IEEE P802.11
Wireless LANs

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| Resolution for PS Related Comments  |
| Date: 2018-09 |
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Abstract

This submission proposes resolutions for CIDs 1378,1466,1469,1477

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.

**R3 Resolution for CID 1378**

**R4 typo corrected**

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 1378 | Mark Rison | 10.30 | 1750 | 35 | PSMP is obsolete and should be deleted | At the start of the referenced subclause add "PSMP is obsolete. Support for this mechanism might be removed in a laterrevision of the standard." |

Is PSMP Obsolete? There has been no indication that anyone wants to keep it

Hence ACCEPT but need to insert words in other places.

RESOLUTION

REVISE

With reference to D1.5

At P1874L11 Insert “PSMP is obsolete. Support for this mechanism might be removed in a later
revision of the standard."

At P812L37 insert

“NOTE: PSMP is obsolete. Support for this mechanism might be removed in a later
revision of the standard."

At 9.4.1.24 P908L46 insert “PSMP is obsolete. Support for this mechanism might be removed in a later
revision of the standard."

At 9.4.1.25 P909L17 insert “PSMP is obsolete. Support for this mechanism might be removed in a later
revision of the standard."

At 9.6.11.4 P1546L35 insert “PSMP is obsolete. Support for this mechanism might be removed in a later
revision of the standard."

At 9.6.11.4 P909L35 insert “PSMP is obsolete. Support for this mechanism might be removed in a later
revision of the standard."

At B.4.4.1 P3551L21 Add in second column “PSMP is obsolete. Support for this mechanism might be removed in a later revision of the standard."

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 1466 | Mark Rison | 11 |  |  | Discussions related to CID 7592 and 7593 in mc have revealed that the description of legacy PS and U-APSD is hopelessly muddled in terms of things like how PS-Polls operate for U-APSD and duplication of statements and consistency of description | Refactor the wording |

Before I work on this I need to know if the commenter is preparing a submission.

Also, at a minimum I need to have the discussions on CIDs 7592 and 7593 so as to know where to start.

I am willing to work on clarifying the PS Poll within U-APSD. It should be clear that if all ACs are set to 0, then only PS Poll can be used to retrieve buffered packets.

Assigned to Mark Rison, submission required.

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 1469 | Mark Rison | 9.3.1.1 | 766 | 12 | There is wide variation in the setting of the PM bit in Control frames. Say that the PM bit is ignored (not reserved, because some implementations do set it to 1) in Control frames | At the end of the second para of the referenced subclause add "The Power Management field is ignored." and delete the "(0)" for that bit in Figure 9-22 |

**9.3.1.1 Format of Control frames**

In the following descriptions, “immediately previous” frame means a frame whose reception concluded

within the SIFS preceding the start of the current frame.

The subfields within the Frame Control field of Control frames (11ah)carried in a non-S1G PPDU are set as shown(#243) in Figure 9-22 (Frame Control field subfield values within Control frames (11ah)carried in a non-S1G PPDU).



The Figure has (0) for B8, 9, 10, 11, 14 and 15, and says nothing about B12 and B13 indicating that they are valid values. **PM does not have a (0) in the Figure** (as suggested by the commentor) Let’s investigate the PM bit further.

PowerManagement Bit

732.51

In an infrastructure BSS or PBSS, the following applies:

— **The Power Management subfield is valid only in frame exchanges as described in 11.2.3** (Power management in a non-DMG infrastructure network) and 11.2.7 (Power management in a PBSS and DMG infrastructure BSS). In such exchanges, a value of 1 indicates that the STA will be in PS mode. A value of 0 indicates that the STA will be in active mode.

— The Power Management subfield is reserved in all Management frames transmitted by a STA to an AP or PCP with which it is not associated.

— The Power Management subfield is reserved in all frames transmitted by the AP.

So we need to look at **11.2.3**

1966.22

“**A STA that is associated with an AP and that changes power management mode shall inform the AP of this fact** **using the Power Management subfield within the Frame Control field of transmitted frames.”**

Now “transmitted frames” include, to my mind, control packets such as RTS, CTS and PS-Poll, and hence if a STA is in power save these should be setting the PM bit. Also I can’t see why it should not be set in other Control Packets such as Ack, and BA. By my reading of the specification, if the STA is in PM mode then it should be setting the PM bit in ALL transmitted frames. Hence, the PM bit is NOT IGNORED in Control Packets- It could convey real information on the power state of the STA.

Also, to back this up

At 1968.32

“To change power management modes a STA shall inform the AP by completing a successful frame

exchange (as described in Annex G) that is initiated by the STA. **This frame exchange shall include a**

**Management frame, Extension frame or Data frame from the STA, and an Ack or a BlockAck frame from the AP. The Power Management subfield(s) in the Frame Control field of the frame(s) sent by the STA in this exchange indicates the power management mode** that the STA shall adopt upon successful completion of the entire frame exchange, except where the Power Management subfield is reserved (see 9.2.4.1.7 (Power Management subfield)).”

Hence I propose to reject and not make a change.

Discussion in Fort Lauderdale ad-hoc Tuesday:

* APs known that will not reply to a PS-Poll if PM bit set. Better if PM bit was ignored,
* If true that some APs do look at the PM bit, then obviously at the moment the PM bit is not ignored, hence cannot add that requirement.

No consensus yet.

RESOLUTION

REJECT

Evidence exists that APs do not ignore the PM bit in PS-Polls and hence adding that requirement could make existing implementations non-compliant. Note that Figure 9-22 does not have a (0) for the PM bit.

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| CID | Commenter | Clause  | Page  | Line | Comment | Proposed |
| 1477 | Mark Rison | 11.2.3.2 | 1968 | 33 | "initiated by the STA" -- so this means that the PM mode cannot be changed during RD. However, only timing distinguishes the last frame of a RD exchange from the first frame of a non-RD exchange, which is awkward to validate | Allow the PM mode to be changed in RD by adding after "To change power management modes a STA shall inform the AP by completing a successful frame exchange (as described in Annex G) that is initiated by the STA" the words ", or is within the RD portion of an RD exchange" |

I admit, I had to look up “RD” - Reverse direction. May be supported by HT, S1G and DMG STAs.

Cited text

To change power management modes a STA shall inform the AP by completing a successful frame exchange (as described in Annex G) **that is initiated by the STA**.

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Proposed is

To change power management modes a STA shall inform the AP by completing a successful frame exchange (as described in Annex G) **that is initiated by the STA** **or is within the RD portion of an RD exchange**.”

OK, so what is the Reverse direction (RD) exchange sequence? See 10.29.2 1747.25

1. Initiator transmits PPDU containing an RD grant (RDG).
2. Transmission of one or more PPDUs by the responder. The first (or only) PPDU of the response contains one immediate Block Ack or Ack frame. The last (or only) PPDU contains MPDUs requiring a response (immediate block ack or ack)
3. RD initiator transmits final PPDU

Who dreams up this stuff?? I suppose “the RD portion” refers to this sequence.

I suppose the initiator and responder can be a non-AP STA or an AP and only a STA can set the PM bit.

In the case of the STA being in PS mode, then it must be the initiator. If it is not in PS mode, then either the AP or STA can be the initiator.

BUT

1. STA is awake and wants to go into PS. Why use an RD exchange to do this? Why not just send a data null and be done with it?
2. STA is in PS mode and wants to come out of it. Again, why use an RD exchange, just send a data null and be done with it.

What I am saying is that a STA should never use an RD exchange to change its power management mode. Much easier ways of doing it.

RESOLUTION

REJECT

If a STA wants to change PM mode there are much simpler ways of doing it than using an RD exchange.