 is updated to show the size of EBCS Parameters field as variable (deleted 0 or 4). Since the field is optionally the term ‘(optional)’ is added within the field name. Similar changes applied to other fields that are optionally present. The description text for each field is updated accordingly.TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1351 |
| 1523 | Stephen McCann | 37.00 | 17 | 9.6.7.100 | The "E-BCS Parameters element" is defined in clause 9.4.2.300 and does not appear to fit into a 4 octet subfield. I'm really not sure what this is supposed to mean. | Delete the cited sentence. | **Revised**Figure 9-bc24 is updated to show the size of EBCS Parameters field as variable (deleted 0 or 4). Since the field is optionally the term ‘(optional)’ is added within the field name. Similar changes applied to other fields that are optionally present. The description text for each field is updated accordingly.TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1523 |
| 1637 | Yunsong Yang | 36.00 | 9 | 9.6.7.100 | The E-BCS Parameters Present and Timestamp Present bits in the eBCS UL Control field appear in an opposite order of the E-BCS Parameters and Timestamp subfields in the UL eBCS frame Action field. If there is no particular reason for reversing the order, we should keep the order of the subfields and the order of their corresponding Present bits the same, e.g., by swapping the E-BCS Parameters Present bit and the Timestamp Present bit in the eBCS UL Control field. And for the same reason, the Frame Signature Type subfield should take B3 and B4 in the eBCS UL Control field, and B5-B7 should be the Reserved bits, so that in the future, if new parameters are added in the UL eBCS frame Action field after the Frame Signature subfield and B5-B7 are used for indicating their presence, a consistence order can be maintained. | In the eBCS UL Control field format, swap the E-BCS Parameters Present bit and the Timestamp Present bit, and change the Frame Signature Type subfield to B3 and B4 so that B5-B7 become the Reserved bits. And change the order of the related paragraphs accordingly. | **Accept**NOTE to the TGbc editor: the size of Frame Signature Type subfield was changed as a resolution to another comment. |
| 1567 | Tomoko Adachi | 36.00 | 10 | 9.6.7.100 | We can still fix the ordering to align with the ordering of the original fields in Figure 9-bc24. | Switch the bit ordering of the E-BCS Parameters Present subfield and Timestamp Present subfield in Figure 9-bc25. Switch the order of paragraphs starting from pp.ll 36.16 and 36.18.Or, switch the ordering of the Timestamp subfield and E-BCS Parameters subfield in Figure 9-bc24. | **Revised**TGbc Editor: please switch the order of the E-BCS Parameter element Present subfield and Replay Protection subfield. Please update the order in which the paragraphs describing these subfields appears in the draft to match the order shown in the eBCS Control field. |
| 1163 | James Yee | 36.00 | 24 | 9.6.7.100 | Reference to 12.bc.2.5 should be 12.100.2.5. Similar error of referencing "bc" occurs elsewhere in this draft too. | As noted | **Revised**The section references were fixed in Table 9-bc6TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1163 |
| 1113 | Fumihide Goto | 36.00 | 20 | 9.6.7.100 | The number of Encoding of Frame Signature Type is only 4. Why don't you care about future update? | adding version filed in order to prepare updating | **Revised**Agree with the comment. The size of the field is increased to 3 bits and a new row is added for values 4-7. The new values are marked as reserved for future expansion.TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1113 |
| 1162 | James Yee | 36.00 | 23 | 9.6.7.100 | The Frame Signature Type field has no reserved values. Does this mean no new signature types are anticipated?Yes, the HLSA provides expansion and there are 2 reserved bits in the eBCS UL Control field, but the particular signature types and key lengths chosen may not meet the security requirements different applications. | Expand the field to allow more types or justify why the types chosen are adequate for the lifetime of the amendment. | **Revised**Agree with the comment. The size of the field is increased to 3 bits and a new row is added for values 4-7. The new values are marked as reserved for future expansion.TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1162 |
| 1606 | Xiaofei Wang | 37.00 | 4 | 9.6.7.100 | The purpose of Timestamp field should not be a part of the spec text in clause 9. | The purpose is useful and should be in a note. | **Revised**The cited text is moved to clause 11. Further, it is changed to a recommendation to prevent replay attacks.TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1606 |
| 1627 | Yasuhiko Inoue | 37.00 | 5 | 9.6.7.100 | Timestamp field has already defined in 9.4.1.10 | Use a different name. | **Revised**The field name is changed to ‘Replay Protection’ and the ‘Counter’ subfield within this field is renamed to ‘Frame Count’TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1627 |
| 1383 | Mark RISON | 37.00 | 10 | 9.6.7.100 | "clause 11.bc.1.3" -- no such (sub)clause and it's a subclause and it should be Subclause (but normally just say nothing) | Change to "11.100.3.3" | **Revised**The paragraph was modified as a result of resolution for another comment and the reference to clause 11 is removed. Therefore, not further changes are neededTGbc editor: No changes are needed to resolve this comment |
| 1384 | Mark RISON | 37.00 | 10 | 9.6.7.100 | The encoding should be in Clause 9 not Clause 11 | Move the "number of seconds since 2020-01-01 00:00:00 UTC" to 9.6.7.100 | **Revised**Clause 9 and 11 are updated as suggested by the commenter.TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1384 |
| 1261 | Mark RISON | 37.00 | 13 | 9.6.7.100 | A URI is a URI, not an address | Change "The Destination URI element is defined in 9.4.2.89 (Destination URI element) and carries the address of 13the remote destination where the packet needs to be forwarded to. " to "The Destination URI element is defined in 9.4.2.89 (Destination URI element) and indicates the remote destination to which the packet needs to be forwarded. " | **Revised**Agree with the comment. The sentence was modified as suggested with changes in-line with those discussed during 11bc sessions on January 11th and 12th 2021TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1261 |
| 1385 | Mark RISON | 37.00 | 15 | 9.6.7.100 | “Note that the length of the Destination URI element is computed based on the value carried in the Length 15field in the element (value in Length field + 2 octets). “ – this is true of all elements, including the EBCS Params element that is also in this frame | Delete the cited text | **Accept** |
| 1608 | Xiaofei Wang | 37.00 | 15 | 9.6.7.100 | is this sentence a note or spec text? If it is a note, needs to format it in Note format, otherwise, remove the word note and rephrase the text. | As in comment | **Revised**The cited paragraph is deletedTGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1608 |
| 1346 | Mark RISON | 56.00 | 6 | 11.100.3.3 | I think American or at least IEEE prefers "that" | Change "which" to "that" | **Revised**Agree with the comment. The sentence describing this subfield in clause 9 and 11 and was updated to replace ‘which’ with ‘that’.TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1346 |
| 1034 | Abhishek Patil | 56.00 | 6 | 11.100.3.3 | The Counter subfield is 4-bits long and can carry up to 16 values. Therefore the calculation should be 2^16 | replace 2^32 with 2^16 | **Accept** |
| 1352 | Mark RISON | 56.00 | 6 | 11.100.3.3 | Should specify whether the Counter subfield is initialised to any value, and if so to what value and when | As it says in the comment | **Revised**The cited paragraph in clause 11 was updated as suggested by the comment. The field description in clause 9 was updated to remove the term ‘numeric’TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1352 |
| 1357 | Mark RISON | 56.00 | 6 | 11.100.3.3 | "a numeric value which is incremented for each 6packet transmission. When the STA has transmitted 2 32 - 1 frames" is imprecise. What is a "packet"? What kind of "frames"? | Change to "a numeric value which is incremented for each UL eBCS frametransmission. When the STA has transmitted 2 32 - 1 UL eBCS frames" | **Revised**The cited paragraph is updated as suggested by the comment with a typo fixed. The changes were also made in paragraph in clause 9 that describes the field.TGbc Editor: please make changes as shown in doc: [https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc](https://mentor.ieee.org/802.11/dcn/21/11-21-0090-01-00bc-lb252-resolutions-for-cids-assigned-to-abhi-%28part-2%29.doc) tag 1357 |

#1 – Text updated to be in line with discussion that took place during TGbc session on January 11th and 12th 2021

* Includes replacing the terms ‘forward’ with ‘relay’ and ‘remote’ with ‘specified’
* As in “… an EBCS AP relays the higher layer payload carried in the UL eBCS frame to a specified destination …”

***TGbc Editor: The baseline for the proposed changes is 802.11bc D1.0***

**9.6.7.100 UL eBCS frame format**

***TGbc Editor: please make changes to this clause as shown below:***

***TGbc Editor: please note, changes proposed by CID 1637 and 1567 are not reflected in this document***

[#1]The UL eBCS frame is transmitted by an eBCS non-AP STA and carries higher layer payload intended for a destination identified within the frame.

The format of UL eBCS frame Action field is defined in Figure 9-bc24 (UL eBCS frame Action field format).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Category | Public Action | eBCS ULControl | Destination URI | HLPPayload Length | HLPPayload | STACertificate Length (optional) | STACertificate (optional) |

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

|  |  |  |
| --- | --- | --- |
| Replay Protection (optional) | E-BCSParameters (optional) | FrameSignature (optional) |

Octets: 0 or 8 variable variable

 **Figure 9-bc24 - UL eBCS frame Action field format**[1351, 1523, 1627]

The Category field is defined in 9.4.1.11 (Action field).

The Public Action field is defined in 9.6.7.1 (Public Action frames).

B0 B1 B2 B3 B4 B5 B7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| STACertificate Present | E-BCSParameters Present | Replay Protection Present | Reserved | Frame Signature Type |

Bits: 1 1 1 2 3

 **Figure 9-bc25 - eBCS UL Control field format**[1627]

The format of eBCS UL Control field is shown in Figure 9-bc25 (eBCS UL Control field format).

The STA Certificate Present subfield is set to 1 when the STA Certificate Length and STA Certificate fields are carried in the frame. Otherwise, the subfield is set to 0.

[1571]The E-BCS Parameters Present subfield is set to 1 when the E-BCS Parameters element is carried in the frame. Otherwise, the subfield is set to 0.

[1627]The Replay Protection Present subfield is set to 1 when the Replay Protection field is carried in the frame. Otherwise, the subfield is set to 0.

The encoding of the Frame Signature Type subfield is shown in Table 9-bc6 (Encoding of Frame Signature Type subfield).

 **Table 9-bc6 - Encoding of Frame Signature Type subfield**

|  |  |  |
| --- | --- | --- |
| Subfield value | Definition | Encoding |
| 0 | HLSA | The authentication of uplink data is provided by higher layer and is included in the HLP Payload field and the Frame Signature field is not present |
| 1 | RSA-2048 | See [1163]12.100.2.5 (Signature of the eBCS UL frame) and [1163]12.100.2.6 (Authentication of an eBCS UL frame) |
| 2 | ECDSA-P256 |
| 3 | Ed25519 |
| 4-7 | Reserved | [1113, 1162] |

The HLP Payload Length field indicates the length of the HLP Payload field in bytes.

The HLP Payload field carries the higher layer protocol (HLP) payload.

[1351, 1523]The STA Certificate Length field, if present, indicates the length of the STA Certificate field.

[1351, 1523]The STA Certificate field, if present, carries the certificate of the transmitting STA.

[1606]

[1627, 1351, 1523]The Replay Protection field is optionally present. The format of the Replay Protection field is shown in Figure 9-bc26 (Replay Protection field format).

|  |  |  |
| --- | --- | --- |
|  | Time | Frame Count |

Octets: 4 4

 **Figure 9-bc26 - Replay** Protection **field format**[1627]

[1384]The Time subfield is either set to 0 or carries the number of seconds since 2020-01-01 00:00:00 UTC when the frame is queued for transmission at the STA.

[1627, 1346, 1352]The Frame Count subfield carries a value that is incremented for each EBCS UL frame transmission.

[#1, 1571, 1261]The Destination URI field contains a Destination URI element as defined in 9.4.2.89 (Destination URI element) and indicates the destination to which the packet needs to be relayed.

[1608, 1385][#1, 1571, 1351, 1523]The E-BCS Parameters field, if present, contains an EBCS Parameters element as defined in 9.4.2.300 (EBCS Parameters element) that carries a request directed towards an eBCS AP, that provides relaying service, to embed metadata before relaying the HLP payload to the specified destination.

The Frame Signature field, if present, carries a signature for the contents of the UL eBCS frame Action field except the Frame Signature field.

* + - 1. **eBCS UL operation at an eBCS non-AP STA**

***TGbc Editor: please make changes to the 3rd and 4th paragraph in this clause as shown below:***

[1606, 1627, 1384]An EBCS non-AP STA should include tReplay Protection in the EBCS UL frame that it transmits to s

When the STA has time information, the Time subfield of the Replay Protection field shall indicate the time when the frame is queued for transmission at the STA; otherwise the subfield shall be set to 0.

NOTE—How a non-AP STA obtains time information is out of scope of this standard.

[1627, 1346, 1034, 1357]The Frame Count subfield of the Replay Protection field shall be initialized to 0. It shall be incremented for each EBCS UL frame transmission. When the STA has transmitted 216 – 1 EBCS UL frames, the value in the field shall wrap around and start from 0.

##### 11.100.3.2 eBCS UL operation at an eBCS AP[#1, 1627]

***TGbc Editor: please make changes to the 5th and 6th paragraph in this clause as shown below:***

In order to prevent denial-of-service attacks or replay attacks or injection attacks directed towards the specified destination, an eBCS AP that supports relaying service should perform source authentication, perform replay check and validate the frame signature based on the fields carried in the EBCS UL frame. Furthermore, an eBCS AP should throttle the number or the frequency of uplink data it relays to a specified destination to defend against such attacks.

eor performs replay check relays EBCS specifiedReplay Protection

An eBCS AP that authenticates the transmitter of the EBCS UL frame before relaying the HLP payload to a specified destination shall provide an indication of the authentication scheme in the E-BCS Parameters element that it transmits (see Table 9-bc1 (Encoding of UL Authentication Mode subfield)).

**6.3.201.2.2 Semantics of the service primitive**[1627]

***TGbc Editor: please make changes to this clause as shown below:***

The primitive parameters are as follows:

 MLME-EBCSUL.request(

DestinationURI,

HLPPayload,

STACertificate,

ReplayProtection,

EBCSParameters,

PrivateKey

 )

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| DestinationURI | Destination URI element | As defined in 9.4.2.89(Destination URI element). | The Destination URI element as defined in9.4.2.89 (Destination URI element). |
| HLPPayload | Sequence of octets | N/A | Specifies the contents from the higher layer to be included in EBCS UL frame. |
| STACertificate | Sequence of octets | N/A | Specifies the certificate for the transmitting STA. |
| ReplayProtection | Sequence of octets | N/A | Specifies the time and count of the EBCS UL frame is transmission. |
| EBCSParameters | EBCS Parameters element | As defined in9.4.2.300 (EBCS Parameters element). | The EBCS Parameters element as defined in9.4.2.300 (EBCS Parameters element). |
| PrivateKey | Sequence of octets | N/A | Specifies the private key for signature generation. |

**6.3.201.3.2 Semantics of the service primitive**[1627]

***TGbc Editor: please make changes to this clause as shown below:***

The primitive parameters are as follows:

 MLME-EBCSUL.indication(

DestinationURI,

HLPPayload,

ReplayProtection,

EBCSParameters

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| DestinationURI | Destination URI element | As defined in9.4.2.89 (Destination URI element). | The Destination URI element as defined in9.4.2.89 (Destination URI element). |
| HLPPayload | Sequence of octets | N/A | Specifies the contents from the higher layer to be included in an EBCS ULframe. |
| ReplayProtection | Sequence of octets | N/A | Specifies the time and count of the EBCS UL frame is transmission. |
| EBCSParameters | EBCS Parameters element | As defined in9.4.2.300 (EBCS Parameters element). | The EBCS Parameters element as defined in9.4.2.300 (EBCS Parameters element). |