IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 802.11  [Refining the resolution to CID 1918  (relative to IEEE 802.11 REVmd D3.0 and P802.11az D1.5) | | | | |
| Date: 2019-11-14 | | | | |
| Author(s): | | | | |
| Name | Company | Address | Phone | Email |
| Ganesh Venkatesan | Intel Corporation | 2111 NE 25th Ave, Hillsboro, OR 97124 | 503 334 6720 | [ganesh.venkatesan@intel.com](mailto:ganesh.venkatesan@intel.com) |
| Ali Raissinia | Qualcomm |  |  | [alirezar@qti.qualcomm.com](mailto:alirezar@qti.qualcomm.com) |

**Abstract**

submission 11-19-1587r2 provides a resolution to CID #1918. However not all .11az MIB definitions are aligned to the WG recommendation for MIB variable definitions (document 11-15-335). This submission refines the resolution proposed in submission 11-19-1587r2 and extends the conformance of MIB variable definitions in TGaz to align with submission 11-15-355.

History:

R0: Initial Version – initial version

R1: Updated to include editor instructions to update Annex-C

R2: Removed a comment asking the question if the LOSAssessment MIB variables should use the Activated pattern. Fixed an error in the MIB variables summary table that is part of the discussion.

Restored dot11ISTA2RSTALMRFeedbackPolicy and dot11RSTARequiresPMFActivated (to the terms used on D1.5).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1918 | 171.19 | 19 | C.3 | Rename MIB attributes per WG recommendations | Control variables should use Activated (nor Allowed), not Implemented, per naming conventions. Capability variables should be Implemented, not Activated (see P174.26). | Revise  Agree in principle.  Annex C is written according IEEE styple guidline.  TGaz editor to incorporate editor instruction in submissions 11-19-1587 and 11-19-1902. |

Discussion:

Summary of MIB patterns described in 11-15-355:

|  |  |  |
| --- | --- | --- |
| dot11<feature>Implemented (no DEFVAL attribute) | MAX-ACCESS=none  e.g. dot11RSNImplemented | Static capability; not changed during operation; used exclusively within the 802.11 subsystem; no access to external entities |
| MAX-ACCESS=read-only | read-only access to external entities to configure related/dependent features/sub-features |
| dot11<feature>Activated (A DEFVAL attribute is present) | MAX-ACCESS=none  MAX-ACCESS=read-only  e.g.  dot11ExtendedChannelSwitchActivated  MAX-ACCESS=read-write  e.g. dot11RSNAProtectedManagementFramesActivated | Dynamic capability that could be turned on/off by 802.11 subsystem (internally) or an external entity |
| dot11<feature>Required  (A DEFVAL attribute is present) | MAX-ACCESS=none  MAX-ACCESS=read-only  e.g.  dot11OFDMCCAEDRequired  dot11LCIDSERequired | Static behavior that is not changed during operation; typically used when a primary/secondary relationship exists; the primary advertises, the secondary on observing the advertisement, sets the corresponding version of the variable (and operates accordingly) |
| dot11<feature>Directed (A DEFVAL attribute is present) | MAX-ACCESS=none  MAX-ACCESS=read-only  MAX-ACCESS=read-write  e.g. dot11FortyMHzIntolerantDirected | Dynamic behavior that is set based on operational/locally detected conditions. Typically used when a primary/secondary relationship exists; primary advertises and secondary adapts or secondary indicates and the primary sets corresponding version of the variable (and advertises the change) |
| dot11<feature>PolicyActive (A DEFVAL attribute is present) | MAX-ACCESS=read-write  e.g.  dot11OperatingClassesPolicyActive  dot11RSNAPBACPolicyActive | Dynamic behavior that is set ON/OFF during operation. |
| No need for a MIB variable |  | Describe it in words in the specification |

MIB Variables in 802.11az (D1.4 plus 11-19-1587r1):

By “does not change during operation” we mean that the setting of the corresponding variable does not change and in order to change it, the value of the variable needs to be set to the new value and MLME-RESET is invoked.

Note that the designations, read-only, read, read-write applies to access by external entities when the instance is instantiated. Access to the MIB variable when the instantiation is not active is outside the scope of IEEE802.11.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **MIB Variable** | **I** | **A** | **R** | **D** | **PA** | **Notes** | **Recommendation** |
| dot11PASNActivated |  | X |  |  |  | Does not change during operation; DEFVAL is false | No change. Already exists. |
| dot11NoAuthPASNActivated |  | X |  |  |  | Could change during operation. Does not impact ongoing sessions since this setting only affects how PASN is setup (not how it is used). | No Change |
| dot11SecureLTFImplemented | X |  |  |  |  | Does not change during operation | No change |
| dot11NonTriggerBasedRangingRespImplemented | X |  |  |  |  | Does not change during operation | No change |
| dot11TriggerBasedRangingRespImplemented | X |  |  |  |  | Does not change during operation | No change |
| dot11RSTARequiresPMFActivated |  | X |  |  |  | This is a primary/secondary relationship, the RSTA advertises requirement, the ISTA initiates PASN negotiation; DEFVAL=false  Advertised using Extended Capabilities element | No Change |
| dot11PassiveLocationRangingResponderImplemented | X |  |  |  |  | Does not change during operation | Renamed to dot11PassiveTBRangingResponderImplemented |
| dot11PassiveLocationRangingInitiatorImplemented | X |  |  |  |  | Does not change during operation | Renamed to dot11PassiveTBRangingInitiatorImplemented |
| dot11PassiveRangingAoDEnablementActivated |  | X |  |  |  | Does not change during operation | dot11PassiveTBRangingAoDImplemented |
| dot11AoAMeasurementAvailable |  | X |  |  |  | As described in Annex-C of D1.5 it is best rendered as an Implemented pattern. | dot11AoAMeasurementImplemented |
| dot11ISTA2RSTALMRFeedbackPolicy |  |  |  |  |  | Indicates a policy. The existing semantics can still be maintained. Dot11ISTA2RSTALMRFeedbackPolicyActive = 1 implies ISTA2RSTALMR not required and = 0 implies that the ISTA and RSTA negotiate ISTA2RSTA LMR Feedback for the session; DEFVAL=true | No change |
| dot11PhaseShiftFeedbackImplemented | X |  |  |  |  | Static capability that does not change during the operation of the device. Entry missing in Annex-C | No Change. |
| dot11LOSassessmentTXimplemented | X |  |  |  |  | Modify entry in Annex-C to correctly render this as an Implemented pattern. | Change the variable to dot11LOSAssessmentTxImplemented |
| dot11LOSassessmentRXimplemented | X |  |  |  |  | Modify entry in Annex-C to correctly render this as an Implemented pattern. | Change the variable to dot11LOSAssessmentRxImplemented |

Question for 60GHz – if (dot11FineTimingMsmtRespActivated is true or dot11FineTimingMsmstInitActivated is true) and if the implementation is DMG/EDMG capable, is the implementation PDMG/PEDMG?

Question on the Device Class parameter (Bit 30 of the Ranging Parameters field): Do we need a MIB variable and/or an Extended Capabilities bit corresponding to this?

Resolution: Revise.

***TGaz Editor: Apply the following changes to D1.5***

1. ***Replace all occurrences of*** dot11PassiveRangingAoDEnablementActivated ***with*** dot11PassiveTBRangingAoDImplemented
2. ***Replace all occurrences of*** dot11AoAMeasurementAvaialable ***with*** dot11IAoAMeasurementImplemented
3. ***Replace all occurrences of*** dot11PassiveLocationRangingInitiatorImplemented ***with*** dot11PassiveTBRangingInitiatorImplemented
4. ***Replace all occurrences of*** dot11PassiveLocationRangingResponderImplemented ***with*** dot11PassiveTBRangingResponderImplemented
5. ***Replace all occurrences of dot11LOSassessmentTXimplemented with dot11LOSAssessmentTxImplemented***
6. ***Replace all occurrences of dot11LOSassessmentRXimplemented with dot11LOSAssessmentRxImplemented.***

***TGaz Editor: Change the following MIB entries in Annex-C***

**C. 3 MIB detail**

***Insert the following entry at the end the following object as shown below****:*

Dot11WirelessMgmtOptionsEntry ::=  
 SEQUENCE {  
 …  
 dot11RMCivicConfigured TruthValue,  
 dot11SecureLTFImplemented TruthValue,  
 dot11TriggerBasedRangingRespImplemented TruthValue,  
 dot11NonTriggerBasedRangingRespImplemented TruthValue,  
 dot11RSTARequiresPMFActivated TruthValue,  
 dot11PassiveTBRangingResponderImplemented TruthValue,  
 dot11PassiveTBRangingInitiatorImplemented TruthValue  
 dot11AoAMeasurementImplemented TruthValue,  
 dot11ISTA2RSTALMRFeedbackPolicy TruthValue  
 dot11LOSAssessmentTxImplemented TruthValue,  
 dot11LOSAssessmentRxImplemented TruthValue,  
 (#**1280**)dot11PassiveTBRangingAoDImplemented TruthValue (#**2303**)  
 dot11SecureLTFActivated TruthValue, (Doc #1857r1)  
 dot11RSTARequiresPMFPolcyActive TruthValue,

dot11PhaseShiftFeedbackImplemented Truthvalue,}

***TGAz Editor: Delete P215L36-42 (D1.5)***

***Note: This MIB definition is (a) in the wrong location and (b) is redundant, as it is defined again (in the right location).***

***TGaz Editor: Modify the following MIB entries in Annex-C as shown below:***

dot11SecureLTFImplemented 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 a secure LTF measurement exchange protocol (see 11.22.6.4.6 (Secure LTF Measurement Exchange Protocol)) is implemented. The capability is disabled otherwise."

::= { dot11WirelessMgmtOptionsEntry 54}

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 TB Ranging measurement exchange as a

Responding STA (see 11.22.6 (Fine Timing Measurement Procedure)) is

implemented. The capability is disabled otherwise."

::= { dot11WirelessMgmtOptionsEntry 54}

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-TB Ranging measurement exchange as a

Responding STA (see 11.22.6 (Fine Timing Measurement

Procedure)) is implemented. The capability is disabled

otherwise."  
 ::= { dot11WirelessMgmtOptionsEntry 56 }

dot11RSTARequiresPMFActivated

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) to successfully negotiate a Range Measurement

Session (see 11.22.6.3.1 (Range Measurement

Negotiation)). False indicates that the station does not

require Management Frame Protection for all management

frames exchanged during the negotiation (see 11.22.6.3.1

Range Measurement Negotiation) and range measurement

procedure 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 to successfully negotiate a Range Measurement

session."  
 DEFVAL { false }

::= { dot11WirelessMgmtOptionsEntry 57 }

dot11PassiveTBRangingResponderImplemented 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 a support for Passive Location Ranging acting as a

responder is implemented (see subclause 11.22.6.4.8

Measurement Exchange in Passive TB Ranging) is

implemented. The capability is disabled otherwise."  
 ::= { dot11WirelessMgmtOptionsEntry 58 }

dot11PassiveTBRangingInitiatorImplemented 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 a support for Passive Location Ranging acting as an

initiator is implemented (see subclause 11.22.6.4.8

Measurement Exchange in Passive TB Ranging) is

implemented. The capability is disabled otherwise."

::= { dot11WirelessMgmtOptionsEntry 59 }

dot11AoAMeasurementImplemented 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 the STA supports Angle-of-Arrival (AoA) measurements

and feedback of these measurements is available via the

LMR frame. When false, there is no such feedback available

in the LMR frame."

::= { dot11WirelessMgmtOptionsEntry 60 }

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 61 }

***TGaz Editor: Move P219L24-43, P220L1-29 to here; and modify them as shown below:***

dot11LOSAssessmentTxImplemented OBJECT-TYPE (#1280)  
 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 the station

capability for participation in LOS assessment FTM exchange by

transmitting a Loss Assessment PPDU. It is set to false

otherwise."

::= { dot11WirelessMgmtOptionsEntry <ANA> }  
  
dot11LOSAssessmentRxImplemented 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 the station capability

for participation in LOS assessment FTM exchange by switching

polarization on the TRN field when a Loss Assessment PPDU

is received. It is set to false otherwise."

::= { dot11WirelessMgmtOptionsEntry <ANA> } (#**1280**)

dot11PassiveRangingAoDEnablementImplemented 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 the station, when

performing passive ranging, is capable of estimating the AoD measurement by the

client STA that locates itself through passive ranging(see

11.22.6.4.8) (Measurement Exchange in Passive TB Ranging

)).  
 False indicates that the station, when performing passive

ranging, is not capable of estimating the AoD measurement by the client STA

that locates itself through passive ranging. (see 11.22.6.4.8)

(Measurement Exchange in Passive TB Ranging)."

::= { dot11WirelessMgmtOptionsEntry <tbd>} (#**2302**)

dot11PhaseShiftFeedbackImplemented 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 the STA supports reporting of Time of Arrival

estimated using the Phase Shift feedback method

and including these measurements in the corresponding

LMR frame. When false, the Time of Arrival estimates

Reported in the LMR frame are not based on the Phase Shift

Shift feedback method."

::= { dot11WirelessMgmtOptionsEntry <tbd> }

***TGaz Editor: Delete lines P219L4-5***

***TGaz Editor: Modify P219L7 as shown below:***

dot11NoAuthPASNPolicyActive TruthValue

***TGaz Editor: Delete lines P219L9-22 (dot11NonTriggerBasedRangingImplemented is already defined)***

***TGaz Editor: Delete lines P220L31-45 (dot11TriggerBasedRangingImplemented is already defined)***

***TGaz Editor: Modify P220L46-49 and P221L1-28 as shown below:***

dot11FineTimingMeasurement OBJECT-GROUP  
 OBJECTS {  
 dot11WirelessManagementImplemented,  
 dot11FineTimingMsmtRespActivated, 1

dot11FineTimingMsmtInitActivated,  
 dot11LciCivicInNeighborReport,  
 dot11RMFineTimingMsmtRangeRepImplemented,  
 dot11RMFineTimingMsmtRangeRepActivated,  
 dot11RMLCIMeasurementActivated,  
 dot11RMLCIConfigured,  
 dot11RMCivicMeasurementActivated,  
 dot11RMCivicConfigured,  
 dot11PASNActivated,  
 dot11NoAuthPASNActivated,  
 dot11SecureLTFImplemented,  
 dot11TriggerBasedRangingRespImplemented,  
 dot11NonTriggerBasedRangingRespImplemented,  
 dot11RSTARequiresPMFActivated,  
 dot11PassiveTBRangingResponderImplemented,  
 dot11PassiveTBRangingInitiatorImplemented,  
 dot11AoAMeasurementImplemented,  
 dot11ISTA2RSTALMRFeedbackPolicy,  
 dot11RSNAConfigPASNPTKSATimeout,

dot11LOSAssessmentRxImplemented,

dot11LOSAssessmentTxImplemented,

dot11PhaseShiftFeedbackImplemented,

dot11PassiveTBRangingAoDImplemented

}  
STATUS current  
DESCRIPTION  
 "Attributes that configure the Fine Timing Measurement feature for

IEEE Std 802.11."

::= { dot11Groups 93 }

***TGaz Editor: Delete P221L29-45***

***TGaz Editor: Delete P221L46, P222L1-27***

***TGaz Editor: Delete P223L30***

***TGaz Editor: Delete P224L28-31, P225-P227***