IEEE P802.11
Wireless LANs

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| Text proposal on ISTA-2-RSTA LMR feedback |
| Date: 2019-05-15 |
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Abstract

This submission contains a proposal to resolve CID-1624, 2295, 2296, 2297, 2298, 2299, 2300 received during TGaz LB# 240. The proposal clarifies that an RSTA can request an ISTA to transmit the time measurement feedback and optionally the AoA measurement feedback to the RSTA only if the ISTA has indicated that it is willing to share its data.

**Introduction**

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| **CID** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 2295 | 48.14 | "The ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field is set to 1 in the Initial Fine Timing Measurement Request frame indicates that the ISTA is willing to report the estimated LMR to the RSTA; when included in the Initial Fine Timing Measurement frame indicates that the RSTA requires a LMR report from the ISTA at the end of each rangingexchange. Otherwise the ISTA2RSTA LMR Feedback subfield is set to 0. See 11.22.6.4.2.4 (TB 1419 Measurement Reporting Part) and 11.22.6.4.3.3 (Measurement Report)". The text needs to be clarified that only when the ISTA has set the ISTA2RSTA LMR Feedback field to 1 (i.e., willing to share its location information) in the initial FTM Request frame, then the RSTA may set the ISTA2RSTA LMR Feedback field to 1 in the initial FTM frame. | Modify the text to clarify that, only when the ISTA has set the ISTA2RSTA LMR Feedback field to 1 (i.e., willing to share its location information) in the initial FTM Request frame, then the RSTA may set the ISTA2RSTA LMR Feedback field to 1 in the initial FTM frame; the RSTA shall set the ISTA2RSTA LMR Feedback field to 0 in the initial FTM frame if ISTA has set the ISTA2RSTA LMR Feedback field to 0 (i.e., not willing to share its location information) in the initial FTMRequest frame. See submission. | REVISE: Apply editor instructions as described in document 11-19-0481r5 |
| 2296 | 48.14 | "The I2R ToA Type subfield is set to 1 in the initial Fine Timing Measurement Request frame to indicate that the ISTA supports phase shift type ToA feedback in the ISTA-to-RSTA LMR. The I2R ToA type subfield is set to 1 in the initial Fine Timing Measurement frame to set the ToA feedback type in the ISTA-to-RSTA LMR to phase shift, corresponding to the average linear phase across the subcarriers. Otherwise, the I2R ToA Type is set to 0 and the ISTA-to-RSTA LMR ToA feedback type will be first path reporting." The spec needs to specify that when the ISTA-to-RSTA LMR Feedback field in the initial FTM Request frame is set to 0 (i.e., not willing to share its location information), then the I2R ToA Type subfield in both the initial FTM Request frame and the initial FTM frame shall have no meaning. | Modify the spec to specify that when the ISTA-to-RSTA LMR Feedback field in the initial FTM Request frame is set to 0 (i.e., not willing to share its location information), then the I2R ToA Type subfield in both the initial FTM Request frame and the initial FTM frame is reserved. See submission. | REVISE: Apply editor instructions as described in document 11-19-0481r5 |
| 2297 | 48.29 | "The I2R AoA Requested subfield is set to 1 in the initial Fine Timing Measurement Request frame to indicate that the ISTA supports AoA measurement feedback in the ISTA-to-RSTA LMR. The I2R AoA Requested subfield is set to 1 in the initial Fine Timing Measurement frame by the RSTA to request the ISTA to include AoA measurements in the ISTA-to-RSTA LMR in the AoA feedback field." The spec needs to specify that when the ISTA-to-RSTA LMR Feedback field in the initial FTM Request frame is set to 0 (i.e., not willing to share its location information), then the I2R AoA Requested subfield in both the initial FTM Request frame and the initial FTM frame shall have no meaning. | Modify the spec to specify that when the ISTA-to-RSTA LMR Feedback field in the initial FTM Request frame is set to 0 (i.e., not willing to share its location information), then the I2R AoA Requested subfield in both the initial FTM Request frame and the initial FTM frame is reserved. See submission. | REVISE: Apply editor instructions as described in document 11-19-0481r5 |
| 2298 | 86.32 | In this section, text needs to be added to specify that The ISTA shall set the ISTA-to-RSTA LMR feedback field in the Ranging Parameters field in the initial Fine Timing Measurement Request frame to 0 if the ISTA is not willing to share its time measurement or AoA measurement to the RSTA. As a result, the RSTA shall set the ISTA-to-RSTA LMR feedback subfield field in the Ranging Parameters field in the initial Fine Timing Measurement frame to 0. An RSTA shall not reject an ISTA's request because the ISTA has set the ISTA-to-RSTA LMR feedback field in the Ranging Parameters field in the initial Fine Timing Measurement Request frame to 0. | For Rev\_mc ranging (i.e., the legacy FTM protocol), the timestamps are transmitted only from the rSTA to iSTA. In the base spec, there is a separate feature that a STA 1(AP, or STA) can request a another STA 2 to send the location of STA1 (self), STA 2 (peer) or STA 3 ( 3r party); STA 2 can refuse to share the requested location information by transmitting a response frame indicating "refused". The protocol was designed precisely for the privacy protection. The 11az spec needs to follow the same principle, so that the the end users, not the networks, have the control of the users' location privacy. The use of the 11az ranging protocol shall not require a user to give up its location privacy. Alternatively, the iSTA-2-rSTA LMR report is not needed and can be removed, because the existing feature of Location LCI Report in the 802.11 base spec can be used to obtain another STA's location. | REVISE: Apply editor instructions as described in document 11-19-0481r5 |
| 2299 | 86.32 | In this section, text needs to be added to specify that when the ISTA-to-RSTA LMR Feedback field in the initial FTM Request frame is set to 0 (i.e., not willing to share its location information), then the I2R ToA Type subfield in both the initial FTM Request frame and the initial FTM frame is reserved. | As in comment. | REVISE: Apply editor instructions as described in document 11-19-0481r5 |
| 2300 | 86.32 | Modify the spec to specify that when the ISTA-to-RSTA LMR Feedback field in the initial FTM Request frame is set to 0 (i.e., not willing to share its location information), then the I2R AoA Requested subfield in both the initial FTM Request frame and the initial FTM frame is reserved. | As in comment. | REVISE: Apply editor instructions as described in document 11-19-0481r5 |
| 1624 | Based on discussions/comments related to market adoption hurdles for Fine Timing Measurement protocol (in REVmc) from AP Vendors, it would be prudent to add a ISTA to RSTA LMR Required bit in the Extended Capabilities element. This bit would indicate if the RSTA requires the ISTA to support ISTA to RSTA LMR in order to successfully negotiate a FTM (limited to nTB and TB) session with an ISTA. | The commenter will bring a submission to resolve this comment. | REVISE: Apply editor instructions as described in document 11-19-0481r5 |

*Instruction to the editor: The proposed modifications are in reference to the text* *in IEEE P802.11802.11az\_D1.0, and are indicated by the change marks as follows:*

# 9.4.2.26 Extended Capabilities element

***TGaz Editor: Insert the following new row into Table 9-283 Extended Capabilities element as shown below:***

|  |  |  |
| --- | --- | --- |
| Bits | Information  | Notes |
| <ANA> |  ISTA2RSTA LMR Feedback Policy | A STA sets the ISTA2RSTA LMR Feedback Policy field to 1 if dot11 ISTA2RSTALMRFeedbackPolicy is true. Otherwise the STA sets the ISTA2RSTA LMR Feedback Policy field to 0. See 11.22.6.3.3 (Trigger-based and non-Trigger-based Ranging Measurement Negotiation) |

* + - 1. **Ranging Parameters**

***TGaz Editor: Modify the following paragraph as shown below:***

The ISTA sets the ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement Request frame:

* to 0 to indicate that it does not transmit ISTA2RSTA LMR at the end of each measurement exchange, if requested by the RSTA, or
* to 1 to indicate that transmits ISTA2RSTA LMR at the end of each measurement exchange, if requested by the RSTA.

The ISTA2RSTA LMR Feedback subfield in the Initial Fine Timing Measurement frame is set to 1 to indicate that the RSTA requests an LMR report from the ISTA at the end of each ranging exchange, and is set to 0 otherwise.

See 11.22.6.4.2.4 (TB Measurement Reporting Part) and 11.22.6.4.3.3 (Measurement Report)

***TGaz Editor: Modify the following paragraph as shown below:***

The I2R ToA Type subfield in the initial Fine Timing Measurement Request frame is set to 1 to indicate that the ISTA supports phase shift type ToA feedback and is set to 0 to indicate that the the first path reporting in the ISTA2RSTA LMR. The I2R ToA type subfield in the initial Fine Timing Measurement frame is set to 1 to indicate that the ToA feedback type in the ISTA2RSTA LMR to be phase shift type ToA corresponding to the average linear phase across the subcarriers, and is set to 0 to indicate that the ISTA2RSTA LMR ToA feedback type to be be first path reporting.

***TGaz Editor: Modify the following paragraph as shown below:***

The I2R AoA Requested subfield in the initial Fine Timing Measurement Request frame is set to 1 to indicate that the ISTA supports AoA measurement feedback in the ISTA-to-RSTA LMR.

The I2R AoA Requested subfield in the initial Fine Timing Measurement frame is set to 1 to indicate to the ISTA to include the AoA measurement feedback in the ISTA-to-RSTA LMR, and is set to 0 otherwise.

**11.22.6.2 FTM Capabilities**

***TGaz Editor: Insert the following new text at the end of 11.22.6.2 of 11az\_D1.0.***

A STA in which either dot11NonTriggedBasedRangingRespImplemented is true or dot11TriggedBasedRangingRespImplemented is true shall set the ISTA2RSTA LMR Feedback Policy field of the Extended Capabilities element to 1 if dot11ISTA2RSTALMRFeedbackPolicy is true. The STA shall set the ISTA2RSTA LMR Feedback Policy field of the Extended Capabilities element to 0 if dot11 ISTA2RSTALMRFeedbackPolicy is false.

**11.22.6.3.3** **Trigger-based and non-Trigger-based Ranging Measurement Negotiation**

— maximum number of LTF repetitions it is capable of receiving in the preamble of the DL NDP frames, in the Max DL Rep subfield of the Ranging Parameters field.

— maximum number of LTF repetitions it is capable of transmitting in the preamble of the  UL NDP frames in the Max UL Rep subfield of the Ranging Parameters field.

The ISTA shall set the Max DL Rep and Max UL Rep subfields to a value greater than 0 if the Secure LTF Required subfield of the Ranging Parameters field is equal to 1.

***TGaz Editor: Insert the following text after the above paragraph.***

If based on the policy at the ISTA, the ISTA does not share measurement results with the RSTA,the ISTA shall set the ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field, in the initial Fine Timing Measurement Request frame, to 0. Otherwise it is set to 1.

If the ISTA2RSTA LMR Feedback subfield in the Initial Fine Timing Measurement Request frame is set to 0, and the ISTA2RSTA LMR Feedback Policy field in the Extended Capabilities element is set to 1, then the RSTA shall not reject the request because the ISTA2RSTA LMR Feedback subfield was set to 0, and shall set the ISTA2RSTA LMR Feedback in the Initial Fine Timing Measurement frame to 0.

If the ISTA2RSTA LMR Feedback subfield in the Initial Fine Timing Measurement Request frame is set to 0, and the ISTA2RSTA LMR Feedback Policy field in the Extended Capabilities element is set to 0, then the RSTA shall set the ISTA2RSTA LMR Feedback subfield to 1 to indicate it requests the ISTA to transmit the ISTA2RSTA LMR Feedback subfield or to 0 otherwise. In the former case, the ISTA may either proceed with the ranging operation or terminate the FTM session using the procedure described in Subclause 11.22.6.6.

If the ISTA2RSTA LMR Feedback subfield in the Initial Fine Timing Measurement Request frame is set to 1, then the RSTA shall set the ISTA2RSTA LMR feedback subfield to 1 to indicate it requests the ISTA to transmit the ISTA2RSTA LMR Feedback or to 0 otherwise.

NOTE 1-- The setting of the ISTA2RSTA LMR Feedback subfield to 1 in the Ranging Parameters field in the Ranging Parameters element contained in the initial Fine Timing Measurement Request and initial Fine Timing Measurement frame respectively is based on higher layer agreements

NOTE 2: Because the FTM procedure executes at the PHY/MAC layer, an RSTA accepting a ranging request despite the ISTA having set the ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field in the initial Fine Timing Measurement Request frame to 0 enables use cases where the ISTA may share its location information at a higher layer.

If the ISTA indicated for AOA feedback in the Initial Fine Timing Measurement Request frame, the RSTA may set the I2R AoA Requested subfield in the corresponding Initial Fine Timing Measurement frame to 1, or it is set to 0 otherwise.

For TB ranging and non-TB ranging, the Ranging Priority subfield of the Ranging Parameters field of the Ranging Parameters element in the initial Fine Timing Measurement Request frame contains the ISTA’s Ranging Priority request which indicates the time sensitivity of a ranging operation, and it is set according to Table 9-281a in 9.4.2.167.

# *A*nnex C

# (normative)

# ASN.1 encoding of the MAC and PHY MIB

**C. 3 MIB detail**

***TGaz Editor: Insert the following entry into*** *Dot11WirelessMgmtOptionsEntry* ***as shown below:***

Dot11WirelessMgmtOptionsEntry ::= SEQUENCE {

….

dot11 ISTA2RSTALMRFeedbackPolicy, TruthValue,

}

***TGaz Editor: Insert the following as shown below:***

dot11ISTA2RSTALMRFeedbackPolicy OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-write
STATUS current
DESCRIPTION

"This is a control variable.
It is written by an external management entity or the SME.
Changes take effect at the next occurrence of an MLME-START.request or
MLME-JOIN.request primitive.

This attribute, when true, indicates that the station (RSTA) does not require any initiating stations to support the capability to generate and transmit ISTA-to-RSTA Location Measurement Reports

(see 11.22.6.3.3 (Trigger-based and non-Trigger-based Ranging Measurement Negotiation)).
False indicates that the stations shall negotiate the transmission of ISTA-to-RSTA Location Measurement Reporting. "

DEFVAL { true }

::= { dot11WirelessMgmtOptionsEntry <tbd>}

**References:**

1. IEEE Draft P802.11az\_D1.0, Draft standard for information technology – telecommunications and information exchange between systems – local and metropolitan area networks – specific requirements – Part 11: Wireless LAN medium access control (MAC) and physical layer (PHY) specifications, Amendment 8: Enhancements for locationing