IEEE P802.11
Wireless LANs

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| 802.11IEEE P802.11REVme/D3.0 Mandatory Draft Review (MDR) Report |
| Date: 2023-04-27 |
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**Abstract**

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

r0: section headings.

R1: volunteer names added

R2: ANA check

R3: Unicast/multicast (Roy Want). First batch of Edward’s findings

# Introduction

## Purpose of this document

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

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

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

## Process / references

The MDR process is described in:

* [11-11/615r6](https://mentor.ieee.org/802.11/dcn/11/11-11-0615-06-0000-wg802-11-mec-process.doc) – WG802.11 MEC Process

And references:

* [11-09/1034r20](https://mentor.ieee.org/802.11/dcn/09/11-09-1034-20-0000-802-11-editorial-style-guide.docx) – 802.11 Editorial Style Guide

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

## Acknowledgements

The 802.11 technical editor (Robert Stacey) gratefully acknowledges the work and contribution of:

* Claudio de Silva
* Carol Ansley
* Emily Qi
* Edward Au
* Joseph Levy
* Roy Want
* Brian Hart
* Yongho Seok

# Findings

## Style

### Style Gude 2.1 – Frames

Claudio

### Style Guide 2.1.1 – Frame Format Figures

Claudio

### Style Guide 2.1.2 – Naming Frames

Claudio

### Style Guide 2.2 – true/false

Carol

### Style Guide 2.3 – “is set to”

Joseph

Update list he has already generated.

Bring to TGme as soon as possible to see if they are willing to accept changes.

### Style Guide 2.4 – Information Elements/Subelements

Emily (Edward’s suggestion)

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

#### Style Guide 2.4.2 – Definition Conventions

#### Style Guide 2.4.3 – Element Inclusion Conventions

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

Edward

As per Section 2.5 of the IEEE 802.11 editorial guideline, “Functions and features described in the published 802.11 standard shall not be removed unless they have been marked “obsolete and subject to removal in a subsequent revision of this standard.” in a previous revision.”.

[01] The use of the dual beacon mechanism was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the dual beacon mechanism from REVme.

[02] The use of the dual CTS protection mechanism was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the dual CTS protection mechanism from REVme.

[03] The use of RIFS for a non-DMG STA was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the use of RIFS for a non-DMG STA from REVme.

[04] The DMG low-power SC mode was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the DM low-power SC mode from REVme.

[05] The CDMG low-power SC mode was marked “obsolete” in IEEE 802.11-2020. Please remove all the materials related to the CDM low-power SC mode from REVme.

### Style Guide 2.6 – Capitalization

Edward

[01] Figure 10-140: Replace “DTIM Beacon frame” with “DTIM beacon”.

[02] 3037.1: Replace “peering Management frame body” with “peering management frame body”.

[03] 3037.10: Replace “peering Management frame body” with “peering management frame body”.

[04] 4787.6: Replace “Protected mesh peering Management frame processing” with “Protected mesh peering Management frame processing”.

[05] 5492.43: Replace “QoS Management Frame functionality” with “QoS management frame functionality”

[06] 910.54: Replace “The Subelement IDs for subelements in the Fine Timing Measurement Range request” with “The subelement IDs for subelements in the Fine Timing Measurement Range Request element”

[07] 947.46: Replace “The Subelement ID is equal” with “The Subelement ID field is equal”.

[08] 1127.25: Replace “The U-APSD coexistence element provides” with “The U-APSD Coexistence element provides”.

[09] Figure 9-1174: Replace “Transmit Power Envelope element (optional)” with “Transmit Power Envelope Element (optional)”.

[10] 2371.13: Replace “NDP Feedback Report Parameter set element” with “NDP Feedback Report Parameter Set element”.

[11] 2504.59: Replace “Measurement request element” with “Measurement Request element”.

[12] 869.49: Replace “The Requested Element IDs are” with “The Requested Element IDs field are”.

[13] 869.50: Replace “The Requested Element IDs are” with “The Requested Element IDs field are”.

[14] 869.51: Replace “The Requested Element IDs are” with “The Requested Element IDs field are”.

[15] 869.54: Replace “A given element ID is included at most once among the Requested Element IDs” with “A given element ID is included at most once among the Requested Element IDs field”.

[16] 870.21: Replace “The Requested Element ID field contains one of the Element IDs used to indicate an extended element” with “The Requested Element ID field contains one of the element IDs used to indicate an extended element”.

[17] 955.8: Replace “The Subelement ID is equal to” with “The Subelement ID field is equal to”.

[18] 1356.16: Replace “Element ID values are in increasing order” with “Element ID subfield values are in increasing order”.

[19] 1356.32: Replace “Element ID Extension values are in increasing order” with “Element ID Extension subfield values are in increasing order”.

[20] 1356.34: Replace “have an Element ID value of 255” with “have an element ID value of 255”.

[21] 2351.1 to 2351.13: Replace “Element ID (Extension)” with “element ID (extension)”.

[22] 3103.54: Replace “A mesh STA may set the Status Code” with “A mesh STA may set the Status Code field”.

[23] 4904.22: Replace “This attribute holds the most recently transmitted Status Code” with “This attribute holds the most recently transmitted Status Code field”.

[23] 4910.34: Replace “This attribute holds the most recently transmitted Status Code” with “This attribute holds the most recently transmitted Status Code field”.

[24] 4911.24: Replace “This attribute holds the most recently transmitted Status Code” with “This attribute holds the most recently transmitted Status Code field”.

[25] 1570.40: Replace “the Status Code is REQUEST\_DECLINED” with “the Status Code field is REQUEST\_DECLINED”.

[26] 938.17: Replace “STA Floor Number values” with “STA Floor Number field values”.

[27] 2084.51: Replace “is Poll transmission” with “is poll transmission”.

[28] 1164.34: Replace “The EDCA Access Factor is expressed as” with “The EDCA Access Factor field is expressed as”.

[29] 1164.34: Replace “When the EDCA Access Factor is greater than” with “When the EDCA Access Factor field value is greater than”.

[30] 4581.47: Replace “The WUR PN Update procedure” with “The WUR PN update procedure”.

[31] 1135.14: Replace “The Alert Identifier Hash (AIH) contains” with “The Alert Identifier Hash field contains”. Note that I delete “(AIH)” because abbreviation is not allowed for a field’s name.

[32] 2649.59: Replace “The Emergency Alert Identifier element provides an Alert Identifier Hash value,” with “The Emergency Alert Identifier element provides an Alert Identifier Hash field value,”.

[33] 2649.60: Replace “The Alert Identifier Hash value allows” with “The Alert Identifier Hash field value allows”.

[34] 2650.10: Replace “The Alert Identifier Hash in the Emergency Alert Identifier element” with “The Alert Identifier Hash field in the Emergency Alert Identifier element”.

[35] 2650.14: Replace “After receiving an Alert Identifier Hash value” with “After receiving an Alert Identifier Hash field value”.

[36] 2650.17: Replace “transmit the Alert Identifier Hash of the desired message” with “transmit the Alert Identifier Hash field of the desired message”.

[37] 2650.26: Replace “the hexadecimal numerals of the Alert Identifier Hash” with “the hexadecimal numerals of the Alert Identifier Hash field”.

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

Edward

No issues identified.

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

[Volunteer name]

#### normative, non-normative, ensure

#### Carol

(Mark Rison has done a substantial amount of review on this topic)

**May**

**"Will” should not be used**

**“Must”**

**“May not” should not be used.**

**“Only”** used as a constraint

#### Style Guide 2.8.1 – which/that

Joseph

Carol

(decide between yourself who does which section)

#### Style Guide 2.8.2 – articles

Check with Mark Rison

#### Style Guide 2.8.3 – missing nouns

Check with Mark Rison

#### Style Guide 2.8.4 – unnecessary nouns

Check with Mark Rison

#### Style Guide 2.8.5 – unicast and multicast

#### Roy Want

Unicast (11 occurrences: 7 changes proposed, 4 ok)

#1 P208 L15: If the target matches the address of an associated non-AP STAs, the Proxy ARP service can either respond on behalf of the non-AP STA, or preferably send the frames as unicast transmissions to the target STA(s) only. -> If the target matches the address of an associated non-AP STAs, the Proxy ARP service can either respond on behalf of the non-AP STA, or preferably send the frames as unicast individually addressed transmissions to the target STA(s) only.

#2 P2602 L13: If the target address is known, the Proxy ARP service can either respond directly on behalf of a STA or forward the request as a unicast frame to the intended STA. -> If the target address is known, the Proxy ARP service can either respond directly on behalf of a STA or forward the request as a unicast an individually addressed frame to the intended STA.

#3 P2602 L17: Otherwise, forwarding as unicast is recommended, to avoid responding with misleading information. -> Otherwise, forwarding as unicast an individually addressed frame is recommended, to avoid responding with misleading information.

#4 P2602 L20:

(#1208) For IPv4, when the address being resolved in the ARP request (IETF RFC 826) is used by a non-AP STA currently associated to the BSS, the proxy ARP service shall either respond on behalf of the STA to an ARP request or an ARP probe (IETF RFC 5227) or preferably turn the ARP request into a unicast frame sent to that STA. ->

(#1208) For IPv4, when the address being resolved in the ARP request (IETF RFC 826) is used by a non-AP STA currently associated to the BSS, the proxy ARP service shall either respond on behalf of the STA to an ARP request or an ARP probe (IETF RFC 5227) or preferably turn the ARP request into a unicast an individually addressed frame sent to that STA.

#5 P2604 L2:

NS messages are sent as IP layer unicast for neighbor unreachability detection (NUD) (section 7 of IETF RFC 4861). ->

NS messages are sent as IP layer unicast individually addressed frames for neighbor unreachability detection (NUD) (section 7 of IETF RFC 4861).

#6 P2604 L3:

The proxy ARP function shall not operate on IP layer unicast NS messages.->

The proxy ARP function shall not operate on IP layer unicast individually addressed NS messages.

#7 P2604 L20:

Preferably, though, the Proxy ARP service should transmit the IP layer multicast NS message as a unicast frame to the STA and let the STA respond, as recommended in IETF RFC 8929.->

Preferably, though, the Proxy ARP service should transmit the IP layer multicast group addressed NS message as a unicast an individually addressed frame to the STA and let the STA respond, as recommended in IETF RFC 8929.

#8 & #9 P5381 L23: (MIB Detail: OK – but duplicated?)

Dot11InterworkingEntry ::= SEQUENCE { dot11NonAPStationMacAddress MacAddress, dot11NonAPStationUserIdentity DisplayString, dot11NonAPStationInterworkingCapability BITS, dot11NonAPStationAssociatedSSID OCTET STRING, dot11NonAPStationUnicastCipherSuite OCTET STRING, dot11NonAPStationUnicastCipherSuite OCTET STRING,

#10 P5383 L14: (Appendix C: MIB Detail: OK)

dot11NonAPStationUnicastCipherSuite OBJECT-TYPE

#11 P5746 L13: (Appendix R: Interworking with external networks: OK)

The following is used: — dot11NonAPStationUnicastCipherSuite

Multicast (383 occurrences: 3 changes proposed, 380 OK)

#1 P280 L14:

(#1208) The Proxy ARP service enables an AP to avoid forwarding to the BSS broadcast ARP frames for IPv4 (IETF RFC 826) and IP layer multicast packets IPv6 ND messages for IPv6 (IETF RFC 4861 and IETF RFC 4862) which target not match the address of an associated STA. ->

(#1208) The Proxy ARP service enables an AP to avoid forwarding to the BSS broadcast ARP frames for IPv4 (IETF RFC 826) and IP layer multicast group addressed packets IPv6 ND messages for IPv6 (IETF RFC 4861 and IETF RFC 4862) which target not match the address of an associated STA.

#2 P602 L63: (?)

(#1208) IPv6 ND uses IP layer multicast Internet Control Message Protocol version 6 (ICMPv6) Neighbor Solicitation (NS) messages (section 4.3 of IETF RFC 4861) for address resolution (section 7.2 of IETF RFC 4861), which is the equivalent of ARP request, and for duplicate address detection (DAD). ->

(#1208) IPv6 ND uses IP layer multicast group addressed Internet Control Message Protocol version 6 (ICMPv6) Neighbor Solicitation (NS) messages (section 4.3 of IETF RFC 4861) for address resolution (section 7.2 of IETF RFC 4861), which is the equivalent of ARP request, and for duplicate address detection (DAD).

#3 P2604 L17:

(#1208)When the target IPv6 address of a IP layer multicast NS message corresponds to an associated STA, the Proxy ARP service may respond on behalf of an associated low-power STA with a neighbor advertisement (NA) message (section 4.4 of IETF RFC 4861) with the override flag set to zero, to conserve energy. ->

(#1208)When the target IPv6 address of a IP layer multicast group addressed NS message corresponds to an associated STA, the Proxy ARP service may respond on behalf of an associated low-power STA with a neighbor advertisement (NA) message (section 4.4 of IETF RFC 4861) with the override flag set to zero, to conserve energy.

### Style Guide 2.9 – Numbers

Brian Hart (will review what he can) – focus on LSB/MSB

Edward will do the rest

### Style Guide 2.10 – Maths operators and relations

Edward

[01] As per Section 2.10 of the IEEE 802.11 editorial guideline, “Any use of “up to and including” should be avoided”. How about “up to and excluding” in 225.11?

[02] 967.34: Please replace “up to and including” with an appropriate phrase.

### Style Guide 2.11 – Hyphenation

Edward

[01] 1910.9: Replace “non-dynamic” with “nondynamic”.

[02] 1910.13: Replace “non-dynamic” with “nondynamic”.

[03] 1910.51: Replace “non-dynamic” with “nondynamic”.

[04] 1996.28: Replace “non-fragmentable” with “nonfragmentable”.

[05] 1997.47: Replace “non-fragmentable” with “nonfragmentable”.

[06] 1997.51: Replace “non-fragmentable” with “nonfragmentable”.

[07] 1997.53: Replace “non-fragmentable” with “nonfragmentable”.

[08] 1997.60: Replace “non-fragmentable” with “nonfragmentable”.

[09] 1997.62: Replace “non-fragmentable” with “nonfragmentable”.

[10] 1997.64: Replace “non-fragmentable” with “nonfragmentable”.

[11] 1998.30: Replace “non-fragmentable” with “nonfragmentable”.

[12] 1998.38: Replace “non-fragmentable” with “nonfragmentable”.

[13] 2241.62: Replace “non-beamforming” with “nonbeamforming”.

[14] 618.22: Replace “pre-correction” with “precorrection”.

[15] 3836.64: Replace “pre-correction” with “precorrection”.

[16] 3848.26: Replace “pre-association” with “preassociation”.

[17] 3849.25: Replace “Pre-association” with “Preassociation”.

[18] 4011.12: Replace “pre-correction” with “precorrection”.

[19] 4011.15: Replace “pre-correction” with “precorrection”.

[20] 4155.60: Replace “pre-correction” with “precorrection”.

[21] 4155.63: Replace “pre-corrections” with “precorrections”.

[22] 4155.64: Replace “pre-correction” with “precorrection”.

[23] 4156.2: Replace “pre-correction” with “precorrection”.

[24] 4156.4: Replace “pre-correction” with “precorrection”.

[25] 4156.7: Replace “pre-correction” with “precorrection”.

[26] 4157.5: Replace “pre-correction” with “precorrection”.

[27] 5554.12: Replace “re-unites” with “reunites”.

[28] 5583.35: Replace “re-unites” with “reunites”.

[29] 5595.18: Replace “re-unites” with “reunites”.

[30] 3929.63: Replace “(Re-)Association Request” with “(Re)Association Request”.

[31] 1487.1: Replace “Access network query protocol (ANQP) elements” with “Access network query protocol (ANQP)-elements”.

[32] 2914.48: Replace “implementation-specific” with “implementation specific”.

[33] 2952.54: Replace “implementation-specific” with “implementation specific”.

[34] 3862.44: Replace “implementation-specific” with “implementation specific”.

[35] 306.47: Replace “implementation-specific” with “implementation specific”.

[36] 998.63: Replace “implementation-specific” with “implementation specific”.

[37] 1230.37: Replace “implementation-specific” with “implementation specific”.

[38] 1396.28: Replace “implementation-specific” with “implementation specific”.

[39] 1991.4: Replace “implementation-specific” with “implementation specific”.

[40] Consider adding “timing-related” to the grandfather list.

[41] 3750.31: Replace “Time-related” with “Timing-related”.

[42] 3750.37: Replace “Time-related” with “Timing-related”.

[43] 360.5: Replace “MIB-related” with “MIB related”.

### Style Guide 2.12 – References to SAP primitives

No volunteer

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

Discuss with Emily and see what to do about this.

### Style Guide 2.14 –MIB attributes

Mark Hamilton

### Style Guide 2.15 – Hanging Paragraphs

No volunteer

### Style Guide 2.16 – Abbreviations

Emily (Edward’s suggestion)

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

No volunteer

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

#### Definitions (Clause 3)

Carol

#### General Description (Clause 4)

No volunteer

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

Emily

#### SAP interfaces (Clause 6)

No volunteer

#### New top level clauses

No volunteer

#### Annex A – Bibliography

No volunteer

#### Annex B – PICS

Edward

#### Annex G – Frame exchange sequences

No volunteer – Robert to fix style guide

## ANA

Check for correct use of numbers against database.

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

Robert Stacey

|  |  |  |
| --- | --- | --- |
| **Resource** | **Reference** | **Notes** |
| AKM suite selectors | 9.4.2.23.3 | OK |
| Authentication algorithm numbers | 9.4.1.1 | Value 1 should be released. Draft is OK. |
| Behavior limits | E.1 | No longer applicable. |
| Capabilities | 9.4.1.4 | Values 2, 3, 4, 6, 14, 15 should be released. Draft is OK. |
| Categories | 9.4.1.11 | Value 33 allocated but not used in draft. Was a TGay allocation. |
| Cypher suites | 9.4.2.23.2 | OK |
| Protocol Version | 9.2.4.1.2 | OK |
| Frame types | 9.2.4.1.3 | OK |
| Control subtypes | 9.2.4.1.3 | Value 15 should be released. Draft is OK. |
| Data subtypes | 9.2.4.1.3 | Values 14 and 15 should be released. Draft is OK. |
| Management subtypes | 9.2.4.1.3 | OK |
| Extended subtypes | 9.2.4.1.3 | OK |
| Extended Control values | 9.2.4.1.3 | Rename value 7 to “Grant Ack”. Rename value 0 to “Sector Ack”. Rename value 1 to “Block Ack Schdule”. Allocate value 11 as “TDD Beamforming”. |
| Element IDs | 9.4.2.1 | Values 17-31 should be released. Value 77 should be released. Draft OK. |
| Element ID Extension 1 | 9.4.2.1 | Value 0 should be released. Draft OK. |
| RSNXE | 9.4.2.240 | OK |
| RSNE | 9.4.2.23.4 | OK |
| Extended Capabilities | 9.4.2.25 | Value 76 is reserved in draft but allocated (TGaq) in database. Otherwise OK. |
| FT sublement IDs | Table 9-219 | Rename value 1 to “PMK-R1”. Remame value 3 to “PMK-R0”. Allocate: 5 = OCI, 6 = BIGTK, 7 = WIGTK. |
| FILS Discovery Frame Control subfield | Figure 9-1127 | OK |
| ANQP Info ID | Table 9-412 | 280 was released but shown in draft as Network Authentication Type with Timestamp. 283, 284, 285 conflict with TGbc. 286 without allocation. |
| Public Action frames | 9.6.7.1 | Values 35-38 rename: DCT -> DCS. Otherwise OK. |
| Reason codes | 9.4.1.7 | Value 69 is TIME\_SYNC\_LOST in draft, but reserved in database (previous TGak allocation). Value 70 in database is TIME\_SYNC\_LOST. Otherwise OK. |
| Status codes | 9.4.1.9 | Value 48 should be released. Some names missing in database. Otherwise OK. |
| PV1 frame types | 9.8.3.1 | OK |
| PV1 Control frame subtypes | 9.8.4.1 | OK |
| PV1 Management frame subtypes | 9.8.5.1 | OK |
| Subelement neighbor report | 9.4.2.35 | OK |
| Spectrum management action frames | 9.6.2.1 | OK. Should be released from ANA control. |
| TLV encodings |  | Release 4, 5, and 6. (no reference in draft) |
| WNM notification type | 9.6.13.29 | OK |
| USA operating classes | Table E-1 | OK |
| Europe operating classes | Table E-2 | OK |
| Japan operating classes | Table E-3 | Release 2-7, 9-10, 12-16, 18-19, 21-24, 27-28, 35, 38, 40, 43, 45, 47-50, 52-55. Draft OK. |
| Global operating classes | Table E-4 | Release 61-63. Allocate 77. Release 112-114. |
| Dot11smt | C | OK |
| Dot11phy | C | OK |
| Dot11StationConfig | C | 189 dot11UnsolicitedBAActivated used without allocation. |
|  |  |  |

Additional Actions:

## MIB

Yongho Soek

The compiled MIB is embedded as the following.

[Embed MIB after compilation]

### Detailed proposed changes

* MIB Detail

# Collateral findings

# IEEE-SA MEC

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