IEEE P802.11
Wireless LANs

|  |
| --- |
| D8 clarifications and fixes  |
| Date: 2012-14-06 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Solomon Trainin | Intel |  | 972547885738 | solomon.trainin@intel.com |
| Carlos Cordeiro | Intel |  |  | carlos.cordeiro@intel.com |

Abstract

This document provides text clarifications and modifications in relation to the Draft P802.11ad\_D8.0.

*Discussion:*

*“2)For an HT STA, contains one or more correctly received frames that are capable of carrying the HT Control field but did not contain an HT Control field, or"
It is very common case when the RD initiator transmits RD Grant in A-MPDU and the RD responder is not able or not willing to take it and responds with BA. The RD initiator continues with the consecutive A-MPDU SIFS time after getting the BA. It shall be supported but in the current text this behavior is not supported by DMG devices.*

*P288L44 Editor insert a new item (4) below item (3) as follows:*
"For a DMG STA, none of the correctly received frames contained in the PPDU carry the QoS control field"

*Discussion:*

*"A transmitting DMG STA shall set the TXVECTOR parameter SIFS Response to 1 if the DMG STA is transmitting a packet during an SP and the DMG STA is the SP source or the DMG STA is transmitting a packet during a TXOP and the DMG STA is the TXOP holder, and the transmitted packet requires an immediate response following a SIFS period. The SIFS Response parameter is set to 0 in all other cases."
The existing solution does not cover the completely symmetrical case when the RD responder transmits A-MPDU and requests BA. It should be covered. In general the bit is helpful only if it signals about any case when the transmitter does not keep transmitting in SIFS or shorter time but delegates the transmission rights to the intended receiver.*

*Editor replace as follows:*

1) Change the name "SIFS Response" to "Turnaround"

*2) Replace all the rules of SIFS Response with*

For an individually addressed PPDU, a transmitting DMG STA shall set the TXVECTOR parameter Turnaround to 1 if the DMG STA is required to listen for an incoming PPDU immediately following the transmission of the PPDU, and to 0 otherwise. The DMG STA shall set the TXVECTOR parameter Turnaround to zero when it transmitting the RTS frame.

*Discussion:*

*Control frames RTS, CTS, DMG CTS, and CF-End are used to deliver virtual CCA. It is important that even STAs with quasi-omni configuration of antennas are able to receive those frames. Propose to define that the frames shall be transmitted using DMG control modulation class*

*Editor in* **9.7.5a.2** *remove paragraph that starts with “*A control frame that is not a control response frame shall be transmitted *…”
Editor in* **9.7.5a.1** *change the text as follows:*"The DMG Beacon, SSW-Feedback, SSW-ACK, ~~and~~ RTS, DMG CTS, DMG CTS-To-Self, DMG DTS, and the first BRP packet in beam refinement shall be transmitted using the DMG Control modulation class."

*Discussion:*

*BRP response time that is defined to be longer than DIFS enables the third party to send frame following the regular backoff procedure. In the same time STAs participating in BRP may receive frames from third party if in Rx mode that makes duration of BRP unpredictable. I suggest that the BRP responder transmits Qos Null Frames if the response time is longer than SIFS.*

*Editor in* ***9.35.3.1 (General)*** *P340L38 right after paragraph that ends with “…or the complete transmission of the beam refinement request within the allocation.” add following paragraph:*

“When performing BRP, if a responding STA requires longer than SIFS to transmit a BRP frame as a response for beam refinement training request from a requesting STA, the responding STA should keep the IFS not longer than SIFS by transmitting one or more PPDUs to the requesting STA. “

*Discussion:*

*There is EOSP controversy in frame formats 8.2.4.5.3 definition and normative behavior in 10.2.5.1.*

*Editor: fix definition in 8.2.4.5.3 P136L6 as follows:*

“The EOSP subfield is 1 bit in length and is used by the HC ~~or DMG STA~~ to indicate the end of the current service period (SP) and by a DMG STA to indicate the end of the current SP or the end of the current allocated CBAP with individually addressed destination AID. The HC ~~or DMG STA~~ sets the EOSP subfield to 1 in its transmission and retransmissions of the SP’s final frame to end a scheduled/unscheduled SP and set it to 0 otherwise. To end an SP allocation or a CBAP allocation with individually addressed destination AID, the DMG STA sets the EOSP subfield to 1 in its final frame transmission and retransmissions within the allocation; otherwise, the DMG STA sets the EOSP subfield to 0.”

*Discussion:*

*Current text in 10.28.1 (Beamformed link maintenance) is not relevant for allocated CBAP with individually addressed destination AID. In this case the behavior should be as for SP.*

*Editor: replace* "The beam link maintenance timer shall be halted during the BTI and A-BFT of a beacon interval. If the beamformed link is intended to be used during SP allocation(s) only, the beam link maintenance timer shall be halted during SPs of other links and during CBAP(s). If the beamformed link is intended to be used during CBAP allocation(s) only, the beam link maintenance timer shall be halted during SPs. Otherwise if the beamformed link is intended to be used during SP and CBAP allocation(s), the beam link maintenance timer shall be halted during SPs of other links. The beam link maintenance timer shall be halted during periods of time when any of the DMG STAs involved in the Beamformed Link are in Doze state."
BY
"The beam link maintenance timer of a beamformed link shall be halted during the following periods of time:
- BTI and A-BFT of a beacon interval
- SPs and CBAPs that the DMG STA does not participate in
- When any of the DMG STAs involved in the beamformed link are in Doze state."

*Discussion:*

*In TGad draft, in section 11.4.5.3.3, the spec points to 11.4.3.3.3 (in the 802.11 2012 spec) for the AAD construction that refers to SPP A-MSDU capable bit. The SPP A-MSDU capable bit is irrelevant to TGad.*

*Editor change text on top of P1209 in the 802.11 2012 as follows:*

**11.4.3.3.3 Construct AAD**

g) QC – QoS Control field, if present, a 2-octet field that includes the MSDU priority. The QC TID is

used in the construction of the AAD. When in non DMG both the STA and its peer have their SPP A-MSDU Capable fields equal to 1, bit 7 (the A-MSDU Present field) is used in the construction of the AAD. The remaining QC fields are masked to 0 for the AAD calculation (bits 4 to 6, bits 8 to 15, and bit 7 when either the STA or its peer has the SPP A-MSDU Capable field equal to 0). When in DMG the A-MSDU present bit 7 and A-MSDU type bit 8 are used in the construction of the AAD. The remaining QC fields are masked to 0 for the AAD calculation (bits 4 to 6, bits 9 to 15).

*Discussion: a non-PCP/non-AP STA that receives a DMG Beacon is allowed to respond during the A-BFT. In a dense environment, this can cause problems in terms of collisions, interference and joining latency. We propose to allow the PCP/AP to filter responses it receives in an A-BFT.*

*Editor change the text as follows:*

**8.3.4.1 DMG Beacon**

*P154L33*

If the value of Discovery Mode field is 0 ~~The format of~~, the Clustering Control field is formatted as shown in Figure 8-34c. If the value of the Discovery Mode field is 1, the Clustering Control field is formatted as shown in Figure xyz.

*Insert “*if Discovery Mode field equals 0*” at the end of the caption of Figure 8-34c*

*Insert at the end of the subclause*

|  |  |  |
| --- | --- | --- |
|  | B0-B47 | B48-B63 |
|  | A-BFT Responder Address | Reserved |
| Bits: | 48 | 16 |

Figure xyz Clustering Control field format if Discovery Mode field equals 1

The A-BFT Responder Address subfield contains the MAC address of the STA that is allowed to transmit during the following A-BFT.

**9.35.5.2 Operation during the A-BFT**

*Insert after the second paragraph*

A DMG STA that receives a DMG Beacon frame with the Discovery Mode field equal to 1 and CC Present field equal to 1 may respond in the A-BFT following the BTI where the DMG Beacon frame is received if at least one of the following conditions is met:

* The STA’s MAC address is equal to the value of the A-BFT Responder Address subfield
* The value of the A-BFT Responder Address subfield is a group address of a group the STA belongs

If none of these conditions are met, the DMG STA shall not respond in the A-BFT.

*Insert the following paragraph in P347L17*

A responder that receives an SSW-Feedback frame from the initiator during an A-BFT that was allocated with a DMG Beacon frame with Discovery Mode equal to 1 should not attempt to access the following aMaxABFTAccessPeriod A-BFT allocations to redo beamforming with the initiator, unless in the BTI preceding the A-BFT the responder receives a DMG Beacon frame that has the Discovery Mode field equal to 1, the CC Present field equal to 1 and the value of the A-BFT Responder Address subfield equal to the responder’s MAC address. This allows other STAs the opportunity to successfully contend for A-BFT access and perform beamforming with the initiator.

Insert “aMaxABFTAccessPeriod, 2” in 10.38

**10.1.3.2b DMG Beacon generation before network initialization**

*Insert after the third paragraph*

A DMG STA that transmits a DMG Beacon frame with the Discovery Mode field equal to 1 may indicate the STA(s) that is allowed to respond in the A-BFT following the BTI where the DMG Beacon frame is transmitted. To do that, in the DMG Beacon the DMG STA shall set the CC Present field to 1 and shall set the A-BFT Responder Address subfield to an individual address or to a group address of a group that includes the STA(s) that is allowed to respond in the A-BFT.

**References:**

Draft P802.11ad\_D8.0