IEEE P802.11
Wireless LANs

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| CIDs section 8.3.1.19 |
| Date: 2012-07-16 |
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# Comments

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| 6236 | 40.33 | 8.3.1.19 | "Sequence number" but it's not really a sequence number | In general in 802.11 this quantity is called a "Dialog Token". Rename here and elsewhere | ReviseAs suggested, rename the field to “Sounding Dialog Token” and the subfield to “Sounding Dialog Token Number”; see editing instructions in this document |

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| 6237 | 41.19 | 8.3.1.19 | Nc is unclear | For clarity, add a reference to eqn (8-1). |  Reject |

Discussion

The referred text is “*If the Feedback Type field indicates MU(#4289), then Nc Index indicates the number of columns, Nc, in the Compressed Beamforming Feedback Matrix subfield(#4723) minus one*” which seems to precisely point out to which Nc it is referring to.

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| 6410 | 41.09 | 8.3.1.19 | In DLS or TDLS communication, STA should know an AID of a peer STA for VHT NDP sounding.During DLS or TDLS Setup procedure, AID information is exchanged each other.But, after DLS or TDLS Setup procedure, if the AID of STA is changed through re-association process, how is it updated? | Provide the solution for updating AID after DLS/TDLS Setup procedure. | Reject |

Discussion

As pointed out by the commenter, the TDLS Setup Request/Response frames include the AID Information Element.

Note also that the TDLS direct-link establishment procedure (10.22.4) includes the following case.

*If a TDLS Setup Request frame is received from a TDLS responder STA with which a currently*

*active TDLS session exists, then the receiving STA shall tear down the existing TDLS direct link as*

*if a TDLS Teardown frame was received, and respond with a TDLS Setup Response frame.*

Based on above procedure, the STA with the new AID can send a TDLS Setup Request including the new AID, to update the peer STA.

There may be several reasons for a STA to send a TDLS Setup Request to an already peered STA, to update any of the info carried by the TDLS Setup Request; the current specifications though do not list explicitly al the conditions that would trigger the transmission of a new TDLS Setup Request. For this reason, it is suggested that no change to the text is required.

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| 6794 | 41.11 | 8.3.1.19 | There might be more than one sounding feedback generated. | Change "the sounding feedback" to "sounding feedback" | Reject |

Discussion

The referenced text is:

Contains the 12 least significant bits of the AID of a

STA expected to process the following VHT NDP and

prepare the sounding feedback. Equal to 0 if the STA

is an AP, mesh STA or STA that is a member of an

IBSS.

The STA receiving the VHT NDP Announcement can only prepare one feedback as a response to the reception of a VHT NDP Announcement and following NDP.

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| 6813 | 40.01 | 8.3.1.19 | Are there any variable-length MAC frames without an indication in the MAC fields of the actual length and that are carried in a VHT format PPDU? For example, a variable length non-Data Type frame in a VHT PPDU. If so, how does the MAC determine the correct endpoint for this frame in order to validate the FCS? Looking at the VHT NDP Announcement frame, I thought that I had such a frame, but I believe that this frame cannot be transmitted using VHT PPDU format. | Make certain that we do not have an FCS problem in the MAC, that we always know exactly how many bytes we are supposed to receive for each frame. | RejectThe length in bytes of the MPDU is known either from the PHY preamble or from the MPDU delimiter, hence there is no issue related to FCS computation. |
| 6814 | 40.07 | 8.3.1.19 | It does not appear that "n", number of STA Info fields, is specified anywhere in this frame - how is RX supposed to know this? | Explain how STA can infer the value of "n", or add explicit signalling of "n" via a change to the frame, e.g., use 2 reserved bits in Sounding Sequence field and 2 more bits by reducing the "sequence number" field in Sounding Sequence from 6 to 4. | Reject. The length in bytes of the MPDU is known either from the PHY preamble or from the MPDU delimiter, hence there is no need for further indications in the NDPA. |

The VHT NDP Announcement may be sent as a single MPDU in a HT or non-HT PPDU in which case the length in bytes is known fro the PHY preamble.

When sent in a VHT PPDU, the VHT NDPA Announcement is sent as part of a VHT Single MPDU; A VHT Single MPDU has same structure of a A-MPDU subframe and includes a MPDU delimiter which indicates the length of the MPDU in Bytes; Since the length is known, the number of STA Info Fields is also known without ambiguities so that no explicit indication of the number of STA Info Fields is required and there is no issue related to FCS computation.

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| --- | --- | --- | --- | --- | --- |
| 6849 | 41.10 | 8.3.1.19 | There is a chance of addressing more than one STA by AID12. A note on how to possibly avoid this could help. | Add a note on how to avoid/reduce chance of addressing more than a STA by a single AID12. | Reject |

AIDs are limited to assme values in [0,2007], so that all possible AIDs can be represented in 12bits and each value of AID12 refers to a single STA. Note that AID 12 was defined to include the 12 LSBs of AID because AID is defined as a 16bits field, although only 12 are meaningful for the Association ID indication (see **8.4.1.8 AID field**)

*The value assigned as the AID is in the range 1–2007 and is placed in the 14 LSBs of the AID field, with the*

*two MSBs of the AID field set to 1 (see 8.2.4.2).*

**Editing instructions for 6236**

* VHT NDP Announcement(#4921)
* frame format

The frame format of the VHT NDP Announcement(#4921) frame is shown in .

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Frame Control | Duration | RA | TA | Sounding Dialog Token | STA Info 1 | … | STA Info *n* | FCS |
| Octets: | 2 | 2 | 6 | 6 | 1 | 2 |  | 2 | 4 |
| * VHT NDP Announcement(#4921)
 |

The Duration field is set as defined in 8.2.5 (

Duration/ID field

).

The VHT NDP Announcement(#4921) frame contains at least one STA Info field. If the VHT NDP Announcement(#4921) frame contains only one STA Info field, then the RA field is set to the address of the STA identified by the AID in the STA Info field. If the VHT NDP Announcement(#4921) frame contains more than one STA Info field, then the RA field is set to the broadcast address.

The TA field is set to the address of the STA transmitting the VHT NDP Announcement(#4921) frame.

The format of the Sounding Dialog Token field is shown in .

|  |  |  |
| --- | --- | --- |
|  | B0 B1 | B2 B7 |
|  | Reserved | Sounding Dialog Token Number |
| Bits: | 2  | 6 |
| * Sounding Dialog token
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The Sounding Dialog Token Number subfield in the Sounding Dialog Token field contains a value selected by the beamformer to identify the VHT NDP Announcement frame(#4286).

The format of the STA Info field is shown in .

|  |  |  |  |
| --- | --- | --- | --- |
|  | B0 B11 | B12 | B13 B15 |
|  | AID12(#4342) | Feedback Type | Nc Index |
| Bits: | 12  | 1 | 3 |
| * STA Info field
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The subfields in the STA Info field are described in .

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| * STA Info subfields
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| Field | Description |
| AID12(#4342) | Contains the 12 least significant bits of the(#4342) AID of a(#4287) STA expected to process the following VHT NDP(#4923) and prepare the sounding feedback. Equal to 0 if the STA is an AP, mesh STA or STA that is a member of an IBSS.(#4287) |
| Feedback Type | Indicates the type of feedback requested.Set to 0 for SU.Set to 1 for MU. |
| Nc Index | If the Feedback Type field indicates MU(#4289), then Nc Index indicates the number of columns, *Nc*, in the Compressed Beamforming Feedback Matrix subfield(#4723) minus one:(#4655)Set to 0 to request *Nc* = 1Set to 1 to request *Nc* = 2…Set to 7 to request *Nc* = 8Reserved if the Feedback Type field indicates SU(#4289). |

* VHT MIMO Control field

The VHT MIMO Control field is defined in .

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| B0 B2 | B3 B5 | B6 B7 | B8 B9 | B10 | B11 | B12 B14 | B15 | B16 B17 | B18 B23 |
| Nc Index | Nr Index | Channel Width | Grouping | Codebook Information | Feedback Type | Remaining Feedback(#4293) Segments | First Feedback(#4293) Segment | Reserved | Sounding Dialog Token Number |
| Bits: 3 | 3 | 2 | 2 | 1 | 1 | 3 | 1 | 2 | 6 |
| * VHT MIMO Control field
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The subfields of the VHT MIMO Control field are defined in .

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| * Subfields of the VHT MIMO Control field
 |
| Subfield | Description |
| Nc Index | Indicates the number of columns, *Nc*, in the compressed beamforming feedback matrix(#4723) minus one:Set to 0 for *Nc* = 1Set to 1 for *Nc* = 2…Set to 7 for *Nc* = 8 |
| Nr Index | Indicates the number of rows, *Nr*, in the compressed beamforming feedback matrix(#4723) minus one:Set to 0 for *Nr* = 1Set to 1 for *Nr* = 2…Set to 7 for *Nr* = 8 |
| Channel Width | Indicates the width of the channel in which the measurement to create the compressed beamforming feedback matrix(#4723) was made:Set to 0 for 20 MHzSet to 1 for 40 MHzSet to 2 for 80 MHzSet to 3 for 160 MHz or 80+80 MHz |
| Grouping | Indicates the subcarrier grouping, *Ng*, used for the compressed beamforming feedback matrix(#4720):Set to 0 for *Ng* = 1 (No grouping)Set to 1 for *Ng* = 2Set to 2 for *Ng* = 4The value 3 is reserved |
| Codebook Information | Indicates the size of codebook entries:If Feedback Type is SU:(Ed)Set to 0 for 2 bits for ψ, 4 bits for fSet to 1 for 4 bits for ψ, 6 bits for fIf Feedback Type is MU:(Ed)Set to 0 for 5 bits for ψ, 7 bits for fSet to 1 for 7 bits for ψ, 9 bits for f |
| Feedback Type | Indicates the feedback type:Set to 0 for SUSet to 1 for MU |
| Remaining Feedback(#4293) Segments | Indicates the number of remaining feedback segments for the associated VHT Compressed Beamforming frame:Set to 0 for the last feedback segment of a segmented report or the only segment of an unsegmented report.Set to a value between 1 and 6 for a feedback segment that is neither the first nor the last of a segmented report.Set to a value between 1 and 7(#4656) for a feedback segment that is not the last segment of a segmented report.(#4667)In a retransmitted feedback segment, the field is set to the same value associated with the segment in the original transmission. |
| First Feedback(#4293) Segment | Set to 1 for the first feedback segment of a segmented report or the only feedback segment of an unsegmented report(#4667); set to 0 if it is not the first feedback segment or if the VHT Compressed Beamforming Report field and MU Exclusive Beamforming Report field are not present in the frame.(#4656)In a retransmitted segment, the field is set to the same value associated with the feedback segment in the original transmission. |
| Sounding Dialog Token Number | Sounding Dialog Token Number from the VHT NDP Announcement frame(#4921) soliciting feedback |

In a VHT Compressed Beamforming frame not carrying all or part of (#4667)a VHT(#4713) Compressed Beamforming Report field, the fields Nc Index, Nr Index, Channel Width, Grouping, Codebook Information, Feedback Type(#4656) and Sounding Dialog Token Number are reserved, the First Segment field is(#4667) set to 0 and the Remaining Feedback(#4293) Segments field is set to 7.

**9.31.5 VHT sounding protocol**

P147L43

The value of the Sounding Dialog Token Number subfield in the VHT MIMO Control field shall be set to the

same value as the Sequence Number subfield in the Sounding Sequence field in the corresponding VHT NDP

Announcement frame.

NOTE—The VHT beamformer can use the Sounding Dialog Token Number in the VHT Compressed Beamforming frame(s) of the

VHT Compressed Beamforming report to associate the feedback with a prior VHT NDP Announcement-VHT NDP

Sounding Dialog Token Number and thus compute the delay between sounding and receiving the feedback. The VHT beamformer can

use this delay time when making a decision regarding the applicability of the feedback for the link.