IEEE P802.11  
Wireless LANs

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| 802.11  IEEE P802.11bc/D3.0 Mandatory Draft Review (MDR) Report | | | | |
| Date: 2022-07-11 | | | | |
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|  |  |  |  |  |

**Abstract**

This document contains the report of the TGbc Mandatory Draft Review.

r0: section headings

r1: volunteers added for most section

r2: Jonathan Segev update

r3: Peter Eccleisne update

r4: Included Edward’s findings. Included Yongho’s findings. Included MEC response. Included Emily’s findings. Included ANA findings.

# Introduction

## Purpose of this document

This document is the report from the group of volunteers that participated in the P802.11bc/D3.0 mandatory draft review.

This document contains recommendations for changes to the P802.11bc draft to bring it into improved compliance to IEEE-SA and WG11 style.

The recommended changes need to be reviewed by TGbc and approved, or ownership of the issues taken by TGbc.

## Process / references

The MDR process is described in:

* 11-11/615r6 – WG802.11 MEC Process

And references:

* 11-09/1034r19 – 802.11 Editorial Style Guide

A setup meeting was held, and review topics identified and assigned to volunteers. The volunteers provided their review comments, which have been compiled into this document, with some editorial changes.

## Acknowledgements

The 802.11 technical editors (Robert Stacey and Peter Ecclesine) gratefully acknowledge the work and contribution of:

* Emily Qi
* Edward Au
* Jonathan Segev
* Yongho Seok
* Mark Hamilton

# Findings

## Style

### Style Gude 2.1 – Frames

Emily Qi

At 48.31, add “format” at the end of the title of Figure 9-144d.

At 49.44, add “format” at the end of the title of Figure 9-144g.

### Style Guide 2.2 – Naming Frames

Emily Qi

The draft looks good. Don’t find any issues in this regard.

### Style Guide 2.2 – true/false

Jonathan Segev

Complies with style guide, no findings where identified.

### Style Guide 2.3 – “is set to”

Jonathan Segev

D3.0 P.46 L.1 *If the STA is an AP with dot11MultiBSSIDImplemented set to true and the Address 1 field is*

*set to the broadcast address, then this address is the transmitted BSSID.*

Change to:

*If the STA is an AP with dot11MultiBSSIDImplemented is equal to true and the Address 1 field is*

*equal to the broadcast address, then this address is the transmitted BSSID.*

D3.0 P.51 L.27 *The TBTT Information Field Type subfield identifies, together with the TBTT Information Length subfield,*

*the format of the TBTT Information field. It is set to 0 or 1. Values of 1, 2, and 3 are reserved.*

*The TBTT Information Length subfield, when the TBTT Information Field Type subfield is set to 0, is*

*interpreted as shown in Table 9-231 (TBTT Information field contents when TBTT Information Field Type*

*subfield set to 0).*

Change to:

*The TBTT Information Field Type subfield identifies, together with the TBTT Information Length subfield,*

*the format of the TBTT Information field. It is equal to 0 or 1. Values of 1, 2, and 3 are reserved.*

*The TBTT Information Length subfield, when the TBTT Information Field Type subfield is set to 0, is*

*interpreted as shown in Table 9-231 (TBTT Information field contents when TBTT Information Field Type*

*subfield set to 0).*

D3.0 P.52 L.117 *The TBTT Information Length subfield, when the TBTT Information Field Type subfield is set to 1, is interpreted as shown in Table 9-231a (TBTT Information field contents when TBTT Information Field Type*

*subfield set to 1).*

Change to:

*The TBTT Information Length subfield, when the TBTT Information Field Type subfield is equal to 1, is interpreted as shown in Table 9-231a (TBTT Information field contents when TBTT Information Field Type*

*subfield set to 1).*

D3.0 P.56 L.12 *In case the Association Required bit in the Control field included in the same Enhanced Broadcast Services Tuple field is set to 1, the only allowed request method is through EBCS Content Request/Response frames, therefore the EBCS Content Request Frame bit is set to 1 and EBCS Request ANQP Element bit is set to 0..*

Change to:

*In case the Association Required bit in the Control field included in the same Enhanced Broadcast Services Tuple field is equal to 1, the only allowed request method is through EBCS Content Request/Response frames, therefore the EBCS Content Request Frame bit is set to 1 and EBCS Request ANQP Element bit is set to 0..*

D3.0 P.76 L.64 *The Negotiation Address subfield contains a MAC address if the Negotiation Address Type is set to 0.*

Change to:

*The Negotiation Address subfield contains a MAC address if the Negotiation Address Type is equal to 0.*

D3.0 P.77 L.1 *The format of the Negotiation Address subfield when the Negotiation Address Type is set to 1 is shown in Figure 9-909ax (Negotiation Address subfield format for a Negotiation Address Type of 1).*

Change to:

*The format of the Negotiation Address subfield when the Negotiation Address Type is equal to 1 is shown in Figure 9-909ax (Negotiation Address subfield format for a Negotiation Address Type of 1).*

D3.0 P91 L33 *An EBCS non-AP STA should include the Frame Count field in an EBCS UL frame that it transmits to*

*reduce the possibility of a successful replay attack. When the STA provides a frame count, the Frame Count field shall carry a value that is set to 1 in the first EBCS UL frame that the STA transmits and shall be incremented for each subsequent transmission of an EBCS UL frame.*

Change to:

*An EBCS non-AP STA should include the Frame Count field in an EBCS UL frame that it transmits to*

*reduce the possibility of a successful replay attack. When the STA provides a frame count, the Frame Count field shall carry a value that is set to 1 in the first EBCS UL frame that the STA transmits and shall be incremented for each subsequent transmission of an EBCS UL frame.*

D3.0 P.95 L.24 *if the Frame Signature Type subfield of the EBCS UL frame is set to a nonzero value, then one of the following public key algorithms is used to generate the frame signature.*

*— RSASSA-PSS*

*— ECDSA*

*— Ed25519*

Change to:

*if the Frame Signature Type subfield of the EBCS UL frame is equal to a nonzero value, then one of the following public key algorithms is used to generate the frame signature.*

*— RSASSA-PSS*

*— ECDSA*

*— Ed25519*

Other (not related to “is set to”):

D3.0 P.46 L.53 the highlighted reference has a typo *The HT Control field is defined in 4.2.4.6 (HT Control field).The presence of the HT Control field is*

*determined by the +HTC subfield of the Frame Control field, as specified in 9.2.4.1.10 (+HTC subfield).*

Should be 9.2.4.6.

### Information Elements/Subelements

Edward Au

#### Style Guide 2.4.1 – Information Elements/subelements – Naming

No findings

#### Style Guide 2.4.2 – Definition Conventions

No findings

#### Style Guide 2.4.3 – Element Inclusion Conventions

No findings

### Style Guide 2.5 – Removal of functions and features

Jonathan Segev

Complies with style guide, no findings where identified.

### Style Guide 2.6 – Capitalization

Edward Au

[01] Page 48, line 46: Please replace “Content ID” with either “Content ID subfield” or “content ID”.

[02] Page 55, line 52: Please replave “Out of Band Request” with “Out Of Band Request”.

[03] Page 55, line 52: Please replave “Content with Restriction” with “Content With Restriction”.

[04] Page 56, line 6: Please replave “Out of Band Request” with “Out Of Band Request”.

[05] Page 56, line 18: Please replace “The Service URL” with “The service URL”.

[06] Page 57, line 10: Replace “The Content Address Length” with “The length of the Content Address subfield”.

[07] Page 58, line 33: Please replace “Operating Band” with “Operating band”.

[08] Page 58, line 57: Please replace “TX rate subfield” with “TX Rate subfield”.

[09] Page 59, line 18: Please replace “HT MCS Index” with “HT MCS index”.

[10] Page 60, line 31: Please replace “Channel Bandwidth” with “Channel bandwidth”.

[11] Page 63, line 11: Replace “SBTC” with “STBC”. It is a typo.

[12] Page 64, line 46: Replace “Guard Interval” with “Guard interval”. It is a typo.

[13] Page 66, line 38: Replace “EBCS Response Information List” with either “EBCS Response Information List field” or “EBCS response information list”.

[14] Page 67, line 7: Replace “EBCS Termination Notice” with “EBCS termination notice”.

[15] Page 68, line 4: Replace “Frame Signature Length” with “Frame signature length”.

[16] Page 68, line 29: Replace “Destination URI length” with “Destination URI Length”.

[17] Page 68, line 38: Replace “Destination URI” with “destination URI”.

[18] Page 70, line 12: Replace “EBCS TIME field” with “EBCS TIM field”.

[19] Page 70, line 23: Replace “Certificate Present” with “Certificate present”.

[20] Page 70, line 23: Replace “Signature Length” with “Signature length”.

[21] Page 71, line 26: Replace “Time of Termination” with “Time Of Termination”.

[22] Page 71, line 44: Replace “Content Authentication Algorithm” with “Content authentication algorithm”.

[23] Page 72, line 41: Replace “Out Of BandContent Request” with “Out Of Band Content Request”.

[24] Page 74, line 2: Replace ‘Instant Authenticator List” with “instant authenticator list”.

[25] Page 76, line 63: Replace “the Negotiation Address Type” with “the negotiation address type”.

[26] Page 77, line 1: Replace “the Negotiation Address Type” with “the negotiation address type”.

[27] Page 77, line 9: Replace “a Negotiation Address Type” with “a negotiation address type”.

[28] Page 77, line 19: Replace “the Negotiation Address Type” with “the negotiation address type”.

[29] Page 77, line 27: Replace “a Negotiation Address Type” with “a negotiation address type”.

[30] Page 77, line 37: Replace “the Negotiation Address Type” with “the negotiation address type”.

[31] Page 77, line 45: Replace “a Negotiation Address Type” with “a negotiation address type”.

[32] Page 78, line 26: Replace “EBCS Content Request” with “EBCS content request”.

[33] Page 78, line 29: Replace “EBCS Content Response” with “EBCS content response”.

[34] Page 79, line 37: Replace “an EBCS Content Response” with “an EBCS content response”.

[35] Page 82, line 13: Replace “Out of Band Request” with “Out Of Band Request”.

[36] Page 82, line 58: Replace “EBCS Addressing” with “EBCS addressing”.

[37] Page 82, line 61: Replace “an EBCS Content MAC address or EBCS Info MAC address” with “an EBCS content MAC address or EBCS info MAC address”.

[38] Page 82, line 62: Replace “the EBCS Content MAC address and EBCS Info MAC address” with “the EBCS content MAC address and EBCS info MAC address”.

[39] Page 83, line 1: Replace “EBCS Info MAC address” with “EBCS info MAC address”.

[40] Page 83, line 6: Replace “The EBCS Content MAC address” with “The EBCS content MAC address”.

[41] Page 83, line 11: Replace “Content ID” with “content ID”.

[42] Page 83, line 51: Replace “EBCS Content MAC Address” with “EBCS content MAC address”.

[43] Page 84, line 9: Replace “an EBCS Content MAC address” with “an EBCS content MAC address”.

[44] Page 84, line 13: Replace “the EBCS Content MAC address” with “the EBCS content MAC address”.

[45] Page 84, line 24: Replace “the EBCS Content MAC address” with “the EBCS content MAC address”.

[46] Page 85, line 61: Replace “desired EBCS Content MAC addresses” with “desired EBCS content MAC addresses”.

[47] Page 86, line 31: Replace “the EBCS Info MAC address” with “the EBCS info MAC address”.

[48] Page 88, line 44: Replace “Broadcaster MAC Address” with either “Broadcaster MAC Address subfield” or “broadcaster MAC address”.

[49] Page 88, line 52: Replace “Content ID” with “content ID”.

[50] Page 88, line 53: Replace “Content ID” with “content ID”.

[51] Page 91, line 15: Replace “The EBCS Content MAC address” with “The EBCS content MAC address”.

[52] Page 91, line 20: Replace “The EBCS Content MAC address” with “The EBCS content MAC address”.

[53] Page 91, line 23: Replace “EBCS Proxy” with “EBCS proxy”.

[54] Page 91, line 42: Replace “EBCS UL Operation at an EBCS Proxy” with “EBCS UL operation at an EBCS proxy”.

[55] Page 92, line 18: Replace “Instant Authentication” with “instant authentication”.

[56] Page 92, line 20: Replace “Instant Authentication” with “instant authentication”.

[57] Page 95, line 21: Replace “non-APSTA” with “non-AP STA”.

[58] Page 96, line 3: Replace “Frame Count” with “frame count”.

[59] Page 96, line 18: Replace “Frame Count” with “frame count”.

[60] Page 96, line 19: Replace “Frame Count” with “frame count”.

[61] Page 99, line 29: Replace “Example HCFA Key Delivery” with “Example HCFA key delivery”.

[62] Page 100, line 29: Replace “Example Instant Authenticator Delivery” with “Example instant authenticator delivery”.

[63] Page 102, line 13: Replace “HCFA Authenticator” with “HCFA authenticator”.

[64] Page 102, line 23: Replace “Instant Authenticator” with “Instant authenticator”.

[65] Page 104, line 30: Replace “Enhanced Broadcast Services Receive only” with “Enhanced Broadcast Services receive only”.

[66] Page 106, line 53: Replace “EBCS termination notice frame” with “EBCS Termination Notice frame”.

[67] Page 22, line 37: Replace “Info MAC Address” with “info MAC address”.

[68] Page 22, line 40: Replace “Content MAC Address” with “content MAC address”.

### Style Guide 2.7 – Terminology: frame vs packet vs PPDU vs MPDU

Edward Au

[01] Page 95, line 7: Replace “PKFA MPDU frame” with “PKFA MPDU”.

### Style Guide 2.8 – Use of verbs & problematic words

#### normative, non-normative, ensure

#### which/that

#### articles

#### missing nouns

#### unnecessary nouns

#### unicast and multicast

### Style Guide 2.9 – Numbers

Edward Au

[01] Page 64, line 63: Please replace “65535” with “65 535”.

[02] Page 65, line 5: Please replace “65535” with “65 535”.

[03] Page 69, line 20: Please italicize r.

[04] Page 69, line 20: Please italicize s.

[05] Page 75, line 62: Please replace “65535” with “65 535”.

[06] Page 90, line 11: Please replace “65535” with “65 535”.

[07] Page 98, line 43: Please italicize N.

[08] Page 98, line 53: Please italicize N.

[09] Page 98, line 56: Please italicize N.

[10] Page 115, line 1: Please replace “65535” with “65 535”.

[11] Page 115, line 17: Please replace “65535” with “65 535”.

### Style Guide 2.10 – Maths operators and relations

Edward Au

[01] Page 40, line 12: Replace “1-255” with “1–255”.

[02] Page 40, line 54: Replace “1-255” with “1–255”.

[03] Page 41, line 30: Replace “1-255” with “1–255”.

[04] Page 42, line 9: Replace “1-255” with “1–255”.

[05] Page 52, line 35: Replace “0-1” with “0–1”.

[06] Page 52, line 40: Replace “3-255” with “3–255”.

[07] Page 53, line 53: Please use the multiplication operator rather than “x”.

[08] Page 56, line 47: Replace “4-255” with “4–255”.

[09] Page 57, line 6: Replace “3-255” with “3–255”.

[10] Page 58, line 46: Replace “4-255” with “4–255”.

[11] Page 60, line 44: Replace “5-7” with “5–7”.

[12] Page 61, line 32: Replace “5-7” with “5–7”.

[13] Page 62, line 24: Replace “5-7” with “5–7”.

[14] Page 68, line 24: Replace “6-7” with “6–7”.

[15] Page 69, line 43: Please use the multiplication operator rather than “x”.

[16] Page 70, line 43: Replace “7-255” with “7–255”.

[17] Page 71, line 59: Replace “4-255” with “4–255”.

[18] Page 76, line 29: Replace “4-255” with “4–255”.

[19] Page 76, line 54: Replace “4-255” with “4–255”.

[20] Page 78, line 31: Replace “2-255” with “2–255”.

[21] Page 94, line 45: Replace “>=” with “≥”.

### Style Guide 2.11 – Hyphenation

Edward Au

[01] Page 56, line 17: Please replace “off-line” with “offline”.

[02] Page 56, line 19: Please replace “off-line” with “offline”.

[03] Page 74, line 44: Replace “In case of Pre-negotiated” with “In case of Prenegotiated”.

[04] Page 86, line 37: Replace “co-hosted” with “cohosted”.

[05] Page 86, line 38: Replace “co-hosted” with “cohosted”.

[06] Page 90, line 62: Replace “co-hosted” with “cohosted”.

[07] Page 93, line 48: Replace “Pre-negotiated” with “Prenegotiated”.

[08] Page 94, line 2: Replace “Pre-negotiated” with “Prenegotiated”.

### Style Guide 2.12 – References to SAP primitives

Peter Eccelsine

No issue found

### Style Guide 2.13 – References to the contents of a field/subfield

Emily Qi

At 95.24, change “if the Frame Signature Type subfield of the EBCS UL frame is set to a nonzero value, then one of the following public key algorithms is used to generate the frame signature.”

To “If the Frame Signature Type subfield of the EBCS UL frame is a nonzero value, then one of the following public key algorithms is used to generate the frame signature.”

### Style Guide 2.14 – References to MIB variables/attributes

Jonathan Segev

D3.0 P.109 L.38 *dot11EBCSRelayingServiceSupported TruthValue,*

Change to:

*dot11EBCSRelayingServiceImplemented TruthValue* andall of usages of the MIB change to reflected the name modification refer to 11-15-0355 section 3 patterns (3.1 dot11xxx implemented Static implementation capability. Also consider other option *dot11EBCSRelayingServiceActivated* if the variable is intended to be dynamically changing.

D3.0 P.111 L.65 *dot11EBCSTIMInBeacon … This attribute when true, indicates that the EBCS TIM element is included in the Beacon*

*frame.* – this is a dynamic capability control variabgle and hence name should include an Activated suffix; refer to 11-15-355r13 clause 3.2 dot11xxxActivated Dynamically operational capability.

Change to:

*dot11EBCSTIMInBeaconAcitvated* andalign all uses of the variable in the draft accordingly.

D3.0 P.112 L.63 *dot11EBCSTrafficStreamBufferable*

According to its definition: *This variable, when true, the EBCS traffic stream is buffered and transmitted*

*in EBCS DTIM period.* Hence this variable is a dynamic capability and should have an Activated suffix.

Change to: *dot11EBCSTrafficStreamBufferableActivated* andalign all uses of the variable in the draft accordingly.

D3.0 P.112L.64 *dot11EBCSTrafficStreamEnabled*

According to its definition: *“This variable, when false, indicates that the EBCS receiver filters the*

*EBCS traffic stream.”* Hence this variable is a dynamic capability and should have an Activated suffix.

Change to: *dot11EBCSTrafficStreamActivated* and align all uses of the variable in the draft accordingly.

### Style Guide 2.15 – Hanging Paragraphs

Emily Qi

The draft looks good, No issue identified.

### Style Guide 2.16 – Abbreviations

Edward Au

[01] Page 22, line 20: Replace “IDs” with “identifiers (IDs)”.

[02] Page 22, line 26: Replace “APs” with “access points (APs)”.

[03] Page 22, line 33: Replace “DS” with “distribution system (DS)”.

[04] Page 22, line 41: Replace “UL” with “uplink (UL)”.

[05] Page 22, line 60: Replace “UL” with “uplink (UL)”.

[06] Page 23, line 1: The correct subclause number is 3.4, not 3.2.

[07] Page 92, line 34: Delete “(Certificate Authority)” because it has been defined in subclause 3.4 of IEEE 802.11-2020.

### Style Guide 2.17 – Format for code/pseudocode

N/A

### Style guide 3 – Style applicable to specific Clauses

#### Definitions (Clause 3)

Peter Ecclesine

**enhanced broadcast services (EBCS) Info MAC Address: and**

**enhanced broadcast services (EBCS) Content MAC Address:**

MAC addressing should refer to **11.55.2** **EBCS Addressing,** not 11.55.1a

#### General Description (Clause 4)

Peter Ecclesine

No issues noted

#### Frame formats (Clause 9) – shall or may?

Emil Qi

#### SAP interfaces (Clause 6)

Mark Hamilton

#### New top level clauses

#### Annex A – Bibliography

Not applicable. There are neither normative nor informative references.

#### Annex B – PICS

#### Annex G – Frame exchange sequences

N/A

## ANA

Check for correct use of numbers against database.

Check names against database (update database if names have changed).

Robert Stacey

|  |  |  |  |
| --- | --- | --- | --- |
| **Resource** | **Value** | **Name** | **Status** |
| InfoIDs | 283 | Enhanced Broadcast Services | Allocated value not reflected in D3.0. Name differs in draft |
|  | 284 | Enhanced Broadcast Services Request | Allocated value not reflected in D3.0. Name differs in draft |
|  | 285 | Enhanced Broadcast Service Response | Allocated value not reflected in D3.0. Name differs in draft |
| Element ID Extension 1 | 111 | EBCS Parameters | Allocated value not yet reflected in D3.0 |
|  | 112 | EBCS TIM | Allocated value not yet reflected in D3.0 |
| dot11StationConfigEntry | 208 | dot11EBCSSupportActivated | Allocated value not reflected in D3.0. |
|  | 209 | dot11EBCSContentList | Name does not appear in D3.0 |
|  | 210 | dot11EBCSInfoInterval | Allocated value not reflected in D3.0. |
|  | 211 | dot11EBCSHCFAKeyChangeInterval | Allocated value not reflected in D3.0. |
|  | 212 | dot11EBCSHCFAHashDistance | Allocated value not reflected in D3.0. |
|  | 213 | dot11EBCSInfoTxRate | Allocated value not reflected in D3.0. |
|  | 214 | dot11EBCSDTIMPeriod | Allocated value not reflected in D3.0. |
|  | 215 | dot11EBCSTerminationNoticeTime | Allocated value not reflected in D3.0. |
|  | 216 | dot11EBCSTerminationNoticeMinimumInterval | Allocated value not reflected in D3.0. |
|  | 217 | dot11EBCSTerminationNoticeMaximumInterval | Allocated value not reflected in D3.0. |
|  | 218 | dot11EBCSRelayingServiceSupported | Allocated value not reflected in D3.0. |
| dot11Groups | 124 | dot11EBCSComplianceGroup | Incorrectly appears under dot11Compliances in D3.0 |
| dot11Compliances | 26 | dot11EBCSCompliance | Allocated value not reflected in D3.0. |
| Extended Capabilities | 98 | EBCS Support | Incorrectly using value 90 in D3.0 |
|  | 99 | EBCS Relaying Supported | Incorrectly using value 91 in D3.0 |
| DataSubTypes | 1 | EBCS Data | Not yet present in D3.0 |
| **The following are present but have no value allocated** | | | |
| dot11StationConfigEntry |  | dot11EBCSAPGroupID |  |
|  |  | dot11EBCSInfoPHYType |  |
| dot11smt |  | dot11EBCSTrafficStreamTable |  |

Additional Actions:

## MIB

Conformance to 09/533r1 and 15/355r13

The compiled MIB is embedded as the following. Please refer the proposed changes in the following section to fix errors.

Yongho Seok

The compiled MIB is embedded as the following. Please refer the proposed changes (see the embedded word field) in the following section to fix errors.



### Detailed proposed changes

* MIB Detail



# Collateral findings

# IEEE-SA MEC

|  |
| --- |
| Hello Robert  First off, my apologies on the delay for this, I thought I had completed this one already.  Please let this email serve as my official comment for P802.11bc.  This draft meets all editorial requirements and therefore can proceed to ballot.  If the draft contains registration of options, please submit to the IEEE Registration Authority for review before final ballot.  If you have any questions, please feel free to contact me. Thank you!  --  Michelle Turner Manager, Content Production and Management  IEEE Standards Association e-mail: [m.d.turner@ieee.org](mailto:m.d.turner@ieee.org) PH: +1 732 562 3825; FAX: +1 732 562 1571  Cell: +1 732 540 2992 |