IEEE P802.11
Wireless LANs

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| IEEE P802.11bi/D2.0 Mandatory Draft Review (MDR) Report |
| Date: 2025-10-21 |
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**Abstract**

This document contains the report of the IEEE P802.11bi/D2.1 Mandatory Draft Review.

r0: Initial version

r1: Reviewer assignment completed

r2: Findings (except MIB) from Edward are included; change D2.0 to D2.1.

r3: Response from Po-Kai to Edward’s findings are added.

r4: Findings from Jay are included; response from Po-Kai to Jay’s findings are also included.

r5: Findings from Robert and Preston are included.

r6: Response from Po-Kai to Robert’s findings are added.

# Introduction

## Purpose of this document

This document is the report from the group of volunteers that participated in the P802.11bi/D2.1 mandatory draft review (MDR).

This document contains recommendations for changes to the P802.11bi draft to bring it into improved compliance to both the IEEE SA Standards Style Manual and the IEEE 802.11 Style Guide style.

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

## Process / references

The MDR process is described in:

* [11/0615](https://mentor.ieee.org/802.11/documents?is_dcn=615&is_year=2011) – WG802.11 Mandatory Draft Review Process

And references:

* IEEE SA Standards Style Manual ([Latest version: 2021](https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf))
* [09/1034](https://mentor.ieee.org/802.11/documents?is_dcn=1034&is_year=2009) – 802.11 Editorial Style Guide

A setup meeting may be held with and review topics assigned to volunteers. The review comments from the volunteers will be compiled into this document.

## Acknowledgements

The IEEE 802.11 technical editor gratefully acknowledges the work and contribution of the participants listed in the authors list.

# Findings

## Style

### Style Gude 2.1 – Frames

#### Style Guide 2.1.1 – Frame Format Figures

#### Assignee: Joe Levy

#### Style Guide 2.1.2 – Naming Frames

Assignee: Joe Levy

### Style Guide 2.2 – true/false

Assignee: Ankur Bansal

### Style Guide 2.3 – “is set to”

Assignee: Joe Levy

### Style Guide 2.4 – Information Elements/Subelements

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

Assignee: Jay Yang

1. P70L44: “The format of the BSSID Of the Next Epoch subelement is shown in Figure 9-423a (BSSID Of The Next Epoch).” Change “BSSID Of the Next Epoch subelement” to “BSSID of The Next Epoch subelement”

[TGbi editor: Revised – Based on style guide 2.6 Capitalization “For proper names, all words in the name (excluding acronyms) should be capitalized, including prepositions and conjunctions. This is to avoid ambiguity where the preposition or conjunction might be misinterpreted as part of the sentence.” Hence, change “BSSID Of the Next Epoch subelement” to “BSSID Of The Next Epoch subelement”. To implement in D3.0.]

1. P70L24: “Of “should be the lower-case letter when it appears in the naming. Suggest to change “BSSID Of The Next Epoch” to “SSID of The Next Epoch” in all cases

[TGbi editor: Rejected - Based on style guide 2.6 Capitalization “For proper names, all words in the name (excluding acronyms) should be capitalized, including prepositions and conjunctions. This is to avoid ambiguity where the preposition or conjunction might be misinterpreted as part of the sentence.”]

#### Style Guide 2.4.2 – Definition Conventions

Assignee: Volker Jungnickel

#### Style Guide 2.4.3 – Element Inclusion Conventions

Assignee: Jay Yang

1. P44L54: “This element is present if the Association Response frame is encrypted and dot11EPPGroupEpochActivated is true; otherwise, it is not present.” Change “This element” to “The EPP element” (to align the expression of the case in P43L25).

[TGbi editor: Accepted. To implement in D3.0.]

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

Assignee: Carol Ansley

### Style Guide 2.6 – Capitalization

Assignee: Carol Ansley

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

Assignee: Preston Hunt

#### No findings (there are many instances of MPDU but they all seem appropriate in the context versus using "frame".)

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

#### normative, non-normative, ensure

Assignee: Edward Au

1. P32.8: Is the verb “will” necessary here? As per our Editor’s style guide, “will” can be used when stating future fact, and using any other tense dilutes the intended meaning. This case should be rare.

[TGbi editor: Revised - Change “will differ” to “differs”. To implement in D3.0.]

1. P55.25: Is the verb “only” necessary here? As per our Editor’s style guide, “Only” is a constraint, which should apply to a condition, not to a verb

[TGbi editor: Revised - Change “has stored it only partially.” to “has stored it partially.” To implement in D3.0.]

#### Style Guide 2.8.1 – which/that

Assignee: Joe Levy

#### Style Guide 2.8.2 – articles

Assignee: Robert Stacey

1. 32.36: “exchange” -> “the exchange”

[TGbi editor: Accepted To implement in D3.0.]

1. 33.32: Inappropriate use of “the” (no precedent). Also, because of the lack of precedent, it is not clear what is meant by “first” (first frame of that type ever transmitted by a STA? first frame to that peer? first frame in an authentication exchange?). Change as follows: “During association, a~~A~~ STA can supply a list of PMK identifiers in the (Re)Association Request frame ~~or the~~, in the first FILS Authentication frame ~~or the~~, or in the first EPPKE Authentication frame.”

[TGbi editor: Change to “A STA can supply a list of PMK identifiers in the (Re)Association Request frame ~~or the~~, in the first FILS Authentication frame of a FILS Authentication frame exchange ~~or the~~, in the first IEEE 802.1X Authentication frame of an IEEE 802.1X Authentication frame exchange ~~or the~~, or in the first EPPKE Authentication frame of an EPPKE Authentication frame exchange.” To implement in D3.0.]

1. 33.35: Not an article issue but related to other changes here. Use a list instead of follow-on “or”: Change as follows: “The Authenticator can specify the selected PMK identifier in message 1 of the 4-way handshake, in ~~or~~ the second FILS Authentication frame, ~~or~~ in the second IEEE 802.1X Authentication frame, or in the second EPPKE Authentication frame.

[TGbi editor: Change to “The Authenticator can specify the selected PMK identifier in message 1 of the 4-way handshake, in ~~or~~ the second FILS Authentication frame of a FILS Authentication frame exchange, ~~or~~ in the second IEEE 802.1X Authentication frame of an IEEE 802.1X Authentication frame exchange, or in the second EPPKE Authentication frame of an EPPKE Authentication frame exchange.” To implement in D3.0.]

1. 37.15: Missing article and incorrect plural “frames”. Change as follows: “The set of elements and fields to be included in the 802.1X Authentication frame~~s~~.” (note deletion of “s” in “frames”)

[TGbi editor: Accepted To implement in D3.0.]

1. 37.30: Change as follows: “The set of elements and fields to be included in the EPPKE Authentication frame~~s~~.” (note deletion of “s” in “frames”)

[TGbi editor: Accepted To implement in D3.0.]

1. 38.15: Change as follows: “The set of elements and fields received in the 802.1X Authentication frame~~s~~.” (note deletion of “s” in “frames”)

[TGbi editor: Accepted To implement in D3.0.]

1. 38.30: Change as follows: “The set of elements and fields received in the EPPKE Authentication frame~~s~~.” (note deletion of “s” in “frames”)

[TGbi editor: Accepted To implement in D3.0.]

1. 39.15: Change as follows: “The set of elements and fields received in the 802.1X Authentication frame~~s~~.” (note deletion of “s” in “frames”)

[TGbi editor: Accepted To implement in D3.0.]

1. 39.30: Change as follows: “The set of elements and fields received in the EPPKE Authentication frame~~s~~.” (note deletion of “s” in “frames”)

[TGbi editor: Accepted To implement in D3.0.]

1. 40.03: Change as follows: “The set of elements and fields included in the 802.1X Authentication frame~~s~~.” (note deletion of “s” in “frames”)

[TGbi editor: Accepted To implement in D3.0.]

1. 40.26: Change as follows: “The set of elements and fields included in the EPPKE Authentication frame~~s~~.” (note deletion of “s” in “frames”)

[TGbi editor: Accepted To implement in D3.0.]

1. 41.51: Incorrect plural: “parameters” -> “parameter”

[TGbi editor: Accepted To implement in D3.0.]

1. 41.54: Incorrect article: “a lifetime” -> “the lifetime”

[TGbi editor: Accepted To implement in D3.0.]

1. 41.55: Missing article: “delete installed identify key” -> “delete the installed identify key”

[TGbi editor: Accepted To implement in D3.0.]

1. 52.28: Missing articles. Change as follows: “The RSNE is present if the Status Code field is 0. The PASN Parameters element is present if the Status Code field is 0.”

[TGbi editor: Accepted To implement in D3.0.]

1. 57.64: Incorrect article: “an identifier of” -> “the identifier of” (alternatively “an identifier for”)

[TGbi editor: Revised – Change “an identifier of” to “an identifier for”. To implement in D3.0.]

1. 57.64: “indicates” is inconsistent with “identifier”. Change as follows: “The value 0 ~~indicates~~ identifies the default EPP group”

[TGbi editor: Accepted To implement in D3.0.]

1. 78.17 “and EPP AP” -> “an EPP AP”

[TGbi editor: Accepted To implement in D3.0.]

1. 156.30 Inappropriate “the” (no precedent). Change as follows: “~~The~~ An unsolicited EPP Capabilities…”

[TGbi editor: Accepted To implement in D3.0.]

1. 156.43 Missing article. Change as follows: “then only the APs affiliated with”. Also change “and whose link ID is equal to” to “with a link ID equal to”

[TGbi editor: Accepted To implement in D3.0.]

1. 177.53 “WIGTK” -> “a WIGTK”

[TGbi editor: Accepted To implement in D3.0.]

Grammar

1. 32.32: “over the Authentication frames exchange” Incorrect plural; change “frames” to “frame”

[TGbi editor: Accepted To implement in D3.0.]

1. 32.54 “frames” -> “frame”. Incorrect plural. It’s “an exchange of Authentication frames”, but “an Authentication frame exchange”. In the latter, the focus of the exchange is the Authentication frame – it does not need to be plural just because multiples of that item are exchanged (e.g., stock exchange).

[TGbi editor: Accepted To implement in D3.0.]

1. 39.33 “frames” -> “frame”

[TGbi editor: Revised – change “The set of elements and fields received in EPPKE Authentication frames.” to “The set of elements and fields received in the EPPKE Authentication frame.” To implement in D3.0.]

1. 156.49 Grammer issue with “include the following in order and does not follow”. I’m not sure what it is trying to say.

[TGbi editor: Revised – change “shall include the following in order and does not follow” to “shall include the following in order and shall not follow” To implement in D3.0.]

Other issues:

1. 156.59: This paragraph is extremely hard to parse and could benefit from a rewrite.

[TGbi editor: Rejected – the paragraph mimics the style of inheritance writing in the baseline, which goes through various debate to have sufficient details in the description. Rewriting to a different style may create confusions on conceptual design difference.

*If an element, identified by an Element ID and Element ID Extension (if applicable), is carried in a Management frame transmitted by a reporting STA and the element is outside the Basic Multi-Link element and outside Multiple BSSID element (if included), and there is no element having the same Element ID and Element ID Extension (if applicable) in a complete profile of a reported STA carried in the Basic Multi-Link element, then the element is considered to be part of the reported STA’s profile and the value to use is the*

*same as that of the corresponding element carried in the reporting STA’s frame unless any of the following conditions are true, in which case the element is not considered to be part of the reported STA’s profile:*

*— The complete profile carries the Non-Inheritance element (see 9.4.2.239 (Non-Inheritance element)) and the element is listed in the Non-Inheritance element.*

*— The element is excluded from being included in the Per-STA Profile subelement as described in 35.3.3.4 (Fields and elements not carried in a Per-STA Profile subelement).*]

1. 188.60 “nor” -> “or”

[TGbi editor: Accepted - To implement in D3.0.]

1. 189.13 “nor” -> “or”

[TGbi editor: Accepted - To implement in D3.0.]

#### Style Guide 2.8.3 – missing nouns

Assignee: Robert Stacey

#### No findings

#### Style Guide 2.8.4 – unnecessary nouns

Assignee: Robert Stacey

1. 53.61: “element element” -> “element”

[TGbi editor: Accepted - To implement in D3.0.]

#### Style Guide 2.8.5 – unicast and multicast

Not applicable.

### Style Guide 2.9 – Numbers

Assignee: Edward Au

1. P58.38: replace “-“ with endash.
2. P59.49: replace “-“ with endash.
3. P60.23: replace “-“ with endash.
4. P61.34: please italicize “N”.
5. P79.25: replace “-“ with endash.
6. P82.41: replace “-“ with endash.
7. P83.27: replace “-“ with endash.
8. P84.22: replace “-“ with endash.
9. P85.18: replace “-“ with endash.
10. P86.41: replace “-“ with endash.
11. P87.57: replace “-“ with endash.
12. P101.40: please italicize “n”.
13. P113.48: replace “-“ with endash for the minus sign.
14. P148.14: replace “-“ with endash.

[TGbi editor: Accepted. To implement in D3.0.]

### Style Guide 2.10 – Maths operators and relations

Assignee: Edward Au

1. P103.46: replace “*c*+*q*” with “*c* + *q*”.
2. P103.47: replace “*c*+ *q*+ 1” with “*c* + *q* + 1”.
3. P104.19: please add a space after the equality sign.
4. P104.19: please un-italicize “KDF”.
5. P117.18: please add a space after “for SNS11”.
6. P167.13: please remove the space before “XXKey”.

[TGbi editor: Accepted. To implement in D3.0.]

1. P167.24: please activate the cross reference of 12.7.1.6.3.

[TGbi editor: Revised. Change “12.7.1.6.3 PMK-R0” to “12.7.1.6.3 (PMK-R0)”. To implement in D3.0.]

### Style Guide 2.11 – Hyphenation

Assignee: Edward Au

1. P31.31: For sake of consistency with REVmf, please replace “third-party” with “third party”.
2. P114.7: Suggest to replace “non-anonymized” with “nonanonymized”.
3. P114.9: Suggest to replace “non-anonymized” with “nonanonymized”.
4. P114.11: Suggest to replace “non-anonymized” with “nonanonymized”. Two instances.
5. P114.19: Suggest to replace “non-anonymized” with “nonanonymized”.
6. P114.21: Suggest to replace “non-anonymized” with “nonanonymized”. Two instances.
7. P160.21: Replace “NOTE 2” with “NOTE 1”.
8. P162.33: Replace “NOTE 1” with “NOTE 2”.
9. P173.33: Replace “NOTE 1” with “NOTE”.
10. P174.13: Replace “NOTE 1” with “NOTE”.
11. P174.57: Replace “NOTE 1” with “NOTE”.

[TGbi editor: Accepted. To implement in D3.0.]

### Style Guide 2.12 – References to SAP primitives

Assignee: Mark Hamilton

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

Assignee: Jay Yang

According to the following preferred usage defined in 2.13,

1. When describing normative behavior for setting the value, the verb “set” is used
2. When describing normative behavior for testing or using the value, “is” or “equal to” is used.
3. Suggest to change “equal to” to “set to” in following cases: P59L8, P80L15, P80L58, P80L60, P81L2, P122L32, P131L3, P131L14, P163L16, P163L19, P168L52, P168L55

P59L8

[TGbi editor: Accepted. To implement in D3.0.]

P80L15

[TGbi editor: Accepted. To implement in D3.0.]

P80L58

[TGbi editor: Accepted. To implement in D3.0.]

P80L60

[TGbi editor: Accepted. To implement in D3.0.]

P81L2

[TGbi editor: Accepted. To implement in D3.0.]

P122L32

[TGbi editor: Rejected – The instance is about testing the value.

*A non-AP STA that has received a Beacon, Probe Response or (Re)Association Response frame with BPE Available field equal to 1 in the Extended Capabilities element from its associated AP may query information of available BPE AP MLDs by sending an encrypted BTM Query frame to its associated AP.*]

P131L3

[TGbi editor: Accepted. To implement in D3.0.]

P131L14

[TGbi editor: Rejected – The instance is about testing the value.

*A CPE AP that has set the Group EPP Epoch Supported to 1 in the RSNXE field and that receives an encrypted Neighbor Report Request frame that includes a Measurement Request element with the value of its Measurement Type field equal to CPE AP MLD EPP, shall respond with an encrypted Neighbor Report Measurement frame with a list of Neighbor Report elements of neighboring APs supporting CPE and their individual EPP elements.*]

P163L16

[TGbi editor: Accepted. To implement in D3.0.]

P163L19

[TGbi editor: Accepted. To implement in D3.0.]

P168L52

[TGbi editor: Rejected – The instance is about testing the value.

*Calculate the MIC in the FTE by using the key, the algorithm, and the MIC size as defined in 13.8.5*

*(FT authentication sequence: contents of fourth message) on the concatenation of the following data,*

*in the order given here as the input:*

*i) FTO’s MAC address.*

*ii) FTR’s MAC address.*

*iii) RSNE sent in the Beacons transmitted by the AP with MAC address equal to Address 1 field of the first message.*

*iv) RSNXE sent in the Beacons transmitted by the AP with MAC address equal to Address 1 field of the first message.*

*v) the Frame Body field of the second message with MIC field of the FTE set to 0.* ]

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P168L55

[TGbi editor: Rejected – The instance is about testing the value.

*Calculate the MIC in the FTE by using the key, the algorithm, and the MIC size as defined in 13.8.5 (FT authentication sequence: contents of fourth message) on the concatenation of the following data, in the order given here as the input:*

*i) FTO’s MAC address.*

*ii) FTR’s MAC address.*

*iii) RSNE sent in the Beacons transmitted by the AP with MAC address equal to Address 1 field of the first message.*

*iv) RSNXE sent in the Beacons transmitted by the AP with MAC address equal to Address 1 field of the first message.*

*v) the Frame Body field of the second message with MIC field of the FTE set to 0.*]

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1. Suggest to change “set to” to “equal to” in following cases: P57L61(X2), P164L57, P165L50

[TGbi editor: Accepted. To implement in D3.0.]

### Style Guide 2.18 – Deprecation of subfield

Assignee: Jay Yang

1. P70L1: Change “Enhanced Privacy Protection subfield” to “Enhanced Privacy Protection field” in all cases.

[TGbi editor: Accepted. To implement in D3.0.]

1. P98L33: Change “Epoch Interval Length subfield value” to “Epoch Interval Length field value”

[TGbi editor: Accepted. To implement in D3.0.]

1. P135L9: Change “Character-based Password Identifier Deleted subfield” to “Character-based Password Identifier Deleted field”

[TGbi editor: Accepted. To implement in D3.0.]

1. P148L13: Change “Character-based Password Identifier Deleted subfield” to “Character-based Password Identifier Deleted field”

[TGbi editor: Accepted. To implement in D3.0.]

### Style Guide 2.14 – MIB attributes

Assignee: Mark Hamilton

### Style Guide 2.15 – Hanging Paragraphs

Assignee: Edward Au

1. P119.20 to P119.50: There are 6 hanging paragraphs (including 2 NOTEs) between 10.71.8 and 10.71.8.1.

[TGbi editor: Revised. Add 10.71.8.1 General for the 6 paragraphs. To implement in D3.0.]

1. P155.29 to P155.32: There is a hanging paragraph between 12.16.4 and 12.16.4.1.

[TGbi editor: Revised. Add 12.16.4.1 Introduction for the paragraph. To implement in D3.0.]

1. P159.20 to P159.25: There are 2 hanging paragraphs between 12.16.6 and 12.16.6.1.

[TGbi editor: Revised. Add 12.16.6.1 General for the 2 paragraphs. To implement in D3.0.]

1. P166.11 to P166.16: There are 2 hanging paragraphs between 12.16.7 and 12.16.7.1.

[TGbi editor: Revised. Add 12.16.7.1 General for the 2 paragraphs. To implement in D3.0.]

1. P167.46 to P167.49: There is a hanging paragraph between 12.16.8 and 12.16.8.1.

[TGbi editor: Revised. Add 12.16.8.1 Introduction for the paragraph. To implement in D3.0.]

### Style Guide 2.16 – Abbreviations

Assignee: Volker Jungnickel

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

Not applicable.

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

#### Definitions (Clause 3)

Assignee: Robert Stacey

1. 25.18: The hyphen in “non-access point” is an en-dash, not a dash.

[TGbi editor: Accepted - To implement in D3.0.]

1. 25.30: The hyphen in “non-access point” is an en-dash, not a dash.

See 2.11 in style guide:

Note that when the hyphen is used before an open compound term, the hyphen is an en-dash (e.g., non–access point).

[TGbi editor: Revised – search all instances of “non-access point” to use en-dash properly. To implement in D3.0.]

No other findings. Consistent with current baseline style.

#### General Description (Clause 4)

Assignee: Preston Hunt

#### No findings

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

Assignee: Volker Jungnickel

#### SAP interfaces (Clause 6)

Assignee: Mark Hamilton

#### New top level clauses

Not applicable.

#### Annex A – Bibliography

Not applicable.

#### Annex B – PICS

Assignee: Edward Au

1. P183.42: Prepend "\*" to EPPM2.2 as it is cross-referenced by FR77.14.
2. P184.4: Prepend "\*" to EPPM3 as it is cross-referenced by a few PICS items.
3. P184.56: Prepend "\*" to EPPM9.1 as it is cross-referenced by a few PICS items.
4. P185.46: Prepend "\*" to EPPM9.7 as it is cross-referenced by a few PICS items.

[TGbi editor: Accepted. To implement in D3.0.]

#### Annex G – Frame exchange sequences

Not applicable.

## ANA

Assignee: Carol Ansley

Check for correct use of numbers against database.

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

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| --- | --- | --- | --- |
| **Resource** | **Ref** | **Value** | **Status** |
|  |  |  |  |

Additional Actions:

## MIB

Assignee: Edward Au

The compiled MIB is embedded as the following.

[Embed MIB after compilation]

### Detailed proposed changes

# Collateral findings

# IEEE-SA MEC

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