IEEE P802.11
Wireless LANs

|  |
| --- |
| [802.11az Annex-C](relative to IEEE REVmd D1.0, 802.11ax D3.0 and 802.11az D0.6) |
| Date: 2018-11-13 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Ganesh Venkatesan | Intel | 2111NE 25th Ave, Hillsboro, OR 97124 |  | Ganesh.venkatesan@intel.com |
| Jonathan Segev | Intel |  |  | Jonathan.segev@intelc.om |

Abstract

This submission proposes Annex-C entries corresponding to P802.11az features. This submission is based on recommendations in document 15-355r13.

History:

R0: Initial Version

# 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> | Secure LTF Support | A STA sets the Secure LTF Support field to 1 when dot11SecureLTFImplemented is true. Otherwise, the STA sets the Secure LTF Support field to 0. See 11.22.6.4a (Secure LTF Measurement Exchange Protocol). |
| <ANA> | non-TB Ranging Responder | A STA sets the non-TB Range Responder field to 1 if dot11TriggedBasedRangingRespImplemented is true. Otherwise the STA sets the non-TB Range Responder field to 0. See 11.22.6 (Fine Timing Measurement Procedure). |
| <ANA> | TB Ranging Responder | A STA sets the non-TB Range Responder field to 1 if dot11TriggerBasedRangingRespImplemented is true. Otherwise the STA sets the TB Range Responder field to 0. See 11.22.6 (Fine Timing Measurement Procedure). |
| <ANA> | ISTA-to-RSTA LMR Required | A STA sets the ISTA-to-RSTA LMR Required field to 1 if dot11RSTARequiresLMRActivated is true. Otherwise the STA sets the ISTA-to-RSTA LMR Required field to 0. See 11.22.6.3.1 (Range Measurement Negotiation) |
| <ANA> | Protection of Range Measurement Management Frames Required | A STA sets the Protection of Range Measurement Management Frames Required field to 1 if dot11RSTARequiresPASNActivated is true. Otherwise the STA sets the Protection of Range Measurement Management Frames Required field to 0. See 11.22.6.3.1 (Range Measurement Negotiation) |
| <ANA> | Passive Location Ranging Responder Measurement Support | A STA sets the Passive Location Ranging Responder Measurement Support field to 1 whendot11PassiveLocationRangingResponderActivatedis true. Otherwise, the STA sets the Passive Location Ranging Responder Measurement Support field to 0. See 11.22.6.4.9 (Measurement Exchange in Passive Location Ranging mode). |

**11.22.6.2 FTM capabilities**

*TGaz Editor: Modify the insertions to Cl. 11.22.6.2 as shown below:*

*Insert the following paragraphs of Clause 11.22.6.2 as shown below:*

(a) if dot11NonTriggerBasedRangingRespImplemented is true, the STA shall set the non-Trigger Based Ranging Responder field of the Extended Capabilities element to 1. Otherwise it shall set the non-Trigger Based Ranging Responder field of the Extended Capabilities element to 0.

(b) if dot11TriggedBasedRangingRespImplemented is true, the STA shall set the Trigger Based Ranging Responder field of the Extended Capabilities element to 1. Otherwise it shall set the Trigger Based Ranging Responder field of the Extended Capabilities element to 0.

**11.22.6.3.1 Range Measurement Negotiation**

***TGaz Editor: Insert new paragraphs to Cl. 11.22.6.3.1 as shown below:***

The ISTA shall include one ISTA Availability Window element in the HEz specific subelement in the IFTMR indicating its availability for TB Ranging as well as the requested periodicity. The periodity of the availability windows requested by the ISTA is expressed in units of 10 TUs in the Count subfield in the ISTA Availability Information field of the ISTA Availability Window element. The value of the Count subfield in the ISTA Availability Information field of the ISTA Availability Window element shall be a multiple of the Beacon Interval of the RSTA in units of
10 TUs.

An RSTA shall reject a request if it has set the ISTA-to-RSTA LMR Required field in the Extended Capabilities element to 1, and the ISTA2RSTA LMR Feedback subfield in the Ranging Parameters field of the Ranging Parameters element included in the IFTMR is set to 0.

An RSTA shall reject a request if it has set the Protection of Range Measurement Management Frames Required field of the Extended Capabilities element to 1, and the ISTA has not successfully set up a security context to protect IFTMR, IFTM and LMR frames exchanged between the RSTA and the ISTA. Note that the security context can either be established as a result of a successful association between the RSTA and ISTA; or as a result of the ISTA successfully completing PASN as described in 12.13 Pre-Association Security Negotiation.

An RSTA shall reject a request for TB Ranging from an ISTA if the RSTA cannot assign theISTA to an availability window that does not overlap with a 10 TU interval in which the ISTA is unavailable (as signalled by the ISTA Availability Window element in the IFTMR).

**11.22.6.3.2 Secure LTF measurement setup**

***TGaz Editor: Modify the paragraph in Cl. 11.22.6.3.2 as shown below:***

— An RSTA sets the Secure LTF Required subfield in the Ranging Parameters field in a transmitted initial Fine Timing Measurement frame to 1.

When management frame protection is negotiated, for TB and non-TB ranging negotiation a STA shall use the Protected Dual of Public Action frames for an initial Fine Timing Measurement Request, an initial Fine Timing Measurement, and a Location Measurement Report.

An ISTA in which dot11SecureLTFImplemented is false ignores a Secure LTF Parameters if an initial Fine Timing Measurement frame and a Location Measurement Report frame carries the Secure LTF Parameters.

# ***A*nnex C**

# **(normative)**

# **ASN.1 encoding of the MAC and PHY MIB**

***TGaz Editor: Delete insertion in Clause C.1 (these are already in C.3)***

**C.3 MIB detail**

***Insert the following entries into*** *Dot11WirelessMgmtOptionsEntry* ***as shown below:***

Dot11WirelessMgmtOptionsEntry ::=
SEQUENCE {

*…*

|  |  |
| --- | --- |
| dot11FineTimingMsmtRespActivated dot11FineTimingMsmtInitActivated dot11LciCivicInNeighborReport dot11RMFineTimingMsmtRangeRepImplemented dot11RMFineTimingMsmtRangeRepActivated dot11RMLCIConfigured dot11RMCivicConfigured  | TruthValue,TruthValue,TruthValue,TruthValue,TruthValue,TruthValue,TruthValue, |
| dot11SecureLTFImplemented | TruthValue, |
| dot11TriggedBasedRangingRespImplemented | TruthValue, |
| dot11NonTriggerBasedRangingRespImplemented | TruthValue, |
| dot11RSTARequiresLMRActivated | TruthValue, |
| dot11RSTARequiresPASNActivated | TruthValue, |
| dot11PassiveLocationRangingResponderActivated | TruthValue, |
| dot11PassiveRangeImplemented | TruthValue, |
|  |  |

***TGaz Editor: Insert the following after dot11SecureLTFImplemented OBJECT-TYPE as shown below:***

dot11TriggerBasedRangingRespImplemented OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This is a capability variable.
Its value is determined by device capabilities.
This attribute, when true, indicates that support for negotiating and executing Trigger Based Ranging protocol as a Responding STA (see 11.22.6 (Fine Timing Measurement Procedure)) is
implemented. The capability is disabled otherwise."

DEFVAL { false }

::= { dot11WirelessMgmtOptionsEntry <tbd>}

dot11NonTriggerBasedRangingRespImplemented OBJECT-TYPE

SYNTAX TruthValue
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This is a capability variable.
Its value is determined by device capabilities.
This attribute, when true, indicates that support for negotiating and executing non-Trigger Based Ranging protocol as a Responding STA (see 11.22.6 (Fine Timing Measurement Procedure)) is
implemented. The capability is disabled otherwise."

DEFVAL { false }

::= { dot11WirelessMgmtOptionsEntry <tbd>}

dot11RSTARequiresLMRActivated 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 requires initiating stations to support the capability to generate and transmit ISTA-to-RSTA Location Measurement Reports, in order

to successfully negotiate a Range Measurement Session

(see 11.22.6.3.1 (Range Measurement Negotiation)).
False indicates that the station does not require initiating stations to support ISTA-to-RSTA Location Measurement Reporting capability in order to successfully negotiate a Range Measurement session. "

DEFVAL { false }

::= { dot11WirelessMgmtOptionsEntry <tbd>}

dot11RSTARequiresPASNActivated 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 requires Management Frame Protection for all management frames exchanged during the negotiation

(see 11.22.6.3.1 Range Measurement Negotiation) and range measurement procedure

(see 11.22.6.4.3 Measurement Exchange in TB Mode,

11.22.6.4.4 Measurement Exchange in non-TB Mode and

11.22.6.4.6 Secure non-TB and TB Measurement Exchange Protocol), in order to successfully negotiate a Range Measurement Session

(see 11.22.6.3.1 (Range Measurement Negotiation)).
False indicates that the station does not require initiating stations to support ISTA-to-RSTA Location Measurement Reporting capability in order to successfully negotiate a Range Measurement session. False indicates that the station does not require Management Frame Protection for all management frames exchanged during negotiation and range measurement

Procedure, in order to successfully negotiate a Range Measurement session. "

DEFVAL { false }

::= { dot11WirelessMgmtOptionsEntry <tbd>}

***TGaz Editor: Move the descriptions of dot11PassiveLocationRangingResponderActivated and dot11PassiveLocationRangingInitiatorActivated from P146 of D0.6 to here.***