IEEE P802.11
Wireless LANs

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| Resolutions for some comments on 11md/D1.0 (LB232) |
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Abstract

This submission proposes resolutions for CIDs 1375, 1415, 1447, 1452, 1456, 1480, 1507, 1526 on 11md/D1.0. 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.

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| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID 1456Mark RISON | There are several instances of wording of the form "A STA shall not transmit a frame with the TXVECTOR parameter blah set to foo unless the RA of the frame is of type baz": 1341.23, 1341.29, 1341.35, 1341.41, 1342.7, 1342.18, 1342.29, 1342.40, 1342.51, 1343.23 in 802.11mc/D6.0. These are broken because the first "frame" means PPDU and the second one means "MPDU". There is also an issue if the RA is a group address | Reword these instances to the form "A STA shall not transmit a PPDU with the TXVECTOR parameter blah set to foo unless the RA of the frame(s) it contains are of type baz (where this condition applies to all addressed STAs if the RA is a group address)" . See 16/0839r3 and 17/1243r6 |

Discussion:

As it says in the comment, an MPDU does not have a TXVECTOR. The TXVECTOR is associated with the PPDU, i.e. used to determine how to transmit the PSDU. Additionally, for group-addressed frames the requirements need to apply w.r.t. all the targeted recipients.

Note, however, that it is considered acceptable to refer to PPDUs as “frames”:

**physical layer (PHY) frame**: The unit of data exchanged between PHY entities. Syn: **PPDU**.

NOTE 14—In contexts in which the PHY is clearly the subject, “frame” is an implicit reference to a PHY frame.

So the first part of the problem is restricted to cases where “frame” is being used for both MPDUs and PPDUs (typically because one part of the wording refers to the RA or to a frame type and another refers to the TXVECTOR).

The second part of the problem is addressed by making it explicit that requirements are w.r.t. all intended receivers (a discussion in TGmc suggested this needed to be verbose, and e.g. just adding “(s)” was not sufficient).

Proposed changes:

All references are to D1.2.

At the end of Subclause 1.4 add:

References to an MPDU being transmitted or received with a certain TXVECTOR or RXVECTOR parameter respectively are to be understood as referring to the TXVECTOR or RXVECTOR parameter respectively used for the PPDU containing the MPDU.

Change “Frames” to “PPDUs” in the last bullet of the first list in 9.2.5.2:

— ~~Frames~~PPDUs transmitted by an S1G STA with the TXVECTOR parameter RESPONSE INDICATION equal to Long Response

Change 1605.39 in 10.3.2.9.1 as follows:

The STA indicates truncation of the TXOP by transmitting a CF-End frame in a PPDU with TXVECTOR parameter restrictions as specified in 10.7.6.3 (Rate selection for CF-End frames).

Change 1595.54 in 10.3.2.4 as follows:

An S1G STA that receives a PS-Poll frame in a PPDU with ~~the~~ RXVECTOR parameter RESPONSE\_INDICATION equal to NDP Response shall update its NAV using a duration value equal to NDPTxTime (10.3.2.5.2 (RID update)) plus one SIFS, but only when the new NAV value is greater than the current NAV value and the RA is not equal to the MAC address of the S1G STA. The NDPTxTime is calculated according to additional RXVECTOR parameters as described in 10.3.2.5.2 (RID update).

Change 10.6.5.7 as follows:

— A STA shall not transmit a frame using a rate or MCS that is not supported by the receiver STA ~~or STAs~~, as reported in any Supported Rates and BSS Membership Selectors element, Extended Supported Rates and BSS Membership Selectors element, or Supported MCS Set field in Management frames transmitted by the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver).

— A STA shall not transmit a frame using a <VHT-MCS, NSS> tuple that is not supported by the receiver STA, as reported in any Supported VHT-MCS and NSS Set field in Management frames transmitted by the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver).

— A STA shall not transmit a frame using a <S1G-MCS, NSS> tuple that is not supported by the receiver STA, as reported in any Supported S1G-MCS and NSS Set field in Management frames transmitted by the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver).

— If at least one Operating Mode field with the Rx NSS Type subfield equal to 0 was received from the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— A STA shall not transmit a frame with the number of spatial streams greater than that indicated in the Rx NSS subfield in the most recently received Operating Mode field with the Rx NSS Type subfield equal to 0 from the receiver STA.

— If at least one Operating Mode field with the Rx NSS Type subfield equal to 1 was received from the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— A STA shall not transmit an SU PPDU frame using a beamforming steering matrix with the number of spatial streams greater than that indicated in the Rx NSS subfield in the most recently received Operating Mode field with the Rx NSS Type subfield equal to 1 from the receiver STA if the beamforming steering matrix was derived from a VHT Compressed Beamforming report with Feedback Type subfield indicating MU in the VHT Compressed Beamforming frame(s).

— A STA shall not transmit a frame using a value for the CH\_BANDWIDTH parameter of the TXVECTOR that is not supported by the receiver STA, as reported in any HT Capabilities element, VHT Capabilities element, or S1G Capabilities element received from the intended receiver (if there is more than one intended receiver, then this requirement applies for each intended receiver).

— An HT STA that is a member of a BSS and that is not a VHT STA shall not transmit a frame using a value for the CH\_BANDWIDTH parameter of the TXVECTOR that is not permitted for use in the BSS, as reported in the most recently received HT Operation element, with the exception of transmissions on a TDLS off-channel link, which follow the rules described in 11.23.6.2 (General behavior on the off-channel) and 11.23.6.3 ( Setting up a 40 MHz direct link).

— A VHT STA that is a member of a BSS shall not transmit a frame using a value for the CH\_BANDWIDTH parameter of the TXVECTOR that is not permitted for use in the BSS, as reported in the most recently received VHT Operation element with the following exceptions:

— Transmissions on a TDLS off-channel link follow the rules described in 11.23.6.2 (General behavior on the off-channel) and 11.23.6.3 (Setting up a 40 MHz direct link).

— Transmissions by a VHT STA on a TDLS link follow the rules described in 11.23.1 (General) and 11.23.6.5 (Setting up a wide bandwidth off-channel direct link).

— An S1G STA that is a member of a BSS shall not transmit a frame using a value for the CH\_BANDWIDTH parameter of the TXVECTOR that is not permitted for use in the BSS, as reported in the most recently received S1G Operation element with the following exceptions:

— Transmissions on a TDLS off-channel link follow the rules described in 11.21.6.2 (General behavior on the off-channel) and 11.21.6.3 (Setting up a 40 MHz direct link).

— Transmissions by an S1G STA on a TDLS link follow the rules described in 11.21.1 (General) and 11.21.6.5 (Setting up a wide bandwidth off-channel direct link).

Additionally, the value of the CH\_BANDWIDTH parameter for a transmission by an S1G STA that is operating as an SST STA is limited by the Maximum permitted PPDU bandwidth as indicated in the Maximum Transmission Width field of the most recently received SST element or RPS element (see 10.53 (Subchannel selective transmission (SST)) and 10.24.5 (Restricted access window (RAW) operation).

— If at least one Operating Mode field with the Rx NSS Type subfield equal to 0 was received from the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— A STA shall not transmit a frame using a value for the TXVECTOR parameter CH\_BANDWIDTH that is not supported by the receiver STA as reported in the most recently received Operating Mode field with the Rx NSS Type subfield equal to 0 from the receiver STA.

Change 1647.47 in 10.7.6.3 as follows:

A STA that transmits a CF-End frame at the end of a TXOP that was obtained by a non-AP STA through the use of the dual CTS mechanism shall transmit the CF-End frame in a PPDU with the same value for the TXVECTOR parameter STBC, TXVECTOR parameter MCS (if present), and TXVECTOR parameter RATE as was used for the transmission of the PPDU containing the matching Control frame at the beginning of the TXOP.

Change 1647.62 in 10.7.6.3 as follows:

A STA that transmits a CF-End frame at the end of a TXOP that was obtained by an AP through the use of the dual CTS mechanism shall transmit the CF-End frame in a PPDU with the same value for the TXVECTOR parameter STBC, TXVECTOR parameter MCS (if present), and TXVECTOR parameter RATE as was used for the transmission of the PPDU containing the matching Control frame at the beginning of the TXOP.

Change 10.6.6.5.2 as follows:

The modulation class of the PPDU containing the control response frame shall be selected according to the following rules:

— If the PPDU containing the received frame is of a modulation class other than HT, VHT, or S1G and the control response frame is carried in a non-HT PPDU, the control response frame shall be transmitted in a PPDU using the same modulation class as the PPDU containing the received frame. In addition, the control response frame shall be sent in a PPDU using the same value for the TXVECTOR parameter PREAMBLE\_TYPE as the PPDU containing the received frame.

— If the PPDU containing the received frame is of the modulation class HT or VHT and the control response frame is carried in a non-HT PPDU, the control response frame shall be transmitted in a PPDU using one of the ERP-OFDM or OFDM modulation classes.

Change 10.6.8.4 as follows:

— A STA shall not transmit a frame using a rate or MCS that is not supported by the receiver STA ~~or STAs~~, as reported in any Supported Rates and BSS Membership Selectors element, Extended Supported Rates and BSS Membership Selectors element, or Supported MCS Set field in the Management frames transmitted by the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver).

— A STA shall not transmit a frame using a <CMMG MCS, NSS> tuple that is not supported by the receiver STA, as reported in any Supported CMMG MCS and NSS Set field in the Management frames transmitted by the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver).

— If at least one Operating Mode field with the Rx NSS Type subfield equal to 0 was received from the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— A STA shall not transmit a frame with the number of spatial streams greater than that indicated in the Rx NSS subfield in the most recently received Operating Mode field with the Rx NSS Type subfield equal to 0 from the receiver STA.

— A STA shall not transmit a frame using a value for the CH\_BANDWIDTH parameter of the TXVECTOR that is not supported by the receiver STA, as reported in any CMMG Capabilities element ~~or CMMG Capabilities~~ element received from the intended receiver.**<para break>**

~~— A STA that is a member of a BSS and that is not a CMMG STA shall not transmit a frame using a value for the CH\_BANDWIDTH parameter of the TXVECTOR that is not permitted for use in the BSS, as reported in the most recently received CMMG Operation element with the exception transmissions on a TDLS off-channel link, which follow the rules described in 11.21 (Tunneled direct-link setup).~~

— A ~~CMMG~~ STA that is a member of a BSS shall not transmit a frame using a value for the CH\_BANDWIDTH parameter of the TXVECTOR that is not permitted for use in the BSS, as reported in the most recently received CMMG Operation element with the following exceptions:

— Transmissions on a TDLS off-channel link follow the rules described in 11.21 (Tunneled direct-link setup).

— Transmissions by a CMMG STA on a TDLS link follow the rules described in 11.21 (Tunneled direct-link setup).

— If at least one Operating Mode field with the Rx NSS Type subfield equal to 0 was received from the receiver STA (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— A STA shall not transmit a frame using a value for the TXVECTOR parameter CH\_BANDWIDTH that is not supported by the receiver STA as reported in the most recently received Operating Mode field with the Rx NSS Type subfield equal to 0 from the receiver STA.

~~— A STA shall not initiate transmission of a frame at a data rate higher than the greatest rate in the OperationalRateSet, or using an MCS that is not in the CMMG OperationalMCSset, or using a <CMMG MCS, NSS> tuple that is not in the OperationalCMMGMCS\_NSSSet, which are parameters of the MLME-JOIN.request primitive.~~

Change 1654.52 in 10.7.6.5.7 as follows:

A STA shall not transmit a control response frame in a PPDU with TXVECTOR parameter GI\_TYPE set to SHORT\_GI unless it is in response to a reception of a frame in a PPDU with ~~the~~ RXVECTOR parameter GI\_TYPE equal to SHORT\_GI.

A STA shall not transmit a control response frame in a PPDU with TXVECTOR parameter FEC\_CODING set to LDPC\_CODING unless it is in response to a reception of a frame in a PPDU with ~~the~~ RXVECTOR parameter FEC\_CODING equal to LDPC\_CODING.

A STA shall not transmit a control response frame in a PPDU with ~~the~~ TXVECTOR parameter FORMAT set to HT\_GF.

Change 1657.3 in 10.7.6.7 as follows:

A STA shall not transmit a Control frame that initiates a TXOP in a PPDU with ~~the~~ TXVECTOR parameter GI\_TYPE set to a value of SHORT\_GI.

A STA shall not transmit a Control frame that initiates a TXOP in a PPDU with ~~the~~ TXVECTOR parameter FEC\_CODING set to a value of LDPC\_CODING.

Delete “the” in “An S1G STA shall not transmit an S1G Control frame or an NDP CMAC frame with the TXVECTOR parameter S1G\_DUP\_1M to another S1G STA” at 1662.6 in 10.7.11. Change 1661.59 in 10.7.11 as follows:

NOTE—A CTS frame, even though it does not have a TA field, can also be transmitted in a PPDU with ~~the~~ TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT present.

Change 10.16 as follows:

An HT STA shall not transmit a frame in a PPDU with ~~the~~ TXVECTOR parameter FORMAT set to HT\_MF or HT\_GF and ~~the~~ TXVECTOR parameter FEC\_CODING set to LDPC\_CODING unless the RA of the frame corresponds to an HT STA for which the LDPC Coding Capability subfield of the HT Capabilities element received from that STA contained a value of 1 and dot11LDPCCodingOptionActivated is true (if there is more than one intended receiver, then this requirement applies for each intended receiver).

A VHT STA shall not transmit a frame in a PPDU with ~~the~~ TXVECTOR parameter FORMAT set to VHT and ~~the~~ TXVECTOR parameter FEC\_CODING set to LDPC\_CODING unless the RA of the frame corresponds to a VHT STA for which the Rx LDPC subfield of the VHT Capabilities element received from that STA contained a value of 1 and dot11VHTLDPCCodingOptionActivated is true (if there is more than one intended receiver, then this requirement applies for each intended receiver).

An S1G STA shall not transmit a frame in a PPDU with ~~the~~ TXVECTOR parameter FEC\_CODING set to LDPC\_CODING unless the RA of the frame corresponds to a STA for which the Rx LDPC subfield of the S1G Capabilities element from that STA contained a value of 1 and dot11S1GLDPCCodingOptionActivated is true (if there is more than one intended receiver, then this requirement applies for each intended receiver).

A STA should not transmit a frame in a PPDU with ~~the~~ TXVECTOR parameter FORMAT set to HT\_MF, HT\_GF or VHT and ~~the~~ TXVECTOR parameter FEC\_CODING set to LDPC\_CODING if the RA of the frame corresponds to a STA from which it has received a frame containing an Operating Mode field and the most recent Operating Mode field it has received from that STA had the No LDPC subfield equal to 1 (if there is more than one intended receiver, then this requirement applies for each intended receiver).

Change 10.17 as follows:

A STA shall not send an HT PPDU with the TXVECTOR parameter STBC set to a nonzero value to a recipient STA unless the recipient STA has indicated in the Rx STBC field of its HT Capabilities element that it supports the reception of PPDUs using STBC with a number of spatial streams greater than or equal to the number of spatial streams in the HT PPDU (if there is more than one intended receiver, then this requirement applies for each intended receiver). A STA shall not send a VHT PPDU with the TXVECTOR parameter STBC set to a nonzero value to a recipient STA unless the recipient STA has indicated in the Rx STBC field of its VHT Capabilities element that it supports the reception of PPDUs using STBC with a number of spatial streams greater than or equal to the number of spatial streams in the VHT PPDU (if there is more than one intended receiver, then this requirement applies for each intended receiver). A STA shall not send an S1G PPDU with the TXVECTOR parameter STBC set to a nonzero value to a recipient STA unless the recipient STA has indicated in the Rx STBC field of its S1G Capabilities element that it supports the reception of PPDUs using STBC with a number of spatial streams greater than or equal to the number of spatial streams in the S1G PPDU (if there is more than one intended receiver, then this requirement applies for each intended receiver).

[…]

A STA shall not send a CMMG PPDU with the TXVECTOR parameter STBC set to a nonzero value to

a recipient STA unless the recipient STA has indicated in the Rx STBC field of its CMMG Capabilities element that it supports the reception of PPDUs using STBC with a number of spatial streams equal to or greater than the number of spatial streams in the CMMG PPDU (if there is more than one intended receiver, then this requirement applies for each intended receiver).

Change 10.18 as follows:

A STA may transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW20 and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The STA is an HT STA.

— The TXVECTOR parameter FORMAT is equal to HT\_MF, HT\_GF, or VHT.

— The RA of the frame corresponds to a STA for which the Short GI for 20 MHz subfield of the HT Capabilities element contained a value of 1.

— dot11ShortGIOptionInTwentyActivated is present and is true.

A STA may transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW40 and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The STA is an HT STA.

— The TXVECTOR parameter FORMAT is equal to HT\_MF, HT\_GF, or VHT.

— The RA of the frame corresponds to a STA for which the Short GI for 40 MHz subfield of the HT Capabilities element contained a value of 1.

— dot11ShortGIOptionInFortyActivated is present and is true.

A STA shall not transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW80 and GI\_TYPE set to SHORT\_GI unless all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The STA is a VHT STA.

— The TXVECTOR parameter FORMAT is equal to VHT.

— The RA of the frame corresponds to a STA for which the Short GI for 80 MHz/TVHT\_MODE\_4C subfield of the VHT Capabilities element contained a value of 1.

— dot11VHTShortGIOptionIn80Activated is present and is true.

A STA may transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW160 or CBW80+80 and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The STA is a VHT STA.

— The TXVECTOR parameter FORMAT is equal to VHT.

— The RA of the frame corresponds to a STA for which the Short GI for 160 and 80+80 MHz subfield of the VHT Capabilities element contained a value of 1.

— dot11VHTShortGIOptionIn160and80p80Activated is present and is true.

A STA may transmit a frame in a PPDU with TXVECTOR parameters FORMAT set to VHT, NUM\_USERS set to greater than 1, and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met:

— The STA is a VHT STA.

— The TXVECTOR parameter FORMAT is equal to VHT.

— The RAs of all MPDUs in the VHT MU PPDU correspond to STAs for which the Short GI subfield of the following conditions are satisfied:

— If the TXVECTOR parameter CH\_BANDWIDTH is set to CBW20, the Short GI for 20 MHz subfields of the HT Capabilities element contained a value of 1, and dot11ShortGIOptionInTwentyActivated is present and is true.

— If the TXVECTOR parameter CH\_BANDWIDTH is set to CBW40, the Short GI for 40 MHz subfields of the HT Capabilities element contained a value of 1, and dot11ShortGIOptionInFortyActivated is present and is true.

— If the TXVECTOR parameter CH\_BANDWIDTH is set to CBW80, the Short GI for 80 MHz/ TVHT\_MODE\_4C subfields of the VHT Capabilities element contained a value of 1, and dot11VHTShortGIOptionIn80Activated is present and is true.

— If the TXVECTOR parameter CH\_BANDWIDTH is set to CBW160 or CBW80+80, the Short GI for 160 MHz and 80+80 MHz subfields of the VHT Capabilities element contained a value of 1, and dot11VHTShortGIOptionIn160and80p80Activated is present and is true.

An S1G STA may transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW1 and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The RA of the frame corresponds to a STA for which the Short GI for 1 MHz subfield of the S1G Capabilities element is 1.

— dot11ShortGIOptionIn1MActivated is present and is true.

An S1G STA may transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW2 and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The RA of the frame corresponds to a STA for which the Short GI for 2 MHz subfield of the S1G Capabilities element is 1.

— dot11ShortGIOptionIn2MActivated is present and is true.

An S1G STA may transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW4 and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The RA of the frame corresponds to a STA for which the Short GI for 4 MHz subfield of the S1G Capabilities element is 1.

— dot11ShortGIOptionIn4MActivated is present and is true.

An S1G STA may transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW8 and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The RA of the frame corresponds to a STA for which the Short GI for 8 MHz subfield of the S1G Capabilities element is 1.

— dot11ShortGIOptionIn8MActivated is present and is true.

An S1G STA may transmit a frame in a PPDU with TXVECTOR parameters CH\_BANDWIDTH set to CBW16 and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met (if there is more than one intended receiver, then this requirement applies for each intended receiver):

— The RA of the frame corresponds to a STA for which the Short GI for 16 MHz subfield of the S1G Capabilities element is 1.

— dot11ShortGIOptionIn16MActivated is present and is true.

An S1G STA may transmit a frame in a PPDU with TXVECTOR parameters NUM\_USERS set to greater than 1, and GI\_TYPE set to SHORT\_GI only if all of the following conditions are met:

— The RAs of all MPDUs in the S1G MU PPDU correspond to STAs for which the Short GI subfield

of the following conditions are satisfied:

— If the TXVECTOR parameter CH\_BANDWIDTH is set to CBW2, the Short GI for 2 MHz

subfield of the S1G Capabilities element is equal to 1, and dot11ShortGIOptionIn2MActivated

is present and is true.

— If the TXVECTOR parameter CH\_BANDWIDTH is set to CBW4, the Short GI for 4 MHz

subfield of the S1G Capabilities element is equal to 1, and dot11ShortGIOptionIn4MActivated

is present and is true.

— If the TXVECTOR parameter CH\_BANDWIDTH is set to CBW8, the Short GI for 8 MHz

subfield of the S1G Capabilities element is equal to 1, and dot11ShortGIOptionIn8MActivated

is present and is true.

— If the TXVECTOR parameter CH\_BANDWIDTH is set to CBW16, the Short GI for 16 MHz

subfield of the S1G Capabilities element is equal to 1, and dot11ShortGIOptionIn16MActivated

is present and is true.

An HT STA shall not transmit a frame with ~~the~~ TXVECTOR parameter FORMAT set to HT\_GF and the GI\_TYPE parameter set to SHORT\_GI when the MCS parameter indicates a single spatial stream.

Change 10.19 as follows:

An HT STA shall not transmit a frame in a PPDU with ~~the~~ TXVECTOR parameter FORMAT set to HT\_GF unless the RA of the frame corresponds to a STA for which the HT-Greenfield subfield of the HT Capabilities element contained a value of 1 and dot11HTGreenfieldOptionActivated is true (if there is more than one intended receiver, then this requirement applies for each intended receiver).

Change 10.57 as follows:

An S1G STA shall not transmit a frame with TXVECTOR parameter TRAVELING\_PILOTS equal to 1 to an S1G STA unless the Traveling Pilot Support field of the S1G Capabilities element received from that STA contained a value of 1 or 3 and dot11S1GTravelingPilotOptionActivated is true (if there is more than one intended receiver, then this requirement applies for each intended receiver).

In Table 9-307 change “Extended Supported Rates element” to “Extended Supported Rates and BSS Membership Selectors element”.

Delete the “’s” in “XVECTOR’s parameter” in Table 10-3, Table 10-7, 10.6.12, 10.51.2 (3x).

Proposed resolution:

REVISED

Make the changes shown under “Proposed changes” for CID 1456 in <this document>, which address the issues raised.

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| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID 1375Mark RISON11.22.16.22189.9 | It should be possible to cancel multiple DMS streams | Allow a list of DMSIDs in DMS cancellation, i.e. the length is not necessarily set to 1. The STA should be able to send the cancellation with multiple DMSIDs |

Discussion:

11.22.16.2 specifies:

The DMS recipient may request removal of one or more accepted DMS traffic flows by sending a DMS Request frame or Reassociation Request frame that includes a DMS Request element containing one or more DMS Descriptors with the Request Type set to “Remove” and the DMSID field set to that the DMSID of the accepted DMS traffic flow to be removed. The DMS Length field in this DMS Descriptor is set to 1. The TLCAS Elements, TCLAS Processing Element TSPEC Element and Optional Subelements fields shall not be included in the DMS Descriptor if the Request Type is set to “Remove.” The DMS provider shall terminate individually addressed frame delivery for the requested group addressed frames identified by the DMSID for the requesting DMS recipient upon receipt of a DMS Request frame or Reassociation Request frame with the Request Type field equal to “Remove.” The DMS provider shall respond to the termination request by sending a DMS Response frame including the corresponding DMSID and a Response Type value of “Terminate” in the Response Type field of the corresponding DMS Status field. The DMS Length field in this DMS Status field is set to 3. The TLCAS Elements, TCLAS Processing Element, TSPEC Element and Optional Subelement fields shall not be included in the DMS Status field if the Response Type field is set to “Terminate.”

The first sentence allows for removal of multiple DMS streams, but the second half suggests only one DMS stream can be removed.

Proposed changes:

Change 11.22.16.2 as follows:

In this subclause, the following terms are used:

— *DMS provider*: An AP, PCP, or DMG STA associated with a PCP that provides DMS.

— *DMS recipient*: A non-AP STA that uses DMS.

Directed multicast service (DMS) is a service that ~~may be~~is provided by a DMS provider to ~~its associated~~ DMS recipients in the same BSS ~~that support DMS~~, where the DMS provider transmits group addressed MSDUs as individually addressed A-MSDUs. […]

A DMS recipient ~~that supports DMS~~ may request use of DMS […]

If the DMS provider accepts a DMS request identified by a DMS Descriptor, the Response Type field of the corresponding DMS Status field in the DMS Response element shall be set to “Accept” and a nonzero DMSID ~~is~~shall be assigned. A ~~Response Type~~ value of “Den~~y~~ied” shall be set in the Response Type field of the corresponding ~~Response Type field of the~~ DMS Status field in the DMS Response element when the DMS provider denies a DMS request identified by a DMS Descriptor, and the DMSID shall be set to 0. […] When one or more STAs send a DMS request to ~~an~~the DMS provider, […]

If the requested DMS is accepted by the DMS provider, the DMS provider shall send subsequent group addressed MSDUs that match the frame classifier specified in the DMS Descriptors to the ~~requesting STA~~DMS recipient as A-MSDU subframes […]

A DMS recipient may request modification of the traffic characteristics or attributes of one or more accepted DMS traffic flows by sending a DMS Request frame or Reassociation Request frame that includes a DMS Request element that contains~~ing~~ one or more DMS Descriptors each with the Request Type field set to “Change” and the DMSID field set to that of the DMSID of ~~with the DMSIDs that identify~~ the accepted DMS traffic flow~~s~~ to be modified. ~~If the Request Type field of a DMS Descriptor is set to “Change,” then t~~The values of at least one of the TSPEC Element and Optional Subelement fields shall be different from those of the accepted DMS traffic flow ~~corresponding to the DMSID~~.

If the DMS provider accepts a DMS change request identified by a DMS Descriptor, the Response Type field of the corresponding DMS Status field in the DMS Response element shall be set to “Accept” and the DMSID shall be set to that of the DMS Descriptor. If the DMS provider denies a DMS change request identified by a DMS Descriptor, the Response Type field of the corresponding DMS Status field in the DMS Response element shall be set to “Den~~y~~ied” and the DMSID shall be set to that of the DMS Descriptor. When the DMS provider denies a DMS change request identified by a DMS Descriptor, the existing DMS traffic flow of the corresponding DMSID shall remain unchanged.

~~The~~A DMS recipient may request removal of one or more accepted DMS traffic flows by sending a DMS Request frame or Reassociation Request frame that includes a DMS Request element containing one or more DMS Descriptors each with the Request Type field set to “Remove” and the DMSID field set to that of the DMSID of the accepted DMS traffic flow to be removed. The DMS Length field ~~in this DMS Descriptor is~~shall be set to 1. The T~~L~~CLAS Elements, TCLAS Processing Element TSPEC Element and Optional Subelements fields shall not be included. ~~in the DMS Descriptor if the Request Type is set to “Remove~~.~~”~~ ***<insert para break>***

The DMS provider shall terminate one or more accepted DMS traffic flows~~individually addressed frame delivery for the requested group addressed frames identified by the DMSID for the requesting DMS recipient~~ upon receipt of a DMS Request frame or Reassociation Request frame that includes a DMS Request element containing one or more DMS Descriptors each with the Request Type field equal to “Remove.” and the DMSID field set to that of the DMSID of an accepted DMS traffic flow. The DMS provider shall respond to the termination request by sending a DMS Response frame containing one or more DMS Status fields each including the corresponding DMSID and a ~~Response Type~~ value of “Terminate” in the Response Type field ~~of the corresponding DMS Status field~~. The DMS Length field ~~in this DMS Status field is~~shall be set to 3. The T~~L~~CLAS Elements, TCLAS Processing Element, TSPEC Element and Optional Subelement fields shall not be included. ~~in the DMS Status field if the Response Type field is set to “Terminate.”~~

The DMS provider may send an unsolicited DMS Response frame at any time to ~~cancel~~terminate an ~~granted~~accepted DMS traffic flow~~identified by the DMSID~~ by including the DMSID and a ~~Response Type~~ value of “Terminate” in the Response Type field in the DMS Status field in a DMS Response element. The DMS provider may reject a new DMS traffic flow or ~~cancel~~terminate a granted DMS traffic flow at any time based on network conditions, for example the number of associated STAs and channel load.

~~The~~A DMS recipient shall keep a list of group addresses for which ~~the DMS recipient~~it has requested DMS and that have been accepted by the DMS provider~~. The requesting STA~~, and shall discard group addressed frames that match a group address in this list until the DMS has been terminated. […]

NOTE—When the Last Sequence Control field in the DMS Response frame is not supported at the DMS provider (i.e., the sequence number value is not provided in the field), and a multicast MSDU that has sent using both individually addressed and group addressed frame transmission, termination of the DMS stream by the DMS provider might result in a DMS recipient receiving undetectable duplicate MSDUs that are not filtered out by the MAC. […]

If ~~the~~a DMS recipient supports both DMS and FMS, ~~the DMS recipient~~it shall not request both services for the same group addressed frames simultaneously~~. The DMS recipient~~, but may request them ~~different service (DMS vs. FMS)~~ for different group addressed frames simultaneously.

In Table 11-12 add “field” after “Request Type”.

In Figure 6-26 and in 6.3.67.6.1 change “granted DMS” to “accepted DMS”.

In 9.4.2.88 change “indicates the DMS Status” to “indicates the DMS status”.

In 11.22.16.3.3 change “Deny” to “Denied”.

Change 11.22.16.3.4 as follows:

— The AP or a mesh STA providing GCR service successfully transmits an individually addressed DMS Response frame with a DMS Response element containing a DMS Status field with the DMSID identifying the group addressed stream that has the ~~Status~~Response Type field set to “Terminate.”

Proposed resolution:

REVISED

Make the changes shown under “Proposed changes” for CID 1375 in <this document>, which specify the mechanism whereby multiple DMS streams may be terminated simultaneously.

|  |  |  |
| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID 1447Mark RISON9.7.31537.49 | "One of these is present at the start of the A-MPDU" -- but not clear about later on | Append "; these are not present other than at the start of the A-MPDU" |

Discussion:

The context is:



The intent is presumably that in the control response context there is some kind of ack at the start, and then any number of Action No Acks.

Proposed resolution:

ACCEPTED

|  |  |  |
| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID 1452Mark RISON10.2.61570.13 | The document sometimes implies an MPDU containing an entire MSDU a special case of a fragment, and sometimes that such an MPDU is not a fragment | At the end of the referenced subclause add a para "An MPDU containing an entire MSDU is sometimes considered a fragment and sometimes not, depending on context." |

Discussion:

Here an MPDU containing an entire MSDU is considered a fragment:

**9.2.4.4.3 Fragment Number field**

The Fragment Number field is a 4-bit field indicating the number of each fragment of an MSDU or MMPDU. The fragment number is set to 0 in the first or only fragment of an MSDU or MMPDU

Here an unencrypted MPDU containing an entire MSDU of size greater than dot11FragmentationThreshold is not considered a fragment:

**10.4 MPDU fragmentation(11ai)**

The MAC may fragment and reassemble MSDUs or MMPDUs that are carried in individually addressed MPDUs. The fragmentation and defragmentation mechanisms allow for fragment retransmission.

The length of each fragment shall be an equal number of octets for all fragments except the last, which may be smaller. The length of each fragment shall be an even number of octets, except for the last fragment of an MSDU or MMPDU, which may be either an even or an odd number of octets. The length of a fragment shall never be larger than dot11FragmentationThreshold unless security encapsulation is invoked for the MPDU.

… or is it?

If security encapsulation is active for the MPDU, then the MPDU shall be expanded by the encapsulation overhead and this may result in a fragment larger than dot11FragmentationThreshold.

A fragment is an MPDU, the Frame Body field of which carries all or a portion of an MSDU or MMPDU.

The term “fragment” appears about 700 times in md/D1.0.

Proposed resolution:

ACCEPTED

|  |  |  |
| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID 1507Mark RISON8.3.5.17.2723.43 | The only use of PHY-TXBUSY is as an immediate response to a PHY-TXSTART, where per 10.23.2.2.e) it is used to signal an internal collision. The IDLE state is never used | Delete "(STATE)" in 8.3.5.17.2. Delete the last para of 8.3.5.17.2. Delete "(BUSY)" in 10.23.2.2. Delete the "STATE" row of Table 8-3. Delete "The STATE of the primitive is set to BUSY. " and the last para of 8.3.5.17.3 |

Discussion:

As the commenter states, the only references to TXBUSY are mention in Table 8-2—PHY SAP inter-(sub)layer service primitives and Table 8-3—PHY SAP service primitive parameters, 8.3.5.17 PHY-TXBUSY.indication and in 10.23.2.2.e), and in this case the IDLE state is never used:

The backoff procedure shall be invoked by an EDCAF when any of the following events occurs:

[…]

e) The transmission attempt of a STA coordinated by an MM-SME collides internally with another STA coordinated by the same MM-SME (see 11.32 (MMSL cluster operation)), which is indicated to the first MAC entity with a PHY-TXBUSY.indication(BUSY) primitive as response to the PHY-TXSTART.request primitive.

Therefore the behaviour is that a STA coordinated by an MM-SME issues a PHY-TXSTART.request, and then one of two things happens:

* it gets a PHY-TXSTART.confirm, in which case it can proceed
* it gets a PHY-TXBUSY.indication, in which case it backs off

Therefore there is no use for the STATE; it is always BUSY.

Proposed changes:

Delete "(BUSY)" in 10.23.2.2. Delete the "STATE" row of Table 8-3.

Change 8.3.5.17 as follows:

8.3.5.17 PHY-TXBUSY.indication

8.3.5.17.1 Function

This primitive is an indication by the PHY to the local MAC entity(ies) of the current ~~transmission~~busy state of the PHY, when there are multiple MAC entities coordinated by an MM-SME.

8.3.5.17.2 Semantics of the service primitive

~~The primitive provides the following parameter:~~

The semantics of the primitive are as follows:

PHY-TXBUSY.indication ~~(STATE)~~

~~The STATE parameter can be one of two values: BUSY or IDLE. The parameter value is BUSY if the PHY is transmitting a PPDU and thus not available to respond with a PHY-TXSTART.confirm primitive to a PHY-TXSTART.request primitive. Otherwise, the value of the parameter is IDLE.~~

This primitive has no parameters.

8.3.5.17.3 When generated

The primitive is generated when the PHY issues a PHY-TXSTART.confirm primitive to one of the MAC entities coordinated by an MM-SME, and it is generated to all coordinated MAC entities except to the one to which it responds with the PHY-TXSTART.confirm primitive. ~~The STATE of the primitive is set to BUSY.~~

~~This primitive is generated within aTxPHYDelay of the occurrence of a change in the state of the PHY transmit state machine to the RX state. In this case, the STATE of the primitive is set to IDLE.~~

8. 3.5.17.4 Effect of receipt

~~The effect of receipt of this primitive by the MAC is unspecified if the STATE of the primitive is set to IDLE. The effect of receipt of this primitive by the MAC is specified in 10.24.2.12 (Retransmit procedures) if the STATE of the primitive is set to BUSY.~~

The receipt of this primitive triggers backoff among MAC entities coordinated by an MM-SME (see 10.24.2.2).

Proposed resolution:

REVISED

Make the changes shown under “Proposed changes” for CID 1507 in <this document>, which address the issue in the direction suggested.

|  |  |  |
| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID 1415Mark RISON9.2.4.5.4743.3 | The way the ack policy is referred to is confusing/inconsistent. Do you refer to the options indicated by the bit pattern (e.g. "Normal Ack or Implicit Block Ack Request") or do you refer to only the type of ack being requested in the context being requested (e.g. just "Implicit Block Ack Request" in the case of an A-MPDU)? | Change "The Ack Policy subfield is 2 bits in length and identifies the acknowledgment policy that is followed uponthe delivery of the MPDU." to "The Ack Policy subfield is 2 bits in length and identifies, together with other information such as whether it is in the context of an S-MPDU and the value of bit 6 of the Frame Control field, the acknowledgment policy that is followed uponthe delivery of the MPDU." at the referenced location" |
| CID 1526Mark RISON9.2.4.5.4743.3 | The way the ack policy is referred to is confusing/inconsistent. Do you refer to the options indicated by the bit pattern (e.g. "Normal Ack or Implicit Block Ack Request") or do you refer to only the type of ack being requested in the context being requested (e.g. just "Implicit Block Ack Request" in the case of an A-MPDU)? | See 17/1243r6 |

Discussion:

The four possible Ack Policy field settings have more than four meanings, disambiguated by context:

|  |  |  |
| --- | --- | --- |
| b5 | b6 | Meaning(s) |
| 0 | 0 | Normal Ackor Implicit Block Ack Request |
| 1 | 0 | No Ack |
| 0 | 1 | No explicit acknowledgmentor PSMP Ack[or HTP Ack in P802.11ax] |
| 1 | 1 | Block Ack |

The question arises: when we refer to this, are we focusing on the bit pattern, or are we focusing on the meaning? If we are focusing on the bit pattern, we should either use that explicitly or refer to all the possible meanings of that pattern (the latter might be preferable because no-one will be able to remember what each two-bit value refers to; but it might lead to spec rot when a new meaning gets added for a particular bit pattern). But if we are focusing on the meaning, it only makes sense to refer to the meaning that applies in that context (e.g. in the non-S-MPDU A-MPDU context then 00 only refers to Implicit Block Ack Request; no spec rot then).

A discussion in TGax has indicated that some people think referring to just one meaning of the Ack Policy field implies all the context necessary for that interpretation to apply. So e.g. “ack policy [note case] is Normal Ack” would mean (paraphrasing) “Ack Policy subfield is 00 and in non-A-MPDU or in A-MPDU with EOF=1” and “ack policy is Implicit BAR” would mean “Ack Policy subfield is 00 and in A-MPDU with (if not HT PPDU) EOF=0”. We could define this, i.e. define and then use the expression “the ack policy is Normal Ack[/Implicit Block Ack Request/PSMP Ack/No Explicit Acknowlegment/HTP Ack]”. There was agreement in TGmd to this approach.

Note to self: ack policy not blockackpolicy not "bar ack policy" not "ba ack policy" not "info ack policy" not "immediate block ack policy" not "delayed block ack policy" not "block ack policy subfield"

Proposed changes:

In these proposed changes, “$noun” is to be understood as “BLAH”, excluding the double quotes.

In Table 9-10 change “Ack Policy” to “Ack $noun” throughout.

Change 9.2.4.5.4 as follows:

* Ack ~~Policy~~$noun subfield

The Ack ~~Policy~~$noun subfield is 2 bits in length and, together with other information, as shown in Table 9-9, identifies the ack~~nowledgment~~ policy, i.e. the behavior ~~that is~~ followed upon the delivery of the MPDU. ~~The interpretation of these 2 bits is given in Table 9-9 (Ack Policy subfield in QoS Control field of QoS Data frames).~~

|  |  |  |
| --- | --- | --- |
|  |  | * Ack policy~~Policy subfield in QoS Control field of QoS Data frames~~
 |
| Ack policy | Bits in QoS Control field | Other conditions | Meaning |
|  | Bit 5 | Bit 6 |  |
| Normal Ack | 0 | 0 | MPDU is a non-A-MPDU frame | ~~Normal Ack or Implicit Block Ack Request.~~ ~~In a frame that is a non-A-MPDU frame:~~~~w~~Where either the originator or theaddressed recipient does not support fragment BA procedure:The addressed recipient returns an Ack or QoS +CF-Ack frame after a short interframe space (SIFS) period, according to the procedures defined in 10.3.2.11 (Acknowledgment procedure) and 10.24.3.5 (HCCA transfer rules). A non-DMG STA uses this ack policy ~~sets the Ack Policy subfield~~ for individually addressed QoS Null (no data) frames ~~to this value~~.~~In a non-A-MPDU frame containing a fragment w~~Where both the originator and the addressed recipient support the fragment BA procedure:The addressed recipient returns an NDP BlockAck frame after a SIFS, according tothe procedure defined in 10.3.2.12 (Fragment BA procedure(11ah)).~~Otherwise:~~~~The addressed recipient returns a BlockAck frame, either individually or as part of an A-MPDU starting a SIFS after the PPDU carrying the frame, according to the procedures defined in 10.3.2.9 (Acknowledgment procedure), 10.24.7.5 (Generation and transmission of BlockAck frames by an HT STA or DMG STA), 10.24.8.3 (Operation of HT-delayed block ack), 10.28.3 (Rules for RD initiator), 10.28.4 (Rules for RD responder), and 10.32.3 (Explicit feedback beamforming).~~ |
| Implicit BAR | 0 | 0 | MPDU is not a non-A-MPDU frame | The addressed recipient returns a BlockAck frame, either individually or as part of an A-MPDU starting a SIFS after the PPDU carrying the frame, according to the procedures defined in 10.3.2.11 (Acknowledgment procedure), 10.26.6.5 (Generation and transmission of BlockAck frames by an HT STA or DMG STA), 10.26.7.3 (Operation of HT-delayed block ack), 10.30.3 (Rules for RD initiator), 10.30.4 (Rules for RD responder), and 10.35.3 (Explicit feedback beamforming). |
| No Ack | 1 | 0 | None | ~~No Ack~~The addressed recipient takes no action upon receipt of the frame. More details are provided in 10.25 (No Acknowledgment (No Ack)).This ack policy is used ~~The Ack Policy subfield is set to this value~~ in all individually addressed frames in which the sender does not require acknowledgment. It is also used ~~The Ack Policy subfield is also set to this value~~ in all group addressed frames that use the QoS frame format except QoS Data frames with a TID for which a block ack agreement exists.It ~~This value of the Ack Policy subfield~~ is not used for QoS Data frames with a TID for which a block ack agreement exists.~~The Ack Policy subfield for group addressed QoS Null (no data) frames is set to this value.~~ |
| No Explicit Acknowledgment | 0 | 1 | Bit 6 of the Frame Control field (see 9.2.4.1.3 (Type and Subtype subfields)) is equal to 1 | ~~No explicit acknowledgment or PSMP Ack.~~~~When bit 6 of the Frame Control field (see 9.2.4.1.3 (Type and Subtype subfields)) is set to 1:~~There might be a response frame to the frame that is received, but it is neither the Ack frame nor any Data frame of subtype +CF-Ack.The Ack Policy subfield for QoS CF-Poll and QoS CF-Ack +CF-Poll Data frames is set to this value.~~When bit 6 of the Frame Control field (see 9.2.4.1.3 (Type and Subtype subfields)) is set to 0:~~ ~~The acknowledgment for a frame indicating PSMP Ack when it appears in a PSMP downlink transmission time (PSMP-DTT) is to be received in a later PSMP uplink transmission time (PSMP-UTT).~~~~The acknowledgment for a frame indicating PSMP Ack when it appears in a PSMP-UTT is to be received in a later PSMP-DTT.~~NOTE—Bit 6 of the Frame Control field (see 9.2.4.1.3 (Type and Subtype subfields)) indicates the absence of a ~~data~~ Frame Body field in a QoS Data frame. When equal to 1, the QoS Data frame contains no Frame Body field, and any response is generated in response to a QoS CF-Poll or QoS CF-Ack +CF-Poll frame, but does not signify an acknowledgment of data. ~~When set to 0, the QoS Data frame contains a Frame Body field, which is acknowledged as described in 10.29.2.7 (PSMP acknowledgment rules).~~ |
| PSMP Ack | 0 | 1 | Bit 6 of the Frame Control field (see 9.2.4.1.3 (Type and Subtype subfields)) is equal to 0 | The acknowledgment for a frame indicating PSMP Ack when it appears in a PSMP downlink transmission time (PSMP-DTT) is to be received in a later PSMP uplink transmission time (PSMP-UTT).The acknowledgment for a frame indicating PSMP Ack when it appears in a PSMP-UTT is to be received in a later PSMP-DTT.See 10.31.2.7 (PSMP acknowledgment rules). |
| Block Ack | 1 | 1 | None | ~~Block Ack~~The addressed recipient takes no action upon the receipt of the frame except for recording the state. The recipient can expect a BlockAckReq frame or implicit block ack request in the future to which it responds using the procedure described in 10.26 (Block acknowledgment (block ack)). |

In 10.24.2.8 “a frame transmitted with an acknowledgment policy that does not require immediate acknowledgment” and “an individually addressed frame transmitted with an acknowledgment policy that requires immediate acknowledgment”; 11.4.1 “allows other parameters to be specified that are associated with the TS, such as a traffic classifier and acknowledgment policy”; 11.5.4 “regardless of the acknowledgment policy used in that frame”; K.4.1 “(within the constraints of the minimum PHY rate, acknowledgment policy, and so forth)” change “acknowledgment policy” to “ack policy”.

In B.4.12 “Decode of no-acknowledgment policy in QoS Data frames” change “no-acknowledgment policy” to “No Ack ack policy”.

Change 5.1.1.4 as follows:

When an MSDU is received from the MAC SAP with one of the following service class indications, and the recipient STA is a QoS STA:

— QoSAck, the MSDU is transmitted using one or more QoS Data frame(s) with an ack policy other than No Ack~~the Ack Policy subfield in the QoS Control field set to Normal Ack or Implicit Block Ack Request, PSMP Ack, or Block Ack~~.

— QoSNoAck, the MSDU is transmitted using one or more QoS Data frame(s) with an ack policy of ~~the Ack Policy subfield in the QoS Control field set to~~ No Ack.

[…]

When a QoS Data frame is received from another STA, the service class parameter in the MA-UNITDATA.indication primitive is set to

— QoSAck, if the frame is a QoS Data frame with an ack policy other than No Ack~~the Ack Policy subfield in the QoS Control field equal to either Normal Ack or Block Ack~~.

— QoSAck, if the frame was delivered via the DMS or the GCR block ack retransmission policy.

— QoSNoAck, if the frame is a QoS Data frame with an ack policy of~~the Ack Policy subfield in the QoS Control field equal to~~ No Ack. This service class is also used when the DA parameter is a group address unless the frame was delivered via DMS or the GCR block ack retransmission policy.

Change 9.2.5.2 as follows:

5) In Management frames, non-QoS Data frames (i.e., with bit 7 of the Frame Control field equal to 0), and individually addressed Data frames with an ack policy other than No Ack or Block Ack~~the Ack Policy subfield equal to Normal Ack only~~, the Duration/ID field is set to one of the following:

[…]

6) In individually addressed QoS Data frames with an ack policy of~~the Ack Policy subfield equal to~~ No Ack or Block Ack, for Action No Ack frames, and for group addressed frames, the Duration/ID field is set to one of the following:

Change 9.7.3 as follows:

All of the MPDUs within an A-MPDU are addressed to the same RA. All QoS Data frames within an A-MPDU that have a TID for which an HT-immediate block ack agreement exists have the same value for the Ack ~~Policy~~$noun subfield of the QoS Control field.

In Figure 9-946 and Figure 9-932 change “Ack Policy” to “Ack $noun”.

Change 9.8.3.1 as follows:

The Ack ~~Policy~~$noun subfield identifies the acknowledgment policy that is followed upon the delivery of the MPDU, as defined in Table 9-528 (Ack Policy subfield in the Frame Control field for PV1 frames(11ah)).

|  |  |  |
| --- | --- | --- |
|  |  | * Ack ~~Policy~~$noun subfield in the Frame Control field for PV1 frames(11ah)
 |
| Ack policy |  Ack ~~Policy~~$noun subfield | Other conditions | Meaning |
| Normal Ack | 0 | MPDU is non-A-MPDU frame | ~~Normal Ack or Implicit Block Ack Request.~~~~In a PV1 frame that is a non-A-MPDU frame (#233)w~~Where either the originator or the addressed recipient does not support fragment BA procedure:The addressed recipient returns an Ack frame after a short interframe space (SIFS) period, according to the procedures defined in 10.3.2.10 (Dual CTS protection). ~~In a PV1 frame that is part of an A-MPDU that is not an S-MPDU:~~~~The addressed recipient returns a BlockAck frame, either individually or as part of an A-MPDU starting a SIFS after the PPDU carrying the frame, according to the procedures defined in 10.3.2.10 (Dual CTS protection), and 10.26.7.3 (Operation of HT-delayed block ack).~~ ~~In a PV1 frame that is a fragment:~~When both the originator and the addressed recipient support the fragment BA procedure, the addressed recipient returns an NDP BlockAck frame after a SIFS, according to the procedure defined in 10.3.2.12 (Fragment BA procedure(11ah)).Ack Policy 0 is limited to at most one MU recipient per MU PPDU. |
| Implicit BAR | 0 | MPDU is not a non-A-MPDU frame | The addressed recipient returns a BlockAck frame, either individually or as part of an A-MPDU starting a SIFS after the PPDU carrying the frame, according to the procedures defined in 10.3.2.10 (Dual CTS protection), and 10.26.7.3 (Operation of HT-delayed block ack).  |
| No Ack | 1 | MPDU is non-A-MPDU frame | ~~No Ack or Block Ack Policy.~~~~In a PV1 frame that is a non-A-MPDU frame(#233):~~The addressed recipient takes no action upon receipt of the frame. More details are provided in 10.27 (No Acknowledgment (No Ack)). This ack policy is used ~~The Ack Policy subfield is set to this value~~ in all individually addressed frames in which the sender does not require acknowledgment. It is also used ~~The Ack Policy subfield is also set to this value~~ in all group addressed frames. It ~~This combination~~ is not used for PV1 Data frames with a TID for which a ~~B~~**b**lock ~~A~~ack agreement exists. ~~In a PV1 frame that is part of an A-MPDU frame that is not an S-MPDU:~~~~The addressed recipient takes no action upon the receipt of the frame except for recording the state. The recipient can expect a BlockAckReq frame in the future to which it responds using the procedure described in 10.26 (Block acknowledgment (block ack)).~~ |
| Block Ack | 1 | MPDU is not a non-A-MPDU frame | The addressed recipient takes no action upon the receipt of the frame except for recording the state. The recipient can expect a BlockAckReq frame in the future to which it responds using the procedure described in 10.26 (Block acknowledgment (block ack)). |

In Table 9-521 change “These have the Ack Policy field equal to Block Ack.” to “These have Block Ack ack policy.”, “One or more QoS Data frames with the Ack Policy field equal to Implicit Block Ack Request” to “One or more QoS Data frames with Implicit BAR ack policy” (2x), “QoS Null MPDU with the Ack Policy subfield set to No Ack” to “QoS Null MPDU with the No Ack ack policy” (3x, once “MPDU” twice “MPDUs”), “A BlockAckReq frame with an optional QoS Null MPDU the Ack Policy subfield set to No Ack” to “A BlockAckReq frame with an optional QoS Null MPDU with No Ack ack policy”, “NOTE—These MPDUs all have the Ack Policy field equal to the same value, which is either Implicit Block Ack Request or Block Ack.” to “NOTE—These MPDUs all have the same ack policy, which is either Implicit BAR or Block Ack.”

In Table 9-522 change “These have the Ack Policy field equal to Block Ack.” to “These have the Block Ack ack policy.”, “These have the Ack Policy field equal to No Ack” to “These have No Ack ack policy”.

In Table 9-523 change “Acknowledgment in response to data received with the Ack Policy field equal to PSMP Ack” to “Acknowledgment in response to data received with the PSMP Ack ack policy”, “QoS Data frames in which the Ack Policy field is equal to PSMP Ack or Block Ack” to “QoS Data frames with the PSMP Ack or Block Ack ack policy”, “These have the Ack Policy field equal to Block Ack.” to “These have Block Ack ack policy.”, “These have the Ack Policy field equal to No Ack.” to “These have No Ack ack policy.”

In 10.2.6 change “with its Ack Policy subfield set to Normal Ack” to “with Normal Ack ack policy”, “with the Ack Policy of the corresponding MPDUs set to Normal Ack” to “with Normal Ack ack policy for the corresponding MPDUs”.

In 10.3.2.11 change “Individually addressed QoS Data frames(Ed) where the Ack Policy subfield is equal to Normal Ack” to “Individually addressed QoS Data frames(Ed) with Normal Ack ack policy”.

Change 10.3.2.12 as follows:

An originator STA may send F-MPDUs ~~and set the Ack Policy field of the F-MPDU to~~ with Block Ack ack policy. A recipient STA shall not send any frame as an immediate response to an F-MPDU ~~that has the Ack Policy field equal to~~with Block Ack ack policy. An originator STA may solicit an immediate response following an F-MPDU by setting the ~~Ack Policy field~~ack policy of the eliciting F-MPDU to Implicit ~~Block Ack Request~~BAR.

The receiving STA that is the intended receiver of either an F-MPDU with ~~the Ack Policy field equal to~~ Implicit ~~Block Ack Request~~BAR ack policy or a BAR frame shall […]

In 10.3.2.17 change “Ack Policy field” to “Ack $noun field”.

In Table 10-7 change “The Ack Policy subfield in any included QoS Control field or in the Frame Control field of the first MPDU in the PPDU is equal to No Ack or Block Ack” to “The ack policy in any included QoS Data MPDU or the Ack $noun subfield in the Frame Control field of the first MPDU in the PPDU is No Ack or Block Ack”, “The Ack Policy subfield (if any) in the QoS Control field or in the Frame Control field is equal to Normal Ack or Implicit Block Ack Request.” to “The ack policy in any included QoS Data MPDU or the Ack $noun subfield in the Frame Control field of the first MPDU in the PPDU is Normal Ack or Implicit BAR.” (2x)

In 10.6.6.5.2 change “implicit BlockAck request” to “implicit block ack request” (2x).

In 10.7 change “set to Normal Ack or Implicit Block Ack Request, PSMP Ack, or Block Ack” to “the QoS Data frames that are used to send these MSDUs or A-MSDUs shall have Normal Ack, Implicit BAR, PSMP Ack or Block Ack ack policy”, “the Ack Policy subfield in the QoS Control field set to No Ack” to “No Ack ack policy”.

In 10.12 change “Ack Policy equal to Normal Ack” to “Normal Ack ack policy”.

In 10.13.8 change “A Data frame cannot indicate an Ack Policy of “Implicit Block Ack”” to “A QoS Data frame cannot have Implicit BAR ack policy”, “A Data frame could indicate an Ack Policy of “Implicit Block Ack”” to “A QoS Data frame could have Implicit BAR ack policy”.

In 10.15 change “All QoS Data frames within A-MPDUs within an A-PPDU shall have the same value of the Ack Policy subfield of the QoS Control field” to “All QoS Data frames within A-MPDUs within an A-PPDU shall have the same ack policy”.

In 10.24.3.2.3 change “with the Ack Policy subfield equal to Normal Ack,” to “with Normal Ack ack policy,” (2x).

In 10.24.3.5.1 change “A STA shall respond to QoS Data frames having the Ack Policy subfield in the QoS Control field equal to Normal Ack with an Ack frame” to “A STA shall respond to QoS Data frames having Normal Ack ack policy with an Ack frame”.

In 10.24.4.2.3 change “an MPDU transmitted with Normal Ack policy” to “an MPDU transmitted with Normal Ack ack policy”.

In 10.26.6.2 change “It may adjust the Ack Policy field of transmitted QoS Data frames” to “It may adjust the ack policy of transmitted QoS Data frames”.

In 10.26.6.5 change “receives an A-MPDU that contains one or more MPDUs in which the Address 1 field matches its MAC address with the Ack Policy field equal to Normal Ack (i.e., implicit block ack request)” to “receives an A-MPDU that contains one or more QoS Data frames with Implicit BAR ack policy”, “received A-MPDU with Ack Policy field equal to Normal Ack (i.e., implicit block ack request)” to “received QoS Data frame with Implicit BAR ack policy” (3x).

In 10.26.6.7 change “A STA may send a block of data in a single A-MPDU where each Data frame has its Ack Policy field set to Normal Ack” to “A STA may send a block of data in a single A-MPDU where each QoS Data frame Normal Ack ack policy”, “Alternatively, the originator may send an A-MPDU where each Data frame has its Ack Policy field set to Block Ack” to “Alternatively, the originator may send an A-MPDU where each QoS Data frame has Block Ack ack policy”, “a Data frame that was previously transmitted within an A-MPDU that had the Ack Policy field equal to Normal Ack” to “a QoS Data frame that was previously transmitted within an A-MPDU that had Normal Ack ack policy”, “MPDUs are transmitted with the Ack Policy subfield set to Block Ack” to “QoS Data MPDUs are transmitted with Block Ack ack policy”, “an MPDU or A-MPDU that has an Ack policy other than Normal Ack” to “a QoS Data frame has an ack policy other than Normal Ack”.

In 10.26.10.2 change “It can adjust the Ack Policy field of transmitted Data frames” to “It can adjust the ack policy of transmitted QoS Data frames”.

In 10.27 change “When a QoS Data frame is transmitted with the Ack Policy subfield set to No Ack” to “When a QoS Data frame is transmitted with No Ack ack policy”.

In 10.30.3 change “A QoS Data frame with the Ack Policy field equal to any value except PSMP Ack (i.e., including Implicit Block Ack Request)” to “A QoS Data frame with an ack policy other than PSMP Ack (i.e., including Implicit BAR)”.

In 10.30.4 change “the Ack Policy field equal to Normal Ack” to “the Normal Ack ack policy”.

In 10.31.2.6 change “Ack Policy field value” to “ack policy”, “An Ack Policy of” to “An ack policy of” (2x).

Change 10.31.2.7 as follows:

A non-AP STA shall transmit a Multi-TID BlockAck frame during its PSMP-UTT for data received with ~~the Ack Policy field set to~~ PSMP Ack ack policy or for TIDs in a received Multi-TID BlockAckReq frame for which a BlockAck frame (Compressed BlockAck or Multi-TID BlockAck) has not yet been transmitted. An AP shall transmit a Multi-TID BlockAck frame during a PSMP-DTT addressed to the STA for the data received from that STA with ~~the Ack Policy field set to~~ PSMP Ack ack policy or for TIDs in a Multi-TID BlockAckReq frame received from that STA for which a BlockAck frame (Compressed BlockAck or Multi-TID BlockAck) has not yet been transmitted.

Data sent and received by a non-AP STA within a PSMP sequence may be contained in an A‑MPDU that contains MPDUs of multiple TIDs. Frames of differing TIDs may be transmitted in the same PSMP-DTT or PSMP-UTT and are not subject to AC prioritization.

The subtype subfield of Data frames and the ~~Ack Policy subfield~~ ack policy of QoS Data frames transmitted during either PSMP-DTT or PSMP-UTT periods are limited by the following rules:

* A QoS Data frame transmitted under an immediate or HT-immediate block ack agreement during either a PSMP-DTT or a PSMP-UTT shall have one of the following ~~Ack Policy values~~: PSMP Ack or Block Ack ack policy.
* A QoS Data frame transmitted under an HT-delayed block ack agreement during either a PSMP-DTT or a PSMP-UTT shall have ~~the Ack Policy field set to~~ Block Ack ack policy.
* A Data frame with the RA field containing an individual address transmitted during either a PSMP-DTT or a PSMP-UTT and for which no block ack agreement exists shall be a QoS data subtype and shall have ~~the Ack Policy field set to~~ No Ack ack policy.
* The ~~Ack Policy field~~ack policy of a QoS Data frame transmitted during a PSMP sequence shall not be ~~set to~~ ~~either~~ Normal Ack or Implicit ~~Block Ack~~BAR.

All TID values within a Multi-TID BlockAck frame or Multi-TID BlockAckReq frame shall identify a block ack agreement that is HT-immediate. QoS Data frames transmitted with ~~Ack Policy field equal to~~ PSMP Ack ack policy shall have a TID value that identifies a block ack agreement that is immediate or HT-immediate block ack.

NOTE—In this case, HT-immediate relates to the keeping of acknowledgment state for timely generation of a Multi-TID BlockAck frame. It does not imply that there is any response mechanism for sending a Multi-TID BlockAck frame after a SIFS. The timing of any response is determined by the PSMP schedule.

Acknowledgment for data transmitted under an (#57)HT-immediate block ack agreement may be requested implicitly using PSMP Ack ack policy~~setting of the Ack Policy field~~ in QoS Data frames or explicitly with a (#57)BlockAckReq or Multi-TID BlockAckReq frame. An AP that transmits QoS Data frames with ~~the Ack Policy field equal to~~ PSMP Ack ack policy or that transmits a (#57)BlockAckReq or Multi-TID BlockAckReq frame addressed to a STA in a PSMP-DTT shall allocate sufficient time for the transmission of a (#57)BlockAck frame or Multi-TID BlockAck frame, respectively, in a PSMP-UTT allocated to that STA within the same PSMP sequence. A STA that has received a PSMP frame and that receives a QoS Data frame with ~~the Ack Policy field equal to~~ PSMP Ack ack policy or that receives a (#57)BlockAckReq or Multi-TID BlockAckReq frame shall transmit a (#57)BlockAck frame or Multi-TID BlockAck frame, respectively, in the PSMP-UTT of the same PSMP sequence.

NOTE 1—If the STA does not receive the PSMP frame, it might still receive the downlink data, in which case it can record the status of the data in its block ack buffer, but it cannot transmit a Multi-TID BlockAck frame.

NOTE 2—A Multi-TID BlockAck frame or Multi-TID BlockAckReq frame might contain any TID related to an HT-immediate block ack agreement regardless of the contents of any prior transmission of Multi-TID BlockAck, Multi-TID BlockAckReq, or QoS Data frames.

An AP that receives a QoS Data frame with ~~the Ack Policy field equal to~~ PSMP Ack ack policy during a PSMP-UTT shall transmit a response that is a (#57)BlockAck frame or Multi-TID BlockAck frame in the next PSMP-DTT that it schedules for that STA, except if it has transmitted a BlockAck frame for such TIDs to the STA outside the PSMP mechanism.

NOTE 1—The exception might occur if the non-AP STA transmits one or more BlockAckReq frames or QoS Data frames with ~~the Ack Policy subfield(#1489) set to~~ Implicit ~~Block Ack~~BAR ack policy outside the PSMP mechanism.

NOTE 2—An AP might receive a Multi-TID BlockAck frame in the PSMP-UTT of the current PSMP sequence. If the Multi-TID BlockAck frame indicates lost frames or if the AP does not receive an expected Multi-TID BlockAck frame, the AP might schedule and retransmit those frames in a PSMP sequence within the current PSMP burst or in the next SP.

A Multi-TID BlockAck frame shall include all of the TIDs for which data were received with ~~Ack Policy field equal to~~ PSMP Ack ack policy and for the TIDs listed in any Multi-TID BlockAckReq frame received during the previous PSMP-DTT (STA) or PSMP-UTT (AP). The originator may ignore the bitmap for TIDs in the Multi-TID BlockAck frame for which the originator has not requested a Multi-TID BlockAck frame to be present either implicitly (by the transmission of Data frames with ~~the Ack Policy field set to~~ PSMP Ack ack policy) or explicitly (by the transmission of a Multi-TID BlockAckReq frame).

If a BlockAckReq frame for an HT-delayed block ack agreement is transmitted during a PSMP sequence, the BAR Ack Policy subfield of the BlockAckReq frame shall be set to the value representing No Acknowledgment.

In 10.35.2.4.3 change “with the Ack Policy field set to Normal Ack” to “with Normal Ack ack policy” (2x).

In 11.2.3.17 and 11.2.3.19 change “The STA receives a frame intended for it with the More Data subfield equal to 0 and the Ack Policy subfield in the QoS Control field is equal to No Ack or sends an acknowledgment if the Ack Policy subfield is not equal to No Ack” to “The STA receives a QoS Data frame intended for it with the More Data subfield equal to 0 and No Ack ack policy or sends an acknowledgment if the ack policy is not No Ack”.

In 11.4.4.4 change “the Ack Policy subfield” to “the TS Info Ack Policy subfield” (2x).

In 11.4.10 change “— Arrival of valid MA-UNITDATA.request primitives using this TS at the MAC SAP when the QoS Data frames are sent with the Ack Policy subfield equal to No Ack

— Confirmation of correctly sent MSDUs that belong to the TS within the MAC when the QoS Data frames are sent with the Ack Policy subfield set other than to No Ack” to

“— Arrival of valid MA-UNITDATA.request primitives using this TS at the MAC SAP when the QoS Data frames are sent with No Ack ack policy

— Confirmation of correctly sent MSDUs that belong to the TS within the MAC when the QoS Data frames are sent with ack policy other than No Ack” (2x).

In 11.5.4 change “the Ack Policy subfield in the QoS Control field of that MPDU header is Block Ack or Implicit Block Ack Request” to “the ack policy is Block Ack or Implicit BAR”, “receives Data frames with the Ack Policy subfield equal to Block Ack” to “receives QoS Data frames with Block Ack ack policy”.

In Table G-1 change “Normal Ack policy” to “Implicit BAR ack policy”, “the Ack Policy subfield equal to No Ack” to “No Ack ack policy”, “the Ack Policy subfield equal to Normal Ack” to “Normal Ack ack policy”, “Ack Policy field of QoS Data frame is equal to PSMP Ack” to “QoS Data frame with PSMP Ack ack policy”.

In G.4 change “PSMP Ack Ack Policy” to “PSMP Ack ack policy”.

In O.3 change “The Ack Policy field of the QoS Data frames in this PPDU is set to Implicit Block Ack Request.” to “The ack policy of the QoS Data frames in this PPDU is Implicit BAR.” (2x), “the Ack Policy field of its QoS Data frames set to Implicit Block Ack Request” to “Implicit BAR ack policy for its QoS Data frames”, “QoS Data frames with the Ack Policy field set to Implicit Block Ack” to “QoS Data frames with Implicit BAR ack policy”, “with the Ack Policy field set to Implicit Block Ack Request” to “with Implicit BAR ack policy”.

Finally, change any remaining instances of “Ack Policy field” to “Ack $noun subfield”.

Proposed resolution:

REVISED

Make the changes shown under “Proposed changes” for CIDs 1415 and 1526 in <this document>, which address the issues raised by defining the general concept of an “ack policy” and the specific signalling for each ack policy.

|  |  |  |
| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID 1480Mark RISONC.33815.08 | dot11EDThreshold is useless as it is undefined for PHYs other than DSSS and HR/DSSS | Delete dot11EDThreshold at the referenced location (lines 8-20) |

Discussion:

The issue is actually not that dot11EDThreshold is undefined for PHYs other than DSSS and HR/DSSS, but that its use is not specified in any PHY clause.

It is plausible that this MIB variable is intended to relate to the following in 15.4.6.5 CCA:

a) The ED threshold shall be ≤ –80 dBm for TX power > 100 mW, –76 dBm for 50 mW < TX power ≤ 100 mW, and –70 dBm for TX power ≤ 50 mW.

and in 16.3.8.5 CCA:

a) If a valid HR/DSSS signal is detected during its preamble within the CCA window, the ED threshold shall be less than or equal to –76 dBm for TX power > 100 mW; –73 dBm for 50 mW < TX power ≤ 100 mW; and –70 dBm for TX power ≤ 50 mW.

Proposed changes:

*Alternative 1:*

At the end of the bullet a) in 15.4.6.5 and 16.3.8.5 add a sentence “The ED threshold is specified in dot11EDThreshold.”

*Alternative 2:*

Delete the dot11EDThreshold row in Table 15-4 and Table 16-3.

Delete “,

dot11EDThreshold Integer32” at 4078.51.

Delete 4079.46 to 4079.58.

Delete “,

dot11EDThreshold” at 4176.53.

Delete “dot11EDThreshold,” at 4179.18

Proposed resolution:

REVISED

Make the changes shown under “Proposed changes” for CID 1480 in <this document>, which

|  |  |  |
| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID 1465Mark RISON12.9.2 | In 12.9.2 there is text like "MSDU or A-MSDU has an individual RA" and "... has a group RA" (2058.38, 2059.50, 2060.12, 2060.33, 2060.59, 2063.43, 2064.50, 2065.28, 2066.11, 2068.15, 2068.29, 2068.42 (+missing "M")), but MSDUs/A-MSDUs don't have an RA, only MPDUs do. 1332.40/43/46/50/56 and 3196.2 are also suspect. [All refs are to mc/D6.0] | Either change all the references from RAs to DAs, or change all the subjects from MSDUs/A-MSDUs/MMPDUs to MPDUs (containing all or part of a MSDU/A-MSDU/MMPDU) |

Discussion:

As it says in the comment, only MPDUs have RAs. MSDUs and A-MSDUs and MMPDUs have DAs.

Are the following in 10.7 OK, i.e. SA being linked with RA?

A non-QoS STA shall not have more than one MSDU or MMPDU from a particular SA to a particular individual RA outstanding at a time.

NOTE 1—A simpler, more restrictive alternative to the rule in the above paragraph that might be used is that no more than one MSDU with a particular individual RA be outstanding at a time.

For frames that are not sent within the context of a block ack agreement, a QoS STA shall not have more than one MSDU or A-MSDU for each TID or MMPDU from a particular SA to a particular individual RA outstanding at any time.

NOTE 2—A simpler, more restrictive alternative to the rule in the above paragraph that might be used is that no more than one MSDU or A-MSDU with any particular TID with a particular individual RA be outstanding at any time.

And in dot11RTSThreshold: “PSDU has an individual address in the Address 1 field”?

Proposed changes:

In 12.9.2.2 change “MSDU or A-MSDU has an individual RA” to “MSDU or A-MSDU has an individual DA”,

“MPDU has a group addressed RA” to “MPDU has a group RA”.

In 12.9.2.3 change “MMPDU has an individual RA” to “MMPDU has an individual DA” (2x),

change “MMPDU has a group RA” to “MMPDU has a group DA” (2x).

In 12.9.2.6 change “MPDU has a group addressed RA” to “MPDU has a group RA”.

In 12.9.2.7 change “MMPDU has an individual RA” to “MMPDU has an individual DA” (2x),

change “MMPDU has a group RA” to “MMPDU has a group DA” (2x).

In 12.9.2.9 change “MMPDU has individual RA” to “MMPDU has an individual DA” (2x),

“MPDU has group addressed RA” to “MMPDU has group DA”.

Change “has individual RA” to “has an individual RA” throughout.

Proposed resolution:

REVISED

Make the changes shown under “Proposed changes” for CID 1465 in <this document>, which change the references from RAs to DAs.

|  |  |  |
| --- | --- | --- |
| Identifiers | Comment | Proposed change |
| CID Mark RISON |  |  |

Discussion:

Proposed changes:

Proposed resolution:

REVISED

Make the changes shown under “Proposed changes” for CID in <this document>, which

**References:**

802.11md/D1.0 except where otherwise specified