IEEE P802.11  
Wireless LANs

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| CR on differentiating non-TB and TB sounding | | | | |
| Date: 2018-08-030 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Robert Stacey | Intel |  | +1-503-724-0893 | robert.stacey@intel.com |
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Abstract

Proposed resolutions to 16673, 16674, 16675, 16676, 16678 and 16681

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# Comment

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 16673 | 306.04 | 27.6.3 | TB sounding sequence is adequately distinguished from non-TB sounding sequence using the RA field alone (individually addressed vs broadcast). Additionally using the number of STA Info fields to distinguish the sequences just complicates things. HE TB sounding can involve 1 or more STAs (NOT 2 or more). HE non-TB sounding only a one STA. | Remove "with a single STA Info field". (If necessary, add a separate requirement that an individually addressed HE NDP Announcement shall have a single STA Info field). | REVISED  TGax editor to make changes in <this doc>.  The changes define an HE non-TB sounding sequence as one beginning with an individually addressed HE NDP Announcement. In addition, the changes fix the requirement on setting the AID in the STA info field to accommodate a mesh STA, AP or IBSS member recipient (these don’t have AIDs). |
| 16674 | 306.21 | 27.6.3 | TB sounding sequence is adequately distinguished from non-TB sounding sequence using the RA field alone (individually addressed vs broadcast). Additionally using the number of STA Info fields to distinguish the sequences just complicates things. HE TB sounding can involve 1 or more STAs (NOT 2 or more). HE non-TB sounding only a one STA. | Remove "with two or more STA Info fields" | REVISED  TGax editor to make the changes in <this doc>  The changes remove reference to “two or more STA Info fields” |
| 16675 | 307.01 | 27.6.3 | TB sounding sequence is adequately distinguished from non-TB sounding sequence using the RA field alone (individually addressed vs broadcast). Additionally using the number of STA Info fields to distinguish the sequences just complicates things. HE TB sounding can involve 1 or more STAs (NOT 2 or more). HE non-TB sounding only a one STA. | Change "except when the HE NDP Announcement frame contains only one STA Info field..." to "unless the HE NDP Announcement frame is individually addressed..." | REVISED  TGax editor to make the changes in <this doc>  The changes reference “HE TB sounding” sequence and “HE non-TB sounding sequence” instead of number of STA Info fields. Also, the statements are made declarative since they apply meaning to what is being transmitted. There are normative statements elsewhere on recipient behavior. |
| 16676 | 307.10 | 27.6.3 | TB sounding sequence is adequately distinguished from non-TB sounding sequence using the RA field alone (individually addressed vs broadcast). Additionally using the number of STA Info fields to distinguish the sequences just complicates things. HE TB sounding can involve 1 or more STAs (NOT 2 or more). HE non-TB sounding only a one STA. | Change "An HE beamformer that transmits an HE NDP Announcement with more than one STA Info field..." to "An HE beamformer that transmits a broadcast HE NDP Announcement frame..." | REVISED  TGax editor to make the changes in <this doc>  The first sentence is deleted; a shall statement for BFRP Trigger frame transmission in the sequence is unnecessary, the frame is present as part of the definition of the sequence.  The second sentence is update to refer to the sequence rather than the number of STA Info fields in the NDP Announcement frame. The figure shows the sequence. |
| 16677 | 308.12 | 27.6.3 | TB sounding sequence is adequately distinguished from non-TB sounding sequence using the RA field alone (individually addressed vs broadcast). Additionally using the number of STA Info fields to distinguish the sequences just complicates things. HE TB sounding can involve 1 or more STAs (NOT 2 or more). HE non-TB sounding only a one STA. | Change "when the HE NDP Announcement frame has only on STA Info field" to "if the HE NDP Announcement frame is individually addressed" | REVISED  TGax editor to make the changes in <this doc>  The paragraph is updated to reference the sequence rather than the number of STA Info fields in the HE NDP Annoucnement frame. |
| 16678 | 309.23 | 27.6.3 | TB sounding sequence is adequately distinguished from non-TB sounding sequence using the RA field alone (individually addressed vs broadcast). Additionally using the number of STA Info fields to distinguish the sequences just complicates things. HE TB sounding can involve 1 or more STAs (NOT 2 or more). HE non-TB sounding only a one STA. | Change "an HE NDP Announcement frame that has only one STA Info field" to "an individually addressed HE NDP Announcement frame" | REVISED  TGax editor to make the changes in <this doc>  The changes split the paragraph into two (a beamformer requirement and a beamformee requirement). The changes make reference to the sounding sequence instead of the number of STA Info fields. |
| 16681 | 310.26 | 27.6.3 | TB sounding sequence is adequately distinguished from non-TB sounding sequence using the RA field alone (individually addressed vs broadcast). Additionally using the number of STA Info fields to distinguish the sequences just complicates things. HE TB sounding can involve 1 or more STAs (NOT 2 or more). HE non-TB sounding only a one STA. | Remove "that has more than one STA Info field" | REVISED  TGax editor to make the changes in <this doc>  Changes remove reference to “more than one STA Info field” and correctly references the STA Info field rather than the HE NDP Announcement frame as the source of the parameters. The requirement is on the generation of the HE compressed beamforming/CQI report. The requirement for sending the report is in the second sentence. |

# Discussion

As pointed out by the commenter, the two sounding sequences (TB and non-TB) can be distinguished by the RA field of the HE NDP Announcement frame alone and there is no reason to check the number of STA Info fields present:

* broadcast HE NDP Announcement frame 🡪 HE TB sounding sequence
* individually addressed HE NDP Announcement frame 🡪 HE non-TB sounding sequence

There is also no reason to preclude TB sounding with a single STA.

* HE sounding protocol
  + 1. Rules for HE sounding protocol sequences

***Change the 1st paragraph as follows:***

An HE non-TB sounding sequence is a sounding sequence initiated by an HE beamformer with a burst of two frames comprising an individually addressed HE NDP Announcement frame followed after a SIFS(#15928) by an HE NDP. The HE beamformer that initiates the HE non-TB sounding sequence shall transmit the HE NDP Announcement frame with a single STA Info field and with the AID11 field in the STA Info field set to the AID of the STA identified by the RA field or to 0 if the STA identified by the RA field is a mesh STA, AP or IBSS member STA .(#16673)

***Change the 4th paragraph as follows:***

An HE TB sounding sequence is a sounding sequence initiated by an HE beamformer with a burst of three frames comprising a broadcast HE NDP Announcement frame followed after a SIFS(#15928) by an HE NDP followed after a SIFS(#15928) by a BFRP Trigger frame. The HE beamformer that initiates an HE TB sounding sequence shall transmit the HE NDP Announcement frame with the RA field set to the broadcast address.(#16674)

***Change the 10th and 11th paragraph as follows:***

In an HE TB sounding sequence, each STA Info field in the HE NDP Announcement frame indicates the subcarrier grouping, *Ng*, codebook size and the number of columns, *Nc*, to be used by the HE beamformee addressed by the STA Info field for the generation of HE compressed beamforming/CQI report(#16328). In an HE non-TB sounding sequence, the subcarrier grouping, *Ng*, codebook size and the number of columns, *Nc*, used for the generation of the HE compressed beamforming/CQI report(#16328) are determined by the HE beamformee.(#16675)

An HE beamformer that has initiated an HE TB sounding sequence may send another BFRP Trigger frame a SIFS after the response to the previous BFRP Trigger frame as shown in Figure 27-7 (An example of the sounding protocol with more than one HE beamformee).(#16676)

***Change the 3rd from last paragraph on P310 of D3.1 as follows:***

In an HE non-TB sounding sequence, an HE beamformer shall solicit full bandwidth feedback . In an HE TB sounding sequence, an HE beamformer shall solicit full bandwidth feedback in a STA Info field addressed to an HE beamformee that has not indicated support for partial bandwidth feedback. In an HE TB sounding sequence, an HE beamformer may solicit full bandwidth or partial bandwidth feedback in a STA Info field addressed to an HE beamformee that has indicated support for partial bandwidth feedback (see 27.6.2 (Sounding sequences and support)).(#16677)

***Change the last paragraph on P311 of D3.1 as follows:***

In an HE non-TB sounding sequence soliciting SU feedback, the HE beamformer shall set both the Nc and Feedback Type And Ng subfields in the STA Info field in the HE NDP Announcement frame to 0.

An HE beamformee that provides SU feedback as part of an HE non-TB sounding sequence may use Nc, Ng, and codebook size parameters for the SU feedback that are different from the parameters indicated in the STA Info field of the HE NDP Announcement frame.(#16678)

***Change the last paragraph on P312 of D3.1 as follows:***

An HE beamformee that receives a broadcast HE NDP Announcement frame with a STA Info field addressed it and receives an HE NDP a SIFS after the HE NDP Announcement frame shall generate an HE compressed beamforming/CQI report(#16328) using the feedback type, *Ng* and codebook size indicated in the STA Info field. If the HE beamformee then receives a BFRP Trigger frame with a User Info field addressed to it, the HE beamformee transmits an HE TB PPDU containing(#17069) the HE compressed beamforming/CQI report(#16328) following the rules defined in 27.5.3.3 (STA behavior for UL MU operation). If the HE NDP Announcement frame has the TA field set to the transmitted BSSID, and the HE beamformee is a non-AP STA associated to a nontransmitted BSSID that supports receiving Control frames with TA set to the transmitted BSSID, then the HE compressed beamforming/CQI report(#16328) sent in response shall have the RA field set to either the nontransmitted BSSID or the transmitted BSSID.(#16681)