IEEE P802.11  
Wireless LANs

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| 802.11bc LB 252 resolution for CIDs assigned to Abhi (part 2) | | | | |
| Date: January 12, 2021 | | | | |
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Abstract

This submission proposes resolutions for the following 40 comments submitted during LB 252 for 11bc D1.0:

1571, 1519, 1351, 1523, 1637, 1567, 1163, 1113, 1162, 1606, 1627, 1383, 1384, 1261, 1385, 1608, 1346, 1034, 1352, 1357, 1474, 1517, 1486, 1271, 1110, 1144, 1440, 1045, 1388, 1100, 1344, 1345, 1347, 1622, 1476, 1089, 1093, 1355, 1019, 1570

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
* Rev 2:
  + Updated the baseline to D1.01 and doc [11-21/0064r4](https://mentor.ieee.org/802.11/dcn/21/11-21-0064-04-00bc-lb252-resolutions-for-cids-assigned-to-abhi-part-1.docx)
  + Includes resolution for 10 additional CIDs
    - 1474, 1517, 1486, 1271, 1110, 1144, 1440, 1045, 1388, 1100
    - These are highlighted in yellow in the resolution table
  + Resolution for some comments discussed earlier were updated based on offline discussions
    - 1571, 1519, 1351, 1523, 1637, 1567, 1034
    - These are highlighted in green in the resolution table
  + Incorporated feedback from Mark R. and Carol A.
* Rev 3:
  + Updated based on feedback received over email from Mark R.
  + Includes resolution for 10 additional CIDs
    - 1344, 1345, 1347, 1622, 1476, 1089, 1093, 1355, 1019, 1570
    - These are highlighted in yellow in the resolution table
  + Changes with respect to r2 are highlighted in blue

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.***

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1474 | Stephen McCann | 24.00 | 2 | 9.4.2.300 | The title of this clause is "E-BCS Parameters element". The term E-BSC is not defined. | Change all occurances of "E-BCS" to "eBCS", unless it is within a MLME definition. | **Revised**  All references to the term ‘E-BCS’ or ‘eBCS’ have been fixed in D1.01 to ‘EBCS’. Therefore, no further changes are needed.  TGbc editor: No changes are needed to resolve this comment |
| 1486 | Stephen McCann | 24.00 | 18 | 9.4.2.300.2 | It would be more efficient if the "E-BCS Parameters field for an AP" and the "E-BCS Parameters field for a non-AP STA" be merged into a single frame entitled "eBCS Parameters". There are enough reserved bits in both the current UL and DL frames, so that within a new common frame a leading bit could be assigned to Uplink or Downlink (if really required). The other subfields could be renamed to be more common. | Change the frames in clauses 9.4.2.300.2 and 9.4.2.300.3 to a single eBCS parameters field. This field then contains the following sub-fields: Control, eBCS Info frame interval (optional). The Control sub-field comprises: B0: uplink/downlink indicator, B1-B2: Authentication Mode: B3-B4: Limiting Mode, B5: Metadata Embedding, B6: No forwarding, B7: Reserved. | **Revised**  The spec text has been updated such that the EBCS element provides parameters for an EBCS AP only. The text related to the two bits advertised for an EBCS non-AP STA is moved out of this subclause to the EBCS UL frame. The subclause titles under 9.4.2.300 are deleted. The field name ‘AP Control’ is updated to say ‘Control’.  The subclause on EBCS UL frame is updated to match the change. The bits ordering in EBCS UL Control field of the frame is updated to include the two bits moved from the EBCS Parameters element. The bit used to signal presence of EBCS Parameters element in the EBCS UL frame is removed. The EBCS Parameter field (which carries the EBCS Parameters element) is deleted from the frame. Corresponding description text is removed. Text in clause 11 is updated to make correct references.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1486 |
| 1517 | Stephen McCann | 24.00 | 9 | 9.4.2.300.1 | What is an "eBCS UL frame", as it's not defined anywhere? | Change to "UL eBCS frame" as defined in 9.6.7.100? Otherwise add a definition of an eBCS UL frame. | **Revised**  Agree with the comment. The text cited by the comment was deleted as a resolution to another comment. Therefore, no further changes are needed.  TGbc editor: No changes are needed to resolve this comment |
| 1440 | Osama Aboulmagd | 25.00 | 13 | 9.4.2.300.2 | What is "Throttling Scheme"? | As in comment | **Revised**  The text cited by the comment was replace with the terms ‘Uniform’ and ‘Per Destination’ as a resolution to another comment. The new terms capture the intention of the field. Instances of the term throttling in clause 11 were fixed as a resolution to this comment  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1440 |
| 1045 | Albert Petrick | 25.00 | 14 | 9.4.2.300.2 | In Table 9-bc2 for Subfield value equal to 1 the Encoding column reads "with whom.... ". The relationship is between an AP and a non-AP STA. The 'whom" is the non-AP STA or some device. | Remove the ambiguity and replace "whom" with the intended device e.g., non-AP-STA | **Revised**  Agree with the comment. The text cited by the comment was deleted as a resolution to another comment. Therefore, no further changes are needed.  TGbc editor: No changes are needed to resolve this comment |
| 1271 | Mark RISON | 25.00 | 20 | 9.4.2.300.2 | "If the STA does not transmit eBCS Info frames, this subfield is not used. " is confusing because this subclause is about APs | Change to "If the AP does not transmit eBCS Info frames, this subfield is not used. " | **Revised**  Agree with the comment. The text cited by the comment was deleted as a resolution to another comment. Therefore, no further changes are needed.  TGbc editor: No changes are needed to resolve this comment |
| 1110 | Erik Lindskog | 25.00 | 20 | 9.4.2.300.2 | Change 'If the STA does not transmit eBCS Info frames, this subfield is not used.' to 'If the AP STA does not transmit eBCS Info frames, this subfield is not used.' to clarify that we are talking about the AP STA. | As described in the comment. | **Revised**  Agree with the comment. The text cited by the comment was deleted as a resolution to another comment. Therefore, no further changes are needed.  TGbc editor: No changes are needed to resolve this comment |
| 1089 | Bahareh Sadeghi | 26.00 | 4 | 9.4.2.300.3 | change "Non-AP STA" to "non-AP STA" There are multiple instances. | as in comment. | **Revised**  The ‘N’ in Non-AP was upper case when used as a field name. However, the text cited by the comment was deleted as a resolution to another comment. Therefore, no further changes are needed.  TGbc editor: No changes are needed to resolve this comment |
| 1476 | Stephen McCann | 26.00 | 13 | 9.4.2.300.3 | The use of the term "uplink" is superfluous in many parts of the text. For example in the cited sentence, there is no reason to use the term "uplink". Unfortuantely, there are many other occurances of this phrase in the draft, which are not required. | Change the following text from "...to indicate that the AP can discard a frame received from a non-AP STA..." to "...to indicate that the AP can discard a frame received from a non-AP STA...". | **Revised**  Multiple instances of uplink data or uplink frame were replaced with HLP payload or EBCS UL frame respectively.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1476 |
| 1093 | Bahareh Sadeghi | 36.00 | 1 | 9.6.7.100 | There is an implementation issue with the actual data payload "HLP Payload" . Typically, after removing headers and all, the IP payload of a frame is required to be 4-byte aligned to prevent memory copy things around, which makes it slower than necessary. with all the information contained in the frame before the HLP payload, in particular the variable sized "Destination URI", this is going to be completely off. Given that hardware today usually takes care of aligning things properly depending on the 802.11 header length I suggest that the spec only add multiple of 4 octets before the HLP payload, e.g. by padding out the destination URI so that there's a multiple of 4 octets before the HLP payload. Or alternatively move things around so you have, for example, things in the order: \* Category (1 octet) \* Public Action (1 octet) \* HLP Payload Length (2 octets) \* HLP Payload (variable) \* eBCS UL control (1 octet) \* etc. | as in the comment. | **Rejected**  The HLP payload does not carry IP header. The IP packet is generated by a relaying AP. Therefore, the concerns (if any) raised in the comment are not applicable. Based on offline (email) discussion with the commenter, the resolution is rejected. |
| 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 ‘EBCS Parameters’ field was removed from the frame as a resolution to another comments. The description for the ‘Destination URI’ field was updated to clarify that this field is an element (Destination URI element).  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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**  All references to the term ‘E-BCS’ or ‘eBCS’ have been fixed in D1.01 to ‘EBCS’. Therefore, no further changes are needed.  TGbc editor: No changes are needed to resolve this comment |
| 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**  The EBCS Parameters field was removed from the EBCS UL frame and hence Figure 9-bc24. However, the comment is applicable to other fields shown in the figure. The figure is updated to indicate that these fields are optionally carried in the frame and are of variable size. The term ‘(optional)’ is added within the field name and ‘0 or xxx’ is replaced with ‘xxx’ (e.g., ‘0 or variable’ is replaced as ‘variable’). The description text for each field is updated accordingly. Furthermore, the field related to STA certificate and HLP are consolidated in Figure 9-bc24. The corresponding description text is updated with new figures.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1351 |
| 1355 | Mark RISON | 36.00 | 5 | 9.6.7.100 | Making the Frame Signature field simply optional means the element can't be extended, which seems unwise | Have a bit in the eBCS UL Control field to indicate whether the Frame Signature field is present, and make sure the Frame Signature field includes its length. Also make the Frame Signature Type subfield reserved if there is no Frame Signature field | **Revised**  The frame signature is not present when the Frame Signature Type subfield is set to 0 (HLSA). The description of the Frame Signature field is updated to clarify.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1355 |
| 1144 | Hitoshi Morioka | 37.00 | 3 | 9.6.7.100 | Certificate format should be specified. | Replace the line with "The STA Certificate field carries the X.509 certificate of the transmitting STA in DER (Distinguished Encoding Rules) format." | **Revised**  Based on offline discussion with the commenter, the field description is updated to says that the field carries X.509v3 certificate of the transmitting STA encoded according to RFC 5280.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1144 |
| 1019 | Abhishek Patil | 37.00 | 13 | 9.6.7.100 | The Destination URI element appears before the HLP Payload Length field and the description of the field should be before the HLP Payload Length field | As in comment | **Revised**  The Destination URI field description is moved before HLP Container. In addition, the text in clause 9.4.2.89 is updated to describe the usage of Destination URI element when carried in EBCS UL frame.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1019 |
| 1570 | Tomoko Adachi | 37.00 | 13 | 9.6.7.100 | Move the description of the Destination URI element to align with the order in Figure 9-bc24. | Move the two paragraphs starting from pp.ll 37.13 before pp.ll 36.27 ("The HLP Payload Length field indicates ..."). Change the moved sentence to read "The Destination URI element is set as defined in 9.4.2.89 (Destination URI element) and carries the address of the remote destination where the packet needs to be forwarded to. (line break) NOTE--The length of the Destination URI element is computed based on the value carried in the Length field in the element (value in Length field + 2 octets)." Change "Destination URI" in Figure 9-bc24 to "Destination URI element". | **Revised**  The Destination URI field description is moved before HLP Container. In addition, the text in clause 9.4.2.89 is updated to describe the usage of Destination URI element when carried in EBCS UL frame.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1570 |
| 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**  The EBCS Parameters field was removed from the EBCS UL frame and hence Figure 9-bc24. However, the comment is applicable to other variable length optional fields shown in the figure. The figure is updated to include the term ‘(optional)’ in the field name and replace ‘0 or variable’ as ‘variable’ since variable covers 0 length. 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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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. | **Revised**  Agree with the comment. The EBCS Parameters Present subfield was removed as a resolution to another comment.  The field order for other subfields within the EBCS UL Control field is updated as suggested by the comment with additional changes resulting from resolution for other comments.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1637 |
| 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**  Agree with the comment. The EBCS Parameters Present subfield was removed as a resolution to another comment.  The field order for other subfields within the EBCS UL Control field is updated as suggested by the comment with additional changes resulting from resolution for other comments.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1567 |
| 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 are fixed in Table 9-bc6. An incorrect reference in clause 11.100.3.3 was also fixed  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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 needed  TGbc 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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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 13 the 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 2021  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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 15 field 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 deleted  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1608 |
| 1388 | Mark RISON | 37.00 | 20 | 9.6.7.100 | "The Frame Signature field, if present, carries a signature for the contents of the UL eBCS frame Action 20 field except the Frame Signature field. " is both too specific (which fields are covered) and not specific enough (how the signature is computed) | As it says in the comment | **Revised**  The description is updated to clarify that the Frame Signature field is present if the Frame Signature Type subfield has a value greater than zero.  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1388 |
| 1100 | Carl Kain | 55.00 | 26 | 11.100.3.2 | there is an extra ")" | remove the extra ")" | **Reject**  There isn’t an extra ‘)’ at the cited line. |
| 1344 | Mark RISON | 55.00 | 38 | 11.100.3.3 | "to the broadcast destination address (i.e., Address 1 and Address 3 fields are set to the broadcast address) " -- the "i.e." is misleading because usually transmitting a broadcast does not involve setting Address 3 to all-ones | Change to " with the Address 1 and Address 3 fields set to the broadcast address" | **Revised**  The text was updated to say that Address 1 field is set to broadcast destination (see 9.2.4.3.3. 9.2.4.3.5 and 9.3.3.1) and Address 3 is set to wildcard BSSID (see 11.17)  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1344 |
| 1345 | Mark RISON | 55.00 | 39 | 11.100.3.3 | "carrying data intended for the remote destination" seems spurious | Delete the cited text | **Revised**  The cited text was updated to say ‘carrying the HLP payload’  TGbc Editor: please make changes as shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1345 |
| 1347 | Mark RISON | 56.00 | 1 | 11.100.3.3 | "The format of the UL eBCS frame is described in 9.6.7.100 (UL eBCS frame format). " seems excessive | Delete the cited text and then in first para add "(see 9.6.7.100)" after the first "UL eBCS frame" | **Accept**  TGbc Editor: the changes are also shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1347 |
| 1622 | Xiaofei Wang | 56.00 | 1 | 11.100.3.3 | no need to mention the format of UL eBCS frame | delete the sentence | **Accept**  TGbc Editor: the changes are also shown in doc: <https://mentor.ieee.org/802.11/dcn/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1622 |
| 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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).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 | **Rejected**  The cited subfield is 4 octets in length and hence would represent 2^32 frame transmissions. |
| 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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1352 |
| 1357 | Mark RISON | 56.00 | 6 | 11.100.3.3 | "a numeric value which is incremented for each 6 packet 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/21/11-21-0090-03-00bc-lb252-resolutions-for-cids-assigned-to-abhi-(part-2).doc> tag 1357 |

[#1]:

Text updated to be in line with discussion that took place over the email reflector and during TGbc sessions on January 11th and 12th 2021

* Replace the term ‘forward’ with ‘relay’
* Replace the term ‘remote’ with ‘specified’
* Replace ‘contents of uplink frame’ with ‘HLP payload carried in EBCS UL frame’
* As in “… an EBCS AP relays the HLP payload carried in the EBCS UL frame to the specified destination …”

***TGbc Editor: The baseline for the proposed changes is 802.11bc D1.0 and approved changes from document*** [***11-21/0064r4***](https://mentor.ieee.org/802.11/dcn/21/11-21-0064-04-00bc-lb252-resolutions-for-cids-assigned-to-abhi-part-1.docx)

**9.4.2.300 EBCS Parameters element**

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

[1486]An EBCS AP advertises its EBCS capabilities and operational parameters by including the EBCS Parameters element in Beacon and Probe Response frames that it transmits.

[1486]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 |
|  | Element ID | Length | Element ID Extension | Control | EBCS Info Frame Tx Countdown (optional) |
| Octets: | 1 | 1 | 1 | 1 | 0 or 2 |

**Figure 9-bc1 - EBCS Parameters element format**[1486]

The format of the EBCS Parameters element is shown in Figure 9-bc1 (EBCS Parameters element format).

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

[1486]

[1486]1486]



[1486]

The format of the Control field is defined in Figure 9-bc3 (Control field format).[1486]

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 B1 | B2 B3 | B4 | B5 | B6 B7 |
|  | UL Authentication Mode | UL Limiting Mode | Metadata Embedding Supported | EBCS Info Frame Tx Countdown Present | Reserved |
| Bits: | 2 | 2 | 1 | 1 | 2 |

**Figure 9-bc3 - Control field format**[1486]

The encoding of the UL Authentication Mode subfield is shown in Table 9-bc1 (Encoding of UL Authentication Mode subfield).

**Table 9-bc1 - Encoding of UL Authentication Mode subfield**

|  |  |  |
| --- | --- | --- |
| **Subfield value** | **Definition** | **Encoding** |
| 0 | No Authentication | AP relays the HLP payload carried in an EBCS UL frame to the destination specified in the frame without authenticating the transmitter of the frame. |
| 1 | Per Destination | AP relays the HLP payload carried in an EBCS UL frame only if it is able to authenticate the transmitter of the frame, based on an relationship established with the destination specified in the frame. |
| 2 – 3 | Reserved |  |

The encoding of the UL Limiting Mode subfield is shown in Table 9-bc2 (Encoding of UL Limiting Mode subfield).

**Table 9-bc2 - Encoding of UL Limiting Mode subfield**[1476]

|  |  |  |
| --- | --- | --- |
| **Subfield value** | **Definition** | **Encoding** |
| 0 | Uniform | AP applies no restrictions or allows a fixed amount or frequency of HLP payload from a non-AP STA to be relayed to a specified destination, independent of the destination. |
| 1 | Per Destination | AP applies limits to the amount or frequency of HLP payload from a non-AP STA to be relayed to a specified destination, based on a relationship established with the destination. |
| 2 – 3 | Reserved |  |

The Metadata Embedding Supported subfield is set to 1 if the AP supports embedding of metadata (such as location, date/time, etc. based on the relationship with the destination), when a non-AP STA requests embedding, before relaying the HLP payload carried in an EBCS UL frame to the specified destination. Otherwise, the subfield is set to 0.

NOTE – An EBCS non-AP STA that transmits an EBCS UL frame is not required to first discover APs that provide a relaying service, or whether they support metadata embedding (see 11.100.3.3).

[1486]If the AP transmits EBCS Info frames (see 9.6.7.101 (EBCS Info frame format)) at fixed intervals, the EBCS Info Frame Tx Countdown Present subfield of the Control field is set to 1 and the EBCS Info Frame Tx Countdown subfield in the element indicates the number of TBTTs until the transmission of the next EBCS Info frame. The value 1 indicates that the frame is transmitted following the next TBTT (see 11.100.2.2). The value 0 is reserved. Otherwise the EBCS Info Frame Tx Countdown Present subfield of the Control field is set to 0 and the EBCS Info Frame Tx Countdown subfield is not included in the element.

[1486]

**9.6.7.100 EBCS UL 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 EBCS UL frame is transmitted by an EBCS non-AP STA and carries higher layer payload intended for a destination specified within the frame.

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



|  |  |  |
| --- | --- | --- |
|  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Category | Public Action | Control | Destination URI | HLP Container | STA Certificate Container (optional) | Replay Protection (optional) | Frame Signature (optional) |
| Octets: | 1 | 1 | 1 | variable | variable | variable | 0 or 8 | variable |

**Figure 9-bc24 - EBCS UL frame Action field format**[1486, 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 B6 | B7 |
|  | Metadata Embedding Requested | Do Not Relay Without Metadata Embedding | STA  Certificate Present | Replay Protection Present | Frame Signature Type | Reserved |
| Bits: | 1 | 1 | 1 | 1 | 3 | 1 |

**Figure 9-bc25 - Control field format**[1637, 1567, 1486, 1627]

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

[1486]frameEmetadata

[#1, 1486, 1476]is not to be relayed unless the AP is ableHLP payloadspecified

[1351]The STA Certificate Present subfield is set to 1 when the STA Certificate Container field is carried in the frame. Otherwise, the subfield is set to 0.

[1486][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** | **Algorithm** | **Encoding** |
| 0 | HLSA | [1476]The authentication of HLP payload is provided by higher layer and is included in the HLP Payload field[1355] |
| 1 | RSA-2048 | See [1163, 1388]12.100.2.5 (Signature of the EBCS UL frame) and 12.100.2.6 (Authentication of an EBCS UL frame) |
| 2 | ECDSA-P256 |
| 3 | Ed25519 |
| 4-7 | Reserved | [1113, 1162] |

[#1, 1571, 1261, 1019, 1570]field contains a Destination URI elementasthat specifies theto which the HLP payload relayed

[1351]The format of the HLP Container field is shown in Figure 9-bcxx (HLP Container field format).

|  |  |  |
| --- | --- | --- |
|  | HLP Payload Length | HLP Payload |
| Octets: | 2 | variable |

[1351]**Figure 9-bcxx – HLP Container field format**

The HLP Payload Length subfield indicates the length of the HLP Payload field in octets.

The HLP Payload subfield carries the HLP payload.

[1351]The format of the STA Certificate Container field is shown in Figure 9-bcxx (STA Certificate Container field format).

|  |  |  |
| --- | --- | --- |
|  | STA Certificate Length | STA Certificate |
| Octets: | 2 | variable |

[1351]**Figure 9-bcxx – STA Certificate Container field format**

[1351, 1523]The STA Certificate Length subfield carries a nonzero value that indicates the length of the STA Certificate field in octets.

[1351, 1523, 1144]The STA Certificate subfield carries the X.509v3 certificate of the STA encoded according to IETF RFC 5280.

[1606]

[1627, 1351, 1523]The format of the Replay Protection field, if present, 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 time, expressed as number of seconds since 2020-01-01 00:00:00 UTC, when the frame is queued for transmission.

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

[1019, 1570]

[1608, 1385][1486]

[1355, 1388]The Frame Signature field is not present if when the Frame Signature Type is set to 0 (HLSA). Otherwise, the field is present and carries a signature of the EBCS UL frame (see 12.100.2.5 (Signature of the EBCS UL frame)).

* **Destination URI element** [1019, 1570]

***TGbc Editor: please this subclause as shown below:***

in an EBCS UL frame as described in 9.6.7.100 (EBCS UL frame format) and optionally

When carries in the Event Request frame or Diagnostic Request frame, the Destination URI element contains URI and ESS Detection Interval values from the requesting STA that the responding STA can be used to deliver Event or Diagnostic Report frames.

The format of the Destination URI element is shown in Figure 9-481 (Destination URI element format)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | | ESS Detection Interval | URI |
| Octets: | 1 | | 1 | 1 | 1–253 |
| * **Destination URI element format** | | | | | |

The Element ID and Length fields are defined in 9.4.2.1 (General).

The ESS Detection Interval field is defined in 9.4.2.70.2 (Location Indication Parameters subelement) and its use for Event and Diagnostic requests is described in 11.21.2 (Event request and report procedures) and 11.21.3 (Diagnostic request and report procedures). The ESS Detection Interval field is reserved when the element is carried in an EBCS UL frame.

The URI field specifies the destination URI for Event and Diagnostic reports using the format defined in IETF RFC 3986. The URI field value is limited to 253 octets.

Use of the Destination URI element in an Event Request frame is described in 11.21.2.1 (Event request and event report). Use of the Destination URI element in a Diagnostic Request frame is described in 11.21.3.1 (Diagnostic request and diagnostic report). Use of Destination URI element in EBCS UL frame is described in 11.100.3 (EBCS UL Service).

##### 11.100.3.1 General

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

[#1]The EBCS UL Service procedure allows a non-AP STA to transmit an EBCS UL frame with the expectation that one or more EBCS APs in the neighborhood would relay the HLP payload carried in the frame to a specified destination specified in the frame. An EBCS non-AP STA may include a request to the relaying AP to append additional information to the frame before relaying the frame to the specified destination. The relaying service is best effort with no guarantee that the HLP payload will be delivered to the destination specified in the STA’s frame. Furthermore, a STA’s request to embed metadata might not be fulfilled by a relaying AP.

##### 11.100.3.2 EBCS UL operation at an EBCS AP

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

[#1]An EBCS AP may provide a relaying service in which it supports relaying the HLP payload carried in an EBCS UL frame received from an EBCS non-AP STA to a destination specified in the frame.

[#1, 1486]An EBCS AP shall indicate capabilities related to relaying service in the EBCS Parameters element (see 9.4.2.300 (EBCS Parameters element)) in the Beacon and Probe Response frames that it transmits.

[#1]An EBCS AP that supports relaying and is capable of embedding shall indicate its ability to support embedding by setting the Metadata Embedding Supported subfield in the EBCS Parameters element to 1 and shall append metadata to the HLP payload received from the STA before relaying it to the specified destination when requested by the STA.

NOTE 1—The content and format of the embedded metadata is out of scope of this standard and can be based on a relationship with the specified destination.

NOTE 2 – Upon receiving an EBCS UL frame from an unassociated EBCS STA, a relaying EBCS AP (or a switch to which the EBCS AP is connected) generates an IP packet intended for the destination specified in the frame.

[#1, 1440]An EBCS AP that supports relaying but does not support embedding of metadata shall not relay the HLP payload carried in the EBCS UL frame to the specified destination if the Do Not Relay Without Embedding Metadata subfield in the EBCS UL frame is equal to 1. Otherwise, the AP may relay the HLP payload carried in the EBCS UL frame to the destination specified in the frame subject to other conditions described in this subclause.

[#1, 1627, 1440, 1476]In order to prevent denial-of-service attacks, replay attacks or injection attacks directed towards the specified destination, an EBCS AP that supports a relaying service should perform source authentication, perform replay checking and validate the frame signature based on the fields carried in the EBCS UL frame by following the procedure defined in 12.100.2.6 (Authentication of an EBCS UL frame). Furthermore, an EBCS AP should limit the amount or the rate of HLP payload it relays to a specified destination.

[#1, 1627]Eeor does not perform replay checking relays EBCS specified,Replay Protection

[#1]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 EBCS Parameters element that it transmits (see Table 9-bc1 (Encoding of UL Authentication Mode subfield)).

[1627]

[#1, 1440]An EBCS AP that limits the amount or frequency of HLP payload it relays to a specified destination shall provide an indication of the scheme in the EBCS Parameters element that it transmits (see Table 9-bc2 (Encoding of UL Limiting Mode subfield)).

[#1, 1440]NOTE—Relaying service is best effort and an EBCS AP that supports relaying service is not required to relay a STA’s HLP payload to the destination specified in the STA’s EBCS UL frame if the conditions indicated by the AP (such as authentication and/or UL limiting) are not satisfied or for other reasons.

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

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

[#1, 1344, 1345]An EBCS non-AP STA may send an HLP payload to a specific destination by transmitting an EBCS UL frame. The frame carries the URI of the intended destination. The frame may also carry requests from the STA to the relaying AP and fields for source authentication, preventing replay attacks and protecting the contents of the frame. The Address 1 and Address 3 fields of the frame shall be set to the broadcast address.

[1347, 1622][1606, 1627, 1384]An EBCS non-AP STA should include tReplay Protection in an EBCS UL frame that it transmits to s

[1627]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; otherwise the subfield shall be set to 0.

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

[1627, 1346, 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 232 – 1 EBCS UL frames, the value in the field shall wraparound to 0.

An EBCS non-AP STA may request an EBCS AP that provides a relaying service to embed metadata (such as location, date and time, etc.) by setting the Metadata Embedding Requested subfield in the EBCS UL frame to 1.[1486]

[1163]The Frame Signature field, when present in the frame, shall carry the signature for the contents of the EBCS UL frame Action field except for the field itself(see 12.100.2.5 (Signature of the EBCS UL frame) and 12.100.2.6 (Authentication of an EBCS UL frame)).

[#1]An EBCS non-AP STA is not required to monitor the WM and may transmit an EBCS UL frame without discovering nearby EBCS APs that support relaying service.

***TGbc Editor: update the subclause title shown below:***

**6.3.201 EBCS UL relaying**[#1]

**6.3.201.2.2 Semantics of the service primitive**[1627, 1486]

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

The primitive parameters are as follows:

MLME-EBCSUL.request(

MetadataEmbeddingRequested,

DoNotRelayWithoutMetadataEmbedding,

DestinationURI,

HLPPayload,

STACertificate,

ReplayProtection,

PrivateKey

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MetadataEmbeddingRequested | Bit field as defined in 9.6.7.100 | As defined in 9.6.7.100 | Indicates if the STA is requesting an AP to append metadata before relaying the HLP payload to the specified destination |
| DoNotRelayWithoutMetadataEmbedding | Bit field as defined in 9.6.7.100 | As defined in 9.6.7.100 | Indicates if the STA does not want an AP to relay the HLP payload if it is unable to append metadata |
| DestinationURI | Destination URI element | As defined in 9.4.2.89  (Destination URI element). | Specifies the destination to which the HLP payload is to be relayed. |
| HLPPayload | Sequence of octets | N/A | Specifies the HLP payload carried in EBCS UL frame to be relayed to the specified destination. |
| STACertificate | Sequence of octets | N/A | When present, specifies the certificate for the transmitting STA. |
| ReplayProtection | Replay Protection field as defined in 9.6.7.100 | N/A | When present, specifies the time (if available) when an EBCS UL frame is queued for transmission and a count of the number of EBCS UL frame transmissions. |
|  |  |  |  |
| PrivateKey | Sequence of octets | N/A | When present, specifies the private key for signature generation. |

**6.3.201.3.2 Semantics of the service primitive**[1627, 1486]

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

The primitive parameters are as follows:

MLME-EBCSUL.indication(

MetadataEmbeddingRequested,

DoNotRelayWithoutMetadataEmbedding,

DestinationURI,

HLPPayload,

ReplayProtection,

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| MetadataEmbeddingRequested | Bit field as defined in 9.6.7.100 | As defined in 9.6.7.100 | Indicates if the STA is requesting an AP to append metadata before relaying the HLP payload to the specified destination |
| DoNotRelayWithoutMetadataEmbedding | Bit field as defined in 9.6.7.100 | As defined in 9.6.7.100 | Indicates if the STA does not want an AP to relay the HLP payload if it is unable to append metadata |
| DestinationURI | Destination URI element | As defined in  9.4.2.89 (Destination URI element). | Specifies the destination to which the HLP payload is to be relayed. |
| HLPPayload | Sequence of octets | N/A | Specifies the HLP payload carried in an EBCS UL frame to be relayed to the specified destination. |
| ReplayProtection | Replay Protection field as defined in 9.6.7.100 | N/A | When present, specifies the time (if available) when an EBCS UL frame is queued for transmission and a count of the number of EBCS UL frame transmissions. |
|  |  |  |  |

**12.100.2.6 Authentication of an EBCS UL frame**[1627]

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

An EBCS AP shall discard an EBCS UL frame if any of the following conditions is met:

1. The Replay Protection field is present, and all of the following conditions are met:
   1. The Time subfield is set to a nonzero value and the difference between its value and the time at the EBCS AP is greater than an allowable time difference configured within the AP.
   2. The value carried in the Frame Count subfield is not equal to 0 and is less than or equal to the value in a previously received EBCS UL frame (if any)
   3. The value carried in the Frame Count subfield is 0 and the value in a previously received EBCS UL frame (if any) is not 232 – 1.
2. The STA Certificate subfield is present and the certificate of the CA that signed the STA’s certificate is not installed or the verification of the STA’s certificate using the installed certificate of the CA fails.
3. The Frame Signature Type is not HLSA and the verification of the signature of the frame using the certificate of the STA fails.

If the authentication succeeds, the EBCS receiver processes the HLP payload as described in 11.bc.3.2 (EBCS UL operation at an EBCS AP).

#### 3.2 Definitions specific to IEEE 802.11

***TGbc Editor: please delete the definition of ‘remote destination’:***

[#1]

**4.3.100 Enhanced Broadcast Service**

***TGbc Editor: please update the first paragraph in this subclause as shown below:***

[#1, 1476]Enhanced Broadcast Service (EBCS) enables efficient local distribution of information. EBCS provides enhanced transmission and reception of broadcast data in an infrastructure BSS, both where there is an association between the transmitter and the receiver(s) and in cases where there is no association between transmitter(s) and receiver(s). Further, EBCS provides a service in which an EBCS AP can relay the contents of the higher layer payload, received from a EBCS non-AP STA, to a destination specified by the STA. The relaying EBCS AP can append additional information if requested by the STA and supported by the AP.