IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resolution of CID 327 DMG MLME Primitives | | | | |
| Date: 2022-10-16 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Solomon Trainin | Qualcomm |  |  | strainin@qti.qualcomm.com |
|  |  |  |  |  |

Abstract

Resolution of CID327

|  |  |  |  |
| --- | --- | --- | --- |
| **CID** | **Comment** | **Proposed Change** | **Resolution** |
| 327 | "The following set of MLME primitives supports the WLAN sensing procedure described in 11.21.18 (WLAN sensing procedure)." The defined MLME primitives do not represent the DMG sensing procedure (11.21.20). The DMG sensing procedure uses different frames and attributes. It shall be described in separate MLME primitives. | Define DMG MLME primitives to represent the DMG sensing procedure (11.21.20). It needs separate submission | **Revised,** see submission DCN 1752 |

**6.3.13x DMG WLAN sensing**

**6.3.13x.1 Introduction**

This set of primitives supports the signaling of the DMG sensing procedure between peer SMEs.

**6.3.13x.2 MLME-DMG-SENSMSMTSETUP.request**

**6.3.13x.2.1 Function**

This primitive requests the transmission of a DMG Sensing Measurement Setup Request frame to a peer STA.

**6.3.13x.2.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DMG-SENSMSMTSETUP.request(

PeerSTAAddress,

Category,

Action,

Dialog Token,

DMG Measurement Setup ID,

DMG Sensing Measurement Setup element with the subelements,

)

|  |  |
| --- | --- |
| **Name** | **Description** |
| PeerSTAAddress | The address of the peer MAC entity |
| Category | 9.6.21.8 (DMG Sensing Measurement Setup Request frame format) and TBD (Protected DMG Sensing Measurement Setup Request) |
| Action |
| Dialog Token | As defined in 9.6.21.8 (DMGSensing Measurement Setup Request frame format) |
| DMG Measurement Setup ID |
| DMG Sensing Measurement Setup element with the subelements |

**6.3.13x.2.3 When generated**

This primitive is generated by the SME to request that a DMG Sensing Measurement Setup Request frame be sent to a peer STA to set up sensing measurement instance(s).

**6.3.13x.2.4 Effect of receipt**

On receipt of this primitive, the MLME constructs a DMG Sensing Measurement Setup Request frame and causes it to be transmitted to the PeerSTAAddress.

**6.3.13x.3 MLME-DMG-SENSMSMTSETUP.indication**

**6.3.13x.3.1 Function**

This primitive indicates that a DMG Sensing Measurement Setup Request frame has been received requesting the setup of sensing measurement instance(s).

**6.3.13x.3.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DMG-SENSMSMTSETUP.indication(

PeerSTAAddress

Category,

Action,

Dialog Token,

DMG Measurement Setup ID,

DMG Sensing Measurement Setup element with the subelements,

)

|  |  |
| --- | --- |
| **Name** | **Description** |
| PeerSTAAddress | The address of the peer MAC entity |
| Category | 9.6.21.8 (DMG Sensing Measurement Setup Request frame format) and 9.6.19.24 (Protected DMG Sensing Measurement Setup Request frame format) |
| Action |
| Dialog Token | As defined in 9.6.21.8 DMG (Sensing Measurement Setup Request frame format) |
| DMG Measurement Setup ID |
| DMG Sensing Measurement Setup element with the subelements |

)

**6.3.13x.3.3 When generated**

This primitive is generated by the MLME when a DMG Sensing Measurement Setup Request frame is received.

**6.3.13x.3.4 Effect of receipt**

On receipt of this primitive, the SME shall operate according to the procedure in 11.21.20 (DMG sensing procedure) and either accept or reject the DMG Sensing Measurement Setup request.

**6.3.13x.4 MLME-DMG-SENSMSMTSETUP.response**

**6.3.13x.4.1 Function**

This primitive is generated to request the transmission of a DMG Sensing Measurement Setup Response frame.

**6.3.13x.4.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DMG-SENSMSMTSETUP.response(

PeerSTAAddress,

Category,

Action,

Dialog Token,

DMG Measurement Setup ID,

Status Code,

DMG Sensing Measurement Setup element with the subelements,

DMG Sensing Image Range Axis LUT,

DMG Sensing Image Doppler Axis LUT

)

|  |  |
| --- | --- |
| **Name** | **Description** |
| PeerSTAAddress | The address of the peer MAC entity |
| Category | 9.6.21.9 (DMG Sensing Measurement Setup Response frame format) and 9.6.19.25 (Protected DMG Sensing Measurement Setup Response frame format) |
| Action |
| Dialog Token | As defined in 9.6.21.9 (DMG Sensing Measurement Setup Response frame format) |
| DMG Measurement Setup ID |
| Status Code |
| DMG Sensing Measurement Setup element with the subelements |
| DMG Sensing Image Range Axis LUT |
| DMG Sensing Image Doppler Axis LUT |

)

**6.3.13x.4.3 When generated**

This primitive is generated by the SME to request that a DMG Sensing Measurement Setup Response frame be sent to a peer STA to either accept or reject a DMG Sensing Measurement Setup request.

**6.3.13x.4.4 Effect of receipt**

On receipt of this primitive, the MLME constructs a DMG Sensing Measurement Setup Response frame and causes it to be transmitted to the PeerSTAAddress.

**6.3.13x.5 MLME-DMG-SENSMSMTSETUP.confirm**

**6.3.13x.5.1 Function**

This primitive reports the results of a request to set up the DMG sensing measurement agreement.

**6.3.13x.5.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DMG-SENSMSMTSETUP.confirm(

PeerSTAAddress,

Category,

Action,

Dialog Token,

DMG Measurement Setup ID,

Status Code,

DMG Sensing Measurement Setup element with the subelements,

DMG Sensing Image Range Axis LUT,

DMG Sensing Image Doppler Axis LUT

)

|  |  |
| --- | --- |
| **Name** | **Description** |
| PeerSTAAddress | The address of the peer MAC entity |
| Category | 9.6.21.9 (DMG Sensing Measurement Setup Response frame format) and 9.6.19.25 (Protected DMG Sensing Measurement Setup Response frame format) |
| Action |
| Dialog Token | As defined in 9.6.21.9 (DMG Sensing Measurement Setup Response frame format) |
| DMG Measurement Setup ID |
| Status Code |
| DMG Sensing Measurement Setup element with the subelements |
| DMG Sensing Image Range Axis LUT |
| DMG Sensing Image Doppler Axis LUT |

**6.3.13x.5.3 When generated**

This primitive is generated by the MLME when the STA receives a DMG Sensing Measurement Setup Response frame.

**6.3.13x.5.4 Effect of receipt**

On receipt of this primitive, the SME shall operate according to the procedure in 11.21.20 (DMG sensing procedure).

**6.3.13x.6 MLME-DMG-SENSMSMTSTART.request**

**6.3.13x.6.1 Function**

This primitive requests the MAC entity of the DMG sensing initiator to start the DMG sensing instances.

**6.3.13x.6.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DMG-SENSMSMTSTART.request (

DMG Measurement Setup ID,

DMG Sensing Measurement Setup element with the subelements,

PeerSTAAddress List

)

|  |  |
| --- | --- |
| **Name** | **Description** |
| DMG Measurement Setup ID | DMG Measurement Setup ID the instances belong to |
| DMG Sensing Measurement Setup element with the subelements | As defined in 9.6.21.8 DMG (Sensing Measurement Setup Request frame format)  The LCI and the Peer orientation fields in the element are reserved |
| PeerSTAAddress List | Addresses of the DMG sensing responders that passed the setup indicated by the DMG Measurement Setup ID to be used in the DMG sensing instances. |

**6.3.13x.6.3 When generated**

This primitive is generated by the SME of the DMG sensing initiator to start the DMG sensing instances when the DMG measurement setup is completed with at least one of the DMG sensing responders indicated with the DMG Measurement setup ID used in the instances.

**6.3.13x.6.4 Effect of receipt**

This primitive activates the Initiation, Sounding, and Reporting phases of the DMG sensing instances as agreed in the DMG measurement setups. The MLME subsequently issues the DMG Sensing Request frames, DMG frames used for sounding, and DMG Sensing Poll frames to proceed with one or more DMG Sensing Responders.

**6.3.13x.7 MLME-DMG-SENSMSMTSTART.confirm**

**6.3.13x.7.1 Function**

This primitive reports the results of the MLME-DMG-SENSMSMTSTART.request primitive that initiates the DMG sensing instances.

**6.3.13x.7.2 Semantics of the service primitive**

The primitive parameter is as follows:

MLME-DMG-SENSMSMTSTART.confirm(

ResultCode

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid Range** | **Explanation** |
| ResultCode | Enumeration | SUCCESS |  |
| INVALID\_PARAMETERS | Indicates rejection of the MLME-DMG-SENSMSMTSTART primitive. This may indicate the wrong duplication of the DMG Measurement Setup ID. |

**6.3.13x.7.3 When generated**

This primitive is generated by the MLME as a result of MLME-DMG-SENSMSMTSTART.request primitive.

**6.3.13x.7.4 Effect of receipt**

The SME is notified of the results of the initiation to start the DMG sensing instances.

**6.3.13x.8 MLME-DMG-SENSMSMT.indication**

**6.3.13x.10.1 Function**

This primitive delivers to the SME results of the sounding phase of the DMG sensing.

**6.3.13x.8.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DMG-SENSMSMT.indication (

PeerSTAAddress,

DMG Measurement Setup ID,

Measurement Burst ID,

Sensing Instance SN,

Timestamp,

CSI,

TRN Index

)

|  |  |
| --- | --- |
| **Name** | **Description** |
| PeerSTAAddress | The address of the peer entity that transmitted the frame used for the measurement in the sounding phase |
| DMG Measurement Setup ID | As defined in 9.6.21.8 (DMG Sensing Measurement Setup Request frame format) |
| Measurement Burst ID | As defined in 11.21.20.1 (Overview) |
| Sensing Instance SN | As defined in 11.21.20.1 (Overview) |
| Timestamp | As defiened in the RXVECOR 28.2.2 (TXVECTOR and RXVECTOR parameters) TBD |
| CSI |
| TRN Index |

**6.3.13x.8.3 When generated**

This primitive is generated by the MLME when the EDMG multistatic sensing PPDU or the BRP PPDU is received in the sounding phase.

**6.3.13x.8.4 Effect of receipt**

On receipt of this primitive, the SME uses the information to compute and construct the Feedback and the DMG sensing report. The computation algorithm is implementation dependent and not presented in the spec.

**6.3.13x.9 MLME-DMG-SENSREPORT.request**

**6.3.13x.9.1 Function**

This primitive requests the transmission of a DMG Sensing Measurement Report frame to a peer STA.

**6.3.13x.9.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DMG-SENSREPORT.request(

PeerSTAAddress,

Category,

Action,

Dialog Token,

DMG Measurement Setup ID,

DMG Sensing Report Control element,

DMG Sensing Report element,

Channel Measurement Feedback element

)

|  |  |
| --- | --- |
| **Name** | **Description** |
| PeerSTAAddress | The address of the peer MAC entity |
| Category | As defined in 9.6.21.10 (DMG Sensing Measurement Report frame format) and TBD (Protected DMG Sending Measurement Report frame format) |
| Action |
| Dialog Token | As defined in 9.6.21.10 (DMG Sensing Measurement Report frame format) |
| DMG Measurement Setup ID |
| DMG Sensing Report Control elemen |
| DMG Sensing Report element |
| Channel Measurement Feedback element |

**6.3.13x.9.3 When generated**

The SME generates this primitive to request that a DMG Sensing Measurement Report frame be sent to the DMG Initiator STA.

**6.3.13x.9.4 Effect of receipt**

On receipt of this primitive, the MLME constructs a DMG Sensing Measurement Report frame to be transmitted to the PeerSTAAddress at the scheduled time or as the response triggered by the DMG Sensing Poll frame.

**6.3.13x.10 MLME-DMG-SENSREPORT.indication**

**6.3.13x.10.1 Function**

This primitive indicates that a DMG Sensing Measurement Report frame has been received

**6.3.13x.10.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-DMG-SENSREPORT.indication(

PeerSTAAddress,

Category,

Action,

Dialog Token,

DMG Measurement Setup ID,

DMG Sesning Report Control element,

DMG Sensing Measurement Setup element with the subelements,

Channel Measurement Feedback element

)

|  |  |
| --- | --- |
| **Name** | **Description** |
| PeerSTAAddress | The address of the peer MAC entity |
| Category | As defined in 9.6.21.10 (DMG Sensing Measurement Report frame format) and TBD (Protected DMG Sensing Measurement Report) |
| Action |
| Dialog Token | As defined in 9.6.21.10 (DMG Sensing Measurement Report frame format) |
| DMG Measurement Setup ID |
| DMG Sensing Report Control element |
| DMG Sensing Measurement Setup element with the subelements |
| Channel Measurement Feedback element |

**6.3.13x.10.3 When generated**

This primitive is generated by the MLME when a DMG Sensing Measurement Report frame is received.

**6.3.13x.10.4 Effect of receipt**

On receipt of this primitive, the SME delivers the reported information to the application

**6.3.13x.11 MLME-DMG-SENSMSMTTERMINATION.request**

**6.3.13x.11.1 Function**

This primitive requests the transmission of a DMG Sensing Measurement Setup Termination frame to a peer STA.

**6.3.13x.11.2 Semantics of the service primitive**

The primitive parameters are as follows

MLME-DMG-SENSMSMTTERMINATION.request (

PeerSTAAddress,

Category,

Action,

Dialog Token,

DMG Measurement Setup ID,

DMG Sensing Measurement Setup Termination control

(

|  |  |
| --- | --- |
| Name | Description |
| PeerSTAAddress | The address of the peer MAC entity |
| Category | As defined in 9.6.21.11 (DMG Sensing Measurement Setup Termination frame) and TBD (Protected DMG Sensing Measurement Setup Termination frame) |
| Action |
| Dialog Token | As defined in 9.6.21.11 (DMG Sensing Measurement Setup Termination frame) |
| DMG Measurement Setup ID |
| DMG Sensing Measurement Setup Termination control |

**6.3.13x.11.3 When generated**

The SME generates this primitive to request that a DMG Sensing Measurement Setup Termination frame be sent to the DMG Initiator STA.

**6.3.13x.11.4 Effect of receipt**

On receipt of this primitive, the MLME constructs a DMG Sensing Measurement Setup Termination frame to be transmitted to the peer STA

**6.3.13x.12 MLME-DMG-SENSMSMTTERMINATION.indication**

**6.3.13x.12.1 Function**

This primitive indicates that a DMG Sensing Measurement Setup Termination frame has been received

**6.3.13x.12.2 Semantics of the service primitive**

The primitive parameters are as follows

MLME-DMG-SENSMSMTTERMINATION.indication (

PeerSTAAddress,

Category,

Action,

Dialog Token,

DMG Measurement Setup ID,

DMG Sensing Measurement Setup Termination control

(

|  |  |
| --- | --- |
| Name | Description |
| PeerSTAAddress | The address of the peer MAC entity |
| Category | As defined in 9.6.21.11 (DMG Sensing Measurement Setup Termination frame) and TBD (Protected DMG Sensing Measurement Setup Termination frame) |
| Action |
| Dialog Token | As defined in 9.6.21.11 (DMG Sensing Measurement Setup Termination frame) |
| DMG Measurement Setup ID |
| DMG Sensing Measurement Setup Termination control |

**6.3.13x.12.3 When generated**

This primitive is generated by the MLME when a DMG Sensing Measurement Setup Termination frame is received.

**6.3.13x.12.4 Effect of receipt**

On receipt of this primitive, the SME commits the termination(s) as indicated in the DMG Sensing Measurement Setup Termination frame

**6.3.13x.13 MLME-DMG-SENSMSMTTERMINATION.confirm**

**6.3.13x.13.1 Function**

This primitive confirms the transmission of a DMG Sensing Measurement Setup Termination frame to a peer STA.

**6.3.13x.13.2 Semantics of the service primitive**

The primitive parameters are as follows

MLME-DMG- SENSMSMTTERMINATION.confirm (

ResultCode,

)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid Range** | **Explanation** |
| ResultCode | Enumeration | SUCCESS |  |
| TRANSMISSION\_FAILURE | Indicates rejection of the MLME-DMG-SENSMSMTTERMINATION.request primitive. |

**6.3.13x.13.3 When generated**

This primitive is generated by the MLME as a result of the

MLME-DMG-SENSMSMTTERMINATION.request primitive.

**6.3.13x.13.4 Effect of receipt**

On receipt of this primitive with the ResultCode set to SUCCESS, the SME commits the termination(s) as indicated in the DMG Sensing Measurement Setup Termination frame otherwise, the effect is unspecified.

**References:**