IEEE P802.11
Wireless LANs

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| CIDS from Mike for Graham 2 |
| Date: 2020-02 |
| Author(s): |
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Abstract

This submission proposes resolutions for CIDs 4177, 4189, 4325, 4436, 4438, 4439, 4445,

4462, 4582, 4682, 4683, 4694, 4719, 4720,

Green indicates material agreed to in the group,

yellow material to be discussed, red material rejected by the group and

cyan material not to be overlooked.

The “Final” view should be selected in Word.

REV 1 – Responses added in CID 4683 on the term RTT.

REV 2 - Changes after Mark Rs comments

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4177 |  |  |  |  | "BSSID of the [something] frame" -- a frame does not have a BSSID, it has a BSSID field | Change "BSSID" to "BSSID field" in the cited text in 9.4.2.45 Multiple BSSID element, 9.3.2.1.2 Address and BSSID fields, 9.4.2.146 Cluster Report element, 10.40.4 Cluster report and rescheduling (and change "of the received DMG Beacon" to "of the received DMG Beacon frame"), 11.10.15.3 Measurement pilot usage by a STA, 11.16 20/40 BSS Coexistence Management frame usage, 11.25.1.1 Overview, C.3 (for dot11BeaconRprtBSSID). |

Commenter’s point is accepted. I searched thru and confirmed references:

REVISED

Add “field” as shown, at the following locations.

9.3.2.1.2 P84L22 “The BSSID field of the Data frame is determined….”

9.4.2.45 P1160L64 “...the reference BSSID is the BSSID field of the frame”

9.4.2.146 P1326L45 “The Reported BSSID field contains the BSSID field of the DMG Beacon frame…”

10.40.4 P2011L37 “shall set the Reported BSSID field to the BSSID field of the received DMG Beacon

11.10.15.3 P2320L30 “Whenever testing a requested BSSID for equality against the BSSID field of a Measurement Pilot,”

11.16 P2344L6 “…the BSSID field of the frame is set to…”

11.25.1.1. P2442L24 “…corresponding to the BSSID field of the Management frame.”

dot11BeaconRprtBSSID OBJECT-TYPE

P3961L17 “This attribute indicates the BSSID field of the beacon”

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4189 |  |  |  |  | The concept of a "short SSID" it not defined | In 6.3.3.3.2 change "Short SSID Indicator" to "Short SSID Indicator field" (2x), "The Short SSID" to "The short SSID".  Change "9.4.2.170.3 Calculating the Short-SSID(11ai)The Short-SSID field is a 32-bit field. The value of the Short-SSID field(M101) is calculated over the SSID.The SSID is referred to as the calculation fields. " to "9.4.2.170.3 Calculating the short SSID(11ai)A short SSID is a 32-bit value calculated over an SSID.The SSID is referred to as the calculation fields. ".  Change "a Short SSID" to "a short SSID" and "the 4-octet Short SSID" to "the short SSID" in 9.6.7.36 FILS Discovery frame format(11ai).  Change "Short SSID" to "short SSID" in 11.46.2.2 FILS Discovery frame reception |

“Short SSID Indicator” is a field in the FILS Discovery Frame Control subfield.

There is also a “Short-SSID” field in the Neighbor AP Information field.

REVISED (it may be ACCEPT)

Make changes as follows:

6.3.3.3.2 P340L30 “…if the Short SSID Indicator field in the…”

P340L33 “The ~~S~~short SSID of the found BSS. This parameter is present if the Short SSID Indicator field in the received FILS Discovery frame is equal to 1.”

P1360L14 9.4.2.170.3 “The Short-SSID field is a 32-bit field. The value of the Short-SSID field(M101) is calculated over the SSID. The SSID is referred to as the calculation fields.”

Change to

“A short SSID is a 32-bit value calculated over an SSID. The SSID is referred to as the calculation fields.”

P1560L25 9.6.7.36 “that a Short SSID” to “that a short SSID”

P1561L5 9.6.7.36 “the 4-octet Short SSID” to “the short SSID”

P2529L59 11.46.2.2 Change “…compares the received SSID or Short SSID in the FILS Discovery frame” to “…compares the received SSID or short SSID in the FILS Discovery frame

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4325 |  |  |  |  | "AC parameters" is not a defined thing; should be "EDCA parameters" (5x) | As it says in the comment |

Not so straightforward.



…….

The format of the QoS Info field is defined in 9.4.1.17 (QoS Info field). The QoS Info field contains the

EDCA Parameter Set Update Count subfield, which is initially set to 0 and is incremented each time any of the AC parameters changes. This subfield is used by non-AP STAs to determine whether the EDCA

parameter set has changed and requires updating the appropriate MIB attributes.

**“AC parameters”, in this context, refers to the four AC\_xx Parameter Records**.

There are 5 instances of “AC parameters”, there are 22 instances of “EDCA parameters”.

REVISED

At the following locations, make changes as shown:

P1117L47 9.4.2.28

Change

“is incremented each time any of the AC parameters changes”

to

“is incremented each time any of the AC Parameter Record fields change.”

P1118L29 Change “The formats of AC\_BE, AC\_BK, AC\_VI, and AC\_VO Parameter Record fields are identical…”

To

“ The formats of AC Parameter Record fields, comprising the AC\_BE, AC\_BK, AC\_VI, and AC\_VO, Parameter Record fields, are identical.

P1718L58 10.2.3.2

Change

“following a change in AC parameters, which provides all STAs an opportunity to receive the updated EDCA parameters.”

To

following a change in AC Parameter Record fields, which provides all STAs an opportunity to receive the updated EDCA parameters.

P1719L41 10.2.3.2

Change

“is incremented every time any of the AC parameters changes.”

To

“is incremented every time there is a change in any AC Parameter Record field.”

P4544L24 K.2.1.

“It is recommended that admission control not be required for the access categories AC\_BE and AC\_BK. The ACM subfield for these categories should be set to 0. The AC parameters chosen by the AP should account for unadmitted traffic in these ACs.”

To

“It is recommended that admission control not be required for the access categories AC\_BE and AC\_BK. The ACM subfield for these categories should be set to 0. The values of the AC Parameter Record fields chosen by the AP should account for unadmitted traffic in these ACs.”

P4544L32 K.2.1.

Change:

“AC parameters chosen by the AP should further account for any unadmitted traffic in AC\_VO and AC\_VI that might be reserved for users of a particular SSPN.”

To

“The values of the AC Parameter Record fields chosen by the AP should further account for any unadmitted traffic in AC\_VO and AC\_VI that might be reserved for users of a particular SSPN.”

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4436 |  |  |  |  | If we are keeping non-HT immediate block ack, we need to also cover HT-immediate block ack | Change 917.1 from "The Block Ack Policy subfield is set to 1 for immediate block ack" to "The Block Ack Policy subfield is set to 1 for immediate or HT-immediate block ack". At 1874.57 change "There are two types of block ack mechanisms: immediate and (#2289)HT-delayed. Immediate block" to "There are three types of block ack mechanisms: immediate, HT-immediate and (#2289)HT-delayed. Immediate and HT-immediate block".  At 2266.55 change "immediate" to "HT-immediate".  At 4404.22 change "HT-delayed or immediate block ack policy" to "HT-delayed, HT-immediate or immediate block ack policy" |

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4438 |  |  |  |  | There are no implementations of HT-delayed BA.  HT-delayed BA is not useful, as it impairs throughput.  Note: hypothetical use of HT-delayed BA by amendments to 802.11-202x is not relevant to REVmd | Delete the HT-delayed BA feature |
| 4439 |  |  |  |  | There are no implementations of HT-delayed BA.  HT-delayed BA is not useful, as it impairs throughput.  Note: hypothetical use of HT-delayed BA by amendments to 802.11-202x is not relevant to REVmd | Delete 10.25.7 HT-delayed block ack extensions |
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Separate document presently with Menzo with details of deleting HT- delayed BA.

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4445 |  |  | 1011 |  | "For nonmesh STAs, the Channel Switch Count field either is set to the number of TBTTs until the STAsending the Channel Switch Announcement element switches to the new channel or is set to 0. (MDR2)A 1indicates that the switch occurs immediately before the next TBTT. A 0 indicates that the switch occurs atany time after the frame containing the element is transmitted." is self-contradictory.  If it switches before the next TBTT, the number of TBTTs until the switch was 0 | Change to "For nonmesh STAs, the Channel Switch Count field is set to the number of TBTTs until the STAsending the Channel Switch Announcement element switches to the new channel. (MDR2)1indicates that the switch occurs immediately before the next TBTT. 0 indicates that the switch occurs atany time after the frame containing the element is transmitted." |

P1011L8

“For nonmesh STAs, the Channel Switch Count field either is set to the number of TBTTs until the STA sending the Channel Switch Announcement element switches to the new channel or is set to 0. (MDR2)A 1 indicates that the switch occurs immediately before the next TBTT. A 0 indicates that the switch occurs at any time after the frame containing the element is transmitted.”

Agree with commenter

Comment suggested change to:

"For nonmesh STAs, the Channel Switch Count field is set to the number of TBTTs until the STA sending the Channel Switch Announcement element switches to the new channel. (MDR2)1 indicates that the switch occurs immediately before the next TBTT. 0 indicates that the switch occurs at any time after the frame containing the element is transmitted."

Not sure about “1 indicates”, how about

REVISED

At P1011L8

Change

“For nonmesh STAs, the Channel Switch Count field either is set to the number of TBTTs until the STA sending the Channel Switch Announcement element switches to the new channel or is set to 0. (MDR2)A 1 indicates that the switch occurs immediately before the next TBTT. A 0 indicates that the switch occurs at any time after the frame containing the element is transmitted.”

To

"For nonmesh STAs, the Channel Switch Count field is set to the number of TBTTs until the STA sending the Channel Switch Announcement element switches to the new channel. (MDR2)A value of 1 indicates that the switch occurs immediately before the next TBTT and a value of 0 indicates that the switch occurs at any time after the frame containing the element is transmitted."

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4462 |  |  |  |  | "of all MSDUs and A-MSDUs buffered at the STA".  A STA does not buffer A-MSDUs.  The things it receives via MA-UNITDATA.request are MSDUs, and those are the things it buffers prior to transmission Change the cited text to "of all MSDUs buffered at the STA" | Delete "or A-MSDUs" in 9.2.4.1.8 More Data subfield (4x), 9.2.4.5.6 Queue Size subfield, 9.2.4.5.8 AP PS Buffer State subfield |

Agreed, but the first change is not in the Proposed column. I just hope this is not a circle i.e. someone added A-MPDUs earlier.

REVISED

9.2.4.1.8

At P789L58

Make changes as shown:

“An S1G STA sets the More Data subfield to 1 in individually addressed frames to indicate that theS1G STA has MSDUs~~,~~ or MMPDUs ~~or A-MSDUs~~ buffered for transmission to the frame’s recipient during the current SP or TXOP. An S1G STA does not set the More Data subfield to 1 in individually addressed frames if it does not have any MSDUs~~,~~ or MMPDUs ~~or A-MSDUs~~ buffered for transmission to the frame’s recipient during the current SP or TXOP.”

At P790L22

Make changes as shown:

“In individually addressed frames, it is set to 1 to indicate that the STA has MSDUs ~~or A-MSDUs~~

buffered for transmission to the frame’s recipient during the current SP or TXOP

9.2.4.5.6

At P801L13

Make changes as shown:

“The Queue Size subfield is set to the total size, rounded up to the nearest multiple of 256 octets and expressed in units of 256 octets, of all MSDUs ~~and A-MSDUs~~ buffered at the STA (excluding the MSDU ~~or A-MSDU~~ of the present QoS Data frame) in the delivery queue used for MSDUs ~~and A-MSDUs~~ with TID values equal…”

OR

Change

“The Queue Size subfield is set to the total size, rounded up to the nearest multiple of 256 octets and expressed in units of 256 octets, of all MSDUs and A-MSDUs buffered at the STA (excluding the MSDU or A-MSDU of the present QoS Data frame) in the delivery queue used for MSDUs and A-MSDUs with TID values equal”

To

“The Queue Size subfield is set to the total size, rounded up to the nearest multiple of 256 octets and expressed in units of 256 octets, of all MSDUs buffered at the STA (excluding the MSDU(s) contained, in part of wholly, in the present QoS Data frame) in the delivery queue used for MSDUs and A-MSDUs with TID values equal”

9.2.4.5.8

At P801L60

Make changes as shown:

“of all MSDUs ~~and A-MSDUs~~ buffered at the QoS AP (excluding the MSDU ~~or A-MSDU~~ of the present QoS Data frame).”

OR

Change

“of all MSDUs and A-MSDUs buffered at the QoS AP (excluding the MSDU or A-MSDU of the present QoS Data frame).”

to

“of all MSDUs buffered at the QoS AP (excluding the MSDU(s) contained, in part of wholly, in the present QoS Data frame).”

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4582 |  |  |  |  | The definition of dot11EDCATableMSDULifetime (and QAP version) needs to allow for A-MSDUs and MMPDUs, since those are/can be sent under a particular AC.   Also similarly change 1763.63 in 10.3.4.4 and dot11MaxTransmitMSDU Lifetime in C.3 | As it says in the comment |

I want to discuss this before making a resolution.

I think it might need a lot of changes if we go this way.

P4177L41

dot11EDCATableMSDULifetime

“This attribute specifies the maximum duration an MSDU, for a given AC,

would be retained by the MAC before it is discarded."

Do not understand the reference to 10.3.4.4, or P1763L63, this refers to SRL and LRC.

P1771L11

“The attribute dot11MaxTransmitMSDULifetime specifies the maximum amount of time allowed to transmit an MSDU”

Do we want to change this account for A-MSDUs and MMPDUs? If so do we want to change the name? Is it really necessary?

P4152L50 dot11MaxTransmitMSDULifetime OBJECT-TYPE

“The MaxTransmitMSDULifetime is the elapsed time, after the initial transmission of an MSDU, after which further attempts to transmit the MSDU are terminated."

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4683 |  |  |  |  | The RTT as defined and used is not an RTT, it's a ToF. It has been argued that the term RTT is (mis)used in a "popular OS implementation", but there is more than one popular OS implementation, and in any case terminology misuse by an implementation, however popular, is not a justification for perpetuating an error | Change "RTT" to "ToF" and "round trip time" to "time of flight" throughout.  Change "an RTT" to "a ToF" in Figure 11-37 |

Here are what the terms really are:

RTT = ToA – ToD (time of arrival - time of departure)

ToF = Time for a packet to travel from one station to another

e.g. For an RTS / CTS exchange

ToF = (ToA – ToD – SIFS)/2

But in this case the turnaround time, SIFS, is fixed. Note the “/2”

**The main point is that the distance is TOF \*c**

This is backed up by reference to “time of flight” in P.3 (P4392L24, L40, L41)

So let’s look at the 6 instances of TDD

P216L25 RTT round trip time That’s fine

P242L24 4.3.19.19

“Fine timing measurement allows a STA to accurately measure the round trip time (RTT) between it and another STA.”

The turnaround time is not fixed (e.g. SIFS) and Fine timng measurement does and wants to measure ToF.

FIG 11-37 P2379L23

“Initiating STA can compute an

RTT and a clock offset”

Here it should use ToF so as to agree with Equation 11-5 ,when corrected.

P2380L31

The round trip time (RTT) is defined by Equation (11-5).

*RTT* = [(*t4*' – *t1*') – (*t3* – *t2*)]

This is incorrect. The RTT is (*t4*' – *t1*')

In fact the formula should be

ToF = [(*t4*' – *t1*') – (*t3* – *t2*)]/2

FIG P-1 P4593L22

This incorrect use of RTT

HOWEVER

Ganesh says:

I agree with your assessment.

However, we have had the same comment in the last few ballots and they were rejected for the following reasons:

1. The term RTT as defined currently in the specification is used in at least a test plan that performs a set of interoperability tests on the Fine Timing Measurement protocol
2. As a result of (a), most deployments use the terminology RTT synonymously with the time of flight
3. IEEE802.1AS-2011 uses the similar terminology

Although the changes you propose are technically correct, the downside of doing those changes would result in market confusion – since the term RTT has taken root and has established itself as synonymous to time of flight.

I am copying Jonathan Segev who was instrumental in the development of the Fine Timing Measurement protocol and is leading the definition of the subsequent evolution (TGaz).

Jonathon says:

Also adding Roy Want who also expressed interest in the subject.

I recall having this discussion on a REVmc comment resolution possibly from same commenter, and I can definitely sympathy with the intention.

Having said that, as Ganesh indicated the term RTT has taken root in the context of Wi-Fi/802.11 as synonymous to TOF (Time Of Flight) and that is projected to other standards using FTM as well.

So the risking of following the commenter proposed resolution is market confusion in time where FTM is trying to take market segment.

This is not a healthy thing for commercial standard.

Given “RTT” is well defined in the context of 802.11 FTM, i.e. there is nothing broken within the standard and following the commenter recommendation will not yield a better (more accurate) standard.

BTW there is also the opposite comment possibly from same commenter to change all occurrences of TOF to RTT in 11az draft, so there is also the potential for intra spec inconsistency if REVmd moves from RTT to TOF.

Bottom line, my recommendation would be to reject the comment for the reasons Ganesh identified.

Thank you Ganesh for bringing it to my attention and you Graham for all you work on digging the information out from REVmd.

Graham – if the direction is different than the above please let me know as we at least need to keep consistency between 11az comment resolution and REVmd.

SUMMARY

* I think that all agree the term RTT is not being used correctly
* The changes proposed below are correct
* RTT, incorrectly, has been used in a Test Plan and users’ understandings of RTT are embedded
* TGaz maybe is perpetuating the problem

My personal view, (and it is not from the ponit of a User), is that we shuld have terms used correctly otherwise we will have the same comment in perpetuity.

REVISED

In Clause 3.4 Add

Add

“ToF time of flight”

At P242L24 4.3.19.19

Change

“Fine timing measurement allows a STA to accurately measure the round trip time (RTT) between it and another STA.”

To

“Fine timing measurement allows a STA to accurately measure the time of flight (ToF) between it and another STA.”

FIG 11-37 P2379L23

Change

“Initiating STA can compute an

RTT and a clock offset”

To

“Initiating STA can compute a

ToF and a clock offset”

P2380L31

Chane

“The round trip time (RTT) is defined by Equation (11-5).

*RTT* = [(*t4*' – *t1*') – (*t3* – *t2*)]”

To

“The time of flight (ToF) is defined by Equation (11-5).

ToF = [(*t4*' – *t1*') – (*t3* – *t2*)]/2”

P4593L20

Change

“SME at receiving STA estimates RTT as (t4-t1)-(t3-t2)”

To

“SME at receiving STA estimates ToF as [(t4-t1)-(t3-t2)]/2”

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4694 |  |  |  |  | "the BSS with which the STA is associated " (8x) -- STAs are associated with APs, not with BSSes.  They are members of BSSes. | As it says in the comment |

Agreed but unfortunately, the commenter did not propose any wording so I suspect a wordsmithing marathon.

Anyhow here is my go which I think is along the lines suggested byt the comment.

REVISED

At P1717L62,

Change

“…from the AP of the BSS with which the STA is associated”.

To

“…from the AP of the BSS which the STA is a member of”.

OR

“…from the AP the STA is associated with”

OR

“…from the AP to which the STA is associated”

At P1818L12, P1822L42, and P2103L62

Change

“the BSS with which the STA is associated”

To

“the BSS which the STA is a member of”

At P1825L15, P1825L38

Change

“from the AP of the BSS with which a STA is associated”

To

““…from the AP to which a STA is associated”

At 2226L27

Change

“BSSID field equal to the BSSID of the BSS with which STA A is associated”.

To

“BSSID field equal to the BSSID of the AP with which STA A is associated”.

At 2226L30

Change

“indication that STA B is a member of the BSS with which STA A is associated.

To

“indication that STA B is a member of the same BSS as STA A.

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 4719 |  |  |  |  | CID 1505 followup.  This got rid of QLRC and QSRC, because they were not clearly specified and not actually implemented, but did not touch LRC and SLRC and SRC and SSRC, which suffer from the same problem. Note: DCF is not deprecated. | Delete "LRC" and "SLRC" and "SRC" and "SSRC" throughout |
| 4720 |  |  |  |  | CID 1505 follow-up.  There are still references to short/long retry count(er) in 10.3.3: "The SSRC shall be incremented when any short retry count (SRC)" "The SLRC shall be incremented when any long retry count (LRC)" and in 11.8.3 "The short retry counter and long retry counter for the MSDU or A-MSDU are not affected." Also "A STA shall maintain a SRC and  an  LRC  for  each  MSDU  or  MMPDU  awaiting  transmission." "The  SRC  for  an  MPDU [...]. This SRC and the SSRC shall be reset when [...]. The LRC for an MPDU [...]. This LRC and the SLRC shall be reset when" "Retries for failed transmission attempts shall continue until the SRC for the MPDU [...] or until the LRC for the MPDU [...]" in 10.3.4.4.  Note: DCF is not deprecated. | Delete all references to short/long retry count(er)s throughout |
|  |  |  |  |  |  |  |

Before we do this work, we need to agree that LSR, SLRC, SRC, and SSRC should be deleted. I recall long conversations on this and as to whether they are implemented.