IEEE P802.11  
Wireless LANs

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| Comment Collection 09 MAC CIDs (Comment Resolutions for CC09) | | | | |
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Abstract

This document provides resolutions for CID 93.

The changes are in the following subclauses: 8.2.4.1.3.

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# 0 Revision Notes

R0: First draft

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 93 | 8.2.4.1.3 | 63 | 62 | The Frame Control field of S1G PS-Poll frames has Poll type indication. Introduction of a poll type field seems out of scope because in reality there is no definition of new types of poll frames (indeed it is the same PS-Poll frame format) The only difference is that the STA sending the frames gives particular indications to the AP by using the last bits of the FC. | Simply allow the last 2 bits of the FC for PS-Poll frames to have non-zero values and describe active polling protocol based on the existing Protected Frame and Order bits. This is cleaner than having multiple definitions of the whole frame control field. | Rejected.  Reasons see the following discussion in this document. |

***Discussion***

In SFD, the item R.4.2.M: An active polling STA can solicit the information listed below from an AP upon waking up. AP may provide the information immediately or suggest the STA to check beacons. [12/1101r1, September 2012 meeting minutes]

1. BSS change sequence (one byte)
2. Current timestamp

If the STA is either a normal PS mode STA that listens to the beacon or a low power PS mode STA without listening to the beacon, when it wakes up, it may send the polling message. Therefore, for Power Management bit set to 1, there could be two possible ways for the AP to respond. We need at least one bit to differentiate two situations if PS-Poll is reused.

For the normal PS mode STA, the AP replies either with (Modified NDP) ACK or DATA. In this case, the STA may request the delivery of the DATA without rescheduling its doze/awake cycle when it sends PS-Poll to the AP.

For the low power PS mode STA, AP has two choices on responding the STA’s request on soliciting the information through polling: either providing the BSS change sequence and current timestamp or suggest the STA to check the beacons. Therefore, to facilitate the operation of AP in response to the polling message, the STA needs one bit to tell the difference on whether it is soliciting the BSS change sequence /current timestamp or asking to check the beacon. Unless the STA is restricted to only one behavior (soliciting timestamp/BSS change sequence or checking the beacon) tied with its AID, the AP is not able to determine the response depending on the STA’s AID information.

Non-TIM STA without listening to the beacon may send PS-Poll to its AP anytime when it wakes up (operating in PS mode with Power Management bit set to 1). The AP can either respond with DATA immediately or a Modified NDP ACK with a wakeup timer (Duration Indication = 1 and Duration = wakeup timer). This wakeup timer may point to the TBTT, the starting time of a service period or a TWT of the active polling STA.

In the Subclauses of **9.32f.2 Explicit TWT operation**, “If no Next TWT field is received from the AP during the TWT SP, the STA may transmit a frame following the end of the TWT SP when not otherwise prohibited from transmitting, which solicits a response that contains a Next TWT value”. Without defining a new frame, we can make use of the PS-Poll message with the defined Poll Type subfield. If other frame is also appropriate, we can remove the support for Explicit TWT operation in Poll Type indication.

Therefore, for other non-TIM STA that needs not to listen to the beacon (e.g. TWT STA), an active polling message may be sent out when it needs a rescheduling of doze/awake cycle or it request an explicit next TWT. The Poll Type indication shown in the following is reasonable to support the various cases.

**Table 8-3b—Poll Type**

|  |  |
| --- | --- |
| **Poll Type value**  **b14 b15** | **Description** |
| 00 | Requesting a buffered frame without  rescheduling awake/doze cycle |
| 01 | Requesting Change Sequence/Timestamp |
| 10 | Requesting for a duration to a TBTT or  Next TWT to reschedule awake/doze cycle |
| 11 | Requesting for a duration to a service  period to reschedule awake/doze cycle |

We conclude that introducing a new subfield of Poll Type by redefining the FC fields can satisfy the requirement of SFD on the active polling as well as the different protocols of non-TIM STAs. The proposed change of simply allowing the last 2 bits of FC for PS-Poll frames to have non-zero values and describe the active polling protocol based on the existing Protected Frame and Order bits could not satisfy the requirement of the various (at least three) scenarios: normal PS polling, active polling soliciting timestamp and checking the beacon.